Strategic Environmental and Social Assessment
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INTRODUCTION

The Consortium (the Consultant) led by Environmental Resources Management (ERM) Italy and supported by ELC Electroconsult and CSA Group Ltd was commissioned by the Kosovo Lignite Power Technical Assistance Project (LPTAP) of the Ministry of Energy and Mining of Kosovo (MEM), to undertake the assignment “Environmental and Social Safeguards Services for Private Sector Participation in the Development of new generation capacity, related transmission and the development of the Sibovc Lignite Field” between July 2007 and July 2008.

It is clear from all the studies carried out in Kosovo over the years that the potential for power generation from lignite remains far and away the major asset and that the Sibovc field singled out as the highest priority for development, based on coal quality and overburden. The field contains adequate coal reserves to feed a new power plant of 2,000 MW for a period in excess of 40 years, which is the period usually assumed for the plant life within the economic and financial analysis.

As stated in the Energy Strategy (Energy Strategy of Kosova, 2005-2015, Ministry of Energy and Mining (MEM), July 2005) “the electricity production shall be oriented towards fulfilling domestic consumption demands with stable and uninterrupted production and competing prices, as well as export of energy surpluses to regional and wider markets”.

All the technical and economic indications collected so far point to the fact that the proposed 2,000 MW new power generation is viable. Given the environmental present conditions around the development area, any further air and water emission increase must be carefully evaluated and possibly avoided. What above implies that the existing sources of emissions should be progressively reduced, according to an agreed time schedule, to the western established limits.

1.1 BACKGROUND AND OBJECTIVES

The main scope of the assignment is to provide environmental and social safeguards advisory services to the Project Steering Committee of the Kosovo Lignite Power Technical Assistance Project (PSC), established jointly by the United Nations Interim Administration Mission in Kosovo (UNMIK) and MEM of the Kosovo Provisional Institutions of Self-Government. The project is funded under a grant to these institutions from the International Development Association (IDA) of The World Bank Group.

The work is focused on providing environmental and social safeguard support to facilitate the successful development and investments within the New Mining Field including the development of a new lignite mine and
power station, in a manner consistent with international best practices in regard to the management of the social, economic, and environmental impacts of such developments.

The specific objectives of the assignment are the following:

- assistance in the preparation of a Strategic Environmental and Social Assessment (SESA) that will identify key strategic issues associated with lignite development in accordance with the proposed New Mining Field Development Plan (NMFDP) that would be developed as a part of the Technical Assistance Project;
- identification of gaps, if any, in the existing legislation and institutional framework to address environmental and social issues in the energy and mining sector, and propose necessary policy and institutional changes to address these gaps. This will also include the development of a Resettlement Framework to guide land expropriation and resettlement required for Independent Power Producer (IPP) investments in the lignite sector in the short run;
- development of terms of reference for environmental impact assessment, social assessment and resettlement action plan that would need to be carried out/prepared for specific investments; and
- capacity building among relevant government agencies to manage environmental and social aspects of lignite development and associated power generation.

1.2 SESA REPORT SCOPE OF WORK

The Strategic Environmental and Social Assessment (SESA) is one of the main component of the environmental and social safeguard support the Consultant is requested to provide in order to facilitate the successful development of lignite mining and power generation project. Scope of the SESA is to identify and discuss the broad range of environmental and social issues associated with such development.

As specifically required by the TOR, the SESA has to be carried out in response to and parallel with the New Mining Field Development Plan (NMFDP), a regional energy sector development plan, aimed at describing the spatial implications of the development of a new mine and associated power plants and setting the spatial planning cornerstones and framework for the development activity.

The EU SEA Directive (2001/42/EC) and a new Kosovar regulation presently in development has been considered as the point of reference for scoping and conducting the SESA.
This document represents the Final Strategic Environmental and Social Assessment (SESA) Report, whose main objectives are the following:

- prepare an environmental and socio-economic baseline in a lignite deposit area located northwest of Obiliq town, including Hade, Hamidi, Lajthishte, Sibovc villages, hereafter known as New Mining Field;
- describe present activities (mainly KEK facilities);
- compare potential development scenarios, including three proposed locations, type of technology available (pulverized fired ‘PF’ or circulating fluidized bed ‘CFB’), size of the power plant units (300 or 500 MW), and phasing of development (rapid or phased). The “zero” or no action alternative is also taken into account;
- identify and assessing the environmental and socio-economic impacts of projected development alternatives;
- make recommendations on the preferred development scenario and integrating SESA results into the New Mining Field Development Plan (NMFDP);
- recommend mitigation measures for the development;
- facilitate the process of public consultation.

The SESA is the preliminary environmental and social assessment of lignite sector development. A more detailed analysis is to be carried out by the investors in terms of Environmental Assessment and Social Assessment for the selected project.

1.3 **Overview of SESA Process, Consultations and Relationship with SDP**

The SESA has been prepared in two phases:

- **Phase I - Baseline Study**, including:
  - environmental and socio-economic baseline data;
  - detailed household surveys and the establishment of Community Development Forums to fill socio-economic data gaps;
  - local/regional power sector development strategies; and
  - SESA legislative and regulatory review.

- **Phase II - Evaluation Process**, including:
  - comparison of potential development scenarios;
  - Evaluation of environmental and socio-economic impacts of the development scenarios; and
  - Preparation of the Environmental Management Plan, including mitigation measures and environmental monitoring plan.
The SESA included an extensive consultation process aimed at setting environmental and social priorities within the lignite mining and power generation development and in particular to:

- ensure that key stakeholders are identified;
- collect public opinions/views/perception on current state of the environmental and social issues and expectations for the future;
- provide information on the character, progress and impacts of the project to key stakeholders;
- give stakeholders the opportunity to influence the policy priorities that affect this process;
- disclose the SESA report to stakeholders for comments to be included in the Final SESA Report and Draft Sibovc Development Plan.

The main consultation activities performed within the SESA and the Sibovc Lignite Field Project are the following:

- Identification of the key project stakeholders (Local and national government, employees and KEK existing facilities managers, NGOs, policy and research organizations, communities affected by resettlement and/or other social and environmental impacts) and assessment of stakeholders’ key issues and levels of interest and influence.
- First Public Hearing Meeting, held on the 21st of September 2007, aimed at (i) presenting current status of the Project; (ii) introducing SESA consultation process; (iii) describing SESA scope and objectives and (iv) stimulating/collecting concerns and questions of key stakeholders about the Project.
- Village consultation meetings in 9 most affected villages (Shiptulle, Grabovc, Hade, Sibovc, Lajthishte, Plemetin, Dardhiste, Mazgit, Obliq). The village consultation meetings, carried out in the period 22nd October – 1st November 2007, provided an opportunity for the LPTAP team and the affected communities to establish a two-way dialogue and to identify key issues of concern of different sectors of the community, especially those who may have been excluded from traditional consultation methods. Other scope of the village meetings was to identify the most appropriate methods for future consultations with these communities.
- Second Public Hearing meeting held on the 11th of December 2007 aimed at (i) proposing the development scenarios; (ii) informing about the main environmental and social issues investigated in the First Draft SESA Report and (iii) collecting public comments and questions which will rise upon the First Draft SESA Report disclosure.
- Second phase consultation with affected communities carried on by Community Development Forum-CDF starting from January 2008. The main purposes of these meetings were: (i) to assist in the implementation of the consultation guidelines; (ii) to co-ordinate and document the project’s consultation with affected communities; (iii) to assist in the development and implementation of a grievance mechanism; (iv) to
establish and facilitate community development forums. A total of 57 community meetings were organized and establishment of the community forums, including assignment of roles and responsibilities, was conducted.

In parallel to the above, the Consultant has provided assistance to the Ministry of Environment and Spatial Planning (MESP) in the preparation of the NMFDP, on the basis of the work conducted for the SESA. The draft NMFDP presents:

(i) lignite power sector development schemes;
(ii) planned or anticipated regional developments in other sectors, such as land-use and infrastructure;
(iii) interactions and linkages among the various developments in different sectors;
(iv) measures and conditions to optimize sector development and minimize negative impacts; and
(v) administrative procedures and regulations and institutional roles and responsibilities under which the NMFDP will be implemented.

1.4 CONTENTS AND STRUCTURE OF THE REPORT

The remainder of this Final SESA Report is structured as follows:

- **Section 2** presents the SESA legislative and regulatory review;
- **Section 3** presents the environmental and social baseline;
- **Section 4** presents alternative scenarios for Kosovo C Thermal Power Plant development;
- **Section 5** presents the environmental and social impacts of selected development scenarios;
- **Section 6** presents mitigation measures and monitoring plan.

Moreover, **Annex A** presents the environmental assessment (EA) of KEK existing generation and mining installations and facilities.
2 SESA LEGISLATIVE AND REGULATORY REVIEW

2.1 INTRODUCTION

The legislative framework review is a required key component (Task 4/Al) of the project “Environmental and Social Safeguard Services”. It provides a description of the existing legislative framework related to environmental management and expropriation/resettlement issues at national, regional and local levels and a gap analysis with reference to relevant international standards and regulations.

This gap analysis delivered at the beginning of September 2007 informed the Project Committee’s Legal and Regulatory Advisors on the development of the legislative framework and was used for the preparation of the Diagnostic Survey of Legal Issues Associated with Management of Social, Economic and Environmental Impacts (26th September 2007).

The review focuses on key environmental, health and safety and resettlement issues related to the lignite sector and related activities. The analysis of the division of responsibilities between central and local authorities will be part of the review of the existing institutional capacity for the environmental management which was included in the Activity II/First Draft Report delivered in October 2007.

The present gap analysis review was carried out taking in consideration the laws and instructions on environmental management that have been drafted or approved after February 2007 and also on the basis of main findings of the Revised Interim Diagnostic Survey of the Legal and Regulatory Advisors (21st January 2008).

2.2 METHODOLOGY AND APPROACH

The review of environmental, health and safety legislation has been developed as follows:

- selection of key environmental, health and safety issues based on the context of the project (SESA of lignite extraction and power generation program, Environmental Impact Assessment (EIA) and environmental monitoring, Resettlement issues);
- review of existing EHS EU regulation and pertaining enforced EHS legislation in Kosovo;
- comparative analysis between EU requirements and WB standards versus Kosovo legislation;
- interviews with relevant environmental authorities in Kosovo;
- identification of major gaps.
The key EHS issues selected include as follows:

*Environmental issues:*
- EIA
- SEA-Strategic Environmental Assessment and Spatial Planning issues
- Integrated Pollution Prevention and Control (IPPC)
- air emissions and air quality;
- water uses and wastewater effluents;
- waste management;
- hazardous substances – oils, Polychlorinated Biphenyls (PCBs), asbestos and Ozone Depletive Substances (ODS);
- Soil and Groundwater Quality;
- Nature Protection and Biodiversity;
- Environmental Impact Assessment Issues related to Spatial Planning.

*Health and Safety issues:*
- Health & Safety Management System;
- Mineral Extracting Industry;
- Fire Prevention and Protection;
- Chemical Exposure at Workplace;
- Physical Exposure (Asbestos) at Workplace.

*Resettlement Issue*
The emphasis of the gap analysis is on compensation and resettlement, as this is the most severe impact predicted by the lignite power plant project. However, as social assessment and public consultation are crucial aspects of a sound resettlement process, these elements have been included as part of the legislative review. There is no specific EU directive on resettlement thus the World Bank OP 4.12 and The IFC performance standards 1 and 5 have been used as the international benchmarks against which to measure the Kosovo legislation and regulations.

The following key issues have been analysed as part of the resettlement legal gap analysis:
- Definitions;
- Resettlement planning and procedural requirements (including social assessment);
- Public consultation and participation of project affected communities;
- Extent of compensation and types of assistance to be offered;
- Categories of people eligible for compensation (including vulnerable and indigenous people);
- Property measurement and income restoration.
2.3 **COMPARISON BETWEEN KOSOVO AND INTERNATIONAL STANDARDS**

The following table includes the comparative analysis between existing EU directives, Kosovo regulations and WB and other international standards for each EHS and Social issue.
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<tr>
<th><strong>EUROPEAN UNION REGULATORY STANDARDS</strong></th>
<th><strong>KOSOVO REGULATORY STANDARDS</strong></th>
<th><strong>WORLD BANK MANAGEMENT PRACTICES / OTHERS</strong></th>
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<tr>
<td>Protection of the Environment</td>
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<td><strong>EUROPEAN UNION REGULATORY STANDARDS</strong></td>
<td><strong>KOSOVO REGULATORY STANDARDS</strong></td>
<td><strong>WORLD BANK MANAGEMENT PRACTICES / OTHERS</strong></td>
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<td>The relevant Directives addressing different aspects of Environmental Protection are covered individually in the following sections. A “framework environmental directive” does not exist at EU level.</td>
<td><strong>A new draft Environmental Protection Law</strong> has been submitted to the Assembly during the summer of 2007. To date (26th May 2008) the draft Law is still in the process of approval. The detailed analysis of the draft Environmental Protection Law is not included in the present study since a copy of the Draft Law has not yet been made available for review. Most part of the following considerations is taken from the Diagnostic Report of the Legal and Regulatory Advisors. Reportedly the Draft law is very poorly drafted but would appear too generally to be in compliance with the spirit and intent of the environmental aquis and gives primary responsibility for the effective coordination of environmental protection functions to MESP. <strong>Art 17 of the Draft law</strong> defers to the conditions and measures designated by specific laws, which is important in order to ensure coherence with other key environmental instruments, such as the Law on Waste or the Law on Water. Reportedly, the draft Law includes a requirement for all Municipalities to establish environmental departments and anticipates the concept of Municipal environmental permits for minor projects.</td>
<td><strong>The World Bank Environment Strategy</strong> was approved and endorsed in July 2007. Its main goal is to promote environmental improvements as a fundamental element of the development and poverty reduction strategies and actions. The Strategy has three interrelated objectives: 1. improving people's quality of life 2. improving the prospects for and the quality of growth 3. protecting the quality of the regional and global environmental commons</td>
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<td><strong>European Union Regulatory Standards</strong></td>
<td><strong>Kosovo Regulatory Standards</strong></td>
<td><strong>World Bank Management Practices/Others</strong></td>
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<td>Regulation No. 2003/9: for Law 2002/8</td>
<td>The Environmental Protection Law: General Purpose: Gradual Introduction of the Environmental Standards of the European Union “consistent with the sustainable economic development and the ability of Kosovo to bear the associated cost.”</td>
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<td>Definition of responsible public authorities (Ministry and Municipalities)</td>
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<td>General Objectives: Introduces a number of Principles including the following:</td>
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<td>• Gradual reduction of Pollution, Degradation and Environmental damage</td>
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<td>• Gradual harmonization with EU Standards</td>
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<td>• Balancing of Environmental Protection and the need for economic development</td>
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<td>• Preservation of Bio-diversity Rational and sustainable use of natural resources</td>
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<td>• Public access to State of the Environment Information Preservation of nature, diversity of landscape</td>
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<td>• Introduction of Polluter Pays Principle</td>
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<td>• Principle of Mandatory Insurance Establishes tools for environmental protection such as:</td>
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<td>• The Strategy for environmental protection and sustainable economic development to span 10 yrs.</td>
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<td><strong>EUROPEAN UNION REGULATORY STANDARDS</strong></td>
<td><strong>KOSOVO REGULATORY STANDARDS</strong></td>
<td><strong>WORLD BANK MANAGEMENT PRACTICES / OTHERS</strong></td>
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<td>• Environmental protection plan to be submitted by Ministry to Government every five years.</td>
<td>• State of the environment report to be prepared every two years.</td>
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<td><strong>Administrative Instruction 22/2003</strong> establishes the Kosovo Environmental Protection Agency and defines its responsibilities. Reportedly, the new draft Law defined new roles and responsibilities for KEPA which focus on state of the environment reporting and management of the national environmental information system.</td>
<td><strong>Administrative Instruction 2/2004</strong> establishes the Environmental Protection Inspectorate and defines terms of nomination of Environmental Inspectors.</td>
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**Strategic Environmental Assessment**

**EU Directive 2001/42/CE “On the assessment of the effects of certain plans and programmes on the environment”**:  
**Article 1** of the Directive states that its objective is “to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development”.

Though usually referred to as the SEA Directive, it does not use the term “strategic environmental assessment” or SEA; rather, it requires an “environmental assessment” of certain plans and programmes.

**A draft SEA Law has been submitted to Assembly** and is pending approval. To date (25th May 2008), no information was available on its approval status.

A detailed review which includes specific recommendations has been prepared by the Legal and Regulatory Advisors which include recommendations for rewording of some of the articles as the English version is sometime difficult to interpret.

**UN ECE Protocol on Strategic Environmental Assessment (The Kiev Protocol-May 2003) foresees SEA to be carried out on all plans in States that ratify the Protocol.**


**IFC Performance Standard No1 (Social and Environmental Assessment and Management Systems) is to be applied to projects with a foreseen significant social and...**
For convenience, however, the term SEA is usually used to mean an environmental assessment which complies with the Directive.

The Directive defines “environmental assessment” (Article 2(b)) as a procedure including the following steps:

1. **Preparing an Environmental Report** on the potentially significant effects of the draft plan or programme;
2. **Carrying out public consultation** on the draft plan or programme and the accompanying Environmental Report;
3. **Taking into account the Environmental Report** and the results of consultation in decision making;
4. **Providing information** when the plan or programme is adopted and showing how the results of the environmental assessment have been taken into account;
5. **Monitoring of the significant environmental effects** of the plan’s or programme’s implementation.

Our comments on the draft Law are the following:

In general, the draft Law is considered to have been prepared in compliance with the EC SEA Directive which at the moment represents the international benchmark in SEA implementation.

**Article 4** defines which plans must undergo SEA, but makes no reference to either the Environmental Protection Law (a new draft Law is pending approval in the Assembly), not the Spatial Planning Law.

An interview with the head of the environmental protection Department has indicated that no decision has yet been made on the organisation of the SEA process at institutional level.

**Article 6** makes reference to Competent organs, indicating the Ministry of Environment and Spatial Planning (MESP) as competent authority for SEA review. An interview with the head of the environmental protection Department has indicated that no decision has yet been made on the organisation of the SEA process at institutional level.

**Article 8 of the Environmental protection Law**: Kosovo spatial plans, regional spatial plans, municipal spatial plans, plans for management of Natural Resources, development plans and programs and other spatial planning and adjustment acts, as defined by law, which affect the Environment, must include an environmental impact at an early stage of project development and on an ongoing basis.

It foresees an environmental and social management system to be set up by the owner of the project with the objective to monitor the performance of the project throughout its lifetime. The aim include the following:

- To identify and assess social and environment impacts, both adverse and beneficial, in the project’s area of influence
- To avoid, or where avoidance is not possible, minimize, mitigate, or compensate for adverse impacts on workers, affected communities, and the environment
- To ensure that affected communities are appropriately engaged on issues that could potentially affect them
- To promote improved social and environment performance of companies through the effective use of management systems

The main requirements include the following:

The owner of the project will establish and maintain a Social and Environmental Management System appropriate to the nature and scale of the project and commensurate with the level of social and environmental risks and impacts. The Management System will incorporate the following elements:

(i) Social and Environmental Assessment; (ii) management program; (iii) organizational capacity; (iv) training; (v) community engagement; (vi) monitoring; and (vii) reporting.
assessment of planned activities and their impact on the Environment and a detailed assessment of the potential positive economic impact of such planned activities. The assessment of planned activities and their impact shall be prepared and presented in a manner and procedure prescribed by this law.

The assessment of planned activities shall include an analysis of the present state of potential impacts that the proposed activities and proposed mitigation activities have on the Environment and economic development.

Before they are adopted, Kosovo spatial plans, regional spatial plans, municipal spatial plans, plans for the management of Natural Resources, development plans and programs and other spatial planning and adjustment acts shall be presented for assessment to the Kosovo Environment Protection Agency (KEPA).

**Article 28 (Drafting of Studies of Environmental and Natural Impact) of the Law on Spatial Planning (2003/14)** states that “The competent municipal authority shall determine whether a proposed project requires the preparation of a study of the environmental and natural impacts according to the Law on Environmental Protection.
### Spatial Planning

No specific regulation exists at European level with reference to Spatial Planning.

**The Law on Spatial Planning (2003/14), 4 Administrative Guidelines and instructions for its implementation**

The MESP is responsible for the drafting of Kosovo Spatial Plan and spatial plans for special areas, while the Municipalities are responsible for the drafting of Municipal Development Plans, Municipal Urban Plans and Urban regulatory Plans. Municipal development plans should include assessment of socio-economic and environmental impacts.

A Manual has been drafted on the establishment of the council of planning experts for the support to drafting process of Municipal Development Plans, Urban Development Plans and Urban regulations plan.

**24 May 2007, Leipzig Charter on Sustainable European Cities:**

The charter is a document of the EU Member States, which has been drawn up with the broad and transparent participation of the European Stakeholders. The document defines a set of principles and strategies on sustainable urban development to be adopted in relation to national, regional and local development policies. The charter promotes the establishment of balanced territorial organisation on a European polycentric urban structure.

**May 1999, European Spatial Development Perspective (ESDP):**

is a document approved by the Informal Council of Ministers of Spatial Planning of European Commission in Potsdam in 1999. It is a legally non-binding document forming a policy framework with 60 policy options for all tiers of administration with a planning responsibility. The strategic aim is to achieve a balanced and sustainable spatial development strategy. By adopting it, the Member States and the Commission reached agreement on common objectives and concepts for the future development of the territory of the European Union. The aim of spatial development policies is to work towards a balanced and sustainable development of the territory of the European Union. The goals of European policy are:
- economic and social cohesion;
- conservation and management of natural resources and the cultural heritage;
- more balanced competitiveness of the European territory.
Environmental Impact Assessment

**Directive 85/337/CEE, integrated by EU Directive 97/11/CE and 2003/35/CE:**

Environmental assessment is a procedure that ensures that the environmental implications of decisions on activities or public and private projects are taken into account before the decisions are made. In particular, before consent (which entitles the developer to proceed with the project) is given, projects which are likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects.

The environmental impact assessment shall identify, describe and assess the direct and indirect effects of a project on the following factors:

- human beings, fauna and flora;
- soil, water, air, climate and the landscape;
- material assets and the cultural heritage;
- the interaction between the above mentioned factors.

Projects listed in Annex I shall be made subject to an assessment, while for projects listed in Annex II, the Member States shall determine whether the project shall be made subject to an assessment.

The developer shall supply at least the following information:

- a description of the project, comprising information on the physical characteristics of the site and the production processes and an estimate, by type and quantity, of expected residues and emissions resulting from the operation of the proposed project,
- a description of the aspects of the environment likely to be affected.

A draft EIA Law has been approved by the Assembly in June 2007. To date (26th May 2008) it is awaiting signature to become operational.

Previous local EIA regulations include the Administrative Directive 9 of July 2004, and Articles 20-21 of the Environmental Protection Law.

The new Law has redesigned the EIA procedure which remains total responsibility of the Ministry for the Environment. Main aspects include the following:

- No part of the procedure is carried out by KEPA as had been foreseen by the Administrative Directive of 2004.
- Reportedly, a Commission made up of 5 members will be involved in the EIA procedure. These members will be nominated by the Permanent Secretary and are employees of MESP.
- A single person, employee of the Ministry, is the focal point and coordinator for all EIA processes. A second person is at present on maternity leave.
- The Ministry may contract external experts to review the EIA (Article 18).
- No other Ministries or relevant Authorities are involved.

The World Bank Operational Procedures 4.01 require Environmental Assessment of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making.

The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of EA. The Bank classifies the proposed project into one of four categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts.

(a) Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. EA for a Category A project examines the project’s potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the “without project” situation), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. For a Category A project, the borrower is responsible for preparing a report, normally an EIA (or a suitably comprehensive regional or sectoral EA) that includes, as necessary, elements of other instruments.

(b) Category B: A proposed project is classified as Category B if its potential adverse environmental impacts on human populations or environmentally important areas—including wetlands, forests,
significantly affected by the proposed project, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors,
- a description of the likely significant effects (direct and indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed project on the environment resulting from the existence of the project, the use of natural resources and the emission of pollutants, the creation of nuisances and the elimination of waste,
- a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment,
- the data required to identify and assess the main effects which the project is likely to have on the environment,
- the description of the forecasting methods used to assess the effects on the environment
- an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects,
- a non-technical summary of the information above mentioned,
- an indication of any difficulties (technical deficiencies or lack of know-how) encountered in compiling the required information.

The authorities likely to be concerned by the project by reason of their specific environmental responsibilities are given an opportunity to express their opinion on the information supplied by the developer and on the request for development consent.

The public shall be informed, whether by public notices or other appropriate means such as electronic media where available, of the

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<tr>
<td>Institutions are to be involved in the EIA.</td>
<td><strong>The main conclusions and recommendations contained in the EIA report and the Opinion-Proposal shall be subject to public debate.</strong> (Article 19).</td>
<td>grasslands, and other natural habitats—are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects. The scope of EA for a Category B project may vary from project to project, but it is narrower than that of Category A EA. Like Category A EA, it examines the project’s potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. The findings and results of Category B EA are described in the project documentation (Project Appraisal Document and Project Information Document).</td>
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<td><strong>Article 10: Screening Procedure.</strong> The applicant presents to the Ministry the application, inclusive of Annexes, to start the EIA procedure.</td>
<td><strong>Article 11: Review of the Application.</strong> The Ministry, within 10 days from the receipt of the application, informs the applicant in written form on decision taken whether if:</td>
<td>(c) <strong>Category C:</strong> A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project.</td>
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<td>o EIA Report is required</td>
<td>(d) <strong>Category FI:</strong> A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts. Public Consultation is one of the steps foreseen by the EA procedure.</td>
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<td>o EIA Report is not required.</td>
<td>The World Bank has issued a “Pollution, Prevention and Abatement Handbook” in 1998 containing guidelines for management of environmental issues such as air and water quality, waste management and operating environmental standards for a number of industrial activities.</td>
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<td>Additional foreseen steps are the following:</td>
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following matters early in the environmental decision-making procedures:

(a) the request for development consent;

(b) the fact that the project is subject to an environmental impact assessment procedure;

(c) details of the competent authorities responsible for taking the decision, those from which relevant information can be obtained, those to which comments or questions can be submitted, and details of the time schedule for transmitting comments or questions;

(d) the nature of possible decisions or, where there is one, the draft decision;

(e) an indication of the availability of the information gathered;

(f) an indication of the times and places where and means by which the relevant information will be made available;

(g) details of the arrangements for public participation.

Where a Member State is aware that a project is likely to have significant effects on the environment in another Member State, the Member State in whose territory the project is intended to be carried out shall send to the affected Member State a description of the project, together with any available information on its possible transboundary impact, and information on the nature of the decision which may be taken. The Member States concerned shall enter into consultations regarding, inter alia, the potential transboundary effects of the project and the measures envisaged to reduce or eliminate such effects.

The results of consultations and the information gathered must be taken into consideration in the development consent procedure.

When a decision to grant or refuse development consent has been taken, the competent authority or authorities shall inform the public.

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<tr>
<td>Article 12: Scoping Direction. The applicant may request from the Ministry a written opinion as to the information on environmental impacts to be presented in the EIA Report (Scoping Direction). The applicant submits a brief scoping report of maximum 3 pages to the Ministry. The Ministry issues a Scoping Direction document to the applicant within 30 days from receipt of request.</td>
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<td>Article 17: Review of EIA Report. The Ministry reviews the EIA report and issues the Opinion-Proposal to be presented in writing to the Applicant.</td>
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<td>Article 18: Review of EIA report by external experts. The Ministry requests review by external experts, as necessary.</td>
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Updated Environmental, Health and Safety Guidelines have been issued for a number of sectors, while others, including the thermal power and open pit mining sectors, are currently under revision.
thereof and shall make available to the public the following information:

- the content of the decision and any conditions attached thereto,
- having examined the concerns and opinions expressed by the public concerned, the main reasons and considerations on which the decision is based, including information about the public participation process,
- a description, where necessary, of the main measures to avoid, reduce and, if possible, offset the major adverse effects."

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<tr>
<td>Article 19: Public Debate for the EIA Report. The main conclusions and recommendations contained in the EIA report and the Opinion-Proposal shall be subject to public debate. Within 10 days from receipt of the EIA Report, the Ministry informs concerned parties and the public on the public hearing to be held so that they may give their opinion and remarks on the EIA report. The public debate must take place within 20 to 30 days from the moment of information to the parties and the public.</td>
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<td>Article 20: Results of reviewing EIA report. Within 10 days from the date of public debate, the Ministry shall review remarks and opinions and inform the applicant which is obliged to revise the EIA report accordingly. The Opinion for the Environmental Consent must be prepared by the responsible body of the Ministry within 60 days of receipt of EIA report.</td>
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<td>Article 21: Decision of Environmental Consent. Within 10 days from the presentation of the Opinion for Environmental Consent, the Ministry shall decide for granting or refusing an Environmental Consent</td>
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<td>and convey the decision to the applicant.</td>
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<td><strong>Articles 20-21</strong> of the Environmental Protection Law indicate general terms for EIAs. Amongst these, <strong>Article 21</strong> indicates that all public officials and civil servants having the authority to issue construction permits, must receive basic training in EIA requirements.</td>
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<td><strong>Article 24</strong> foresees notification to foreign countries in case of activities whose environmental impact is expected to go across Kosovo borders.</td>
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<td><strong>Administrative Instruction 09/ 2004: Environmental Impact Assessment.</strong></td>
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<td><strong>Article 1: Purpose</strong> : This Administrative Directive defines and specifies procedures for identification, evaluation, reporting and management of environmental impacts of a proposed project, listed in Annexes I and II, to ensure that all relevant environmental information is taken into account in the decisions by the Ministry of Environment and Spatial Planning on issuing an Environmental Consent (required in order to obtain a construction permit) and an Environmental Permit (required in order to obtain an operating permit).</td>
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<td><strong>Article 3</strong>: Projects which undergo environmental impact assessment require</td>
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the preparation of a full or simplified EIA Report, based on the expected scale, variety and type of likely environmental impacts.

**Article 4:** The EIA procedure begins when an applicant submits, in writing, an application to the municipal authority for an Environmental Consent or an Environmental Permit. The municipal authority shall send a copy of the application to the Ministry and the Ministry shall require Kosovo Environment Protection Agency (KEPA) to review the application and provide a screening opinion to the Ministry.

**Article 5:** The Ministry shall review the application and shall inform the applicant and the municipal authority, in writing, that no EIA is required or that a full or a simplified EIA Report is required.

**Article 7** establishes that only individuals licensed by the Ministry as EIA experts shall be commissioned to prepare EIA Reports.

**Article 9**: The municipal authority shall review the EIA Report and prepare its written opinion stating whether an Environmental Consent or Environmental Permit should be granted and proposing conditions to be included. Such written
opinion shall be forwarded to the Ministry.

**Article 11** establishes that KEPA, after review of the EIA Report and taking into account the written opinion of the municipal authority, shall submit its draft decision to the Ministry with conditions to be attached as necessary. The draft decision will be presented, in writing, to the applicant and the municipal authority.

**Article 12:** The Ministry shall, as necessary, contract experts resident in Kosovo holding a valid EIA licence or international experts having proven expertise in EIA, to present their opinions.

**Article 13:** The Ministry shall issue a written request for a review opinion on an EIA Report to selected bodies having a legitimate interest in the proposed project and its environmental impacts.

**Article 14:** The main conclusions and recommendations, contained in an EIA Report submitted to the Ministry for review, the project to which it refers, and the draft decision shall be subject to public consultation.

**Article 17:** KEPA shall present its proposed decision to the Ministry after reviewing the EIA Report; the opinion of the municipal authority; the reviews of
Article 19: After receiving the KEPA proposed decision, the Ministry shall review it and grant or refuse an Environmental Consent and convey this decision in writing to the applicant, the municipal authority and the public. The Ministry may decline to follow or may amend the KEPA proposed decision only on the basis of imperative reasons of overriding public interest, including reasons of an economic, social or environmental nature.

An Environmental Consent shall specify, as appropriate, measures to be implemented or conditions to be satisfied in order to prevent or reduce, to an acceptable level, adverse environmental impacts.

On receipt of an application for an Environmental Permit, from the municipal authority, the Ministry will request an opinion from KEPA. The procedure for issuing an Environmental Permit, and the contents thereof, shall be regulated by a separate normative act.

Article 23: If no land preparation or
construction work or activities have started within three years from the date of issue of an Environmental Consent then the applicant, or his successor, must submit a new application for the required Environmental Consent to the Ministry. The Ministry shall decide whether a new full or simplified EIA Report is required, or an Addendum to the EIA Report is required.

**Article 27 - Simplified EIA Report:** A simplified EIA Report shall contain information on:

a) purpose of the project;

b) relationship of the project with existing statutory spatial, urban, environmental and economic development plans,

c) description of the project and any alternatives considered;

d) main emissions from construction and operational phases;

e) description of important features of the environmental baseline situation and any trends affecting these environmental features;

f) effects upon architectural, archeological, and cultural heritage;

g) description of likely significant
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<th><strong>World Bank Management Practices/Others</strong></th>
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<td>environmental impacts;</td>
<td>h) proposed measures for the prevention and/or reduction of significant adverse impacts;</td>
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<td>i) measures for rehabilitation and ensuring acceptable after-use of damaged soils and landform once operations cease;</td>
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<td>j) action plan in case of emergencies (if relevant to the proposed project);</td>
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<td>k) proposed environment impact monitoring measures;</td>
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<td>l) description of trans-boundary impacts, if any</td>
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<td>m) copy of the licence issued to the natural or legal person or persons who prepared the EIA Report; and</td>
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<td>n) a non-technical summary of the EIA Report.</td>
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**Article 28 - Full EIA Report:** A full EIA Report shall contain the information required under Article 27 plus detailed information on expected impacts with information for each impact type on forecasting methods used and an indication of any technical difficulties (technical problems or lack of know-how) encountered in preparing the EIA Report. The additional information required for a


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full EIA Report is as follows:

a) procedure and reasons for selection of the project site, and description of at least two other possibilities for project locations;

b) direct and indirect environmental impact of the project (including direct and indirect effects short term, medium term and long term effects, temporary and permanent effects and positive or negative effects of the project) as listed under paragraphs (c)-(j) of this article;

c) effects upon humans, human health, structures created by man;

d) effects upon flora and fauna, nature heritage and geology;

e) effects upon soil, natural resources and land users;

f) effects from closure of access or reduction in access;

g) effects on livelihoods of land loss eg. owned agricultural land and/or resources used in common for specific economic purposes, from changes in quality and amounts of available agricultural land or resources and sterilisation of mineral resources;

h) effects upon water quality and
i) effects upon air and micro-climate;

j) induced or secondary effects of the project.

**Article 29:** If, during a review of an EIA Report, it is determined that the proposed project is likely to cause significant transboundary environmental impacts, then the Ministry shall inform the responsible body of UNMIK. If required by UNMIK the Ministry shall provide a copy of documentation concerning the project, including without limitation, the EIA Report. A neighbouring country or countries that may be affected may give their opinion and comments on the project and may be represented at any public hearing concerning the project. The comments of the country or countries concerned must be taken into account in the decision to issue an Environmental Consent or an Environmental Permit.

**Administrative Direction No. 6 on Licensing Persons and Enterprises for Conducting Environmental Impact Assessment Reports.**

Only individuals licensed by the Ministry as EIA experts shall be commissioned to prepare EIA Reports.

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**Integrated Pollution Prevention and Control (IPPC)**

1. The IPPC Directive is based on a number of principles which include the following:
   - an integrated approach,
   - best available techniques,
   - flexibility and
   - public participation.

2. The integrated approach means that the permits must take into account the whole environmental performance of the plant, covering e.g. emissions to air, water and land, generation of waste, use of raw materials, energy efficiency, noise, prevention of accidents, and restoration of the site upon closure. The purpose of the Directive is to ensure a high level of protection of the environment taken as a whole.

3. The permit conditions including emission limit values (ELVs) must be based on Best Available Techniques (BAT), as defined in the IPPC Directive.

4. The IPPC Directive contains elements of flexibility by allowing the licensing authorities, in determining permit conditions, to take into account: 5. (a) the technical characteristics of the installation,
   (b) its geographical location and
   (c) the local environmental conditions.

6. The Directive ensures that the public has a right to participate in the decision making process, and to be informed of its consequences, by having access to
7. permit applications in order to give opinions,
   (b) permits,
   (c) results of the monitoring of releases and
   (d) the European Pollutant Emission Register (EPER). In EPER, emission data reported by Member States are made accessible in a public register, which is intended to provide environmental information on major industrial activities. EPER will be replaced by the

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**Kosovo Regulatory Standards**

- Article 22 of the Environmental Protection Law (Environmental Operational Permit Procedures) foresees Environmental Permits to be granted to plants which have undertaken an environmental impact assessment procedure.

- Article 23: Environmental Authorisation, foresees an environmental authorisation to be requested and granted to facilities which have not undergone an environmental impact assessment procedure.

- Article 17 of Law on Air Protection: foresees the acquisition of an environmental permit by all operators of emission sources, issued by the MESP in cooperation with the relevant local authority

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**World Bank Management Practices / Others**

- Pollution Prevention and Abatement Handbook, 1998

  Summary requirements:
  Pollution Prevention is preferred to the use of end-of-pipe pollution control facilities. Therefore every attempt should be made to incorporate cleaner manufacturing process and facilities to limit, at source, the quantity of pollutants generated.

  **Threshold Parameters:** Specific guidelines for thermal power plants and open pit mining are presently under revision.
**European Union Regulatory Standards**

European Pollutant Release and Transfer Register (E-PRTR) from 2007 reporting period onwards.

**Summary requirements:** Industrial and agricultural activities with a high pollution potential receive a permit which can only be issued if certain environmental conditions are met. IPPC concerns new or existing industrial and agricultural activities in the field of energy industries, production and processing of metals, mineral industry, chemical industry, waste management, livestock farming, etc. that must comply with certain basic obligations. In particular:

- use appropriate pollution-prevention measures;
- namely the best available techniques (which produce the least waste, use less hazardous substances, enable the recovery and recycling, etc.);
- prevent all large-scale pollution;
- prevent, recycle or dispose of waste in the least polluting way possible;
- use energy efficiently;
- ensure accident prevention and damage limitation;
- return sites to their original state when the activity is over.

**Kosovo Regulatory Standards**

very closely, thereby making it quite clear that large scale power generation plant [Annex 1, Part A, 1.1], hazardous waste disposal activities [Annex 1, Part A, 5.3 and 5.4] and large-scale open-cast extraction of mineral resources [Annex 1, Part A, 6.2] all require an IPPC Permit.

Equally, Annex 1, Part B makes clear the thresholds at which such activities would merely require a Permit from MESP.

**Administrative Instruction for issuing of environmental permit (No 26/05)** foresees that an environmental permit is granted to facilities which have undergone an environmental impact assessment procedure, prior to their construction.

**Article 11 of Waste Law** foresees a waste management plan for facilities which require an ecological permit under the Environmental Protection Law.

**World Bank Management Practices / Others**

very closely, thereby making it quite clear that large scale power generation plant [Annex 1, Part A, 1.1], hazardous waste disposal activities [Annex 1, Part A, 5.3 and 5.4] and large-scale open-cast extraction of mineral resources [Annex 1, Part A, 6.2] all require an IPPC Permit.

Equally, Annex 1, Part B makes clear the thresholds at which such activities would merely require a Permit from MESP.

**Air Emissions and Air Quality**

**Proposal for Directive on Ambient Air Quality and Cleaner Air for Europe**

This new proposal includes the following key elements:

- that most of existing legislation be merged into a single directive (except for the fourth daughter directive) with no change to existing air quality objectives
- new air quality objectives and monitoring requirements for PM$_{2.5}$

**Article 28 of Environmental Protection Law** foresees that the Government will issue a subsidiary normative act establishing prescribed permissible maximum levels for the discharge and emission of pollutants into the air consistent with the capacity of Kosovo to comply at a reasonable cost.

**WB Pollution Prevention and Abatement Handbook, 1998**

Defines a basic set of parameters to be monitored:

- Suspended PM (PM$_{10}$, PM$_{2.5}$), SO$_2$, NO$_x$, lead.
- Others: Ozone, VOC, aerosol acid

Defines criteria for degraded airsheds as follows:

**Moderate air quality:** annual mean value of (i) PM$_{10}$ exceeds 50 µg/m$^3$ or exceeds 80 µg/m$^3$ for TSP (Total Suspended Particles).
European Union Regulatory Standards

• the possibility to discount natural sources of pollution when assessing compliance against limit values
• absolute time extensions of up to five years for compliance with the dates of entry into force of existing limit values.

Kosovo Regulatory Standards

Article 36 foresees discharge and emission monitoring and environmental record keeping.

Article 36 foresees an environmental protection information system.

Article 38 foresees a Cadastre and data base of pollutants

Law 2004/30: The Law on Air Protection

Main Contents: Defines Air Pollution Sources Based on European Standards and WHO

Article 4 defines a number of “Environmental Indicators”:

- Solid Substances, articles (aerosols, fog, smoke, dust, smut)
- SO2, CO, Ozone,
- Lead, Mercury, Arsenic, Cadmium, Nickel, and their compounds
- Haloids
- Hydrocarbons (Benzene)
- Ionizing and non ionizing radiation
- PM10, PM 2.5, PM1.

Article 6 foresees that air emission limits are set in compliance with EU and WHO suspended particles) or (ii) SO2 exceeds 50 µg/m³ or (iii) NO2 exceeds 100 µg/m³ for the airshed, or the 98th percentile of 24 hour mean values of PM10 or SO2 or NO2 for the airshed over a period of a year exceeds 150 µg/m³ (or 230 µg/m³ for TSP).

Poor Air Quality: Annual mean value of (i) PM10 exceeds 50 µg/m³ (or 160 µg/m³ for TSP) or (ii) SO2 exceeds 100 µg/m³ or (iii) NO2 exceeds 200 µg/m³ for the airshed, or the 95th percentile of 24 hour mean values of PM10 or SO2 or NO2 for the airshed over a period of a year exceeds 150 µg/m³ (or 230 µg/m³ for TSP).


Directive 96/62/EC (The so called Air Quality Framework Directive) on ambient air quality assessment and management and daughters directives 1999/30/EC (which introduced limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead), 2000/69/EC (which introduced limit values for benzene and carbon monoxide) and 2002/3/EC (established target values and long term objectives for ozone), 2004/107/CE (which introduced limit values for polycyclic aromatic hydrocarbons (PAH), cadmium, arsenic, nickel and mercury).

Ambient air quality must be monitored throughout the territory of the Member States. Different methods may be used for this purpose: measuring, mathematical modelling, a combination of the two or

1. Not to be exceeded more than 35 times a calendar year.
2. Not to be exceeded more than 3 times a calendar year.
3. Not to be exceeded more than 18 times a calendar year.
estimates. This type of assessment is mandatory in built-up areas with more than 250,000 inhabitants or in areas where concentrations are close to the limit values.

**Threshold Parameters:**
The main ambient air quality parameters are as follows:
- Particulate Matter (PM) µg/m\(^3\): 50 \(^{(1)}\) (daily average), 40 (annual average)
- sulphur dioxide (SO\(_2\)) µg/m\(^3\): 350 (hour average), 125 \(^{(2)}\) (daily average)
- nitrogen dioxide (NO\(_2\)) µg/m\(^3\): 200 \(^{(3)}\) (hour average), 40 (annual average)
- carbon monoxide (CO) µg/m\(^3\): 10 (daily-8 hours average).

**Article 7** foresees temporary standards to be set by MESP for old plants whose technological level does not allow for compliance with the regulatory limits.

**Article 16: Notification about Air Pollution**
1. All operators that discharge pollutants are obliged to publish their data regarding air pollution and to submit periodically full information to the MESP.
2. The MESP, in cases of extreme pollution and smog shall inform public via media.
3. The MESP shall prepare the emission inventory at the country, regional and municipality level for the individual pollution source. A copy of the inventory shall be submitted to the Statistical Agency.
4. Authorities responsible to inform about air pollution shall report periodically pollution results to the MESP. Regulations, procedures, and reporting periods shall be determined by a Government decision, upon the proposal of the MESP.

**Council Decision 97/101/EC** establishes a reciprocal exchange of information and data from networks and individual stations

**Article 23:** Monitoring of Air Quality shall be conducted by the MESP, through Kosovo’s Environmental Protection

**World Bank Management Practices/Others**

- Nitrogen Oxides, as NO\(_2\):
  - Annual arithmetic Mean: 100 µg/m\(^3\)
  - Maximum 24 hour average: 200 µg/m\(^3\)
- Sulphur Dioxide
  - Annual arithmetic Mean: 100 µg/m\(^3\)
  - Maximum 24 hour average: 500 µg/m\(^3\)
measuring ambient air pollution within the Member States.

**Commission Decision 2004/461/EC** Specifies format and contents of Members states Annual Report on ambient air quality in their territories.

**Agency /KEPA/ and other competent authorities, which shall ensure permanent monitoring of the air quality, as well as its effects on the environment and human health.**

**Administrative Instruction** on the Cadastre of the emission for environmental polluters (August 2005) foresees a cadastre of air, water and waste emissions for all municipalities greater than 20,000 inhabitants.


The Directive sets upper limits for each Member State for the total emissions in 2010 of the four pollutants responsible for acidification, eutrophication and ground-level ozone pollution (SO2, NOx, VOCs and ammonia), but leaves it largely to the Member States to decide which measures to take in order to comply.

The national emission ceilings for the Member States have been amended as part of the accession of new Member States. The national ceilings for the EU27 are given in a consolidated table for reference at the following web site:


Based on the provisions of the Directive, Member States are obliged to report each year their national emission inventories and projections for 2010 to the European Commission and the European Environment Agency. They shall also draw up national programs twice in order to demonstrate how they are going to meet the national emission ceilings by 2010. The first year for drawing up national programmes was 2002. Member States are obliged to send their second national programme to Article 38 of the Environmental Protection Law foresees the establishment of a cadastre of Polluters in Kosovo that prescribes the characteristics and influence of Pollution on the air, water, soil and Protected Areas, and which also provides an analysis of the affects on them, makes evident those who are responsible for the Pollution and provides a registry of the harmful and hazardous substances emitted.

**An Administrative Instruction:** “On the Rules and Standards on the discharges on air emissions by stationary emission sources” has been signed by Prime Minster in September 2007. The English version is not always easily understandable, and it is not very clear when the limits contained in the regulation will come into force.

Parallel to the development of the EU NEC Directive, the EU Member States together with Central and Eastern European countries, the United States and Canada have negotiated the "multi-pollutant" protocol under the Convention on Long-Range Transboundary Air Pollution (the so-called Gothenburg protocol, agreed in November 1999). The emission ceilings in the protocol are equal or less ambitious than those decided by the Council and Parliament.

The Protocol (due for revision in 2007) sets emission ceilings for 2010 for four pollutants: sulphur, NOx, VOCs and ammonia. Once the Protocol is fully implemented, Europe's sulphur emissions should be cut by at least 63%, its NOx emissions by 41%, its VOC emissions by 40% and its ammonia emissions by 17% compared to 1990.

The Protocol also sets tight limit values for specific emission sources (e.g. combustion plant, electricity production, dry cleaning, cars and lorries) and requires best available techniques to be used to keep emissions down. VOC emissions from such products as paints or...
the Commission by the end of 2006. The Directive provides for review in 2004 and 2008 with a view to making up the shortfall.


The overall aim of the LCP Directive is to reduce emissions of acidifying pollutants, particles, and ozone precursors. Control of emissions from large combustion plants – those whose rated thermal input is equal to or greater than 50 MW – plays an important role in the Community’s efforts to combat acidification, eutrophication and ground-level ozone as part of the overall strategy to reduce air pollution.

The LCP Directive also establishes new requirements for plants licensed before 1 July 1987.

The LCP Directive encourages the combined generation of heat and power and sets specific emission limit values for the use of biomass as fuel. It also includes gas turbines in its scope in order to regulate NOX emissions.

In particular, the LCP Directive contains the following provisions:

1. Plants licensed after 27 November 2002 will have to comply with the emission limit values for SO2, NOx and dust fixed in part B of the Annexes III to VII, setting values which are significantly stricter than the previous ones.
2. Plants licensed after 1 July 1987, the date of entry into force of the old Directive, and before 27 November 2002, will have to comply with the emission limit values fixed in part A of the Annexes III to VII of the LCP Directive.
3. The LCP Directive requires significant emission reductions from “existing plants” (licensed before 1 July 1987) to be achieved by 1 January 2008:
   a) by individual compliance with the emission limit values

**Article 3** indicates that the temporary emission limits for new LCP should be in compliance with the EC regulations.

**Article 75** indicates that existing LCP should comply with EC regulations by 31.12.20017 through agreements with the Ministry. These plants should prepare a plan for the reduction of emissions by 31.3.2008 in agreement with the Ministry.

**Article 90** sets emission limits for large combustion plants (>50 MW) which use solid fuels.

The limits are a bit higher than the ones set by the EC directive.

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**WB Pollution Prevention and Abatement Handbook, 1998**

**All Thermal Power Plants above 50 MW:**

PM (all sizes): should not exceed 50 µg/Nm$^3$  
Total SO$_2$ emissions should be less than 0.2 metric tons per day (tpd) per MWe of capacity for the first 500 MW e plus 0.1 tpd for each additional MWe capacity over 500 MWe.

NO$_x$: Specific emission limits are 750 mg/Nm$^3$ for a coal fired power plant (and up to 1500 mg/Nm$^3$ for plants using coals with volatile matters less than 10%).

**Coal Mining and Production**

Emission levels for design and operation of each project should to be established through an EA process.
4. The Commission considers that it is possible to adopt a "combined approach" for the implementation of the LCP Directive for existing plants, which may consist of:

a) applying a national emission reduction plan for some plants and an emission limit value approach for others for all the compliance periods (2008-2015, 2016-2017, and 2018 onwards), or

b) adopting a national emission reduction plan for some compliance period(s) and complying with emission limit values for the rest of the compliance periods, or

c) mixing options a) and b) above.

A national emission reduction plan, whether used alone or as part of a combined approach, must address all the three pollutants covered by the Directive for all the plants covered by the plan.

The LCP Directive allows existing combustion plants to be exempted from compliance with emission limit values and from inclusion in a national emission reduction plan, provided that the operator undertakes not to operate the plant for more than 20,000 hours starting from 1 January 2008 and ending no later than 31 December 2015.

Water Uses and Wastewater Effluents


**Summary requirements:** designation of rivers basin management plan by member states to prevent deterioration, protect basins and preserve protected areas. Regulatory framework allows a list of 33 priority substances selected amongst those which present a significant risk to water quality.

**Article 29 of Environmental Protection Law** foresees that the government shall issue a subsidiary normative act establishing prescribed permissible maximum levels for the discharge and emission of pollutants into the water ensuring that the levels established by such subsidiary act are consistent with the ability of Kosovo to comply at a national level.

**WB Pollution Prevention and Abatement Handbook, 1998**

Gives indication for integrated wastewater management and for a basic set of parameters for monitoring water quality: Ph, dissolved oxygen (DO), BOD, Suspended solids, and flow if appropriate. Others are coliforms, ammonia, nitrogen, nitrates, and metals.
or via the aquatic environment. Measures to control such substances, as well as quality standards (see below Directive 2006/11/EC and related mentioned Acts and Directive 2006/118/EC in the following Section “Soil and Groundwater Quality”) applicable to concentrations thereof are also proposed, in order to reduce, stop or eliminate discharges, emissions and losses of these substances. Note: see also Soil and Groundwater Section of this table.

**Threshold Parameters:** Priority list forms Annex X to the Directive (mainly chlorinated substances and metals).

<table>
<thead>
<tr>
<th>European Union Regulatory Standards</th>
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<th>World Bank Management Practices / Others</th>
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</thead>
<tbody>
<tr>
<td>reasonable cost.</td>
<td>The Hydro-meteorological Institute of Kosovo, which is within KEPA and under the authority of the Ministry, shall monitor surface and underground waters, provide systematical research and immediately inform the authorities of the relevant ministries about any accidental Pollution of waters.</td>
<td><strong>Summary requirements</strong> to be achieved daily without dilution:.</td>
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<tr>
<td></td>
<td><strong>Threshold Parameters :</strong></td>
<td>pH 6 – 9</td>
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<tr>
<td></td>
<td></td>
<td>TSS 50 mg/l</td>
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<td></td>
<td></td>
<td>Oil and grease 10 mg/l</td>
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<td></td>
<td></td>
<td>Total residual chlorine 0.2 mg/l</td>
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<td></td>
<td></td>
<td>Total chromium 0.5 mg/l</td>
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<tr>
<td></td>
<td></td>
<td>Copper: 0.5 mg/l</td>
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<tr>
<td></td>
<td></td>
<td>Iron: 1 mg/l</td>
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<tr>
<td></td>
<td></td>
<td>Zinc: 1 mg/l</td>
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<td></td>
<td></td>
<td>Temperature increase at the edge of the mixing zone less than or equal to 3° C</td>
</tr>
</tbody>
</table>

**Law on Water 2004/24**

The law regulates issues relating to the management, planning, protection and institutional responsibilities in regard to Water and Water Resources and introduces general principles such as sustainable water management, river basin management and defines the competent authorities.

**Administrative Instruction 24/05** is relative to the content, form conditions and method of issuing and retaining the water permit.

**Section 7** specifies relevant authorities that are able to grant water permit (Ministry, River Basin District Authority RBDA and Municipality).

**Section 8.1** lists plants which need to request permit to Ministry
Section 8.2 lists plants which need to request permit to RBDA
Section 8.3 lists plants which need to request permit to Municipality
The remaining Sections are related to the permit request and release procedure.

Administrative Inspection 23/05 is relative to the determination of the evidence manner and legitimacy form of nominating inspectors for the water sector.


Summary requirements:

- **Directive 2006/11/CE** sets rules for protection against, and prevention of, pollution resulting from the discharge into the aquatic environment. This Directive codifies and replaces Directive 76/464/EEC. Two lists have been compiled of dangerous substances that need to be controlled:
  
  1) List I: pollution caused by the discharge of substances must be eliminated (organohalogen, organophosphorus, organotin, carcinogenic, mercury, cadmium, mineral oil, persistent synthetic substances)

  2) List II: pollution from the products must be reduced: metalloids and metals, biocides, substances which have a deleterious effect on the taste

See above.
**Threshold Parameters**

Emission limit values for list I substances based on the best available techniques.

For the substances on list II, the Member States adopt and implement programs to preserve and improve water quality.

**Directive: 91/676/EEC, the “nitrates” Directive**

This Directive has the objective of reducing water pollution caused or induced by nitrates from agricultural sources and preventing further such pollution.

The various steps of implementation of the directive are:

1. Detection of polluted or threatened waters (N) Human Health Protection, Living resources and aquatic ecosystems protection, Eutrophication prevention (1 year monitoring)

2. Designation of “vulnerable zones” (NVZs), Areas of agricultural land with significant contribution to N pollution at watershed level

3. Code(s) of good agricultural practice on all M. S. Territory – Voluntary

4. Action Programs within NVZs: Code(s) of good agricultural practice becomes mandatory; Other measures (nutrient balance, manure storage, spreading < 170 kg N organic/hectare/year

5. National Monitoring every 4 years with reporting

treatment has as objective the protection of the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors (see Annex III of the Directive) and concerns the collection, treatment and discharge of:

- Domestic waste water
- Mixture of waste water
- Waste water from certain industrial sectors (see Annex III of the Directive)

Four main principles are laid down in the Directive:

- Planning
- Regulation
- Monitoring
- Information and reporting

Specifically the Directive requires:

- The Collection and treatment of waste water in all agglomerations of >2000 population equivalents (p.e.);
- Secondary treatment of all discharges from agglomerations of >2000 p.e., and more advanced treatment for agglomerations >10 000 population equivalents in designated sensitive areas and their catchments;
- A requirement for pre-authorisation of all discharges of urban wastewater, of discharges from the food-processing industry and of industrial discharges into urban wastewater collection systems;
- Monitoring of the performance of treatment plants and
<table>
<thead>
<tr>
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<tr>
<td>receiving waters; and</td>
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<tr>
<td>• Controls of sewage sludge disposal and re-use, and treated waste water re-use whenever it is appropriate</td>
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<td><strong>Waste Management</strong></td>
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<tr>
<td>Directive 2006/21/EC on the management of waste from the extractive industries</td>
<td>Article 12 of Environmental Protection Law indicates that Government will issue specific regulations with respect to waste and hazardous waste management.</td>
<td>WB Pollution Prevention and Abatement Handbook, 1998</td>
</tr>
<tr>
<td>Further to its Communication of 3 May 2000 on &quot;Promoting sustainable development in the EU non-energy extractive industry&quot;, on 23 October 2000, the Commission adopted a Communication on the &quot;Safe operation of mining activities: a follow-up to recent mining accidents&quot;.</td>
<td>Article 13 forbids processing, storing and importing of radioactive and other hazardous waste.</td>
<td>Solid waste, including ash and FGD (Flue gas desulphurization) sludges which do not leach toxic substances or other contaminants of concern to the environment may be disposed in landfills or other disposal sites provided they do not impact nearby water bodies. Where toxics or other contaminants are expected to leach out, they should be treated, for example, by stabilization, before disposal.</td>
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<tr>
<td>The Communication recaps the current situation with regard to existing Community environmental legislation applicable to mining activities, and sets out three priority actions envisaged to improve the safety of mines,</td>
<td>The Waste Law (2005) addresses a number of waste management issues including the following:</td>
<td>The updated Environmental, Health and Safety guidelines for both the thermal power and open pit mining sectors are presently under review</td>
</tr>
<tr>
<td>• an amendment of the Seveso II Directive to include in its scope mineral processing of ores and, in particular, tailings ponds or dams used in connection with such mineral processing of ores;</td>
<td>• Polluter pays principle</td>
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<tr>
<td>• a Best Available Techniques reference document (BREF) describing the Best Available Techniques of waste management to reduce everyday pollution and to prevent or mitigate accidents in the mining sector.; and</td>
<td>• Priorities in waste management: waste reduction, recycle, reuse, thermal treatment (without energy recovery), final disposal.</td>
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<tr>
<td>• a legislative initiative on the management of mining waste in order to help prevent environmental damage.</td>
<td>• Waste classification based on the European Waste Catalogue</td>
<td></td>
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<tr>
<td>The European Parliament has adopted a Resolution on the above</td>
<td>• Defines Management Planning</td>
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WB Pollution Prevention and Abatement Handbook, 1998

Solid waste, including ash and FGD (Flue gas desulphurization) sludges which do not leach toxic substances or other contaminants of concern to the environment may be disposed in landfills or other disposal sites provided they do not impact nearby water bodies. Where toxics or other contaminants are expected to leach out, they should be treated, for example, by stabilization, before disposal.

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<td>Waste Management mentioned Communication documents:</td>
<td>• Waste Management Strategic Plan for Kosovo (Responsibility of Ministry)</td>
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<td>• Local Waste Plans (Responsibility of Municipalities)</td>
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<td>• Defines Plan for equipment and facilities for waste management</td>
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<td>• Defines an operational waste management plant for operators.</td>
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<td>• Defines authorizations requirements for transport and storage of waste</td>
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<td>• Defines documents to be used for annual declarations</td>
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<td>• Defines competent authorities.</td>
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</table>

Regulation 2006/31 was issued “on the Promulgation of the Waste Law adopted by the Assembly of Kosovo” mainly to modify a number of definitions.

A number of single Regulations address the following issues:

**Administrative Instruction no 3/07** for the management of waste and used oils.

**Administrative Instruction no 02/07** for battery and expended accumulator: This instruction determines required supervisions, obligatory, requests and conditions for gathering, classifications,
### Waste Management

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<td><strong>Transportations, reused, treatment, collection, bond of battery and expended accumulators.</strong></td>
<td><strong>Administrative Instruction no 4/07 on administration of end of life vehicles and their wastes</strong></td>
<td><strong>Administrative Instruction no 5/07 for construction and demolition wastes.</strong></td>
</tr>
</tbody>
</table>

**Directive 2006/12/EC**: general framework; **Directive 91/689/EEC**: practices on hazardous waste; **Directive 1999/31/EC** on landfill requirements

**Summary requirements**: 2006/12/EC basically states that dumping or uncontrolled disposal of waste is forbidden. Companies who store waste has to handle it properly, to be licensed and periodically inspected. Such companies must also keep records of handled waste.

**91/689/EEC** rules and promotes hazardous waste management and laid down additional control, specific permits and handling requirements. Hazardous waste must be recorded and identified, stored in different categories and not mixed with non-hazardous waste. Measures to safeguard human health and the environment have to be ensured. Management activities carried out by transporters, producers, establishments and undertakings have to be recorded and made available to the authorities.

**The Landfill Directive (1991/31/EC)** requires that: sites will be classified into one of three categories (hazardous, non-hazardous or inert) according to the type of waste they will receive; hazardous liquids, flammable, corrosive, explosive, oxidising and infectious

**Article 29** of the Waste Law addresses hazardous waste management.

No specific regulation relative to hazardous waste management has been developed in Kosovo at the present time.

**WB Pollution Prevention and Abatement Handbook, 1998** indicates the main components of a HW management system.

**Basel Convention** is an international treaty that was designed to reduce the movements of hazardous waste between nations, and specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs). It does not, however, address the movement of radioactive waste. The Convention is also intended to minimize the amount and toxicity of wastes generated, to ensure their environmentally sound management as closely as possible to the source of generation, and to assist LDCs in environmentally sound management of the hazardous and other wastes they generate.

The Convention was opened for signature on March 22, 1989, and entered into force on May 5, 1992. A list of parties to the Convention, and their ratification status, can be found on the Basel Secretariat’s web page (untreaty.un.org).
**Waste Management**

Wastes, non-hazardous liquids are banned from landfill; co-disposal of hazardous and non-hazardous waste is forbidden. Additionally, waste will be required to be treated prior to landflling and licensed operators must demonstrate their technical competence to manage the landfill and ensure financial warranties and capability.

**Council Directive 259/93** on supervision and control of shipment of waste within, in and out of the EU.

**Council Decision 93/98/EEC** on control of transboundary movement of hazardous waste and their disposal (Basel Convention).

**EUROPEAN UNION REGULATORY STANDARDS**

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<tr>
<th>Hazardous Substances – Oil and Caustic Soda</th>
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The European Hazardous Substances management framework is regulated mainly by the following acts:

**Directive 2001/58/CE** set specific content for Material Safety Data Sheet to be issued by company producing and selling chemical compounds and made available for final user.

**Directive 99/45/CE** has been issued in the frame of hazardous substance management and set specific requirements aimed to ensure proper label, hazardous identifications and classification and packaging of hazardous compounds.

**KOSOVO REGULATORY STANDARDS**

No specific regulation addressing the management of hazardous substances is presently existing in Kosovo at the present time.

**WORLD BANK MANAGEMENT PRACTICES / OTHERS**

No specific standards from WB.

The following Industrial Standards related to oil storage best practice has been set by UK authorities (*Environment Agency for England and Wales, Scottish Environment Protection Agency and the Environment and Heritage Service for Northern Ireland*) in the frame of British Standard and public guidelines:

1) **Pollution Prevention Guidelines PPG8** – “Above Ground Oil Storage Tanks” set characteristics regarding storage containers, secondary containments, ancillary equipments.

2) **Pollution Prevention Guidelines PPG27** – “Installation, decommissioning and removal of underground storage tanks” set EHS practices and technical standards regarding the mentioned activities.

3) **Pollution Prevention Guidelines PPG26** – “Storage and handling of drums & intermediate bulk containers” set practice related to hazardous substances, flammable substances, pesticides and timber treatment compounds.
### Hazardous Substances – Polychlorinated Biphenyls (PCBs)

**Directive 96/59/EC** on the disposal of polychlorinated biphenyls (PCBs) and polychlorinated terphenyls (PCTs).

**Summary requirements:**
The Directive requires the decontamination or disposal of equipment containing PCBs, and/or the disposal of used PCBs. Facility has to notify to the authorities the presence of equipment containing a quantity equal or greater than 5 dm³ of PCBs. Equipment has to be labeled and properly managed until end of life, to protect the environment and human health. Equipment which is considered likely (or known) to contain PCBs are required to be labelled and decontaminated to 0.005% by weight or disposed of at the end of their useful life. Following decontamination, the equipment must be labelled. The use of PCBs for topping up transformers is forbidden. The disposal of PCBs and PCB-containing equipment must be done by licensed contractors and all precautions must be taken to avoid any risk of fire.

**Threshold Parameters**
- PCBs content between 0.05% and 0.005% by weight: obligation to label equipment and proceed to decontamination or dispose of at the end of life
- PCBs content < 0.005% by weight: obligation to label equipment as containing < < 0.005% PCBs by weight (following the decontamination)

Other general regulation regarding persistent organic compounds (POPs) are as follows:

- **Regulation 850/2004/EC** on persistent organic pollutants and amending Directives 79/117/EEC and 96/59/EC specifically concerns the production, placing on the market, use, discharge and elimination of substances which are banned or restricted under the Stockholm Convention on POPs.

- **Council Decision 2006/507/EC** concerning the conclusion, on behalf of the European Community, of the Stockholm Convention on Persistent Organic Pollutants.

**Kosovo Regulatory Standards**
There is no specific legislation on PCBs issues.

**World Bank Management Practices / Others**
No specific standards from WB.

The **Stockholm Convention** established restriction on the production, use and waste management as well as contaminated sites clean-up for a set of 12 Persistent Organic Pollutants including, beyond nine pesticides, HCBs and PCBs (industrial chemical) dioxins and furans (unintended byproducts).
**Organic Pollutants.** The framework, based on the precautionary principle, which seeks to guarantee the safe elimination of these 12 priority POPs (aldrin, chlordane, dichlorodiphenyltrichlorethane (DDT), dieldrin, endrin, heptachlor, mirex, toxaphene, polychlorobiphenyls (PCBs), hexachlorobenzene, dioxins and furanes).

**Hazardous Substances – Asbestos**


**Summary requirements:** activities which expose workers to asbestos fibres shall be prohibited, with the exception of the treatment and disposal of products resulting from demolition and asbestos removal. All these works involving asbestos materials must be notified to the responsible authority and a preliminary plan of work has to be submitted and approved prior to any demolition or removal work. Asbestos material must be stored and transported in suitable sealed packing and all employees must be trained in the use and disposal of asbestos. When the asbestos demolition or removal work has been completed, the absence of asbestos exposure risks in the workplace shall be verified in compliance with national legislation and practices (See also the following sections with regard “key and Health and Safety” issues).

**Threshold Parameters**

See the following sections with regard “key and Health and Safety” issues.


**Summary requirements:** limitations to the use and placing in the market of certain dangerous substances and preparations; restriction to the use of chrysotile asbestos materials

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<td>There is no specific legislation related to Asbestos issue.</td>
<td>No specific standards from WB.</td>
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**The World Bank – LPTAP ESSAS – Draft Final SESA**
**Hazardous Substances – Ozone Depleting Substances (ODS)**

**Regulation EU/2037/2000** on substances that deplete the ozone layer.

**Summary requirements:**
The regulation includes the application of the Montreal Protocol and the international convention on ozone-depleting substances (ODSs). Member States are required to phase out ODSs by prohibiting the production, placing on the market and use of chlorofluorocarbons (CFCs), halons, carbon tetrachloride, trichloroethane, methyl bromide, hydrobromofluorocarbons and hydrochlorofluorocarbons. Bans and restrictions are as follows:
- 31 December 2009 for the placing on the market, use and importation of HCFCs;
- 1 January 2015 for all HCFCs, including recovered substances;
- 31 December 2025 for the production of HCFCs.

Where CFCs are concerned, the placing on the market, use, production and importation of other fully halogenated chlorofluorocarbons, halons, carbon tetrachloride, 1,1,1-trichloroethane and hydrobromofluorocarbons were banned with effect from the date on which the Regulation entered into force. Under the Regulation, the placing on the market, use and production of methyl bromide will be reduced from 1999 and completely banned from 31 December 2004 and a ban placed on use by undertakings as from 31 December 2005.

**Soil and Groundwater Quality**


**Directive 2006/118/EC** on the protection of groundwater against pollution and deterioration.

**Summary of requirements:** A minimum set of standard parameters

There is no specific legislation related to ozone depleting substances.

No specific standards from WB.

The Montreal Protocol foresees the gradual phasing out of the use of CFCs. Obligations have been incorporated in European Regulation EU/2037/2000 and are reported in the first column.

No specific regulation addresses soil and contaminated site management standards exist.

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(2) «Total» means the sum of all individual pesticides detected and quantified in the monitoring procedure, including their relevant metabolites, degradation and reaction products.
Threshold Parameters
The minimum set of parameters to be considered for groundwater quality monitoring is: Oxygen concentration, pH, conductivity, nitrate, ammonium.

Groundwater quality standards:
Nitrates: 50 mg/l;
Active substance in pesticides\(^1\), including their relevant metabolites, degradation and reaction products: 0,1 µg/l - 0,5 µg/l (total)\(^2\)

Threshold limits of further parameters are set on the basis of evaluation criteria and guidelines set by the art. 4 and Annex II A of Directive 2006/118, and on the basis of a preliminary characterization performed on the basis of criteria set by the art. 5 of 2000/60. The minimum list of pollutants for which have to establish threshold values is: arsenic, cadmium, lead, mercury, ammonium, chloride, sulphate, trichloroethylene, tetrachloroethylene.

Nature Protection and Biodiversity

**Directive 92/43/EEC** on the conservation of natural habitats and of wild fauna and flora (Habitat Directive) requires Member States to designate sites eligible for identification as Sites of Community Importance (SCIs) and as Special Areas of Conservation (SACs) based on species and habitats in the Directive's annexes, including designations of from the Birds Directive as Special Protection Areas (SPAs). Once agreed by the European Commission, these sites become part of a European network, Natura 2000.

**Directive 79/409/EEC** on the conservation of wild birds. The aim of the Birds Directive is to provide for the protection, management and control of naturally occurring wild birds and their nests, eggs and habitats within the European Union. In particular it seeks to protect all wild birds and the habitats of listed species through the designation of specially protected areas (SPAs), which are incorporated in the Natura Law on Nature Conservation (June 2004)
- Defines Duties and responsibilities at central and local levels. The central government will be responsible for a national nature protection program, while Municipalities are responsible to identify local programs.
- Defines levels of protection in compliance with IUCN categories I to V.
- Indicates that the Ministry shall define a list of proposed nature conservation zones in compliance with the Habitat

The United Nations Convention on Biological Diversity, which was signed in 1992 and which the European Union ratified in 1993 has as main objectives the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of genetic resources.

The Guidelines of IUCN (International Union for the Conservation of Nature and Natural Resources) are internationally recognized and adopted as Best Practice in Nature Conservation. The following categories are defined:
CATEGORY la Strict Nature Reserve - Protected area managed mainly for science
<table>
<thead>
<tr>
<th><strong>European Union Regulatory Standards</strong></th>
<th><strong>Kosovo Regulatory Standards</strong></th>
<th><strong>World Bank Management Practices/Others</strong></th>
</tr>
</thead>
</table>
- Defines authority responsible for the act of declaration of the protection for each category of protected areas.  
- A Red Book of important species and habitats will be prepared (Article 13).  
**Administrative Instruction** for the notice manner of nature conservation areas: specifies characteristics of nature protection signs  
**Administrative Instruction No 4/2006** on manner of keeping central register of nature protection areas: Defines the responsibility of the Kosovo Institute for Nature Protection (within KEPA) to collect data and keep register. | CATEGORY Ib Wilderness Area: Protected area managed mainly for wilderness protection  
CATEGORY II National Park: Protected area managed mainly for ecosystem protection and recreation  
CATEGORY III Natural Monument: Protected area managed mainly for conservation of specific natural features  
CATEGORY IV Habitat/Species Management Area - Protected area managed mainly for conservation through management intervention  
CATEGORY V Protected Landscape/Seascape - Protected area managed mainly for landscape/seascape conservation and recreation  
CATEGORY VI Managed Resource Protected Area - Protected area managed mainly for the sustainable use of natural ecosystems  
**IFC Performance Standard No 6** recognizes that protecting and conserving biodiversity—the variety of life in all its forms, including genetic, species and ecosystem diversity—and its ability to change and evolve, is fundamental to sustainable development. The components of biodiversity, as defined in the Convention on Biological Diversity, include ecosystems and habitats, species and communities, and genes and genomes, all of which have social, economic, cultural and scientific importance.  
Objectives: To protect and conserve biodiversity  
To promote the sustainable management and use of natural resources through the adoption of practices that integrate conservation needs and development priorities |
<table>
<thead>
<tr>
<th><strong>EUROPEAN UNION REGULATORY STANDARDS</strong></th>
<th><strong>KOSOVO REGULATORY STANDARDS</strong></th>
<th><strong>WORLD BANK MANAGEMENT PRACTICES / OTHERS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>The applicability of this Performance Standard is established during the Social and Environmental Assessment process, while implementation of the actions necessary to meet the requirements of this Performance Standard is managed through the Social and Environmental Management System.</td>
</tr>
</tbody>
</table>
### Key Health & Safety

<table>
<thead>
<tr>
<th><strong>EUROPEAN UNION REGULATORY STANDARDS</strong></th>
<th><strong>KOSOVO REGULATORY STANDARDS</strong></th>
<th><strong>WORLD BANK MANAGEMENT PRACTICES / OTHERS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health &amp; Safety Management System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Directive 89/391/EEC</strong></td>
<td>Regulatory framework on the introduction of measures to encourage improvements in the safety and health of workers at work.</td>
<td></td>
</tr>
<tr>
<td><strong>Summary requirements</strong></td>
<td>European Regulation set out an approach involving hazard identification, risk assessment and minimisation/control of unacceptable risks. Contingency plan and measures and Medical Surveillance are required.</td>
<td></td>
</tr>
<tr>
<td><strong>Threshold Parameters</strong></td>
<td>On the basis of risk assessment and based on specific field of work activities, limits are set out, where relevant, to aim risk evaluation and ensure employees protection.</td>
<td></td>
</tr>
<tr>
<td><strong>Regulation No. 2003/33</strong></td>
<td><strong>Summary requirements</strong>&lt;br&gt;The Regulation includes Employer’s responsibilities related to organization of measures necessary for occupational safety, health and working environment, including the prevention of risks at work, through a detailed risk assessment, information and training and proper measures in order to provide safe workplaces and maintain machinery, instruments, equipment, tools, in safe conditions. First aid, fire safety, rescue and evacuation procedures are required to be implemented. This framework regulation also refers to preliminary and periodical medical check of employees designated to carry out their activities in special working conditions. External supervising authority is required to be immediately informed about all the cases of death at work or serious accidents at work.</td>
<td>The updated IFC Environmental, Health and Safety guidelines for both the thermal power and open pit mining sectors are presently under review.</td>
</tr>
<tr>
<td><strong>Main requirements</strong></td>
<td><strong>Main requirements</strong>&lt;br&gt;The enterprise with 50 or more employees must designate a part-time safety officer. The enterprise with 250 employees or more must designate a full-time safety officer. In workplaces with more than 20 employees, the employer shall be obliged to have an emergency evacuation plan.</td>
<td><strong>IFC Performance Standard no 2 (Labour and Working Conditions)</strong>&lt;br&gt;The requirements set out in this Performance Standard have been in part guided by a number of international conventions negotiated through the International Labour Organization (ILO) and the United Nations (UN). Its main objectives are the following.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To establish, maintain and improve the worker-management relationship</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To promote the fair treatment, non-discrimination and equal opportunity of workers, and compliance with national labor and employment laws</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To protect the workforce by addressing child labor and forced labor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To promote safe and healthy working conditions, and to protect and promote the health of workers</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>IFC Performance Standard no 4: Community Health, Safety and Security.</strong> Its main objectives are the following.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To avoid or minimize risks to and impacts on...</td>
</tr>
<tr>
<td><strong>EUROPEAN UNION REGULATORY STANDARDS</strong></td>
<td><strong>KOSOVO REGULATORY STANDARDS</strong></td>
<td><strong>WORLD BANK MANAGEMENT PRACTICES / OTHERS</strong></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Directive 89/654/EEC on minimum requirements to be implemented at workplaces</td>
<td></td>
<td>• To ensure that the safeguarding of personnel and property is carried out in a legitimate manner that avoids or minimizes risks to the community’s safety and security</td>
</tr>
<tr>
<td><strong>Summary requirements</strong></td>
<td></td>
<td>The standard includes general requirements for employers’ behaviour, but no detailed specification.</td>
</tr>
<tr>
<td>The Directive sets out minimum standards for workplaces including provisions for control of risk arising from specific occupational hazards, lighting and ventilation, passageways, rest room and changing rooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Threshold Parameters</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>See above.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Summary requirements** | **Summary requirements** | |
| The Directives set out minimum standards for workplaces including provision the control of risk arising from specific occupational hazards to ensure protection to certain vulnerable groups, such as pregnant employees or temporary workers. | Requirements for hygiene conditions at rest rooms and changing rooms are set. The employer is required to provide the employee with personal protective equipment according to identified risks at workplaces. | |
| **Threshold Parameters** | **Threshold Parameters** | |
| See above. | Thresholds parameters are not set. | |
**Mineral-Extracting Industry**

Directives 92/91/EEC, 92/104/EEC on the safety and health protection of workers in the mineral-extracting industry (on shore and offshore extractive industries, surface and underground mines and quarries)

**Summary requirements**

Requirements are included in the Directives related to drawing up and keeping up to date of a "safety and health document" (relating to risk assessment, safe design of workplace, implemented adequate measures, etc.), presence of a skilled person in charge at all times, sufficient number of competent workers, coordination where workers from several undertakings are present, work permit for hazardous and straightforward activities, protection from harmful atmospheres, prevention of explosion. Directives contain a certain flexibility according to the principle of subsidiarity in order to encourage the actors concerned (i.e. the employer and the workers) to act as self-responsible partners.

**Threshold Parameters**

Strict thresholds parameters are not set and only general rules are reported.

---

**Regulation No. 2005/3**

**Summary requirements**

The Regulation applies to all activities involving the exploration, exploitation, mining and processing of Mineral Resources in Kosovo. Requirements are set with respect to Exploration Licenses, Retention Licenses, or Mining Licenses, eligibility criteria, permit procedures, general commercial rights, restricted activities with respect to land use and planning, permits for special operations (drilling, trenching, sampling, geophysical surveys, operation of machinery and equipment, import, transport, manufacture, storage, use of explosives for non-military purposes, small scale mining).

**Threshold Parameters**

Threshold parameters are not set with respect to health and safety.

---

**International Council on Mining & Metals (ICMM) Sustainable Development Framework**

The Framework comprises three elements – a set of 10 Principles, public reporting and independent assurance.

The Framework has been developed systematically since the formation of ICMM in 2001, with its foundations in the Mining, Minerals, and Sustainable Development (MMSD) project, an independent two-year process of consultation and research aimed at understanding how to maximize the contribution of the mining and minerals sector to sustainable development at the global, national, regional and local levels.

Underpinning the Framework is a commitment to sharing good practice across the industry. This is done through the publication of good practice guidance documents and tools which are developed in close co-operation with members, promotion of ICMM initiatives at conferences and workshops, as well as a good practice website developed in partnership with UNCTAD, UNEP and the UK Department for International Development (DFID) (refer to www.goodpracticemining.org).

**Threshold Parameters**

Strict thresholds parameters are not set and only general rules are reported.

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**Extractive Industries Transparency Initiative**

The Extractive Industries Transparency Initiative
(EITI) supports improved governance in resource-rich countries through the verification and full publication of company payments and government revenues from oil, gas, and mining. The Initiative works to build multi-stakeholder partnerships in developing countries in order to increase the accountability of governments.

The primary beneficiaries of EITI are the governments and citizens of resource-rich countries. Knowing what companies pay and what governments receive is a critical first step to holding decision makers accountable for the use of revenues. Resource-rich countries implementing EITI can benefit from an improved investment climate by providing a clear signal to investors and to international financial institutions that the government is committed to strengthening transparency and accountability.

Companies and investors, by supporting EITI in countries where they operate, can help mitigate investment risk. Civil society can benefit from an increased amount of information in the public domain about those revenues that governments manage on behalf of citizens. In summary, implementing EITI as part of a program of improved governance will help to ensure that oil, gas, and mining revenues contribute to sustainable development and poverty reduction.

EITI is supported by an International Secretariat presently based in the UK’s Department for International Development. The Secretariat works closely with the World Bank and the IMF. In addition to the implementing governments, EITI
is supported by donors; by many of the largest oil and mining companies in the world, as well as investors in those companies; and by civil society groups many of which work under the umbrella of the Publish What You Pay Coalition and the Revenue Watch Institute.

**The Mining Association of Canada**  
**Towards Sustainable Mining**

“Towards sustainable Mining (TSM)” is a strategy for improving the mining industry’s performance by aligning its actions with the priorities and values of Canadians and a process for finding common ground with communities to build a better mining industry.

The TSM guiding principles are backed by specific performance indicators, which companies report against each year in the Towards Sustainable Mining Progress Report. Performance indicators help to show Canadians what the industry’s current performance is and how it can be improved. Performance indicators have been developed for tailings management, energy management, external outreach and crisis communications management as described in the protocols. Additional performance elements addressing issues such as Aboriginal relations and biodiversity, are under development.

Canada’s mining industry is currently taking the lead by adopting precedent-setting biodiversity policy that includes a pledge to recognize the planet’s 851 World Heritage properties as “No Go” areas and to finance projects that will return
mining sites to viable and diverse ecosystems. The Mining Association of Canada (MAC) released in July 2007 a Mining and Biodiversity Policy Framework outlining its member company commitments with respect to biodiversity conservation and sustainable development.

Fire Prevention and Protection


**Summary requirements**
The components of fire detection and alarm systems and fixed fire suppression systems are included within the scope of the Directive. It specifies the means by which components covered by the Directive are assessed to ensure they meet the desired standard. The normal means by which components are assessed to check their compliance is by their “attestation” against the requirements of harmonized European Norms (hENs). Examples of hENs include EN54-7:2002 for smoke detectors and EN12094-7:2000 for CO2 extinguishing system nozzles. CE Marking is the only method of signifying compliance in most EU Member States and different approaches based on national legislation are still adopted.

**Threshold Parameters**
Threshold parameters are not set.

**Regulation No. 2006/57**

**Summary requirements**
The Regulation ranks premises, parts of the premises and areas into four groups of fire risk, dependent on the technological process being developed in them, type of produced material or stored and type of material’s ingredients in construction. Measures are set according to fire risks ranking. Workers who have special responsibility towards legal entities and professional services, each in their field of activity, are responsible for implementation of fire protection measures for firefighting, as well as the responsibility to inform workers on fire risks at their working places. The criteria for categorization of premises, parts of the premises and areas in respective fire risk categories, as well as minimal number of firemen are yet to be determined. The construction permit for construction of premises is issued only when the Ministry gives its consent that fire protection measures are included in the main project. Special construction conditions, on spatial regulation conditions in the aspect of fire protection, shall be determined by the Ministry. Only materials that have special fire characteristics can be used for final construction of horizontal or vertical areas of the premises, exits, exit routes in the premises.
<table>
<thead>
<tr>
<th>European Union Regulatory Standards</th>
<th>Kosovo Regulatory Standards</th>
<th>World Bank Management Practices / Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal entities registered for projecting are required to show graphically pre-calculated and textually explained fire protection measures foreseen in the main project, so that fire protection measures can be assessed. The Ministry issues administrative instruction regarding the selection and specification of fire extinguisher quantity, conditions to be met by legal entities that conduct controlling activities, servicing and maintenance activity of extinguishers. Owners of premises, building parts and areas are obliged to maintain in proper condition the fire protection equipment, installations, gas ventilations, chimneys, as well as other equipment which represent a risk for fire spreading, in conformity with technical normative, manufacturer’s norms and guidelines, for which documentation is required. The Ministry determines special technical conditions, which the authorized legal entity is required to meet during inspections (type of premises and building included in the inspection, information on ascertained gaps during inspection, conditions to be fulfilled in the professional preparation training of persons performing the control).</td>
<td></td>
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</tbody>
</table>

**Threshold Parameters**

Threshold parameters are not set.

*Chemical Exposure at Workplace*
**EUROPEAN UNION REGULATORY STANDARDS** | **KOSOVO REGULATORY STANDARDS** | **WORLD BANK MANAGEMENT PRACTICES /OTHERS**
---|---|---

on ascertained gaps during inspection, conditions to be fulfilled in the professional preparation training of persons performing the control).

**Threshold Parameters**
Threshold parameters are not set.

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**Chemical Exposure at Workplace**

**Directives 98/24/EC, 2000/39/EC and 91/322/EEC** on chemical agents at work.

**Summary requirements:**
Provision on protection of the health and safety of workers with respect to the risks related to chemical agents. Directives set threshold occupational exposure limits such as alumina fluoride, dust, CO, cyanides, etc..

**Threshold Parameters**
The mains indoor air threshold limits are as follows:
- Fluorides, Inorganic (mg/m$^3$): 2.5 TLV as 8 hours TWA$^1$
- HCl (mg/m$^3$): 8.0 as TLV-8 hours TWA and 15 as STEL$^2$
- HF (mg/m$^3$): 1.5 as TLV-8 hours TWA and 2.5 as STEL
- NaOH (mg/m$^3$): n.a.
- SO$_2$ (mg/m$^3$): see Management Practice Column
- CO (mg/m$^3$): see Management Practice Column

**Regulation No. 2003/33, Section 7**
**Summary requirements**
According to the Regulation, Section 7, dust and gases shall be cleaned by ventilation or otherwise so as to prevent concentrations tending to injure health or obstruct vision in conformity with European standards. Based on the Regulation, Section 12, all chemical substances, including pesticides, alkalis, acids and other corrosive substances shall be stored and used in accordance with European standards for Control of Substances Hazardous to Health.

**Threshold Parameters**
Occupational Exposure Limit or other threshold parameters are not set.

**Exposure limit are referred to the following international standards:**
- **NIOSH** (National Institute of Occupational Safety and Health – US);
- **OSHA** (Occupational Safety and Health Administration – US);
- **SCOEL** (Scientific Committee for Occupational Exposure Limit).

Part of this exposure limits have been included in European Regulation.

The mains indoor air **threshold limits** are as follows:
- HF (mg/m$^3$): 2.5 as TLV-8 hours TWA and 0.83 as STEL
- SO$_2$ (mg/m$^3$): 5.0 MPL as 8 hours TWA
- CO (mg/m$^3$): 23 as TLV-8 hours TWA and 117 as STEL
- CO$_2$ (mg/m$^3$): 9,000 as TLV-8 hours TWA and 54,000 as STEL
- Oxides (mg/m$^3$): 15 MPL as 8 hours TWA
- Metals (mg/m$^3$): 5.0 MPL as 8 hours TWA.

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(3) $^1$ Threshold Limit Value as 8 hours time weighted average
(4) $^2$ Short Term Exposure Limit (15 minutes)
on ascertained gaps during inspection, conditions to be fulfilled in the professional preparation training of persons performing the control).

**Threshold Parameters**

Threshold parameters are not set.

### Chemical Exposure at Workplace

<table>
<thead>
<tr>
<th>Parameter</th>
<th>European Union Regulatory Standards</th>
<th>Kosovo Regulatory Standards</th>
<th>World Bank Management Practices / Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂ (mg/m³)</td>
<td>9,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxides (mg/m³)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total inhalable dusts (mg/m³)</td>
<td>n.a.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metals (mg/m³)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TLV-8 hours TWA**

- CO₂ (mg/m³): 9,000 as TLV-8 hours TWA
- Oxides (mg/m³): see Management Practice Column
- Total inhalable dusts (mg/m³): n.a.
- Metals (mg/m³): see Management Practice Column
<table>
<thead>
<tr>
<th><strong>EUROPEAN UNION REGULATORY STANDARDS</strong></th>
<th><strong>KOSOVO REGULATORY STANDARDS</strong></th>
<th><strong>WORLD BANK MANAGEMENT PRACTICES /OTHERS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Exposure (Asbestos) at Workplace</strong></td>
<td>There is no specific legislation related on Asbestos containing material issue.</td>
<td>No specific standards from WB.</td>
</tr>
<tr>
<td><strong>Summary requirements</strong></td>
<td>Depending on the results of the initial risk assessment, measurements must also be taken regularly in order to monitor the airborne concentration and if found to exceed the stated concentration, work must cease until adequate protection measures have been taken. The initial health assessment has to be repeated on a 3-yearly basis. A register of workers involved in activities with asbestos must be retained for 40 years from the end of their exposure.</td>
<td></td>
</tr>
<tr>
<td><strong>Threshold Parameters</strong></td>
<td>Employers shall ensure that no worker is exposed to an airborne concentration of asbestos in excess of 0,1 fibres per cm$^3$ as an eight-hour time-weighted average (TWA).</td>
<td></td>
</tr>
</tbody>
</table>
The following Table lists the main European Directives not included in the table above and gives a General Summary on related contents

Table A: European Directives on Health and Safety

<table>
<thead>
<tr>
<th>Directive</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directive 89/655/EEC</td>
<td>Work equipment safety</td>
</tr>
<tr>
<td>Directive 95/63/EC</td>
<td>Work equipment safety</td>
</tr>
<tr>
<td>Directive 2001/45/EC</td>
<td>Work equipment safety</td>
</tr>
<tr>
<td>Directive 90/269/EEC</td>
<td>Manual handling of loads</td>
</tr>
<tr>
<td>Directive 90/270/EEC</td>
<td>Work with display screen equipment</td>
</tr>
<tr>
<td>Directive 89/656/EEC</td>
<td>Use of Personal Protective Equipment</td>
</tr>
<tr>
<td>Directive 2003/10/EC</td>
<td>Occupational noise exposure</td>
</tr>
<tr>
<td>Directive 2003/10/EC</td>
<td>Noise exposure</td>
</tr>
<tr>
<td>Directive 2004/44/EC</td>
<td>Vibrations exposure</td>
</tr>
<tr>
<td>Directive 2004/40/EC</td>
<td>Electromagnetic fields exposure</td>
</tr>
<tr>
<td>Directive 99/92/EC</td>
<td>Risk of explosive atmospheres</td>
</tr>
<tr>
<td>Directive 90/679/EEC</td>
<td>Exposure to biological agents</td>
</tr>
<tr>
<td>Directive 93/88/EEC</td>
<td>Exposure to biological agents</td>
</tr>
<tr>
<td>Directive 90/394/EEC</td>
<td>Exposure to carcinogens</td>
</tr>
<tr>
<td>Directive 97/42/EC</td>
<td>Exposure to carcinogens</td>
</tr>
<tr>
<td>Directive 99/38/EC</td>
<td>Exposure to carcinogens and mutagens</td>
</tr>
</tbody>
</table>

Based on the above mentioned EU directives, employers are obliged to do the following:
- to ensure the health and safety of workers in every aspect related to the work, primarily on the basis of the specified general principles of prevention, without involving the workers in any financial cost;
- to evaluate the occupational risks, inter alia in the choice of work equipment and the fitting-out of workplaces, and to make provision for adequate protective and preventive measures;
- to keep a list of, and draw up reports on, occupational accidents;
- to take the necessary measures for first aid, fire-fighting, evacuation of workers and action required in the event of serious and imminent danger;
- to inform and consult workers and allow them to take part in discussions on all questions relating to safety and health at work;
- to establish medical surveillance programs according to the risks identified at workplaces;
- to ensure that each worker receives adequate health and safety training throughout the period of employment.

Workers are obliged:
- to make correct use of machinery, other means of production, personal protective equipment and safety devices;
- to give warning of any work situation presenting a serious and immediate danger and of any shortcomings in the protection arrangements;
- to cooperate in fulfilling any requirements imposed for the protection of health and safety and in enabling the employer to ensure that the working environment and working conditions are safe and pose no risks.
- The health of workers is monitored through the application of measures introduced in accordance with national laws and practices.

Based on Kosovo regulations referring to issues governed by EU directives,
Employers are required:
- to retain certificates which confirm that installations are in order and clearly show: a) the characteristics of the machine in use, in accordance with European standards, b) instructions on the use of all machinery and appliances for as long as their in use and c) technical documents which clearly specify the application of occupational safety, health and working environment regulations for buildings or parts of buildings used as workrooms or facilities for as long as they are in use (Regulation No. 2003/33, Section 12);
- to ensure that all electrical equipment have labels on which all their characteristics are marked with CE symbol. Electrical installations should be done in accordance with European standards (EN Regulation). Measures for occupational safety, health and working environment against electric power shall be defined by secondary legislation on the basis of Regulation No. 2003/33, Section 11;
- to retain certificates stating that pressure equipment meets essential safety requirements protection against hazards of leakages and explosions caused by simple pressure vessels, pressure equipment and transportable pressure equipment (Regulation No. 2007/5);
- to carry out periodical calibration of equipment measurement means and periodical checking of each pressure equipment according to types, timelines and pressure values with support of pressure equipment ministerial inspectors (independent from designer, manufacturer, supplier, assemblers or user) (Regulation No. 2007/5);
- to ensure that physical agents, as noise, vibration and lights, are measured and controlled by competent institutions. The level of noise and vibration shall be regulated and to be at allowed level in accordance with minimum European standards (Regulation No. 2003/33, Section 7);

Workers are required:
- to ensure safety and health of all persons affected by their work;
- to properly use safety equipment and PPE, utilise them carefully and maintain in working order, as well as to properly use all machines, equipment, tools, working material, means of transport and safety devices in accordance with the specified instructions;
- to elect and appoint their safety representative, that supervises the implementation of measures taken by the employer
- the employees have the right to refuse work if they believe that there is an imminent danger to their life and health (If the employer considers that the work refusal is ungrounded, he shall immediately inform labour inspector).
Key Social and Resettlement Issues

<table>
<thead>
<tr>
<th>EUROPEAN UNION REGULATORY STANDARDS</th>
<th>KOSOVO REGULATORY STANDARDS</th>
<th>WORLD BANK MANAGEMENT PRACTICES / OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.B. There are no applicable EU regulations and standards.</td>
<td>There is no specific definition of resettlement under Kosovo law but there are provisions regarding the expropriation of land by the Government. “This law determines the rules and conditions that allow expropriation of private property for public interest, the procedure of expropriation, temporary usage of private property for public interest, the procedure of compensation amount as well as other issues have to do with expropriation.” (Chapter 1: Article 1). “Expropriation means shifting of the property right from one private person to another private or public person, when the shift is in public interest, it is not discriminating and the owner is compensated in a fair and reasonable way for the loss of the right in the property.” (Chapter 1: Article 4)</td>
<td>– All direct economic &amp; social losses resulting from land taking and restriction of access, together with the consequent compensatory &amp; remedial issues</td>
</tr>
<tr>
<td></td>
<td>World Bank OP4.12 Involuntary “Resettlement”</td>
<td>– Includes:</td>
</tr>
<tr>
<td></td>
<td>World Bank OP4.12 Involuntary “Resettlement”</td>
<td>– Acquisition of land &amp; physical structures on the land, including businesses;</td>
</tr>
<tr>
<td></td>
<td>World Bank OP4.12 Involuntary “Resettlement”</td>
<td>– Physical relocation;</td>
</tr>
<tr>
<td></td>
<td>World Bank OP4.12 Involuntary “Resettlement”</td>
<td>– Economic rehabilitation of displaced persons to improve (or at least restore) incomes &amp; living standards</td>
</tr>
<tr>
<td>i. Involuntary “Resettlement”</td>
<td>World Bank OP4.12 Involuntary “Resettlement”</td>
<td>i. Both physical displacement (relocation or loss of shelter) &amp; economic displacement (loss of assets of access to assets that leads to loss of income sources or means of livelihood) as a result of project-related land acquisition</td>
</tr>
<tr>
<td>i. Involuntary “Resettlement”</td>
<td>World Bank OP4.12 Involuntary “Resettlement”</td>
<td>i. Resettlement is involuntary when affected individuals or communities do not have the right to refuse land acquisition that results in displacement</td>
</tr>
<tr>
<td>i. Involuntary “Resettlement”</td>
<td>World Bank OP4.12 Involuntary “Resettlement”</td>
<td>i. Applicable cases:</td>
</tr>
<tr>
<td>i. Involuntary “Resettlement”</td>
<td>World Bank OP4.12 Involuntary “Resettlement”</td>
<td>a. Lawful expropriation or restrictions on land use based on eminent domain;</td>
</tr>
</tbody>
</table>
Negotiated settlements in which the buyer can resort to expropriation or impose legal restrictions on land use if negotiations with the seller fails.

World Bank OP 4.12

“Affected People/Displaced Persons”
- All people who lose land or the right to use land, or who lose access to legally designated parks & protected areas resulting in adverse impacts on the livelihoods.
- Term is synonymous with “project-affected persons”, is not limited to those subjected to physical displacement.

International Finance Corporation (IFC)
Performance Standard 5
“Affected People/Displaced Persons”
iv. Persons who have formal legal rights to the land they occupy;
v. Persons who do not have formal legal rights to land, but have a claim to land that is recognized or recognizable under the national laws;
Persons who have no recognizable legal right or claim to the land they occupy.

“Stakeholders”
The key stakeholder groups are the displaced persons and the host community where displaced people will be moved to, if applicable.

World Bank OP 4.12

“Vulnerable”/ “At Risk” Groups
- People who are often susceptible to hardship and may be less able than other groups to reconstruct their lives after resettlement.
Resettlement Issues

- Vulnerable groups may include: those less able to care for themselves (children, the elderly and the disabled); groups not protected by national land compensation law (those without land or use rights, host communities, community members remaining in the original area after resettlement); and women, indigenous peoples and the poor.

**International Finance Corporation (IFC) Performance Standard 5**

**Vulnerable”/ “At Risk” Groups**

- People who, by virtue of gender, ethnicity, age, physical or mental disability, economic disadvantage or social status may be more diversely affected by displacement than others and who may be limited in their ability to claim or take advantage of resettlement assistance and related development benefits

- This group may also include people living below the poverty line, the landless, the elderly, women-/ children-headed households, indigenous peoples, ethnic minorities, natural resource dependent communities or other displaced persons who may not be protected through national land compensation or land titling legislation.

**World Bank OP 4.12 - Scope**

**“Impacts Covered”**

i. Direct economic & social impacts that result from projects & are caused by
   - The involuntary taking of land (resulting in relocation/ loss of shelter, loss of assets/
Resettlement Issues

access to assets, loss of income sources/means of livelihood whether or not the affected persons must move to another location)
– The involuntary restriction of access to legally designated parks & protected areas resulting in adverse impacts on the livelihoods of the displaced persons

*International Finance Corporation (IFC)*

*Performance Standard 5“ - Scope*

*Applicability*

i. Applicability is established during Social and Environmental Assessment Process

Implementation of necessary actions is managed through the client’s Social and Environmental Management System (IFC PS 1 & 5)

*World Bank OP4.12 - Scope*

“Activities Covered”

i. All components of the project that result in involuntary resettlement, regardless of the source of financing

x. Other activities resulting in involuntary resettlement that are judged to be
   – Directly & significantly related to the Bank-assisted project;
   – Necessary to achieve objectives as set forth in the project documents;
   – Carries out/planned to be carried out, contemporaneously with the project

*International Finance Corporation (IFC)*

*Performance Standard 5“ - Scope*

*Application*
Resettlement Issues

- **Law on Expropriation (Amended Text), Official Gazette of SAP Kosova, No. 21/78.**

Valuation of estates will be carried out by a Commission under the head of the Government
- Inter-Ministerial Working Group headed by Ministry of Environment and Regional Planning
- Committee led by Head of the Division for Development Policies
- Department of Construction and Housing is responsible for implementation
- Members of Resettlement Committee include representatives from affected village,

- Applies to physical or economic displacement resulting from:
  - Type I: Land rights for private sector project acquired through expropriation or other compulsory procedures
  - Type II: Land rights for a private sector project acquired through negotiated settlements with property owners or those with legal rights to land, including customary or traditional rights recognized or recognizable under the laws of the country, if expropriation or other compulsory process would have resulted upon the failure of negotiation

World Bank OP 4.12 – Responsible Bodies

i. Borrower is responsible for establishing eligibility criteria and developing satisfactory procedure for establishing criteria by which displaced persons will be deemed eligible for compensation and other resettlement assistance

Activities/Responsibility

i. Land Acquisition assessment – Project resettlement unit (?), Land registry office, Verified NGO

i. Census and socio-economic surveys - Project resettlement unit, Local administrative officials, NGOs

i. Determination of eligibility criteria and resettlement entitlements – Project agency/

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(1) Law on Expropriation (Amended Text), Official Gazette of SAP Kosova, No. 21/78.
Resettlement Issues

- The Cadastre is the Official Register for census of land parcels, buildings, parts of buildings and sub-buildings in Kosovo.
- The “common interest” for exploration of mineral or any other natural resource is determined by the Executive Council of the Assembly of Socialist Autonomous Province of Kosova.
- Proposals for expropriation will be reviewed by a municipal administrative body responsible for legal-property affairs for the territory in which the land is located.

Resettlement unit, Gov’t agencies (legal, financial, technical, administrative)

v. Consultations - Project resettlement unit, NGOs

i. Feasibility study of resettlement sites - Project resettlement unit, NGOs, relevant gov’t agencies (land surveys, soils, irrigation, urban development, water & sanitation, etc).

International Finance Corporation (IFC)

Performance Standard 5“ - Responsible Bodies

i. Where land acquisition/ resettlement are the responsibility of the host government, the client will collaborate with the relevant gov’t agency to the extent permitted by the agency.

i. Where government capacity is limited, the client will play an active role during resettlement planning, implementation and monitoring.

x. Where compensation procedures are not addressed under national law or policy, the client should establish methods for determining adequate compensation and for providing this to the affected people.

x. Feasibility of income improvement measures - Project resettlement unit, relevant gov’t agencies for land-based income improvement strategy (land survey, soils, irrigation, geological, urban development, water & sanitation, etc), labour agency, employment agency, welfare agencies, finance agency, consulting firms to conduct the economic feasibility studies of the proposed strategies, NGOs.
Resettlement Issues

| Resettlement Committee prepares a plan for relocation of communities, have it approved by Government |
| Other steps may include: |
| o Inventory of buildings and structures in affected area |
| o Survey of area by Cadastre office |
| o Design of GIS system |
| o Distribution of questionnaires to residents, to get information about household composition, alternative housing and compensation/ resettlement preferences |
| o Creation of Assessment Commission to establish criteria and norms for compensation |

- **Law on Expropriation (Amended Text), Official Gazette of SAP Kosova, No. 21/78.**

i. Host governments may reserve the right to manage land acquisition, compensation payments and resettlement associated with the project

- in such cases, clients should offer to play active role during preparation, implementation and monitoring
- Clients should coordinate with relevant government authorities aspects of the process that can be easily facilitated by client or other agents

**World Bank OP 4.12 - Procedures**

Resettlement Plan/ Resettlement Policy Framework

- Prepared by borrower to address social & economic impacts
- Includes measures to ensure displaced persons are informed of options & rights; consulted on, offered choices among, provided with technically/ economically feasible alternatives; provided with prompt/ effective compensation at full replacement cost for losses directly due to project
- Where impacts include physical resettlement, there should also be measure to ensure displaced persons are provided assistance during relocation and provided with residential housing/ housing sites/ agricultural sites (as needed) where the combination of productive potential, locational advantage
**Resettlement Issues**

- Identification of alternative resettlement sites
- “Line drawn” re compensation for construction initiated after set date
- Committee holds meetings with residents to discuss options, preferences and timing

The proposal for preparatory activities must contain: the purpose of expropriation; identification of the land intended for activities; the ownership of that land; the extent, purpose and duration of proposed activity.

The proposal for expropriation of real estate must identify:
- The proposer of expropriation
- The purpose for which expropriation will be performed
- The land that is to be expropriated and its location
- The owner of the land and his residence
- “the object, respectively the works which need to be constructed into real estate which is proposed to be expropriated” (Article 13)

The proposal for expropriation must also include:
- The extract from the land books or other public books where ownership of the land is registered, and which contains the notes on the land in question
- The certificate from the Social Accounting Service, issued according to the Law on Construction of Investment Objects, which demonstrates that the proposer has provided the necessary

Where necessary, ensure displaced persons are offered support after displacement during transition period, based on reasonable estimate of time needed to restore livelihood and standard of living, and are provided with development assistance as well as compensation.

**International Finance Corporation (IFC) Performance Standard 5 – Procedures**

- The client will establish and maintain an SEMS appropriate to the nature and scale of the project and commensurate with the level of social and environmental risks and impacts
- The management process for accepted international frameworks can be summarized as follows:
  - i. identification and review of the social and environmental impacts and risks of the operations
  - ii. definition of a set of policies and objectives for social and environmental performance
  - iii. establishment of a management program to achieve these objectives
  - iv. monitoring performance against these policies and objectives
  - v. reporting of the results appropriately
  - vi. review of the system and outcomes, striving for continuous improvement
- The client will conduct a process of Social and Environmental Assessment that will consider in an integrated manner the potential social and environmental (inc labour, health and safety) risks and impacts of the project.
### Resettlement Issues

<table>
<thead>
<tr>
<th><strong>European Union Regulatory Standards</strong></th>
<th><strong>Kosovo Regulatory Standards</strong></th>
<th><strong>World Bank Management Practices/Others</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>means for compensation for expropriation</td>
<td>The document on determination of “common interest” for the proposed development</td>
<td>• the Assessment process will be based on current information, including an accurate project description and appropriate socio-environmental baseline data</td>
</tr>
<tr>
<td>The previous owner of the expropriated land may request an annulment of the expropriation approval if the [expropriator] does not undertake necessary works for the planned project within 3 years of approval for expropriation</td>
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</tbody>
</table>

**World Bank OP 4.12 - Procedures**

**Parks and Protected Areas**

- In projects involving involuntary restriction of access to designated parks & protected areas, the nature of restriction & measures to mitigate adverse impacts is determined with the participation of the displaced persons during design & implementation of the project.
- Borrower must prepare a process framework acceptable to the Bank, describing participatory process by which specifics of project will be prepared/implemented; eligibility criteria for displaced persons will be determined; identification process for assistance to restore/improve livelihoods of displaced persons while maintaining park/protected area; how potential conflicts re displaced persons will be resolved.

**International Finance Corporation (IFC)**

**Performance Standard 5** - Procedures

- depending on the type of project and the
Resettlement Issues

- In cases of resettlement, the client will develop a resettlement action plan or framework based on a Social and Environmental Assessment that covers at minimum the applicable requirements.
- The plan/framework will be designed to mitigate the negative impacts of displacement, identify development opportunities, and establish the entitlements of all categories of affected persons (inc host communities), with particular attention paid to the needs of the poor and vulnerable.
- The client will document all transactions to acquire land rights, as well as compensation measures and relocation activities.
- The client will also establish procedures to monitor and evaluate the implementation of resettlement plans and take corrective action as necessary.
- A resettlement will be considered complete when the adverse impacts of resettlement have been addressed in a manner that is consistent with the objectives stated in the resettlement plan or framework as well as the objectives of the Performance Standard.

- World Bank OP 4.12 - Consultation

Affected Persons/ Communities
- Displaced persons, their communities & any
Resettlement Issues

**Consultation**

Resettlement committee shall be transparent in all operation, and all ideas, procedures, constraints and implications will be discussed with all people concerned.

A non-official representative (normal citizen without professional relationship to municipality) of the village shall participate in the Assessment Commission. Also, each committee that carries out assessments should include one resident member.

KEK shall be actively engaged in the resettlement process, as partner in an information sharing capacity. In coordination with resettlement committee, KEK shall conduct an information campaign that informs residents of the village about the process/timing, etc.

- An appeal may be submitted against the verdict on approval or rejection of the proposed works.

*Note: the text does not seem to explain how or who may do this, or go into detail as to the process involved (Article 10, 17)

- The appeal cannot stop the execution of the original decision.

Host communities should be provided with timely & relevant information, consulted on resettlement options, offered opportunities to participate in planning, implementing, monitoring resettlement.

**International Finance Corporation (IFC)**

**Performance Standard 5” - Consultation**

**Affected Persons/ Communities**

- Following disclosure of all relevant information, client will consult with/facilitate informed participation of affected persons/communities in decision making processes re resettlement.

Consultation will continue during implementation, monitoring and evaluation of compensation payment & resettlement to achieve outcomes that are consistent with objectives of Performance Standard.

**World Bank OP 4.12 - Consultation**

**Grievance Mechanism**

- Appropriate/accessible grievance mechanisms should be established for resettled persons, communities & host communities.

- Grievance procedures should include:
  - an inventory of reliable conflict mediation organizations/procedures in project area;
  - a review of grievance redress mechanisms for simplicity, accessibility, affordability, accountability – time limits for grievance response should be set, with appeal procedures clarified & communicated to displaced persons;
  - new grievance committee will be given.
Resettlement Issues

authority to redress complaints (committees usually incl representatives from displaced persons, NGOs, project officials/staff, etc)

*International Finance Corporation (IFC)*

*Performance Standard 5 – Consultation*

**Grievance Mechanism**

The client will establish a grievance mechanism consistent with Performance Standard 1 to receive & address specific concerns re compensation & relocation raised by displaced persons/members of host communities, including recourse mechanism to resolve disputes impartially.
CONCLUSIONS AND RECOMMENDATIONS

The gap analysis carried out comparing existing Kosovo legislation with EU and other international standards (e.g. World Bank) in the framework of Environmental protection, occupational Health and Safety and Resettlement issues applicable to lignite mining and power generation activities, has shown that, although the process to develop an EHS regulatory framework in compliance with EU Directives and other international standards has been started, at the moment, only very limited regulations have been developed in the Kosovo legislation. A number of framework Laws have been passed such as the Environmental Protection Law, the Waste Law and the Water Law, but the regulations to make them operational are not yet in place. In parallel, efforts are needed to build institutional capacity and operational environmental management services.

The most relevant recommendations in relation to the main issues that have been reviewed are noted below; findings and comments on existing legislation as included in the (IPA H&W) Revised Interim Diagnostic Report are also noted when applicable.

Strategic Environmental Assessment and Spatial Planning

The general Principles on assessment of environmental and socio economic impact are indicated in the Spatial Planning Law and the Environmental Protection Law, but no specific regulation has been developed. The Spatial Planning Law indicates that local authorities will decide which plans will need to undergo an environmental and socio-economic impact study. However, such decision should not be left as a decision to individual local authorities, but should be regulated by Law on a general, independent basis.

A draft SEA Law (dated May 2007) has been submitted to the Assembly and is pending approval. Although it was drafted in compliance with the EC SEA Directive, the public consultation procedures are not clearly defined. These should include making SEA reports available to the public for written comments. Guidelines should be prepared to support the SEA process for specific plans and programs (energy, spatial planning, transport, agriculture, etc…).

Sectoral environmental regulations (air and water quality standards amongst others) should also be prepared and promulgated to allow for the SEA process to be implemented.

The institutional framework for the implementation of the SEA process should be defined and specific training planned and provided for all parties involved at central and local levels.

Main comments on the Draft SEA Law as included in the Revised Interim Diagnostic Report of IPA H&W are the following.

Key areas where the draft law is not considered to be compliant with the relevant EC SEA Directive include:

- Scope and procedures for consultation;
• Disclosure of plan adoption decision; and
• Monitoring requirements.

There are also some issues where the intent of the Law is not clear in the English language version.

The IPA H&W Advisors submitted a Draft amendments to the Law as a separate deliverable (November 2007) and discussed with key members of the SEA Law drafting group within MESP during a visit by the consultant in November 2007. The draft was finalized in early 2008 and should be approved soon by the Assembly.

Environmental Impact Assessment
The EIA regulations in force include Administrative Directive 9 of July 2004, and Articles 20-21 of the Environmental Protection Law. A new EIA Law approved by the Assembly in June 2007 is awaiting signature to become operational.

The new Law has redesigned the EIA procedure, which remains the responsibility of MESP. Main aspects include the following:

• No part of the procedure is carried out by KEPA as had been foreseen by the Administrative Directive of 2004.
• Reportedly, a Commission made up of 5 members will be involved in the EIA procedure. These members will be nominated by the Permanent Secretary and are employees of MESP.
• A single person, employee of the Ministry, is the focal point and coordinator for all EIA processes. A second person is at present on maternity leave.
• The Ministry may contract external experts to review the EIA (Article 18).
• No other Ministries or relevant Institutions are to be involved in the EIA.
• The main conclusions and recommendations contained in the EIA report and the Opinion-Proposal shall be subject to public debate. (Article 19).

The IPA H&W Revised Interim Diagnostic Report includes the following main comments on Draft EIA Law:

This Draft Law would appear to meet all the main requirements of the 1985 EC EIA Directive (as amended) and the technical annexes appear to mirror those included under Community legislation. However, once again the Draft Law on EIA raises a number of issues relating to the coherence of the entire corpus of existing and proposed Environmental Laws in Kosovo. Key issues are:

1. Questions of coherence / consistency with the Draft Law on Environmental Protection arise. For example, Article 7 of the Draft EIA Law purports to provide that a project requiring EIA under Article 5 shall not receive the
Environmental Consent required from MESP without having completed the EIA procedure. This provision needs to be checked carefully against the various provisions in the Draft Law on Environmental Protection and the Draft IPPC and Environmental Permitting Law obliging operators to obtain various licenses / permits / authorizations.

2. Similarly, Articles 20 and 21 would appear to link the Opinion for Environmental Consent directly to the review of the EIA Report, which raises a number of issues. First of all, it is not clear whether the Environmental Consent merely relates to the adequacy of the EIA Report, the acceptability of the proposed project or both. Presuming it relates to the project, it would appear to remove a significant element of discretion in decision-making from the relevant public officials. Secondly, it might appear more appropriate for decision-making in respect of the Environmental Consent, including the right to appeal which is set out under Article 22, to be dealt with under the Draft IPPC and Environmental Permitting Law. These provisions will need to be checked carefully for consistency with the relevant provisions of the Draft IPPC and Environmental Permitting Law.

Reportedly, a project to help the enforcement of Environmental Legislation at the Municipal Level financed by EAR is due to start in January 2008 for a 12 month period. It includes training of municipal inspectors, to make understandable the Environmental Law and regulation and make them able to implement them in their municipalities. The TOR specifies the following target groups: the MESP with its executive agencies KEPA and Inspectorate and 30 municipalities (Deçan / Decane, Dragash / Dragas, Drenas / Glogovac, Ferizaj / Urosevac, Fushë-Kosovë / Kosovo-Polje, Gjakovë / Djkovica, Gjilan / Gnjilane, Istog / Istok, Kaçanik / Kacanik, Kamenicë / Kamenica, Klinë / Klina, Leposaviq / Leposavic, Lipjan / Lipljan, Malishevë / Malisevo, Mitrovicë / Mitrovica, Novobërđe / Novobrdo, Obiliq / Obilic, Pejë / Pec, Podujevë / Podujevo, Prishtinë / Pristina, Prizren / Rahovec / Orahovac, Shtërpcë / Strpce, Shtime / Stimlje, Skenderaj / Srbica, Thethë / Suvareka, Viti / Vitina, Vushtrri / Vucitrn, Zubin Potok / Zveçan).

Development of sectoral environmental regulations such as air and water quality standards are fundamental to enable EIA procedures to be implemented.

**IPPC**

A Draft Law on IPPC and environmental permitting has been approved by Assembly but not yet signed by Prime Minster. The following main considerations are applicable as reported in IPA H&W Interim Diagnostic Survey Report.

*This Draft Law is really quite well drafted and follows the general scheme and technical annexes of the EC IPPC Directive very closely, thereby making it quite clear that largescale power generation plant [Annex 1, Part A, 1.1], hazardous waste disposal activities [Annex 1, Part A, 5.3 and 5.4] and large-scale open-cast extraction of mineral resources [Annex 1, Part A, 6.2] all require an IPPC Permit. Equally,*
Annex 1, Part B makes clear the thresholds at which such activities would merely require a Permit from MESP.

However, it would be useful to check this Draft for consistency with a number of other existing or proposed measures of environmental legislation in Kosovo, including the Waste Law, Water Law, the Draft Law on Environmental Protection, and the Draft EIA Law.

Key issues are:
1. Concerns about the lack of a requirement for public participation in respect of the granting of IPPC permits under the Draft Law are obviated by the inclusion of a provision requiring such participation under Article 57(1)(c) of the Draft Law on Environmental Protection. Also, Article 20.2 of the Draft IPPC and Environmental Permitting Law itself provides that, ‘In preparing administrative decisions, the Minister shall inform and consult with other interested governmental bodies and the concerned public, and shall take their comments into account.’

2. As Article 7 makes it clear that ‘Emission limit values’ in other laws shall be considered as maximum emission limit values for the purposes of the conditions to be included in Permits under Article 6.2(b), it would be useful to find out how many such measures setting Emission limit values are in force are in preparation. Further, it would be useful to check for consistency with Articles 36 and 63 of the Draft Law on Environmental Protection. It would also be important to explore the extent to which the Draft Law empowers the permitting authority to attach technical conditions to the Permits in the absence of such measures in force (i.e. without the permitting authority acting ultra vires, etc.).

3. It would also be useful to check the permitting provisions contained in this Draft Law for overlap / duplication with the various provisions in the Draft Law on Environmental Protection obliging operators to obtain various licenses / permits / authorizations.

Air Emission and Air Quality
The main principles related to air quality monitoring and management are defined in the Environmental Protection Law. The Law on Air Protection foresees generators of air emissions to periodically inform the MESP of their characteristics. A draft Administrative Instruction “On the rules and standards of the discharges on air by the stationary sources of pollution” has been approved and signed by the Prime Minister in September 2007. It contains air emission limits for a wide range of industrial activities.

The instruction states that emission limits for Large Combustion Plants should be in compliance with EC regulations and that existing plants must comply with these limits by the end of 2017. Limits for air emissions from existing plants are a bit higher than the EC Directive limits. The regulation foresees air emission reduction plans to be negotiated between the single plants and the Ministry. The English version is sometimes not very clear, it should therefore be revised giving clear indications on the timing in which the emission limits will be coming into force.
No air quality data is presently available in the country as the Ministry and its operative institutions have no adequate measuring equipment. The Kosovo Environmental Protection Agency, (KEPA), has only recently started operating and its environmental monitoring data collection and management capacity still needs to be built at both central and decentralised levels. Additional legislative tools will probably be needed to implement air emission control and air quality management.

**Water Supply**

The Kosovo Water Law under Section 8 calls for coordination of river basin management with upstream and downstream riparians in the case of transboundary river basins system, according to EU policy. Under the Water Law, the right of use of water is given through issuing a Water Permit (subject to review every 5 years) or through a Water Concession (no review period defined).

It appears from the Law that industrial complexes, unlike irrigated agriculture and fisheries, are not eligible to apply for a water concession, although the law states that “use of water for technological needs” is eligible to apply for a concession. No provisions are made in the Law for the transfer of water permits or concessions from one permit holder to another.

Implementing the institutional setting and water strategy development as specified in the law is in its early stages. A basic strategy paper (Water Balance Report, in Albanian) was developed in 2004, based on a 1985 Water Management Plan, but to date no water management plan or river basin management plans have been developed. As a result of the absence of a river basin plan and a comprehensive policy framework, there is limited oversight regarding the availability of water sources in the Iber system, no clear policy for strategic allocation of water for various sectors or the issuing of long-term water usage agreements, nor a well-defined mechanism for the resolution of competing water demands.

There is a need for a river basin plan and comprehensive policy framework to guide strategic water allocations to various sectors and define and institute mechanisms for resolution of competing water demands.

According to EU policy, the Kosovar authorities should endeavor to produce a single river basin management plan for the Iber-Lepenc system with upstream and downstream riparians, and if this is not possible, the plan should at least cover the portion of the international river basin district lying within Kosovo.

**Wastewater**

The Water Law sets the general principles for sustainable water and water resources management. However, no waste discharge limits for waste effluents have been set in any existing regulatory document, and no standards for groundwater quality have been developed. An Administrative Regulation
exists to regulate water usage permitting and the nomination of water inspectors. Specific regulation governing water quality discharges and assessment and preservation of water body qualities should be developed and put into force. In addition, it is foreseeable that monitoring data collection and management capacity still needs to be built at both central and decentralised levels.

A draft regulation on water quality standards has been prepared, but no details have yet been made available to the Consultants.

**Waste Management**
A Framework Waste Law has been issued in 2005 introducing the waste classification system in compliance with the EU Directive, and a number of Administrative Regulations have been issued in 2007 to regulate the management of waste oils, spent batteries, spent vehicles and construction wastes. However, waste management tools such as national and local waste management plans to determine the quantities and typologies of wastes generated in the country and consequently define the needs for treatment and disposal facilities, need to be developed in parallel to building institutional capacity and operational waste management services.

**Hazardous Substances Management and Handling**
No Regulatory framework has been developed for handling of chemicals and hazardous substances apart from the Waste Law. Specific regulation and institutional capacity should therefore be developed to include handling of on Asbestos Containing Materials, PCBs, and Ozone Depletive Substances amongst others.

**Soil and Groundwater Quality**
The only existing regulation refers to discharge of liquid waste into the ground.

Specific guidelines should be developed to regulate the following:
- Soil and groundwater quality standards;
- Soil protection measures (e.g. technical characteristics of storage facilities, periodical integrity testing of underground storage tanks, etc.); and
- Emergency actions to be undertaken in case of soil and groundwater contamination.

**Nature and Biodiversity Protection and Conservation**
The existing Law for Nature Protection in Kosovo indicates a number of subsidiary acts that should complete the regulatory framework on nature conservation on specific issues that include the following:
- The List of Proposed conservation zones and the respective important habitat types and or species present, with reference to Habitat Directive
- The Red Book of important species and important habitats which are to receive special protection
• The measures and criteria for landscape protection outside nature conservation zones
• The procedure for applying for and obtaining an environmental consent for a proposed project within the landscape territories;
• The content and form of reports on measures undertaken with the aim of preventing negative impacts on landscapes, in accordance with the plans drafted by the competent institutions;
• Prohibited activities in protected territories.

According to the information reviewed these subsidiary acts have not been approved yet. It is recommended that the legal framework is completed with the necessary subsidiary acts.

Management of Protected Areas
The Law on Nature Conservation (2004) does not contain specific provisions for the institutional arrangements to be envisaged for the Management Body of the Protected Areas (organizational structure, statute, composition of the management) nor does it clearly indicate which Institution should finance the Management Body’s costs (personnel, equipment, facilities, running costs, etc.). This should be addressed.

IUCN Categories
The Category VI of IUCN is not included in the list of the nature conservation zones. This category is meant to combine nature protection with a sustainable use of natural resources and with sustainable production practices. Review of the Law to include also this category can be considered in the future 3-5 years based on the experience acquired in the application of this Law.

Responsibilities of Municipalities in Nature Protection
The Law assigns a critical role to Municipalities that includes establishing the management authority for all categories of protection, except for National Parks. It is recommended to verify and ensure that Municipalities possess the necessary capacity and resources to comply with this requirements.

Health & Safety Management
A framework legislation is in place in Kosovo governing health and safety at workplaces. Specific occupational health and safety conditions and risks are reported to be regulated separately by secondary legislation on the basis of this general law; specific secondary legislation has not been issued yet.

Aspects that will need to be addressed mainly regard: detailed procedures for accidents and incidents reporting, a stringent risk evaluation approach, and its connection with type of medical surveillance programs required for specific working activities, or personal protective equipment provision, restrictions applicable to vulnerable workers and assessment procedures for specific risks (as biological, carcinogenic or mutagenic risks, occupational noise exposure, manual handling of loads and ergonomics, explosion risks).

Criteria for categorization of premises and areas with respect to fire prevention and protection measures are yet be implemented, as well as specific procedures for inspections assigned to authorized legal entities and
related training of persons performing the controls. Hazardous chemicals substances are required to be stored and used in accordance with European standards; on the other hand, specific standards and threshold limits for indoor asbestos exposure limit at workplaces are missing and should be developed in Kosovo legislation.

New machinery, appliances and safety devices are required to be provided with certifications in accordance with European standards and yet requirements should be set for old machinery not provided with CE marking.

Kosovo legislation regarding mineral extracting activities does not set out framework rules for all stages of mining processes. It is mainly focused on access to extracting activities in terms of exploration and mining licenses, permits for special operations, permit procedures, restricted activities with respect to land use and planning, general commercial rights and royalties, rather than health and safety. On the other hand in EU, currently there is not actually a comprehensive legislation regulating the whole range of mining activities with its different elements (eg prospecting, exploration, extraction, closure, reclamation, liability). In particular mining legislation was extremely different (eg procedure for granting and using authorisations) throughout EU in last years due to historical reasons. European legislation is actually influencing the mineral extracting industry and national mining laws not much on a comprehensive basis but more on a sector basis, especially in the areas of licensing/administrative procedures, health and safety and environment. Strict Health and safety thresholds parameters are not set and only general rules are reported in EU legislation. A set of EU Directives (mainly on machinery, occupational exposure levels, vibrations, explosive atmospheres, major hazard installations) do not deal specifically with mineral extracting industry equipment but include it in their scope of application, with specific provisions or exemptions taking into account requirements of mineral extracting activities.

Resettlement and Social Issues
Overview
Many of the key tenets of The World Bank’s OP 4.12 are partly covered by current Kosovo law. These include:

- The requirement to pay compensation in advance where land is compulsorily acquired (Draft Law on Land Expropriation, Article 8, 2007);
- The need to compensate based on full market value or through grant of another land plot or building of equal quality, size and value (Draft Law on Land Expropriation, Chapter 4, Article 17, 2007);
- The requirement to compensate for losses, whether temporary or permanent in production or damage to productive assets and crops and
- Provision for pre-judicial avenues for resolution of disputes and rights of appeal.

The OP 4.12 principle of avoidance or minimization or resettlement is addressed in article 70.4 of the land code, which stipulates that lands can be
withdrawn only for location of state, municipal or public facilities of high importance. There are, however, three broad areas where the sponsor’s or borrower’s obligation under WB OP 4.12 extends beyond those required under Kosovo legislation.

• Definitions
• Resettlement planning and procedural requirements
• Public consultation and participation of project affected communities
• Extent of compensation and types of assistance to be offered
• Categories of people eligible for compensation
• Property measurement and income restoration

Definitions
Involuntary resettlement, within Kosovo law there is no clear definition of involuntary resettlement and therefore no scope for the application of mitigating instruments’ such as Resettlement Action Plan or social management plan, as required under international guidelines such as WB OP 4.12 and IFC PS 1 and 5, which clearly defines the scope of definition which protects both the developer and those who are to be resettled.

Resettlement Planning and Procedural Requirements
There is presently no requirement to prepare a formal Resettlement Action Plan (RAP) under Kosovo law, nor to undertake any of the component activities of a resettlement action plan such as, a ‘census’, socio-economic survey, consultation with project affected people, monitoring or reporting. There are no specific references in the legislation to ‘involuntary resettlement’. Core WB planning requirements such as the need for community participation in the resettlement planning process and the requirement to improve or enhance project affected people’s living standards and income and production levels, are not explicitly addressed in current legislation.

Legal Measures or additions to Kosovo legislation required to ensure compliance with international best practice should include:
• Provisions for consultation with potential project-affected people on feasible measures for resettlement and rehabilitation
• Drafting and implementing a full public consultation strategy and disclosure plan before construction. Allocation of financial and human resources for consultation activities.
• Carry out a scoping study as soon as possible to identify the need for a Resettlement Action Plan (RAP) and/or a Land Acquisition Plan (LAP)
• Assistance with Project Affected People’s (PAP) transit costs must be offered and financed by the government or private entity who is responsible for the project and resettlement.
• PAPs need to be informed of their rights to assistance and this needs to be explained clearly with supporting information and material, if appropriate.

Public Consultation and Participation
OP 4.12 specifies that project affected people should be informed about their options and rights pertaining to resettlement and ‘…consulted on, offered choices among, and provided with technically and economically feasible resettlement alternatives; and provided with prompt and effective
compensation at full replacement.’ (Clause 6 (i), (ii)). Additionally, currently there is no explicit consultation requirement in Kosovo law.

Legal Measures or additions to Kosovo legislation required to ensure compliance with international best practice should include:

- Information about the project should be disclosed as early as possible
- Disclosure of project environmental and social information should be an integral part of the public consultation process, with information being provided about both benefits and disadvantages of the project
- Information should be clearly presented in appropriate local languages and dialects and in modes that are sensitive to local communities
- Information should be disclosed in locations that are open to the public and that are readily accessible to PAPs

**Compensation Eligibility in Kosovo**

The categories of people who must be compensated under Kosovo legislation are narrower than those defined under OP 4.12 or IFC PS 5. Under the legislation, the only people entitled to compensation are those with registered property rights, and registered identity documentation. Within the Kosovo context, these criteria could exclude some of the poorest and vulnerable people, such as The Roma community, those returning to Kosovo post conflict. Additionally there is no specific mention of compensation for commercial businesses and loss of profit due to economic displacement. This potentially precludes many categories of affected people that would be entitled to compensation under WB Group policies. These categories would include, in Kosovo:

- Users who use land is on the basis of an informal agreement often with a relative or extended family member tenant farmers)
- Owners who occupy land that was transferred by informal agreement from another owner
- Owners who have not registered a change in ownership following a family death, marriage annulment or similar situation
- Internally Displaced People (who have no rights to land)
- People who make use of communal resources to which they have no formal title
- Informal dwellers, such as The Roma community

OP 4.12 states that land, housing, infrastructure and other forms of compensation should be provided to the adversely affected population,… OP 4.12 para 7 goes on to specifically state that ‘…the absence of legal title to land by such groups should not be a bar to compensation’ (Clause 7 Criteria for Eligibility).

Displaced persons may be classified in one of the following three groups:

- those who have formal legal rights to land (including customary and traditional rights recognized under the laws of the country)
- those who do not have formal legal rights to land at the time the census begins but have a claim to such land or assets—provided that such claims are recognized under the laws of the country or become recognized through a process identified in the resettlement plan
• those who have no recognizable legal right or claim to the land they are occupying. (Clause 15 (a), (b), (c))

Under the World Bank and IFC policies, the basic criterion for eligibility is to be adversely or severely affected (physically or economically) by the project. The World Bank defines ‘severely affected’ as households who lose more than 10% of their landholding as a result of the project. People in this category would be eligible for income restoration measures and rehabilitation assistance. In practice, the compensation entitlement of different classes of PAP will vary, for example, those with no legal title or claim to property will only be compensated for loss of assets and not land. Additionally, the IFC’s PS 5 requires that people without legal title(squatters) are provided with security of tenure in their new location.

The WB also singles out as requiring particular attention, what the policy terms as ‘vulnerable groups’ which are at particular risk in the resettlement process. Vulnerable groups may include not only indigenous people and ethnic minorities but also the elderly, the very poor, people with disabilities, and female-headed households.

Legal Measures or additions to Kosovo legislation required to ensure compliance with international best practice should include:

• All users of land (including those with legal documents and those without) should be entitled to compensation for loss of land, structures and livelihoods. For illegal dwellers, compensation for loss of livelihood only is required. All land users must be informed, in a timely and appropriate manner, of their rights and this should be monitored to ensure that eligible people are aware of their entitlements. Leaseholders and users should be entitled to reasonable compensation subject to evidence of use of the land for 2 years or more. Squatters should be provided with security of tenure in their new location.

• Scoping and preliminary census should identify those who are considered vulnerable. Ongoing monitoring should be carried out to check for cases of hardship arising from the project.

• Adequate rehabilitation assistance for those who do not have official titles to the land but who use the land for lawful activities.

• Rehabilitation assistance will include, for example, free house plots or subsidised flats.

**Extent of Compensation and Resettlement Assistance**

Under current legislation in Kosovo, compensation is payable for loss of land, buildings, crops and other damages arising from the acquisition of land for a project. Kosovo law on compensation allows only cash to be provided for compensation and not compensation ‘in kind’. Nevertheless, since within international guidelines, including the IFC’s performance standard 5, compensation in kind is recommended for agricultural communities, Kosovo legislation should amend the law to reflect this recommendation.

**Property measurement:**
Under the World Bank policies, compensation for lost properties is calculated based on full replacement cost compensation should be equal to what enables the PAP to restore their livelihood at the level prior to the resettlement. Under the Kosovo law, compensation is equal to the market value of lost properties. Theoretically, the two rules mean the same, in that full market price is equal to the price at which land owners are willing to surrender the property voluntarily in the open market, which should reflect the cost not only of the productive value of the land but also that to restore livelihood. In reality, however, the two can differ since not all PAPs may be aware of what full replacement cost really means, and hence what is their entitlement. It is therefore most important that i) the PAP are aware of their entitlements and ii) the government and project sponsors clearly understand and agree that the concept of full replacement cost will be used in projects for measurement of properties.

In addition to compensation for losses of land and productive assets, OP4.12 requires that:
- resettled people should be assisted with their move and supported during their transition period at the resettlement site; and,
- assisted in their efforts to improve their former living standards, income earning capacity and production levels or at least to restore them.

Such assistance is not recognized under the Kosovo law as a responsibility of the government or sponsoring agency. The WB policy notes that cash compensation alone may not be adequate to restore lost production. Other types of loss that are recognised under the WB policy as needing to be addressed are loss of access to public services, customers and suppliers and fishing, grazing and forest areas. The policy recognises that such losses cannot be easily evaluated or compensated in monetary terms, but emphasises the requirement for attempts to be made to establish access to equivalent resources.

Legal Measures or additions to Kosovo legislation required to ensure compliance with international best practice should include:
- Adequate resettlement sites should be identified and be satisfactory to the project affected people
- Compensation for properties should be at the replacement cost and should take account of depreciation.
- Services such as privileged access to jobs in the project or preferential loans for small business start-up should be made available to those people identified as survey impacted by the project.

A community needs assessment should be carried out to identify the social needs of heavily impacted people and communities

Amendments to the draft Expropriation Law have been prepared by IPA H&W Advisors to address the issues identified in the Interim Diagnostic Report and to ensure compliance with World Bank/IFC requirements.
IPA H&W have also prepared a first draft of a Resettlement Policy Framework and outline Action Plan.
ENVIRONMENTAL AND SOCIAL BASELINE

3.1 APPROACH

There are many tools used to describe and quantify the environment and the socio-economic issues of a specific area and these are constantly being revised and adapted to the needs of different users.

In the present Report the Pressure-State-Response (PSR) Framework, which was accepted by many agencies in the early 1990s and is now widely used, will be adopted. The PSR Framework uses indicators in order to quantify and simplify phenomena and help understand complex realities.

An indicator tells us something about changes in a system. Whether an indicator is useful or not is very much dependent on a particular context. Therefore, a careful selection process has been carried out in order to determine which indicators may be relevant in the given context in Kosovo.

Indicators are selected to provide information about the functioning of a specific system, for a specific purpose, to support decision making and management. An indicator quantifies and aggregates data that can be measured and monitored to determine whether change is taking place. But in order to understand the process of change, the indicator needs to help decision makers to understand why change is taking place.

There are several important points to bear in mind when using indicators:
- Indicators should be chosen to represent key parameters to be measured for the purpose of measurement and implementing the desired changes. In order for indicators to be useful, good data needs to be collected so that changes in the indicators can be monitored and therefore it can be determined if the required changes are being obtained;
- Performance measures imply that targets need to be set (i.e. something against which performance can be compared);
- Different people living in different places have different values. Indicators must therefore be able to take into account different locations, people, cultures and institutions;
- Sets of indicators evolve over time;
- Sets of indicators are seldom, if ever, complete;
- Measurement of indicators tends to reduce uncertainty, but does not eliminate it;
- Indicators can play an important part in the way in which human influences on the environment operate. Changing the indicators will most likely also change the system.

The OECD PSR framework (see Figure 3.1a) states that human activities exert pressures (such as pollution emissions or land use changes) on the
environment, which can *induce changes in the state of the environment* (for example, changes in ambient pollutant levels, habitat diversity, water flows, etc.). *Society then responds* to changes in pressures or state with environmental and economic policies and programs intended to prevent, reduce or mitigate pressures and/or environmental damage.

**Figure 3.1a**  
*PSR Framework*

Indicators can be powerful tools to help identify and support PSR relationships, both at the reporting stage and subsequently during policy analysis. The aim of the present document is to identify environmental and socio-economic indicators useful to describe the present situation in the area of interest (mainly due to the existing KEK facilities), in order to compare it with the various proposed development alternatives and to identify the “most preferred” option with regard to environmental and social impacts.

*Table 3.1a* shows the proposed indicators for environmental issues. The last column of the Table shows also if the available data are adequate to calculate each single indicator (“Y” meaning it was possible to make the calculation, “N” meaning it was not, “N/Y” meaning the available data are not adequate to quantify the indicator properly) in the present situation.

The Table intends to provide a sort of summary of the environmental issues which have to be investigated further (the “Y” in the last column does not necessary mean that some evaluation is possible based on the existing information). The indicators considered refer to the following components: air, soil and groundwater, surface and wastewater, noise, waste, natural environment. Reportedly no radioactive materials are used in the mines and in the power plants as well as none were identified during the site visit. Moreover, concerning non-ionizing radiations, no issues are raised if electric lines and connections are properly designed. Therefore the component “Radiations” has not been considered.
### Table 3.1a Proposed Environmental PSR Indicators

<table>
<thead>
<tr>
<th>Issue</th>
<th>Indicator</th>
<th>PSR</th>
<th>Calc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>Emissions of greenhouse gasses</td>
<td>P</td>
<td>Y</td>
</tr>
<tr>
<td>Air</td>
<td>Emissions of CO, SO₂, NOₓ, particulate</td>
<td>P</td>
<td>Y</td>
</tr>
<tr>
<td>Air</td>
<td>Climate</td>
<td>S</td>
<td>Y</td>
</tr>
<tr>
<td>Air</td>
<td>Air quality</td>
<td>S</td>
<td>Y</td>
</tr>
<tr>
<td>Air</td>
<td>Expenditure on air pollution monitoring and abatement</td>
<td>R</td>
<td>-</td>
</tr>
<tr>
<td>Soil and groundwater</td>
<td>Occupied land</td>
<td>P</td>
<td>Y</td>
</tr>
<tr>
<td>Soil and groundwater</td>
<td>Groundwater abstraction</td>
<td>P</td>
<td>N</td>
</tr>
<tr>
<td>Soil and groundwater</td>
<td>Sources of soil and groundwater contamination</td>
<td>P</td>
<td>N/Y</td>
</tr>
<tr>
<td>Soil and groundwater</td>
<td>Landslides</td>
<td>P</td>
<td>N</td>
</tr>
<tr>
<td>Soil and groundwater</td>
<td>Geology</td>
<td>S</td>
<td>Y</td>
</tr>
<tr>
<td>Soil and groundwater</td>
<td>Hydrogeology</td>
<td>S</td>
<td>N/Y</td>
</tr>
<tr>
<td>Soil and groundwater</td>
<td>Quality of groundwater and soil</td>
<td>S</td>
<td>N/Y</td>
</tr>
<tr>
<td>Soil and groundwater</td>
<td>Investments in cleanup programs</td>
<td>R</td>
<td>-</td>
</tr>
<tr>
<td>Surface and wastewater</td>
<td>Surface water consumption</td>
<td>P</td>
<td>N/Y</td>
</tr>
<tr>
<td>Surface and wastewater</td>
<td>Generation of wastewater</td>
<td>P</td>
<td>Y</td>
</tr>
<tr>
<td>Surface and wastewater</td>
<td>Surface water reserves</td>
<td>S</td>
<td>Y</td>
</tr>
<tr>
<td>Surface and wastewater</td>
<td>Quality of river water</td>
<td>S</td>
<td>Y</td>
</tr>
<tr>
<td>Surface and wastewater</td>
<td>% population with adequate water facilities</td>
<td>S</td>
<td>N/Y</td>
</tr>
<tr>
<td>Surface and wastewater</td>
<td>Expenditure for the provision of water services</td>
<td>R</td>
<td>-</td>
</tr>
<tr>
<td>Noise</td>
<td>Noise emissions</td>
<td>P</td>
<td>N</td>
</tr>
<tr>
<td>Noise</td>
<td>Zoning plan and noise immissions</td>
<td>S</td>
<td>N</td>
</tr>
<tr>
<td>Noise</td>
<td>Expenditure on noise abatement</td>
<td>R</td>
<td>-</td>
</tr>
<tr>
<td>Solid waste</td>
<td>Production of ashes</td>
<td>P</td>
<td>Y</td>
</tr>
<tr>
<td>Solid waste</td>
<td>Generation of industrial solid waste</td>
<td>P</td>
<td>N/Y</td>
</tr>
<tr>
<td>Solid waste</td>
<td>Municipal waste generation and disposal</td>
<td>P</td>
<td>N/Y</td>
</tr>
<tr>
<td>Solid waste</td>
<td>Expenditure on waste management services</td>
<td>R</td>
<td>-</td>
</tr>
<tr>
<td>Natural environment</td>
<td>Impact on natural habitats</td>
<td>P</td>
<td>N</td>
</tr>
<tr>
<td>Natural environment</td>
<td>Landscape - Visual impact</td>
<td>P</td>
<td>Y</td>
</tr>
<tr>
<td>Natural environment</td>
<td>Natural and protected areas</td>
<td>S</td>
<td>N/Y</td>
</tr>
<tr>
<td>Natural environment</td>
<td>Flora and fauna</td>
<td>S</td>
<td>N/Y</td>
</tr>
<tr>
<td>Natural environment</td>
<td>Land use</td>
<td>S</td>
<td>Y</td>
</tr>
<tr>
<td>Natural environment</td>
<td>Area of invasive plant species rehabilitated annually</td>
<td>R</td>
<td>-</td>
</tr>
</tbody>
</table>

*Table 3.1b* shows the proposed indicators for socio-economic issues, which refer to the following components: demographics, economy, land use, water use, infrastructure, health, education, community attitudes.

In developing socio-economic indicators we have taken into account the need to integrate, wherever possible, socio-economic and environmental issues. We have also considered the need to capture both qualitative and quantitative data. The PSR model has been taken into account for environmental issues, but, given its limitations in the area of socio-economic impacts, it has not been adopted as the 'model' for the indicators to be used to monitor and characterise socio-economic impacts and outcomes.
### Table 3.1b Proposed Socio-Economic Indicators

<table>
<thead>
<tr>
<th>Issue</th>
<th>Indicator</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>Change in demographic structure of PAC’s (1)</td>
<td>This should be analysed at both individual PAC and at aggregate PACs level.</td>
</tr>
<tr>
<td></td>
<td>Change in demographic structure of PAC’s compared to National Trend.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Change in numbers of minority groups in the Project Area.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Roma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Serbians</td>
<td></td>
</tr>
<tr>
<td>Economy</td>
<td>% of PAC economically active population in employment (sub divided into</td>
<td>This should include data for the PACs as a whole and for individual communities. This</td>
</tr>
<tr>
<td></td>
<td>male/female/youth (&lt;21 years)</td>
<td>will assist in the spatial analysis of the impacts and benefits of the development.</td>
</tr>
<tr>
<td></td>
<td>% of PAC economically active population receiving pensions</td>
<td>As above.</td>
</tr>
<tr>
<td></td>
<td>% of PAC population receiving disability pensions.</td>
<td>As above.</td>
</tr>
<tr>
<td></td>
<td>% of PAC population directly employed by the mine.</td>
<td>As above.</td>
</tr>
<tr>
<td></td>
<td>Number of people in the PACs employed by suppliers to the mine.</td>
<td>As above.</td>
</tr>
<tr>
<td></td>
<td>% of people in PACs employed full time in agriculture.</td>
<td>As above.</td>
</tr>
<tr>
<td></td>
<td>% of PAC population involved in the informal economy.</td>
<td>As above.</td>
</tr>
<tr>
<td></td>
<td>Average wage level in PACs in comparison to the national average.</td>
<td>As above.</td>
</tr>
<tr>
<td></td>
<td>% of businesses registered, owned or operated in the PACs with contracts to supply the mine.</td>
<td>As above.</td>
</tr>
<tr>
<td>Land Use</td>
<td>% change in registered land use (by cadastral categories / classification of usage) in the PACs.</td>
<td>This should be for each community not for the PACs as a whole. This should be for both PACs as a whole and the individual communities.</td>
</tr>
<tr>
<td></td>
<td>% of families owning land in the PACs.</td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td>% of population in PACs with access to adequate drinking water.</td>
<td>At both individual community and all PACs level.</td>
</tr>
<tr>
<td></td>
<td>% of population in PACs with access to sanitation.</td>
<td>As above.</td>
</tr>
<tr>
<td></td>
<td>% of population in PACs with access to waste disposal facilities.</td>
<td>As above.</td>
</tr>
<tr>
<td></td>
<td>% of PAC residents satisfied with access to public transport.</td>
<td>Based on periodic survey of PAC residents.</td>
</tr>
<tr>
<td></td>
<td>% of PAC residents satisfied with quality of public transport.</td>
<td>As above.</td>
</tr>
<tr>
<td></td>
<td>% of PAC residents satisfied with access to electricity.</td>
<td>As above.</td>
</tr>
<tr>
<td>Health</td>
<td>Per capita provision of hospital beds within PAC area-compared to national levels.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Per capita provision of doctors within PAC area-compared to national levels</td>
<td></td>
</tr>
</tbody>
</table>

(1) PAC = Project Affected Community
<table>
<thead>
<tr>
<th>Issue</th>
<th>Indicator</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Infant mortality within PAC area-compared to national levels.</td>
<td>Based on periodic surveys of PAC residents.</td>
</tr>
<tr>
<td></td>
<td>Level of satisfaction of PAC population with available health infrastructure.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Life expectancy in PAC area-compared with national statistics.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Levels of disability (physical and mental) within PAC area-compared with national data and also as a trend within PACs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Incidence of noise-related health problems in the PAC area.</td>
<td>This should be based on periodic surveys of PACs.</td>
</tr>
<tr>
<td></td>
<td>Incidence of respiratory, reproductive, cardiovascular, oncological diseases compared to national averages.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Education % of PAC children finishing secondary education-as compared to national average</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of PAC children in higher education-as compared to national average.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of PAC residents attending skills development courses-(as compared to national average</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Community Attitudes % of PAC residents with a positive view of Community Development for a. Based on periodic surveys</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of PAC residents who feel that the impacts of mine development will be positive. As above.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of PAC residents who feel that their community has a positive future.     As above.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of PAC residents who feel that their key issues of concern are being addressed by the CDFs and municipal authorities As above.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>% of PAC residents who feel that their living environment is improving.     As above.</td>
<td></td>
</tr>
</tbody>
</table>

It is important to note that due to a number of circumstances, data was inadequate or unavailable for many of the selected indicators. Conclusions are thus based on available data and field observations. Where available, summary data tables are provided. Overall, there is a need for environmental monitoring equipment to be put in place at the mines and the plants, and plans made for such equipment at the proposed new developments. Issues requiring further investigation are discussed in detail in the following paragraphs.

3.2 Framework

3.2.1 Area of Interest

The area of interest for the proposed development (see Figures 3.2.1a and 3.2.1b) includes Bardh and Mirash lignite mines, Kosovo A and Kosovo B lignite fired thermal power plants (TPP) and the disposal sites related to the TPPs and mines, which are located in the municipality of Obiliq, about 3 km SW from the city limit of Pristina. The proposed New Mining Field is situated north of the Bardh and Mirash mines.
Figure 3.2.1a General Location of the Area of Interest

Figure 3.2.1b shows a more detailed location of the area of interest.

Topographical and Geographical Framework

The Kosova Coal Basin covers about 85 km from north to south with an average east–west extension of 10 km. Hence the deposit comprises some 850 km². Morphologically the Kosova Coal Basin forms an extended valley where the differences in elevation do not exceed 80 m. A central plane extends along the river Sitnica followed by a more hilly terrain approaching the mountains Cicavica Golesh and Sharr. The basin is surrounded by an elevated relief with Kopaonik massive, Kozic, Zhegovc Lisic in the East, Montenegro massive in the south and Cicavica, Golesh, Carnaleva as well as Sharr Mountains in the west and north-west. The surrounding mountains reach elevations from 900 to more than 1,600 m.
The area is located between the Sitnica River valley in the east, with elevations of about +525 m above sea level, and a mountain chain extending north to south, with elevations exceeding +750 m above sea level. To the west lies the Drenica River valley, with elevations of about +550 m above sea level, and Cicavice hill. The power plants are located in a flat area.

The future mining field today forms a hilly surface with elevation from typically +570 mMSL to +670 mMSL. Characteristic landmarks are a N-S stretched hill with the village of Hade (up to +656 mMSL) and a range of hills extending in E-W direction between Lajthishte and Shipitulla (up to +666 mMSL). Associated with these hills are valleys following N-S directions east (down to +570 mMSL) and west (down to +550 mMSL) to the village of Hade and the valley of the Sibovc river (about +560 mMSL) in the north following SW-NE directions.

A portion of the municipalities of Fushe Kosova and Vushtrri falls into in the area of interest. The land surrounding the mining area is mainly used for agriculture, with only a few small forests in the northern part of the basin.

The most important activities in this area from an environmental point of view are mining of lignite coal and power generation. Exploitation of the lignite is carried out since almost 100 years and large-scale operation as it is seen today with open cast mining and power generation has been going on for about 40 years without much concern for the impacts on the environment.

Adjacent to the TTPA is located an old and abandoned industrial area where a gasification plant and a facility producing fertilisers were operating until more than 10 years ago.

The impact of the previous activities (gasification and fertilisers plants included) is today seen as contaminated soil and infiltration of trace metals and salts in the soils resulting in contamination of rivers and groundwater. Hence, the current contamination of rivers and groundwater is not only related to the current activities.

There is no other heavy polluting industry in the area and traffic is the only other source of pollution (the nearest industrial area is in Mitrovica about 30 km north-northwest of the site).

Socio-Economic Framework

There are 20 towns and villages in the area of interest. Most of them (towns of Obiliq and Fushe Kosova and villages of Bardh, Grabovc i Poshtem, Hade, Palaj/Crkvena Vodica, Lajthishte, Sibovc, Dardhishte, Shipitulle and Plemetin) are located close enough to the existing mines and power plants sites to be substantially affected by the environmental pollution that they generate.
In 2003/2004, due to an increased risk of slope failure, part of Hade village was resettled.

The majority of the population in the area is Kosovo Albanian. The villages of Babimoc/Babin Most, Millosheve/Milosevo, Plemetin/Plemetina and Palaj/Crkvena Vodica are inhabited primarily by Kosovo Serbs and other non-Albanian ethnic minorities.

Although an official census has not been conducted since 1981, the estimated population of Obiliq municipality is around 32,300. There are around 5,300 inhabitants in town and 27,000 in the rural areas. The average population density is 304 persons per km² (higher than the Kosovo average of 193 per km²). The population density is variable from one settlement to the other.

3.2.2 Brief Description of Existing Facilities

Korporata Energjetike e Kosovës (Kosovo Energy Corporation, KEK) has recently split into two joint associations, KEK J.S.C. and KOSTT J.S.C., as part of the process of moving from a publicly-owned enterprise to a joint stock company. The mines, TPPs and disposal sites are owned by KEK J.S.C; their installed capacity is 1,478 MW but overall effective capacity ranges from 645 to 710 MW.

The most important activities in the area are mining of lignite coal and power generation. Lignite has been mined here for nearly a century. Large-scale open cast mining operations and power generation have been in place for about 40 years, for most of that time with little concern for environmental impacts. Excavated overburden from initial surface mines was dumped outside the open cast mines, with seven dumps now surrounding the present mining area.

Previous Figure 3.2.1b shows the layout of mines, power plants and disposal sites.

Adjacent to the Kosovo A site, where the power plant continues to operate, is an abandoned industrial area where a gasification plant and fertilizer factory were in operation until 20 years ago. The impact of activities in the area (including the gasification and fertilizers plants) is seen today in contaminated soil and infiltration of trace metals and salts in the soils leading to pollution of rivers and groundwater.

The following paragraphs present a brief description of the mines and the power plants. A full environmental assessment of KEK’s existing generation and mining installations and facilities is presented in Annex A.

3.2.2.1 Bardh and Mirash Mines Description

Mining operations are carried out in two surface mines, Bardh and Mirash, which cover an area of approximately 9 km² (see Figure 3.2.1b). Annual coal production is currently around 7 million tons. Bardh and Mirash mines supply Kosovo B and Mirash alone supplies Kosovo A. Lignite is excavated by bucket wheel excavators and transported by two belt conveyor lines (transport capacity of 1,400 t/h - 33,000 t/day per belt) to the separation plants. The lignite is deposited close to power plants, in open yards.

Both mines work in the same area with opposite advance directions. In 2005 restructuring measures became necessary because the two opencast mines of Bardh and Mirash interconnected in increasing scale. Since then both opencast mines have been developed as one mine. Nevertheless, the mines are called further on by their original names. The first excavator was already set free and was moved into the future field of Sibovc-SW (North of Bardh). Presently five overburden lines are in operation in the mine complex, one of them in the future mine.

The Bardh Open-Cast Mine (see Figure 3.2.2.1a) has an exploitation area at the length of 2.5 km and width of 1.8 km, namely around 4.5 km². The open-cast mine has installed equipment with a lignite exploitation capacity of 8.2 x 10⁶ t/year and 14 x 10⁶ m³/year of overburden.

Figure 3.2.2.1a Bardh Mine
The Mirash Open-Cut Mine is located in a surface area of ca. 10.2 km$^2$. The design capacity of the mine is 8.6 x 10$^6$ t/year of lignite and 14x10$^6$ m$^3$/year of overburden.

Besides the overburden, the ash of both TPP’s was dumped on outside dumps for a long time. Only for TPP B the ash dumping has been changed to inside spoiling in the residual hole of the former Mirash-East mine (see Figure 3.2.2.1b).

Figure 3.2.2.1b  Ash Dump at Mirash East

3.2.2  Kosovo A and Kosovo B Power Plants Description

The power plants and the disposal sites are located in the municipality of Obilic (see Figure 3.2.1b), about 3 km from the city of Pristina. The average altitude is around 550 m above sea level.

Kosovo A has 5 units that were built in two phases (from 1962 to 1964 and from 1970 to 1975). Kosovo B has 2 units built between 1983 and 1984. The two power plants differ in terms of environmental impact due given their differences in age and technology.

Installed and available net capacity of TTP A and TPP B is reported in the following Table 3.2.2.2a together with used fuel and operation year.
Table 3.2.2.2a  
**Total TPP A and TPP B Nominal Installed Capacity, Available Capacity, Used Fuel and Operation Year**

<table>
<thead>
<tr>
<th></th>
<th>Installed capacity [MW]</th>
<th>Available net capacity [MW]</th>
<th>Fuel</th>
<th>Operated since</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kosovo A</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit A1</td>
<td>65</td>
<td>25</td>
<td>Lignite/Diesel</td>
<td>1962</td>
</tr>
<tr>
<td>Unit A2</td>
<td>125</td>
<td>0</td>
<td>Lignite/Diesel</td>
<td>1964</td>
</tr>
<tr>
<td>Unit A3</td>
<td>200</td>
<td>125</td>
<td>Lignite/Diesel</td>
<td>1970</td>
</tr>
<tr>
<td>Unit A4</td>
<td>200</td>
<td>125</td>
<td>Lignite/Diesel</td>
<td>1971</td>
</tr>
<tr>
<td>Unit A5</td>
<td>210</td>
<td>0</td>
<td>Lignite/Diesel</td>
<td>1975</td>
</tr>
<tr>
<td><strong>Total A</strong></td>
<td>800</td>
<td>275</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kosovo B</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit B1</td>
<td>339</td>
<td>277</td>
<td>Lignite/Heavy Fuel Oil</td>
<td>1983</td>
</tr>
<tr>
<td>Unit B2</td>
<td>339</td>
<td>277</td>
<td>Lignite/Heavy Fuel Oil</td>
<td>1984</td>
</tr>
<tr>
<td><strong>Total B</strong></td>
<td>678</td>
<td>554</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Units of Kosovo A power plant do not work continuously due principally to maintenance operations:

- A1 unit is rarely put into operation;
- A2 unit is out of service since a long time because of the failure of the main transformer;
- A3 unit is presently working up to 125 MW because of damages in boiler that do not allow pressure to reach the designed value;
- A4 unit was repaired and is capable of producing 125 MW;
- A5 unit is no more in function because part of the machinery has been used to repair units A3 and A2.

During 2006 and 2007 in the units A3 and A4 the emergency reparation of boilers and capital overhauls of the units has been carried out. Works are undergoing with unit A5, they have been started in 2007 and will be completed in 2008. Commercial operation is expected at the beginning of April 2008.

Kosovo B consists of two units, B1 and B2, with thermal capacity of about 850 MW$_{th}$ each. Also Units of Kosovo B power plant do not work continuously due principally to maintenance operations. In both units of Kosovo B during 2007 capital overhauls have been carried out.

The power generation efficiency as estimated in Carl Bro assessment is 16-25% at Kosovo A and 30% at Kosovo B, even if official data give higher efficiencies as follows:

- 27% for each unit of Kosovo A;
• 30 and 32% for the two units of Kosovo B.¹

*Figure 3.2.2.2a* shows a picture of Kosovo A, while *Figure 3.2.2.2b* shows a picture of Kosovo B.

*(1)* "Environmental Monitoring Report- First 6 months of 2006" issued by KEK (lignite combustion heat and electric power production) and KEK Environmental Report 2006
Coal is sent by open belt conveyer from the mines to the separation plant and then is distributed by internal belt conveyer systems.

Bottom ash (slag) and fly ash are produced in the combustion process in the ration about 1:9. The quantities of ash produced depend mainly on the content of non combustible materials in the lignite (soil). Bottom ash and fly ash from Kosovo A (unit 1 and 2) is transported to the disposal sites as slurry without re-circulation of the water. Fly ash from other unites is dry-transported by air to a temporary storage at the plants where is mixed with water and transported by belt conveyers to the disposal site close to the power plants. Particles of fly ash are typically between 30 µm and 5 µm.

Kosovo A has five stacks 100 m high, while Kosovo B has only one stack 182 meters high. Dust capture is provided by electrostatic precipitators in all units. There is neither desulphurization nor denitrification in both Kosovo A and Kosovo B.

The power plants are not provided with waste water treatment plants.

The water necessary to the plant to prepare process water is taken from the Llapi river flowing nearby the power plant; when the river flow rate is too low (in summer season) water is taken from the Iber Lepenc channel. The solid residuals from water treatment are disposed together with ashes. The installations are badly maintained.
In Kosovo a site is located a Drying Plant in which a minor part of lignite is transported and treated to be sold to industrial costumers. The coal drying plant is working at 1-2% of the installed capacity.
3.3  **ENVIRONMENTAL BASELINE**

3.3.1  **Air**

3.3.1.1  **Pressure**

The main pressures on air in the study area are related to:

- emissions from lignite mining activities;
- emissions from lignite fired power plants;
- emissions from ash disposal;
- emissions related to traffic and heating systems, especially in Prishtina and Obiliq.

The Trepca mining/metallurgy complex is in Mitrovica, about 30 km north-northwest of the site. Around 20 km west of Prishtina and 10 km from the site is the Alferon/Feronikeli mine/smelter.

Details on air emissions from mines and power plants are reported in *Annex A* (Environmental Assessment Report).

**Mine Activity Emissions**

Particulates are the main air emissions generated by the mines (see Figure 3.3.1.1a). Coal dust from the active mining area is a large contributor to air pollution. According to the consultations conducted, the residents of Grabovci Poshtem village are particularly affected by this, because of their close proximity to Sibovc South West mine. Residents of Dardhishte (located between Mirash mine and the ash dump at Kosovo A) have concerns about the impact of ash and particulate on their quality of life; please see Paragraph 3.4.17 for further information. Furthermore, the unpaved roads in the mines are other sources, as well as excavators, trucks and the lignite smouldering fires. No measurements of air emission inside the mines are available.
It can be assumed that dust/particulate matter and exhaust gases from the fires are the major sources of air pollution inside the mines.

Fires due to spontaneous combustion of lignite (see Figure 3.3.1.1b) occur in the slope system of the open pits from Mirash and Bardh, and more sporadically, in excavation fronts and lignite storage piles. Lignite seams ignite due to the oxidation of combustible sulphur, which in contact with the atmospheric oxygen produces the heat energy needed for self-combustion.

Common methods used to prevent and combat coal fires are:

- Covering the lignite fires with soil or overburden material to restrict oxygen supply;
- Excavating and isolating the burning material;
- Injection of chemical foams or other mixtures into the fractures to extinguish the lignite fire by cutting off the oxygen supply;
- Fighting the fires with water.
At KEK’s mines, some isolated measures have been taken in order to stop severe fires, such as local covering with overburden clay material or injection of bentonite. However, there is no action plan to fight this problem so far.

Main environmental effects on air of lignite spontaneous combustion are:

- Greenhouse gas emissions (e.g. CO₂, CH₄, NOₓ, etc);
- Emission of toxic gases and their immission in the area such as CO, N₂O, SOₓ etc.

Air pollution is a health risk for workers and others living nearby the mines. Residents of Dardhishtë, Hade, Palaj and Grabovc i Poshtem are particularly concerned about health issues that they associate with the mines and power plants. Respiratory diseases are prevalent health complaints in these communities (for further information please see Paragraph 3.4.12). During project community consultations, residents have complained about the poor air quality and effects of pollution (please see Paragraph 3.4.15). During the winter, the smoke combined with the micro-climate conditions generates a dense fog, which causes visibility problems.

Power Plants Emissions
Combustion of lignite in Kosovo A and Kosovo B power plants results in emissions of:
- particulate;
- SO₂ and NOₓ;
• soot, CO and hydrocarbons from incomplete combustion; and
• greenhouse gas CO$_2$.

In Kosovo A there are 5 stacks each 100 meters high, while Kosovo B has a single stack 182 meters high.
Electrostatic precipitators for the removal of solid particles are installed at both power plants, but are functioning at far lower efficiencies than designed. KEK personnel reported that, after the overhaul, dust emissions were reduced to about 400-500 mg/m$^3$ for Kosovo A and to 150 mg/m$^3$ for Kosovo B, also due to the fact that the power plants are operating not at full load.
There is no desulphurisation or denitrification process at either plant.

Odor is another concern in the villages close to the plants (please see Paragraph 3.4.15 for more information about effect of smell on residents). No odor measurement is available.

Emissions from Ash Disposal
At Kosovo A, ash handling is hydraulic for two of the units (A1-A2) and mechanical, using conveyor belts, for the other three (A3-A5): the ash is carried to ash dumps located in the direct vicinity of the plant.
The system has been in operation for over 40 years and is in poor condition; particulate emission rates are high and have a serious impact on the environment. Particulate pollution occurs at all operation points, at the bunkers, along the belt conveyors, at the discharge points, and during the dumping and levelling process.

Traffic and Heating System Emissions
At present, there is limited information on the number or type of motor vehicles in the area. Data on the heating systems, both district heating and household oil/coal/wood fired heating systems is also poor. Therefore, it is not possible at present to accurately estimate the impact from these types of emissions on air quality in the area.

Motor vehicles in Kosovo are generally quite old, class of emission Euro 1 to Euro 3. As a consequence, specific emission rate per vehicle should be quite high. Nevertheless, the impact of traffic emissions on the air quality of the interested area should be negligible: most of the traffic is concentrated in Pristina, more than 3 km far from the boundary of the area interested by the development, and traffic emissions influence significantly air quality up to about 500 m from emission sources.

Although Termokos during heating season burns heavy quantity of oil (around 15,000 tons), due to the distance of the area from Pristina, emissions from the heating system should also not impact significantly the area.
Emissions of Greenhouse Gasses

Mines
There is no emission monitoring at the mines, therefore the respective air emissions can only be estimated. Carl Bro EA Report (2002) estimated that about 2.5 million tons of lignite are burned annually and affect an area of about 1 km², producing about 1,743,000 t of CO₂ and about 423,000 t of CH₄.

It has to be taken into account that the greenhouse effectiveness of methane, produced during lignite self combustion, is approximately 21 times higher than the one of carbon dioxide, and that the CH₄ annual emissions from coal self-burning would be only 6.4 times lower than the total CH₄ emissions in Germany.

Power Plants
Calculation performed by KEK Environmental Department on CO₂ emissions (t/year) from Kosovo A and B for the period 2003-2006, as reported in KEK Environment Report 2006, are presented in the following Table 3.3.1.1a.

| Table 3.3.1.1a CO₂ Emissions (t/year) from Kosovo A and B for 2003-2006 |
|-----------------------------|-------------------|-------------------|-------------------|-------------------|
|                            | 2003              | 2004              | 2005              | 2006              |
| Power plant                | ton/year          |                   |                   |                   |
| Kosovo A                   |                   |                   |                   |                   |
| A 1                        | 167,474.00        | 9,190.00          | 118,831.00        | 19,795.12         |
| A 2                        | -                 | -                 | -                 | -                 |
| A 3                        | 728,375.00        | 466,858.00        | -                 | 596,727.32        |
| A 4                        | 909,951.00        | 189,381.00        | -                 | -                 |
| A 5                        | 618,023.00        | 756,111.00        | 1,019,102.00      | 916,408.00        |
| Kosovo B                   |                   |                   |                   |                   |
| B 1                        | -                 | 1,876,681.00      | 1,768,446.00      | 1,646,275.18      |
| B 2                        | 2,530,897.00      | 1,477,701.00      | 2,155,334.00      | 1,962,599.00      |

The CO₂ emission indicator, as reported by KEK, is considered quite reliable: these emissions are calculated from total lignite used and according to lignite composition measurements carried out on a regular basis. The method used for the calculation is not known.

Less reliable appear the emission calculations of CO₂ and CH₄ from mines. These evaluations are based on assumptions not clearly detailed.

Emissions of CO, SO₂, NOx, Particulate
No measurements of emissions from the mines are available. Reportedly, in the past one complaint has been filed by the population of Grabovc, West of the Mines, relating to dust emissions due to the operation of the mine.
A monitoring plan for air emissions (including NO\textsubscript{x}, SO\textsubscript{x}, and particulate) from both Kosovo A and Kosovo B power plants is available but is not carried out due mainly to limited budget availability.

The air emissions for the power plants have been calculated based on fuel characteristics and combustion process parameters (Stein methodology for SO\textsubscript{x} and particulate).

Kosovo B power plant is provided with equipment for online monitoring of particulate; nevertheless, measuring equipment is neither calibrated nor properly maintained. Monitored values are compared with calculated values.

In summary, there is practically no monitoring at the stacks. INKOS, the research and development institute of the Kosovo Electricity Company (KEK), is responsible for monitoring the plants’ environmental pollution. However, INKOS does not have sufficient equipment to carry out its responsibilities adequately. An efficient monitoring system is needed to obtain accurate measurements.

No emergency plan to be adopted in case of threshold limits exceedances is available.

No reliable data are available for Kosovo A and B emissions. Some indicative estimates are presented in Table 3.3.1.1b.

### Table 3.3.1.1b Indicative Emission Estimates for Kosovo A and B

<table>
<thead>
<tr>
<th>Polluters</th>
<th>Particulate* mg/Nm\textsuperscript{3}</th>
<th>NO\textsubscript{x} mg/Nm\textsuperscript{3}</th>
<th>SO\textsubscript{x} mg/Nm\textsuperscript{3}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kosovo A</td>
<td>700-1,300</td>
<td>~700</td>
<td>300</td>
</tr>
<tr>
<td>Kosovo B</td>
<td>150-230</td>
<td>500</td>
<td>400</td>
</tr>
</tbody>
</table>

Kosova A units have been designed for a maximum particulate emissions of 560 mg/Nm\textsuperscript{3}. Nevertheless, at the current lignite quality and maintenance of electrostatic precipitators, the emission levels at Kosovo A power plant are higher. KEK personnel reported that, after the overhaul, dust emissions were reduced to about 400-500 mg/m\textsuperscript{3} for Kosovo A and to 150 mg/m\textsuperscript{3} for Kosovo B, also due to the fact that the power plants are operating not at full load.

Elektrowatt-Ekono carried out emissions measurements on both lines of electrostatic precipitators of Kosovo B\textsubscript{1} boiler in October 2005. The results are presented in the following Table 3.3.1.1c.

### Table 3.3.1.1c Emissions from Line 1 and Line 2 of Kosovo B\textsubscript{1} Boiler Performed by Elektrowatt-Ekono in 2005

<table>
<thead>
<tr>
<th>Polluters</th>
<th>Particulates mg/Nm\textsuperscript{3}</th>
<th>SO\textsubscript{2} mg/Nm\textsuperscript{3}</th>
<th>NO\textsubscript{x} mg/Nm\textsuperscript{3}</th>
<th>CO mg/Nm\textsuperscript{3}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td>577</td>
<td>142</td>
<td>661</td>
<td>73</td>
</tr>
<tr>
<td>Line 2</td>
<td>526</td>
<td>332</td>
<td>713</td>
<td>113</td>
</tr>
</tbody>
</table>
The results of the calculation performed by KEK Environmental Department on air emissions (t/year) from Kosovo A and Kosovo B power plants for the period 2003-2006, as reported in KEK Environment Report 2006, are presented in the following Tables 3.3.1.1d and 3.3.1.1e.

Table 3.3.1.1d  
**Air Emissions (t/year) from Kosovo A Power Plant for 2003-2006**

<table>
<thead>
<tr>
<th>Kosovo A</th>
<th>Emission</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ton/year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 1</td>
<td>SO₂</td>
<td>156.00</td>
<td>5.00</td>
<td>253.00</td>
<td>27.5620</td>
</tr>
<tr>
<td>A 1</td>
<td>NOₓ</td>
<td>460.00</td>
<td>25.00</td>
<td>313.00</td>
<td>53.94</td>
</tr>
<tr>
<td>A 1</td>
<td>Particulate</td>
<td>413.46</td>
<td>22.29</td>
<td>222.46</td>
<td>36.90</td>
</tr>
<tr>
<td>A 2</td>
<td>SO₂</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A 2</td>
<td>NOₓ</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A 2</td>
<td>Particulate</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>A 3</td>
<td>SO₂</td>
<td>678.00</td>
<td>263.00</td>
<td>-</td>
<td>832.33</td>
</tr>
<tr>
<td>A 3</td>
<td>NOₓ</td>
<td>2004.30</td>
<td>1290.00</td>
<td>-</td>
<td>1597.01</td>
</tr>
<tr>
<td>A 3</td>
<td>Particulate</td>
<td>3174.14</td>
<td>2103.03</td>
<td>-</td>
<td>1612.74</td>
</tr>
<tr>
<td>A 4</td>
<td>SO₂</td>
<td>847.00</td>
<td>106.00</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A 4</td>
<td>NOₓ</td>
<td>2504.00</td>
<td>523.00</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A 4</td>
<td>Particulate</td>
<td>4254.74</td>
<td>885.90</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A 5</td>
<td>SO₂</td>
<td>576.00</td>
<td>425.00</td>
<td>2168.00</td>
<td>1310.30</td>
</tr>
<tr>
<td>A 5</td>
<td>NOₓ</td>
<td>1701.00</td>
<td>2090.00</td>
<td>2687.00</td>
<td>2512.67</td>
</tr>
<tr>
<td>A 5</td>
<td>Particulate</td>
<td>2658.56</td>
<td>3301.21</td>
<td>3497.71</td>
<td>3846.44</td>
</tr>
</tbody>
</table>

Table 3.3.1.1e  
**Air Emissions (t/year) from Kosovo B Power Plant for 2003-2006**

<table>
<thead>
<tr>
<th>Kosovo B</th>
<th>Emission</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>ton/year</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 1</td>
<td>SO₂</td>
<td>-</td>
<td>1713.00</td>
<td>4875.00</td>
<td>2376.10</td>
</tr>
<tr>
<td>B 1</td>
<td>NOₓ</td>
<td>-</td>
<td>5934.00</td>
<td>5474.00</td>
<td>5158.80</td>
</tr>
<tr>
<td>B 1</td>
<td>Particulate</td>
<td>-</td>
<td>2691.34</td>
<td>2340.57</td>
<td>3373.55</td>
</tr>
<tr>
<td>B 2</td>
<td>SO₂</td>
<td>3972.00</td>
<td>1348.00</td>
<td>5942.00</td>
<td>2963.75</td>
</tr>
<tr>
<td>B 2</td>
<td>NOₓ</td>
<td>8037.00</td>
<td>4672.00</td>
<td>6672.00</td>
<td>6097.00</td>
</tr>
<tr>
<td>B 2</td>
<td>Particulate</td>
<td>3952.37</td>
<td>2119.17</td>
<td>2852.62</td>
<td>3934.90</td>
</tr>
</tbody>
</table>

The report of EAR “Prefeasibility Study of pollution mitigation measures at Kosovo B Power Plant” presents the following remarks about dust emissions: “During the site visit the continuous measurements showed values of about 510 - 520 mg/m³ in the control room, but the newly installed measuring equipment at Kosovo B unit B2 was said not to be calibrated and to be wrongly installed (vibrations). The results of the dust emission measurements of unit B1 in October 2005 were 526 - 577 mg/Nm³ (dry gasses, standard conditions, 6 % O₂). The dust emissions from unit B2 could not be measured as the unit was being repaired during the measuring period.

As the ESP of unit B2 has been reconstructed recently it is likely that the dust emissions from this unit are at least somewhat lower.
With the calculated consumption of lignite and air the emissions of dust from Kosovo B in the year 2002 Carl Bro Group (2003) calculated the dust emissions as follows:

<table>
<thead>
<tr>
<th>Kosovo B</th>
<th>Unit B1</th>
<th>Unit B2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 218 t</td>
<td>2 109 t</td>
<td>4 327 t</td>
</tr>
<tr>
<td></td>
<td>250 mg/m³</td>
<td>250 mg/m³</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Much lower values were reported by KEK. As the dust emissions of unit B1 were measured to be more than double that of the estimated emissions in the table above it can be concluded, that the total dust emissions of Kosovo B are currently most likely significantly higher than the amounts calculated by Carl Bro Group in 2003.

The annual quantity particulate matter emissions from Kosovo B are significant and dust also forms a significant health problem for the workers at the plant.

According to the European Union (EU) Large Combustion Plants (LCP) directive¹, the emissions limits set for existing power plants above 500 MWth for particulate, nitrogen oxides (NOx) and sulfur dioxide (SO₂) are as presented in Table 3.3.1.1f; emission limits for CO are not defined in the LCP directive.

Table 3.3.1.1f  
**Emission Limits for Solid Fuel Fired Plants set in the EU LCP - Directive (for Boilers with over 500 MWth Capacity)**

<table>
<thead>
<tr>
<th>POLLUTANT</th>
<th>Monthly average:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO$_2$</td>
<td>for solid fuels ($O_2$ content 6 %):</td>
</tr>
<tr>
<td></td>
<td>$&gt;$500 MW$_{th}$: 400 mg/Nm$^3$</td>
</tr>
<tr>
<td>NO$_x$</td>
<td>for solid fuels ($O_2$ content 6 %):</td>
</tr>
<tr>
<td></td>
<td>$&gt;$500 MW$_{th}$: 500 mg/Nm$^3$</td>
</tr>
<tr>
<td></td>
<td>From 1 Jan 2016:</td>
</tr>
<tr>
<td></td>
<td>$&gt;$500 MW$_{th}$: 200 mg/Nm$^3$</td>
</tr>
<tr>
<td>Solid substances</td>
<td>for solid fuels ($O_2$ content 6 %):</td>
</tr>
<tr>
<td></td>
<td>$\geq$500 MW$_{th}$: 50 mg/Nm$^3$</td>
</tr>
</tbody>
</table>

1) Plants licensed before 1.7.1987 must either comply to these limit values by 1.1.2008, or they can be subject to a national emission reduction plan for existing plants.

2) Without prejudice to Directives 96/61/EC and 96/62/EC, existing plants may be exempted from compliance with the emission limit values referred to in Article 4(3) and from their inclusion in the national emission reduction plan on the following conditions:
   - The operator of an existing plant undertakes, in a written declaration [submitted by 30 June 2004 at the latest] to the competent authority, not to operate the plant for more than 20,000 operational hours starting from 1 January 2008 and ending no later than 31 December 2015;
   - The operator is required to submit each year to the competent authority a record of the used and unused time allowed for the plants’ remaining operational life.

3) Where the emission limit values above cannot be met due to the characteristics of the fuel, a rate of desulphurisation of at least 60 % shall be achieved in the case of plants with a rated thermal input of less than or equal to 100 MWth, 75 % for plants greater than 100 MWth and less than or equal to 300 MWth and 90 % for plants greater than 300 MWth. For plants greater than 500 MWth, a desulphurisation rate of at least 94 % shall apply or of at least 92 % where a contract for the fitting of flue gas desulphurisation or lime injection equipment has been entered into, and work on its installation has commenced, before 1 January 2001.

4) Plants, of a rated thermal input equal to or greater than 400 MW, which do not operate more than the following numbers of hours a year (rolling average over a period of five years),
   - until 31 December 2015, 2000 hours;
   - from 1 January 2016, 1500 hours;
   shall be subject to a limit value for sulphur dioxide emissions of 800 mg/Nm$^3$.

5) Until 31 December 2015 plants of a rated thermal input greater than 500 MW, which from 2008 onwards do not operate more than 2000 hours a year (rolling average over a period of five years), shall:
   - In the case of plant licensed in accordance with Article 4(3)(a), be subject to a limit value for nitrogen oxide emissions (measured as NO$_2$) of 600 mg/Nm$^3$;
   - In the case of plant subject to a national plan under Article 4(6), have their contribution to the national plan assessed on the basis of a limit value of 600 mg/Nm$^3$.

From 1 January 2016 such plants, which do not operate more than 1500 hours a year (rolling average over a period of five years), shall be subject to a limit value for nitrogen oxide emissions (measured as NO$_2$) of 450 mg/Nm$^3$.

6) Until 1 January 2018 in the case of plants that in the 12 month period ending on 1 January 2001 operated on, and continue to operate on, solid fuels whose volatile content is less than 10 %, 1200 mg/Nm$^3$ shall apply.

7) A limit value of 100 mg/Nm$^3$ may be applied to plants licensed pursuant to Article 4(3) with a rated thermal input greater than or equal to 500 MW$_{th}$, burning solid fuel with a heat content of less than 5800 kJ/kg (net calorific value), a moisture content greater than 45 % by weight, a combined moisture and ash content greater than 60 % by weight and a calcium oxide content greater than 10 %.

Plants, which have been granted the original construction or operation license before 1.7.1987, like Kosovo A and B, have either to comply with the limits by 1.1.2008 or:
they can be subject to a so called "national emission reduction plan for existing plants", which every Member State can compile, or

the operator of such a plant can submit a written declaration to the competent authority, confirming that the plant will not be operated for more than 20,000 operational hours starting from 1 January 2008 and ending no later than 31 December 2015.

The LCP-directive also sets requirements for the monitoring equipment and practices of emissions from large combustion plants with a thermal input more than 100 MW.

By way of comparison Table 3.3.1.1g shows the applicable limits for Kosovo A and B, according to the LCP Directive, assuming the units are considered separately (with a capacity between 100 and 500 MW).

Table 3.3.1.1g
Applicable Emission Limit Values \(\text{mg/Nm}^3\) for Kosovo A and B (Existing Power Plants, EU LCP Directive)

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>(\text{SO}_2) [(\text{mg/Nm}^3)]</th>
<th>(\text{NO}_x) [(\text{mg/Nm}^3)]</th>
<th>Particulates [(\text{mg/Nm}^3)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit for Kosovo A (according to LCP Directive) (^{(3)})</td>
<td>1,200</td>
<td>600</td>
<td>100</td>
</tr>
<tr>
<td>Limit for Kosovo B (according to LCP Directive) (^{(3)})</td>
<td>400</td>
<td>500 (^{(1)})</td>
<td>50/100 (^{(2)})</td>
</tr>
</tbody>
</table>

\(^{(1)}\) After 1 January 2016 the limit is 200 \(\text{mg/Nm}^3\)

\(^{(2)}\) depending upon lignite characteristics (see note 7 of the previous Table 3.3.1.1f)

\(^{(3)}\) emissions limit values referred to existing plants with a capacity of 100-500 MW

The Kosovo Administrative Instruction on “The Rules and Standards of the Discharges on Air by the Stationary Sources of Pollution” sets air emissions limit values by stationary sources, methods and frequencies of air monitoring.

The Administrative Instruction is under approval at the Assembly of Kosovo.

The temporary threshold values (ELV) for large combustion plants using solid fuel are set in Article 90. Different emission limit values are fixed based on the following categories of heating power:

- from 50 MW to 100 MW;
- from 100 to 500 MW;
- more than 500 MW.

Emission limit values \(\text{mg/Nm}^3\) for air pollutants from TPP A and TPP B according to the Administrative Instruction on air emissions are presented in the following Table 3.3.1.1h.
**Table 3.3.1.1h Emission Limit Values (mg/Nm\(^3\)) for Air Pollutants According to Administrative Instruction**

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>SO(_2)</th>
<th>NO(_x)</th>
<th>Particulate</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPP A</td>
<td>400 - 2000(^1)</td>
<td>450-800(^2)</td>
<td>100</td>
</tr>
<tr>
<td>TPP B</td>
<td>650</td>
<td>300</td>
<td>50</td>
</tr>
</tbody>
</table>

\(^1\) The right values for TPP A is to be defined based on linear progression in the range 400 (500 MW) and 2000 (100 MW).

\(^2\) The right values for TPP A is to be defined based on linear progression in the range 450 (500 MW) and 800 (50 MW).

Based on the Administrative Instruction, TPP A and TPP B shall draw up appropriate programs for the progressive reduction of air emissions (SO\(_2\), NO\(_x\) and particulate) not later than 31 March 2008. Criteria of cooperation to prepare the “Program for efficient reduction” will be set up by MESP.

Furthermore, both power plants, in relation to plans for pollution reduction, are obligated to fulfil EU air emission standards before 31 December 2007.

In summary, Kosovo A and Kosovo B after 1 January 2008 will not be compliant to the LCP-directive and other international limits and will have to identify a road map to reduce their emissions.

**Pressure Indicators – Comments on Available Data and Suggestions**

The emission values are estimated through balances, therefore they give an idea of the real situation, but need to be better defined implementing an efficient monitoring system.

Nevertheless, the data available, while incomplete, demonstrate the heavy pressures on the environment:

- SO\(_2\), NO\(_x\) and particulate emissions are not in compliance with current EU standards and no efficient abatement systems are currently in place;
- uncovered ash dumps at both Kosovo A and Kosovo B and mine operations at Kosovo A constitute an extremely heavy source of particulate emissions, which is further aggravated in case of strong winds and dry periods. Mitigation measures are completely lacking.

Based upon the above, it may be concluded that:

- an air emission reduction program should be prepared and implemented for Kosovo A and B;
- ash should be disposed of using hydraulics rather than mechanical systems all locations to reduce dust;
- the slopes of the ash dumps should be flattened and vegetation established, to prevent further particulate emissions.
3.3.1.2 State

Climate

The Kosovo basin is characterized by continental climate with dry and warm summers and variable winter temperatures depending on the influence of high-pressure systems from Siberia or low-pressure ones from the Atlantic Ocean.

The average annual temperature is about +10°C. For the years 1979 to 1991 the range of temperatures is shown in the following Figure 3.3.1.2a with minimum temperatures in January and maximum in July. Lowest temperature ever measured is –25.2°C.

Figure 3.3.1.2a Variation of Monthly Mean Temperature

![Graph showing monthly mean temperature variations]

Source: Hydrometeorological Institute of Kosovo

Figure 3.3.1.2b shows a statistical compilation of monthly temperature, on the basis of eighteen years, presented in 2004 on www.qwikcast.com.
The wind is predominantly blowing from north and northeast with an average velocity near 3 m/s. Figure 3.3.1.2c shows wind velocities and directions recorded in 1985 by Rudarski Institute. The greatest wind velocity was recorded at 34.3 m/s blowing from the north.

Table 3.3.1.2a presents monthly temperature and wind values recorded in 2006 in Pristina.

Table 3.3.1.2a  Pristina - Temperature and Wind (2006)

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Aver.</th>
</tr>
</thead>
<tbody>
<tr>
<td>T max</td>
<td>0.6</td>
<td>4.1</td>
<td>9.8</td>
<td>17.2</td>
<td>21.3</td>
<td>24.9</td>
<td>27.5</td>
<td>27.2</td>
<td>23.4</td>
<td>19.5</td>
<td>10.5</td>
<td>4.7</td>
<td>15.9</td>
</tr>
<tr>
<td>T min</td>
<td>-7.5</td>
<td>-5.0</td>
<td>0.3</td>
<td>6.9</td>
<td>9.1</td>
<td>12.0</td>
<td>13.7</td>
<td>13.5</td>
<td>10.3</td>
<td>6.1</td>
<td>-1.4</td>
<td>-2.3</td>
<td>4.6</td>
</tr>
<tr>
<td>T aver.</td>
<td>-3.5</td>
<td>-0.9</td>
<td>5.1</td>
<td>11.7</td>
<td>15.2</td>
<td>18.8</td>
<td>21.5</td>
<td>20.2</td>
<td>16.8</td>
<td>12.4</td>
<td>5.3</td>
<td>7.2</td>
<td>10.8</td>
</tr>
<tr>
<td>Wind</td>
<td>1.2</td>
<td>1.2</td>
<td>2.0</td>
<td>1.2</td>
<td>1.5</td>
<td>0.9</td>
<td>1.4</td>
<td>1.0</td>
<td>1.0</td>
<td>1.3</td>
<td>0.9</td>
<td>2.2</td>
<td>1.3</td>
</tr>
</tbody>
</table>


Source: Rudarski Institute
The Hydro-Meteorological Institute of Kosovo produced a study in 1999 showing the monthly average precipitation for a period of 25 years. The Institute provided also monthly values for the years 1979 to 1995. By adding values for the years 2001 to 2004 this data base was widened to cover a period of 25 years (1979 – 2004). The data base was completed by an existing evaluation for the period 1948 to 1978. The average annual precipitation is about 600 mm. Minimum precipitation is described by the 1990 data at 372 mm. Using monthly values maximum annual precipitation was recorded at 1010 mm in the year 1995. A higher value of 1028 mm has been presented by Rudarski Institute (1985) but the year of appearance is lacking in the document.

The following Figure 3.3.1.2d shows the variation of average monthly precipitation. Statistically precipitation is rather evenly distributed with lower values from January to March and higher values throughout summer and autumn.

![Figure 3.3.1.2d](image)

**Figure 3.3.1.2d**  
Long-Term Variation of Monthly Precipitation

The range of monthly precipitation can be described on the basis of values recorded from the years 1979 until 2004. The average monthly precipitation is 56 mm. The following Figure 3.3.1.2e shows the range of possible monthly precipitation. For example within the month of August a minimum of 5 mm (year 1992) was recorded versus a maximum of 184 mm (year 2002). The Figure also shows that more than 80 mm of precipitation per month are possible all over the year.
The variation of daily precipitation values for the years 2001 to 2004 has been made available by the Hydrometeorological Institute of Kosova (see Figure 3.3.1.2f). High quantities of precipitation were recorded with 44.5 mm on 11 April 2001 and 42.5 mm on 8 August 2002. The absolute maximum recorded was achieved on 5 September 1954 with 64.1 mm (INKOS; 1987).

Figure 3.3.1.2f  Daily Precipitation

Source: Hydrometeorological Institute of Kosova

Air Quality

As discussed above, Kosovo A and B power plants (mainly when electrostatic precipitators are not working properly), ash dumping operations, the mines and ash dumps are today the largest sources of air pollution in Kosovo,
although the current poor air quality is also affected by private traffic (Euro 0 and Euro1 cars), private heating and seasonal burning of dry farm land.

Two air quality monitoring stations are present and were functioning in 2006: the first in Obiliq city and the second at the INKOS Institute near Kosovo A. Results of air monitoring in 2006, as reported in the KEK Environmental Report 2006, are presented in the following Table 3.3.1.2b.

<table>
<thead>
<tr>
<th>Month</th>
<th>SO$_2$ (µg/m$^3$)</th>
<th>Soot (µg/m$^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INKOS</td>
<td>Obiliq</td>
</tr>
<tr>
<td>1</td>
<td>9.20</td>
<td>13.70</td>
</tr>
<tr>
<td>2</td>
<td>9.34</td>
<td>19.81</td>
</tr>
<tr>
<td>3</td>
<td>9.21</td>
<td>13.70</td>
</tr>
<tr>
<td>4</td>
<td>42.00</td>
<td>22.50</td>
</tr>
<tr>
<td>5</td>
<td>27.59</td>
<td>29.10</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>21.00</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>9.88</td>
</tr>
<tr>
<td>8</td>
<td>-</td>
<td>11.80</td>
</tr>
<tr>
<td>9</td>
<td>-</td>
<td>15.20</td>
</tr>
<tr>
<td>10</td>
<td>-</td>
<td>19.30</td>
</tr>
<tr>
<td>11</td>
<td>-</td>
<td>31.40</td>
</tr>
<tr>
<td>12</td>
<td>-</td>
<td>41.07</td>
</tr>
<tr>
<td>Average</td>
<td>19.46</td>
<td>20.70</td>
</tr>
</tbody>
</table>

(1) The annual average standard is 30/50 µg/m$^3$, according to former Yugoslavia legislation, 40 µg/m$^3$, according to EU legislation, and 50/100 µg/m$^3$, according to World Bank (WB) Guidelines.

(2) PM10 (particulates smaller than 10 micrometer) are fine particulates and the fractions of particulates that are particularly harmful for public health. Soot has to be read as PM10 in former Yugoslavia methodology. The annual average standard is 30/50 µg/m$^3$, according to former Yugoslavia legislation, and 50/100 µg/m$^3$, according to WB Guidelines. EU standards have an annual average limit of 40 µg/m$^3$ and a daily limit of 50 µg/m$^3$ not to be exceeded more than 35 days per year.

Compared to air quality standards, the situation recorded at the monitoring stations does not appear critical. Nevertheless, not all relevant parameters are recorded and the reliability of the recorded values is uncertain. Other air quality measurements, reported from other sources, indicate that the situation is even worse. However, not enough information is available about the reliability and details of these measurements.

Air quality monitoring activity carried out in June 2007 in the sole Kastriot monitoring station, reported the following average concentrations:

- SO$_2$: 24.36 µg/m$^3$;
- Soot: 6.7 µg/m$^3$.

The KEK Environmental Report also contains information on particulate deposition rates from two locations: the first close to the separation facility and the second at Bardh mine.
Deposition rates are analysed pursuant to the German Standard VDI direction 2119 Blatt 2 (1972): samples are collected during a month, while results are presented in mg/(m²d). Sediment samples are used to determine total dust and soluble and insoluble matters. Sediments are analysed in:

- total dust;
- general inorganic matter;
- general soluble matter;
- pH;
- soluble chloride content;
- soluble sulphate content.

Tables 4.3.1.2c to 4.3.1.2f present the results of the sampling of total dust deposited, carried out in 2005 and 2006, in both locations.

**Table 3.3.1.2c**

<table>
<thead>
<tr>
<th>Total particulate (1)</th>
<th>Inorganic matters</th>
<th>Dissolvable matters</th>
<th>pH</th>
<th>Chloride</th>
<th>Sulfates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>2153.55</td>
<td>1813.04</td>
<td>340.51</td>
<td>8.50</td>
<td>4.67</td>
</tr>
<tr>
<td>3</td>
<td>827.73</td>
<td>685.89</td>
<td>141.84</td>
<td>7.44</td>
<td>3.26</td>
</tr>
<tr>
<td>4</td>
<td>558.23</td>
<td>392.19</td>
<td>166.04</td>
<td>7.70</td>
<td>5.43</td>
</tr>
<tr>
<td>5</td>
<td>1305.43</td>
<td>1050.15</td>
<td>255.28</td>
<td>7.65</td>
<td>2.34</td>
</tr>
<tr>
<td>6</td>
<td>2106.85</td>
<td>1656.51</td>
<td>450.34</td>
<td>8.32</td>
<td>3.50</td>
</tr>
<tr>
<td>7</td>
<td>2158.83</td>
<td>1855.57</td>
<td>303.26</td>
<td>8.97</td>
<td>5.37</td>
</tr>
<tr>
<td>8</td>
<td>1772.57</td>
<td>1512.03</td>
<td>260.54</td>
<td>8.36</td>
<td>4.80</td>
</tr>
<tr>
<td>9</td>
<td>1974.36</td>
<td>1747.86</td>
<td>226.50</td>
<td>7.93</td>
<td>3.85</td>
</tr>
<tr>
<td>10</td>
<td>1943.97</td>
<td>1758.47</td>
<td>185.50</td>
<td>7.08</td>
<td>5.75</td>
</tr>
<tr>
<td>11</td>
<td>734.92</td>
<td>582.45</td>
<td>152.92</td>
<td>7.70</td>
<td>3.95</td>
</tr>
<tr>
<td>12</td>
<td>1128.06</td>
<td>782.11</td>
<td>345.95</td>
<td>7.78</td>
<td>2.32</td>
</tr>
<tr>
<td>Average</td>
<td>1515.23</td>
<td>1257.84</td>
<td>236.56</td>
<td>7.91</td>
<td>4.23</td>
</tr>
</tbody>
</table>

(1) Total suspended matter as monthly maximum for rural and recreational areas, according to Official Gazette of Serbia, N. 54/99, is 300 mg/m²/day.

**Table 3.3.1.2d**

<table>
<thead>
<tr>
<th>Total particulate (1)</th>
<th>Inorganic matters</th>
<th>Dissolvable matters</th>
<th>pH</th>
<th>Chloride</th>
<th>Sulfates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2009.16</td>
<td>1768.21</td>
<td>240.95</td>
<td>8.07</td>
<td>3.09</td>
</tr>
<tr>
<td>2</td>
<td>1815.97</td>
<td>1597.33</td>
<td>218.64</td>
<td>8.11</td>
<td>3.94</td>
</tr>
<tr>
<td>3</td>
<td>600.21</td>
<td>445.92</td>
<td>154.29</td>
<td>7.70</td>
<td>3.95</td>
</tr>
<tr>
<td>4</td>
<td>914.48</td>
<td>821.73</td>
<td>92.75</td>
<td>7.50</td>
<td>2.30</td>
</tr>
<tr>
<td>5</td>
<td>1975.12</td>
<td>1850.54</td>
<td>124.58</td>
<td>7.72</td>
<td>2.80</td>
</tr>
<tr>
<td>6</td>
<td>1215.50</td>
<td>1103.05</td>
<td>112.45</td>
<td>7.72</td>
<td>2.31</td>
</tr>
<tr>
<td>7</td>
<td>3186.00</td>
<td>3065.77</td>
<td>120.23</td>
<td>7.89</td>
<td>2.72</td>
</tr>
<tr>
<td>8</td>
<td>1378.85</td>
<td>992.32</td>
<td>386.53</td>
<td>7.55</td>
<td>4.19</td>
</tr>
<tr>
<td>9</td>
<td>3528.73</td>
<td>3131.76</td>
<td>396.97</td>
<td>8.10</td>
<td>4.70</td>
</tr>
<tr>
<td>10</td>
<td>2163.36</td>
<td>2029.79</td>
<td>133.57</td>
<td>7.93</td>
<td>3.78</td>
</tr>
<tr>
<td>11</td>
<td>1395.69</td>
<td>1039.03</td>
<td>356.66</td>
<td>7.48</td>
<td>3.34</td>
</tr>
<tr>
<td>12</td>
<td>1395.69</td>
<td>1039.03</td>
<td>356.66</td>
<td>7.48</td>
<td>3.34</td>
</tr>
<tr>
<td>Average</td>
<td>1798.23</td>
<td>1573.70</td>
<td>224.52</td>
<td>7.77</td>
<td>3.37</td>
</tr>
</tbody>
</table>
At the separation facility, the deposition rate consistently exceeds (in both years) the limit of 300 mg/m²/d set by former Yugoslavia and WHO legislation (see Table 3.3.1.2k). At Bardh mine, the situation is slightly better but still critical: no exceeding for total deposition recorded in 2005, but values exceeded the limits for three months in 2006, even if the average annual value remains below the limit. Also pH limits are exceeded.

Additional data referring to 2002 (monthly average) immission results are presented in Table 3.3.1.2g for INKOS station (located at INKOS office, just
south of Kosovo A, between Kosovo A and the ash disposal) and in Table 3.3.1.2h for Bardh station.

**Table 3.3.1.2g**  
**Ambient Air Parameters (2002) - INKOS Station**

<table>
<thead>
<tr>
<th>Month</th>
<th>SO2 [µg/m³]</th>
<th>Solid Particles [µg/m³]</th>
<th>Smoke [µg/m³]</th>
<th>Sedimentation rate [mg/m²/d]</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>21,00</td>
<td>99,01</td>
<td>39,00</td>
<td>1027,00</td>
</tr>
<tr>
<td>February</td>
<td>21,80</td>
<td>88,00</td>
<td>10,75</td>
<td>1020,00</td>
</tr>
<tr>
<td>March</td>
<td>28,90</td>
<td>70,33</td>
<td>11,40</td>
<td>511,00</td>
</tr>
<tr>
<td>April</td>
<td>15,60</td>
<td>113,50</td>
<td>17,80</td>
<td>920,00</td>
</tr>
<tr>
<td>May</td>
<td>13,40</td>
<td>64,30</td>
<td>8,20</td>
<td>1111,60</td>
</tr>
<tr>
<td>June</td>
<td>15,30</td>
<td>64,22</td>
<td>8,40</td>
<td>454,00</td>
</tr>
<tr>
<td>July</td>
<td>14,08</td>
<td>53,50</td>
<td>7,14</td>
<td>248,60</td>
</tr>
<tr>
<td>August</td>
<td>14,32</td>
<td>63,30</td>
<td>7,90</td>
<td>176,40</td>
</tr>
<tr>
<td>September</td>
<td>9,90</td>
<td>123,50</td>
<td>6,50</td>
<td>781,81</td>
</tr>
<tr>
<td>October</td>
<td>45,46</td>
<td>125,50</td>
<td>7,16</td>
<td>386,40</td>
</tr>
<tr>
<td>November</td>
<td>4,09</td>
<td>98,70</td>
<td>8,70</td>
<td>641,80</td>
</tr>
<tr>
<td>December</td>
<td>16,42</td>
<td>57,30</td>
<td>12,14</td>
<td>1267,52</td>
</tr>
<tr>
<td>Average year</td>
<td>18,36</td>
<td>85,10</td>
<td>12,09</td>
<td>712,18</td>
</tr>
<tr>
<td>EU Directive</td>
<td>125,00</td>
<td>50,00</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Table 3.3.1.2h**  
**Ambient Air Parameters (2002) - Bardh Station**

<table>
<thead>
<tr>
<th>Month</th>
<th>SO2 [µg/m³]</th>
<th>Solid Particles [µg/m³]</th>
<th>Smoke [µg/m³]</th>
<th>Sedimentation rate [mg/m²/d]</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>February</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>March</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
<td>no data</td>
</tr>
<tr>
<td>April</td>
<td>34,00</td>
<td>199,10</td>
<td>11,70</td>
<td>909,00</td>
</tr>
<tr>
<td>May</td>
<td>21,50</td>
<td>126,60</td>
<td>10,23</td>
<td>905,80</td>
</tr>
<tr>
<td>June</td>
<td>11,03</td>
<td>98,20</td>
<td>7,03</td>
<td>214,60</td>
</tr>
<tr>
<td>July</td>
<td>10,98</td>
<td>80,90</td>
<td>7,46</td>
<td>667,00</td>
</tr>
<tr>
<td>August</td>
<td>8,90</td>
<td>118,80</td>
<td>9,70</td>
<td>124,10</td>
</tr>
<tr>
<td>September</td>
<td>6,80</td>
<td>137,50</td>
<td>6,40</td>
<td>971,60</td>
</tr>
<tr>
<td>October</td>
<td>no data</td>
<td>111,12</td>
<td>no data</td>
<td>254,25</td>
</tr>
<tr>
<td>November</td>
<td>no data</td>
<td>99,20</td>
<td>no data</td>
<td>144,03</td>
</tr>
<tr>
<td>December</td>
<td>14,00</td>
<td>99,90</td>
<td>18,85</td>
<td>3166,84</td>
</tr>
<tr>
<td>Average year</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>EU Directive</td>
<td>125,00</td>
<td>50,00</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

In both stations, dust values exceed EU limits while SO₂ values are well below the accepted maximum values.

As reference the following Tables 4.3.1.2i and 4.3.1.2j present a comparison of various ambient air quality guidelines/standards for selected parameters, at national and international (EU and WB) level.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Former Yugoslavia</th>
<th>EU Legislation</th>
<th>WB (1)</th>
<th>WB (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate Matter - PM$_{10}$ – soot</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td>30/50 (13)</td>
<td>40 (5)</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Maximum 1-hour</td>
<td>-/150 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour Average</td>
<td>40/50 (13)</td>
<td>50 (4)</td>
<td>500</td>
<td>70</td>
</tr>
<tr>
<td>98 percentile</td>
<td>50/150 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Suspended Particles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td>40/70 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour Average</td>
<td>70/120 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>98 percentile</td>
<td>100/200 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen Oxides, as NO$_2$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td>50/60 (13)</td>
<td>40 (5)</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Maximum 1-hour</td>
<td>85/150 (13)</td>
<td>200 (6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour Average</td>
<td>70/85 (13)</td>
<td>200</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>98 percentile</td>
<td>85/150 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td>30/50 (13)</td>
<td>100</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Maximum 1-hour</td>
<td>150/350 (13)</td>
<td>350 (7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour Average</td>
<td>100/150 (13)</td>
<td>125 (8)</td>
<td>500</td>
<td>125</td>
</tr>
<tr>
<td>98 percentile</td>
<td>150/350 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead - Annual average</td>
<td>1 (14)</td>
<td>0.5 (9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzene - Annual average</td>
<td>800</td>
<td>5 (11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manganese - Annual average</td>
<td>1 (14)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chromium - Annual average</td>
<td>0.2 ng/m$^3$ (14)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadmium - Annual average</td>
<td>10 ng/m$^3$ (14)</td>
<td>5 ng/m$^3$ (12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arsenic - Annual average</td>
<td>2.5 ng/m$^3$</td>
<td>6 ng/m$^3$ (12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nickel – Annual average</td>
<td>2.5 ng/m$^3$</td>
<td>20 ng/m$^3$ (12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzo(a)pyrene – Annual average</td>
<td>0.1 ng/m$^3$</td>
<td>1 ng/m$^3$ (12)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(2) Directive 1999/30/EC.
(3) Directive 1999/30/EC. Not to be exceeded more than 35 times per calendar year.
(4) Directive 1999/30/EC. Not to be exceeded more than 18 times per calendar year. A limit of 300 µg/m$^3$ (50%) must be met on the 19 July 1999, reducing on 1 January 2001 and every 12 months thereafter by equal annual percentages to reach 0% (200 µg/m$^3$) by 1 January 2010.
(5) Directive 1999/30/EC. Not to be exceeded more than 3 times per calendar year.
(6) Directive 2004/107/EC sets “target values” for Arsenic, Cadmium, Nickel and benzo(a)pyrene. Target values are set on the total content in the PM$_{10}$ fraction averaged over a calendar year. Target values shall be met by 31 December 2012.
(7) Regulation on ambient air quality, criteria for sampling points and recordkeeping (Official Gazette of the Republic of Serbia, No. 54/92): Rural and recreation areas/Urban areas.
(8) Limit immission values for heavy metals in suspended particles.
Table 3.3.1.2j  
**Maximum Particulate and Heavy Metals Deposition Values (According to Official Gazette of Serbia, N. 54/99)**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Unit</th>
<th>Measuring time</th>
<th>Rural and recreational areas (average annual value)</th>
<th>Urban areas (average annual value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total suspended matter</td>
<td>mg/m²/day</td>
<td>1 month</td>
<td>300</td>
<td>450</td>
</tr>
<tr>
<td>Lead</td>
<td>µg/m²/day</td>
<td>1 year</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Cadmium</td>
<td>µg/m²/day</td>
<td>1 month</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Zinc</td>
<td>µg/m²/day</td>
<td>1 month</td>
<td>200</td>
<td>400</td>
</tr>
</tbody>
</table>

*State Indicators – Comments on Available Data and Suggestions*

**Climate**

Climatological data are scarce and only few are routinely recorded. Monitoring stations maintenance program is not known.

No data are available on atmospheric stability classes, statistics on wind direction or intensity or on temperature gradient; pollutant dispersion parameters therefore cannot be calculated.

New monitoring stations for meteorological parameters are needed and existing ones should be improved through installation of radiometers to measure solar radiation and temperature gradient, in order to be able to reconstruct stability classes.

The available data indicate that the prevailing wind comes from the N-NE. This means that villages more affected by air pollution are those located S-SW from Kosovo A and Kosovo B power plants, ash dumps and mine operating front.

**Air Quality**

Air quality data is limited and unsystematic. There is no data on NOx concentrations, for example. Information on data collection methodology and equipment maintenance programs was unobtainable, making the available data difficult to interpret. That said, the information available shows that air quality in the area is likely not in compliance with EU standards.

Particulate deposition measurements indicate heavy particulate pollution although soot concentrations appear to be below former Yugoslavia limits.

An air quality monitoring network, including continuous monitoring equipment, should be established as soon as possible (see Section 6) in the area of interest.
In summary, although data are not complete and further work is necessary to better quantify the air quality problems around the site, it appears evident that particulate pollution is the main problem to be solved around mines and power plants.

3.3.2 Soil and Groundwater

3.3.2.1 Pressure

The existing KEK facilities, as all industrial sites, represent a pressure on the environment, mainly in terms of occupied land and contamination of soil and groundwater and water abstraction.

Groundwater Abstraction

Presently no water abstraction wells are reportedly operated by the mines and the power plants. On the contrary there are some underground private wells used by the settlements of Shipitullë, Grabovc, Sibovc, Hamidi, Kozaricë, Bajmoc and Breznicië. The indicator “Groundwater abstraction” will not be calculated, since the project will not increase groundwater abstraction.

Landslides

Coal fires and mine activity may cause landslides and land subsidence in the affected area. Presently, there are no investigations about the extent of coal fires and their influence in reported landslides and the risks of subsidence in the deposit area, therefore the indicator “Landslides” cannot be calculated.

The recent Inception Report of the work “Site Investigation, Technical/Organizational Planning and Determination of Environmental Impact Assessment and Preparation of Environmental Management Plans Contract 4075 / 23.07.07” (shortly Kosovo A site investigation) indicates the possibility of slides in the Kosovo A ash dump site, with possible consequence for workers and environmental damages.

Occupied Land

In mining activities, as a result of removal of solid materials for unveiling lignite layers, a large surface area of land is covered and degraded: the solid material is distributed in several areas, in a form of landfills, which are often called overburden dumps.

Figure 3.3.2.1a gives an idea of the land occupied by existing KEK facilities. The areas degraded by overburden and ash cover an area of around 300 hectares.
In particular, the largest surfaces are occupied by:

- Bardh open-cast mine, which has an exploitation area at the length of 2.5 km and width of 1.8 km and covers an area of approximately 4.5 km²;
- Mirash open-cast mine, which is located in a surface area of approximately 10.2 km². In this area is also comprised the Mirash_East dumping area where, beside the overburden dumping, Kosovo B power plant ashes are disposed of;
- the South and West Overburden dumps, which cover more or less 6.5 km². The surface of the dump is more or less revegetated with a lot of sinks that are often water filled;
- the other overburden dumps, which cover more or less 9 km²;
- TTP A landfill with overburden, which occupies an area of approximately 240 ha;
- TPP B landfill occupies 55 - 60 ha.

Minor areas are occupied by the plants:

- Kosovo A and Kosovo B power plants;
- Gasification plant (no more in use), situated adjacent to TPP A, which covers an estimated area of roughly 102 ha;
- Fertilizer plant (no more in use), situated adjacent to TPP A.

Sources of Soil and Groundwater Contamination

Both groundwater and soil are most likely contaminated around mines and power plants.
Underground mining of the lignite was performed in a period from approximately 1922 to 1966 (STEAG 2006). Remains of old underground mining are situated in the south-eastern part of the Sibovc field, connected with the old mining structures, which are currently exposed along the coal cuts in Mirash West and on the Mirash northern slope, and underneath the ash dump of TPP A (STEAG 2006).

The gasification and fertilizer plants, which were in operation close to Kosovo A site until more than 10 years ago, represent a special problem. The occurrence of phenol deposits derived from the gasification plant have been described in several studies: quantities of phenol/water (about 15,000 m$^3$) and concentrated phenol (about 1,000 m$^3$) are stored at the gasification site with potential signs of leaching, but the quantities are reported small.

Reportedly condensates as PAH and Phenols of the gasification plant were dumped in the old underground mining galleries. The tar-like substance is hardened on the surface only, underneath the substance is viscous and degasses. The spatial distribution of this material is not sure up to now (VEM/DMT 2007).

Presently no monitoring results are available, but the groundwater in the area is most likely contaminated with phenols from this plant and oils (probably from gas production) and other contaminants from the fertilizer plant. The contamination of soil is visible all over the area and no actions have been taken so far to remove it.

At present, several heavy oil waste (tar) ponds have been identified in the ash dump sites of Kosovo A power plant.

Reportedly, the tar originating from the old oil gasification plant (about 1-2 m$^3$/d) was daily discharged in the ash dump of Kosovo A.

In mining activities, as a result of removal of top soil and other layers covering the lignite deposits, large areas of land are covered with these materials (“overburden”) and have degraded. The materials have been distributed in several areas, in the form of heaps, which are often called “overburden dumps.”

A “Site Investigation, Technical and Organisational Planning and Determination of Environmental Impact” was initiated in July 2007 as part of the Clean up and Land Reclamation Project (CLRP), which is intended to identify the extent of contamination and improve the environment around and in the KEK mines and power plants, by reducing particulate emissions from the existing Kosovo A ash dump.

Final goal of the project is to reclaim the ash landfill area of Kosovo A power plant. Three alternatives have been examined: the first foresees the ash relocation to exhausted existing mine, the second the relocation to an identified Sitnica field area and the third a redistribution of ash at the ash dump area. The third alternative seems at the moment the most probable.
The CLRP includes the following main investigation activities on the ash dumps/overburden and surrounding areas:

- geological exploration including drilling of 16 new boreholes; the additional 163 boreholes already drilled in the surrounding area of ash dump were also analysed to improve the interpretation results for the dump area;
- geo-mechanical laboratory analysis of the soil samples taken;
- geochemical analysis on soil samples;
- chemical analyses on new boreholes and open pits located downstream of ash dumps TPP A, water discharge from Mirash East existing mines; groundwater quality in the quaternary deposit and water samples from private wells in the nearby villages.

*Figure 3.3.2.1b* presents a map of the contaminated area.
Field investigations at the central part of the dump reported clearly that, besides the ashes, also hydrocarbons were dumped, which obviously derived from the gasification plant. Those materials, which appear similar to tar, can be found either on the surface of the dump either filled into unsealed basins.
(with floor spaces of more than 100 m²) or brought into especially erected drilled boreholes.

In the area around the nearby Dragodan overburden dump as well as at the ash dump close to Kosova A, many illegal garbage dumpsites were found containing municipal waste, building waste, other wastes from power plants, old rubber belts, metal scrap, etc.

The geochemical analysis included analysis of soil samples taken at different depths (from 0.50 to 80 meter) in 11 new boreholes for the detection of pH, calcium, magnesium, potassium, sodium and metals. Referring to Italian regulations on threshold values for soil quality, the analysis found several exceedances for some metals, especially Hg and Cr, and limited exceedances for Ni and Cd.

To the west of the ash dump, some 200 meters from the village of Dardhishte, a former ventilation shaft has been used for dumping tar and phenol residuals. This same practice has taken place at other former underground mines. Moreover, the open dumps do not have adequate lining or other soil protection devices and no mitigation measures are in place to avoid storm water runoff contamination.

The water sampling of groundwater and free surface water included the detection of BTEX, PAH and metals and reported exceedences of Benzene in groundwater samples downstream ash dump, probably due to the presence of tar-like by-products in the ash dumps and a limited exceedence of As.

Exploration drillings, carried out to identify the presence of hydrocarbons inside the ash or inside the soil and groundwater, did not detect any additional pollution.

Another source of possible soil and groundwater contamination is the ash landfill of Kosovo B power plant: the disposal areas do not have any structural protection against pollution of surface or groundwater and it is obvious that harmful substances infiltrate to the groundwater and/or flow to the river Sitnica.

INKOS has newly established monitoring points around the disposal sites. Some monitoring results are shown in Paragraph 3.3.3.1, Table 3.3.3.1b. The groundwater points are namely P2, P_a, P_b, P_c and P_d. Trace elements were not analysed. Anyhow, the results show values of suspended solids and KMnO_4 very high, even higher than the allowed surface water values.

A detailed mapping of the site, systematic soil and groundwater sampling and analyses are urgently required.
Reference Legislation

As far as soil quality is concerned, no regulatory requirement has been yet set up at the European level. In response to concerns about the degradation of soils in the EU, the European Commission published in April 2002 a Communication "Towards a Thematic Strategy for Soil Protection". This Communication outlined the first steps that lead to the development of a Thematic Strategy to protect soils in the European Union. The strategy is one of seven 'thematic strategies' foreseen under the EU's 6th Environment Action Programme.

The Directive 80/68/EEC on the protection of groundwater is aimed at preventing the pollution of groundwater by substances belonging to the families and groups of substances in lists I or II in the Annex. Member States shall prevent the introduction into groundwater of substances in list I and limit the introduction into groundwater of substances in list II so as to avoid pollution of this water by these substances. List I includes those substances with high risk of toxicity, persistence and bioaccumulation (such as mercury, cadmium, mineral oils and hydrocarbons, cyanides, carcinogenic substances, etc.), while List II contains substances, which could have a harmful effect on groundwater (such as zinc, copper, nickel, chrome, lead, selenium, arsenic, biocides, etc.).

A number of EU members have issued standard limits for soil and groundwater contamination (Germany, Italy, France, etc.), some of them have chosen a more risk-assessment approach (e.g. the UK and recently Italy).

Italian standards set for key parameters for soil (both for residential and industrial land use) and for groundwater are reported as a reference in the following Table 3.3.2.1a. The meaning of the limit is: after some exceeding of the represented limits is discovered, according to a well established sampling procedure, a risk analysis is necessary and, after that, the remediation to the extent that risk analysis outcome deems necessary.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Soil – Residential land use (mg/kg)</th>
<th>Soil – Industrial land use (mg/kg)</th>
<th>Groundwater (µg/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium</td>
<td>2</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Lead</td>
<td>100</td>
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</tr>
<tr>
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</tr>
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<td>Hydrocarbon C&lt;12</td>
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<td>250</td>
<td></td>
</tr>
<tr>
<td>Hydrocarbon C&gt;12</td>
<td>50</td>
<td>750</td>
<td>350 (total as n hexane)</td>
</tr>
<tr>
<td>PAH (total sum)</td>
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<td>100</td>
<td>0,1</td>
</tr>
<tr>
<td>Parameter</td>
<td>Soil – Residential land use (mg/kg)</td>
<td>Soil – Industrial land use (mg/kg)</td>
<td>Groundwater (µg/l)</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------</td>
<td>-----------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Nitrites</td>
<td></td>
<td></td>
<td>500</td>
</tr>
</tbody>
</table>

Also Former Yugoslavian legislation *(Regulations on permitted amounts of hazardous and harmful substances in soil and water for irrigation and methods of their testing - “Off. Jour. of RS”, No. 23/94)* prescribes maximum permitted quantities of hazardous and harmful substances in soil and water for irrigation that can deteriorate or change production capacities (fertility) of agricultural land and quality of water for irrigation. Suggested values are similar to the Italian ones.

No WB Guidelines are available for soil.

*Pressure Indicators – Comments on Available Data and Suggestions*

The main potential sources of soil and groundwater contamination identified include:

- Wet or dry deposition of air pollutants from the power plants, particulate from mining activity and from the ash dumps; previously there was also pollutant deposition from the gasification and fertilizer plants;
- leakages of oily substances and other chemicals, in particular at the former gasification and fertilizer plant sites;
- past dumping of chemicals in former underground mines;
- past and current waste dumping at the ash dumps, in particular at the Kosovo A ash dump and in the old mine (municipal waste landfill); and
- past and current discharge of untreated wastewater effluents in rivers that is a likely source of sediment contamination in the Sitnica river.

With regard to the deposition of air pollutants, land degradation is likely related to chemical variation of surface soil composition although not enough information is available.

No information about composition of the ash dump at Kosovo B is available. It is likely that it contains other types of solid waste, such as old tires and other industrial residues. The ash dump is often flooded. This condition has likely caused contamination of Sitnica sediments. Kosovo B ash dump generates substantially less particulate than Kosovo A but limited data is available on local groundwater conditions. A survey is needed. Detailed mapping of the site, systematic soil and groundwater sampling and analyses are urgently required.

No information about soil contamination at the old gasification and fertiliser plants is available.
The investigation found hot spots with a high level of phenolic residuals, phenolic waters and tars in the Kosovo A ash dump, although the dump was not used on a regular basis for dumping of these materials. Two basins on top of the mid-part of the Kosovo A ash dump and some drill holes beside one of these basins have been identified as dumping areas. The total amount of these residuals is very limited and they supposedly seem to be acceptably contained. The ash stored at the ash dump contains elevated levels of heavy metals, but due to the chemical composition of the ash the potential for leaching processes is limited. Elevated levels for some heavy metals were also found at the overburden dumps but these were similar to those found naturally in the area.

While results of the study indicated contaminated groundwater, there was no clear connection to the waste materials from the ash dump. Polluted mining galleries also may pose a serious risk to local groundwater systems and wells, but this requires further investigation.

In summary ash dumps are probably mixed with different type of waste and particularly ash dump of Kosovo A is contaminated with tar and phenolic water coming from the old gasification plant. The open dumps are not provided with adequate lining/soil protection devices and no mitigation measures are in place to avoid storm water runoff contamination. This situation is likely to have led to soil and groundwater contamination. Further more soil of old fertilizer and gasification plant is likely to be contaminated and a survey is necessary to identify contamination extent.

To prevent existing ash dumps to continue to contaminate groundwater a solution (to be confirmed after a risk analysis) could be flanks stabilisation and a capping with final vegetation and possible relocation only of identified hot spots.

In particular measures suggested in the above mentioned Kosovo A site investigation should initiate. At the same time an accurate survey at the TPP B ash dump and at the gasification and fertiliser plant areas should be carried out and the state of contamination of existing ground water wells in the area should be verified.

The underground of the old fertilizer and gasification plant is likely to be contaminated. Under the CLRP a survey is scheduled to start in 2008 to identify contamination extent.

Also under the CLRP, investments for remediation works at Kosovo A ash dump and overburden dumps have been included in a draft final design (April 2008). After formal approval, the proposed measures for reshaping, partial removal of unstable parts, coverage and re-vegetation should provide an adequate solution against particulate generation, possible soil/groundwater pollution and contamination of runoff water.
3.3.2.2 State

Geology

Kosovo geology is varied and its evolution over time has been dictated by its location in an active tectonic zone. That tectonic activity has seen the formation and subsequent closure of an oceanic basin, leading to the development and preservation of a variety of economically exploitable mineral deposits.

The basement of the Kosovo Basin and the exposed surrounding areas are built up by Palaeozoic to Mezozoic crystalline rocks (see Figure 3.3.2.2a). The basin fill consists of Upper Cretaceous strata which are unconformably overlain by Tertiary clays in which lignite is interbedded.

Towards the West the lignite deposition is tectonically bounded by a series of predominantly NNW-SSE striking faults. The eastern limit is characterized by sedimentological pinch-out.

The Palaeozoic formations are mainly build up by marble and schists. The schist is composed of grey coloured shale, phyllites, phyllites mica-shale, quartzite, quartzite-phyllites and rare amphibolite shale. The crystalline series outcrop in the western periphery of the basin and are extending from the River Brusnik to Shipitulla, whilst the outcrops in the eastern periphery reach from Grabovc southward up to Ferizaj and Nerodime. In the northern section of the eastern periphery, near the region of the River Llap strike outcrops of andesite and dacite occur, submerge in the region near Mitrivica and appear again on the surface in the eastern part of this town. Most of the Palaeozoic succession within the frame of the Kosovo Basin are build up of crystalline limestones, which are tectonically stressed, and therefore, their origin is difficult to determine. Within the western part of the basin, the crystalline limestones appears as intermediate lenses, which are sometimes silicated, and therefore, difficult to distinguish from phyllites quartzite.

The lower part of the Mesozoic section consist of serpentinite and peridotite. It is covered by Upper Cretaceous flysch and limestone. The outcrops of serpentinite are located in the western section of the Kosovo Basin, creating the Lubovec-Galicë and the Golesh Massives. Towards the south, there are some further areas which show Serpentinite, but in these areas within a frame of rudist limestone, flysch and shale. The quantity of serpentinite outcrops decreases eastbound. Uppermost Cretaceous Flysch and limestones crop out within a NNW-SSE oriented area along the main bounding faults of the Kosovo Basin.

Besides the already mentioned clay and lignite deposits, Tertiary volcanic rocks from the Miocene and Quaternary unconsolidated sediments as sands and gravel are present within the Cenozoic.
The Tertiary volcanites (andesite-dacite rocks) are distributed in Northeast of the basin (Kopaonik-Trepça zone).

The Pliocene sediments can generally be subdivided in coal productive/unproductive areas:
- Southern area unproductive
- Northern area unproductive
- Central area productive

The central area, the “Coal Kosovo Basin” (limits are marked in red in Figure 3.3.2.2a), is spreading out at a surface of approximately 300 km². Simplified, the succession can be subdivided as follows:
- Bottom Series (green Clay)
- Coal Series (Lignite Formation)
- Top Series (grey Clay)

**Figure 3.3.2.2a  Geological Map of Kosovo and Kosovo Basin Limits**

- Quaternary Sediments
- Tertiary sediments / pyroclastics
- Tertiary volcanics
- Cretaceous flysch
- Jurassic clastics
- Jurassic diabase formation
- Danian
- Ultrabasic rocks
- Granite & granodiorite
- Diorite, limestone & classic
- Paleozoic basement
- Paleozoic granite
- Geosols

In Figure 3.3.2.2b is presented an extract of Kosovo geologic map, with reference to the area of interest.
Figure 3.3.2.2c Extract from Geological Map

In Figure 3.3.2.2c is presented an extract of Kosovo hydrogeologic map, with reference to the area of interest.
Figure 3.3.2.2c  Extract from Hydrogeological Map

Hydrogeological Units

<table>
<thead>
<tr>
<th>Aquifer</th>
<th>K [m/d]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Porous / intergranular porosity</td>
<td>( &gt; 1 \times 10^{-6} )</td>
</tr>
<tr>
<td>Fracture porosity</td>
<td>( 1 \times 10^{-6} )</td>
</tr>
<tr>
<td>Mixed porosity</td>
<td>( &lt; 1 \times 10^{-6} )</td>
</tr>
</tbody>
</table>

Lithology

<table>
<thead>
<tr>
<th>Unconsolidated rock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sediment</td>
</tr>
<tr>
<td>Sand</td>
</tr>
<tr>
<td>Sandstone</td>
</tr>
<tr>
<td>Clay + Sand + Mud/Cl</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consolidated rock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedimentary rock</td>
</tr>
<tr>
<td>Sandstone</td>
</tr>
<tr>
<td>Limestone</td>
</tr>
<tr>
<td>Sedimentary + Limestone + Sandstone</td>
</tr>
<tr>
<td>Claystone</td>
</tr>
<tr>
<td>Limestone + Sandstone + Claystone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Igneous and metamorphic rock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granite, unweathered</td>
</tr>
<tr>
<td>Volcanic rock, unweathered</td>
</tr>
<tr>
<td>Metamorphic rock, unweathered</td>
</tr>
<tr>
<td>Marble</td>
</tr>
</tbody>
</table>

Ground Water Data

- Direction of ground water flow, certain
- Direction of ground water flow, inferred
- Area with absence or absence of ground water

Tectonic Data

- Certain
- Inferred

Teatonic Data

- Fault, well in zone
- Fault, testing the tectonic zone
- Fault, characterizing the tectonic zone
- Fault, well in non-tectonic zone

Source: modified from General Map of Minerals of Kosovo (Independent Commission for Mines and Minerals)
An hydrogeological study has been carried out in the frame of the “Site Investigation, Technical/Organizational Planning and Determination of Environmental Impact Assessment and Preparation of Environmental Management Plans (CLRP)”. The Project area includes ash dump TPP A and outside dumps South, Kalaja, Lugu I Thell and Vasilev, located to the South-West of TPP A site and existing Mirash/Bardh mines.

The scheme of a representative hydrogeological section in the area of interest is reported in the following Figure 3.3.2.2d.

**Figure 3.3.2.2d**  
**W-E Cross-Section between Mirash-East and Ash Dump (Scheme)**

As reported in the “Complementary Mining Plan for Sibovc SW - Part III – Environmental Assessment” (European Agency for Reconstruction, STEAG Consortium, 2006) and summarized in the following, the hydrogeological situation of the area is defined by three main hydrogeological layers. The basis is represented by an aquiclude (low permeability) formed by the “green clay” consisting of clay and silt with a general thickness of more than 100m. In general, the overlaying lignite having a thickness up to 70m has a low permeability but, due to fissures and cracks within the lignite, groundwater can circulate in the lignite layers, which are therefore recognized as an aquifer.

Above the coal follows the overburden mainly consisting of silt and clay with partial presence of sand and gravel layers. Embedded layers with masses of snail shells are characteristic. Locally the “grey clay” changed its appearance to “yellow clay” as a result of oxidation of the iron content within the material. The clay material generally behaves like an aquiclude but because of fissures and cracks reaching depths of 10 m to 15 m from the surface water can penetrate the rock. Hence groundwater appears either when the fissures are dug up by excavation or where those fissures are connected to better permeable layers within the clay such as the snail shell layers or gravel layers. Therefore the hydraulic conductivity of the layer depends on the locally presence of clay and fissures.

The “yellow clay” horizon is frequently used to supply houses and smaller villages with water, e.g. in the village of Hade and in the valley west of Lajthişte.

Information about the spreading of yellow clay strata can be given using a map presented by Rudarski Institut (1985) which shows the elevation of the
bottom of yellow clay for the area west of Hade village (see Figure 3.3.2.2e).
The map gives an impression about the altitude of the basis of yellow clay.
The bottom generally follows the surface with the alteration zone reaching
down to 12 m depth. This again pleads for weathered grey clay with the
precipitation leading to oxidization of the iron content within the soil forming
the typical yellow color. The elaboration furthermore shows that at least in
September 1985 a groundwater level was observable with groundwater
covering up to 10 m of the yellow clay. It can be suggested that these facts can
be found in other areas as well, where Pliocene clay reaches near the surface.
The observed water levels and the alteration in color from grey to yellow
indicate that this groundwater horizon is directly fed by precipitation and it is
assessed that groundwater predominately circulates near the surface.

*Figure 3.3.2.2e*  **Bottom of Yellow Clay**

*Source: “Complementary Mining Plan for Sibovec SW - Part III – Environmental Assessment”,
European Agency for Reconstruction, STEAG Consortium, 2006*
Based on available information from hydrogeological maps (e.g., Rudarski Institute, 1985) as well as studies carried out in the mining site and surroundings, the groundwater flow is generally northeast to west (or southwest) to the Sitnica River. Review of the older documents and field observations shows that the quantity of groundwater descending the overburden at the mines is rather small. At the slopes groundwater can be observed after rainy periods favoured in coarse layers of the “yellow clay” and, along fissures, within the “grey clay”.

Additional vadose water horizons can appear within courser layers of the grey clay especially where it contains larger amounts of snail shells. Locally the overburden is eroded to a thickness of meters or less and as abandoned underground works with broken roofs give direct access to the surface, precipitation can directly infiltrate the coal in larger areas whereby larger quantities of groundwater might be produced.

Use of groundwater is mainly through private wells about 10 to 15 m deep in the overburden clay. Production quantities defined by Rudaski Institute (1985) show hydraulic conductivities in the range of $k_f = 10^{-9}$ m/sec to $k_f = 10^{-6}$ m/sec. In the surroundings of Laitishte some artificial wells have been drilled some 5 m to 7 m deep into the “yellow clay”, to serve as water supply for a village.

The hydraulic conductivity can reach values up to $10^{-4}$ m/s or even greater in the quaternary deposits along the river Sitnica containing coarser materials with sand and gravel contents. Towards the depth these sediments hold growing contents of silt and clay and are underlain by grey clay preventing a direct contact between the surface water and the coal seam.

Because of the hydraulic properties of the clay in case of rainfall an enriched surface run-off can be expected.

The Sibovc-Field is nearly wholly located in less water bearing overburden. In the valley of Sibovc river artesian groundwater outflow was observed in harvest of 2004.

The above figure presenting the multiple aquifers does not include the aquifer changes due to underground mining works.

Based on the available information given from hydrogeological maps (e.g. Rudarski Institute, 1985) as well as studies carried out in the mining site and surroundings, the groundwater flow is generally directed North-East to West (or South-West) to the Sitnica River.

Since recent measurements on the quantity of groundwater and detailed flow directions are not available. Therefore, it has not been possible to calculate properly (quantitatively) the indicator.

The geological layers with clay on top and on bottom of the coal seam divide the layers from each other. Nevertheless, previous experience in the
abandoned mining activities in Krusevac mining area showed that excavation led to subsidences with visible depressions on the surface. This leads to the conclusion that separate layers are interconnected, at least in the area of the ash dump of TPP A. Any contamination deriving from the ash dump can pollute all overburden aquifers as well as the groundwater inside the coal layer. On the other side the presence of fissures and cracks, either in the lignite layer and in surface clay, does not guarantee a protection of the aquifer circulating in the area.

Quality of Groundwater and Soil

The KEK industrial area is one of the areas with the highest land and groundwater pollution. There is no adequate measurement, but based on investigation and continuous inspection, it may be assumed so.

As already said (see indicator “Sources of Soil and groundwater contamination”), a complex problem is represented by gasification and fertilizer facilities (no more in use), located within the TPP Kosovo A area.

As per the findings of the Poiry study (2007) regarding soil pollution:

- “the soil pollution investigated originates from the airborne deposition of heavy metals accumulated up to today and will be a fact for many years;
- the area concerned which may be unsuitable for the production of foodstuff is about 18 km²;
- mitigation would be feasible (whereas costly) only for areas which cause unacceptable risks for other resources and people. This is the case at Kosovo A site as well as at Kosovo B site (ash pile).”

No data are available for soil or groundwater properties for the existing mines. For future Sibovc mine data were compiled in STEAG 2006. In particular, investigations on the qualities of soils came to the conclusion that most expressive information is given by “Soil map of SAP Kosovo”, scale 1:50,000 (N. Povicevic et al., Institute for development of water resources, Belgrade; 1974). An update of the soil classification based on FAO standards was presented by the agricultural faculty of Pristina University. The following Figure 3.3.2.2f shows the situation for the planned mining field including a border area of 1 km width.

(1) STEAG 2006: Complementary mining plan for Sibovc SW, Part III – Environmental Assessment
### Figure 3.3.2.2f Soil Map

Within the New Mining Field, vertisol soil types cover nearly 100% of the area. Only some 0.4 ha at the outer northwestern edge contains reddish sediments at the geological rim of the coal basin.

Vertisol soil types are generally used for grazing of cattle or sheep. It is not unknown for livestock to be injured through falling into cracks in dry periods. However, the shrink-swell activity allows rapid recovery from compaction.

When irrigation is available, crops such as cotton, wheat, sorghum and rice can be grown. Vertisols are especially suitable for rice because they are almost impermeable when saturated. Rainfed farming is very difficult because vertisols can be worked only under a very narrow range of moisture conditions: they are very hard when dry and very sticky when wet. The poor quality of soil has also been identified by a number of people living in the area, for further information please see Paragraph 3.4.10.

In fact, site visits showed that the New Mining Field area is constituted mainly of uncultivated land, with some subsistence farming.

A “Site Investigation, Technical Organisation, Planning and Determination of Environmental Impact” was initiated in July 2007 as part of the Clean up and Land Reclamation Project (CLRP) devoted to identify the extent of contamination and improve the environmental situation in the surroundings of KEK mines and power stations, with particular reference to the reduction of dust emissions from the existing TPP A ash dump (see also Paragraph 3.3.2.1).

Main project’s components are the following:

- preparation of Mirash open pit mine for ash and waste reception;
- relocation of Kosovo A ash dumps into Mirash open pit mine (about 35 million m$^3$);
- adaptation of ash disposal system of Kosovo A power plant for direct discharge into Mirash open pit mine;
- reshaping and grading of South and West Overburden dumps (around 6.5 km$^2$);
- removal of chemicals from gasification plant.

With reference to the preparation of a concept for the final design of the TPP A ash landfill and some selected overburden outside dumps, the project shall deal with the following tasks:

- site investigations and topographic survey for the eastern area of Mirash open pit mine, TPP A ash dump and South field and Western Bardh overburden dumps;
- detailed design, cost confirmation as well as equipment and personnel planning for:
  a) Mirash ash disposal area preparation;
  b) excavation operations at Kosovo A ash dump; and
  c) reshaping and recultivation of South Field and Western Bardh overburden dumps;
- environmental Impacts and preparation of Environmental Management Plans (EMPs) including mitigation measures for the projects and works mentioned above.

Concerning the component “removal of chemicals from gasification plant”, the following main activities have been already performed:

- analysis of the physical properties of the site;
identification of the environmental/health hazards, implications and (positive) impacts;
identification of needs for further investigations, project risks and the reclamation potential;
preparation of an action plan, including an investment plan for the physical clean up and a proposed prioritization of investments.

The testing of groundwater and free surface water in the CLRP site investigation phase showed slightly elevated levels of BTEX (Benzene, Toluene, Ethylbenzene, and Xylenes) and PAH (polycyclic aromatic hydrocarbons) in some samples. Metals were within drinking water standards (WHO, EU) except for arsenic, which was found at concentrations (12 and 13 microgram/L) marginally above drinking water standards (10 microgram/L) in samples west of the Kosovo A ash dump. These arsenic concentrations could very well be related to the natural occurrence of this element in the area’s geology. The conclusion is that test results could not identify any significant contamination of groundwater downstream of the ash dump. There is verbal reporting of contaminated groundwater in wells, this seems now more likely to be related to the disposal of chemicals in old mine galleries but this needs further investigation. Some shallow wells showed elevated levels of electric conductivity (from salts) suggesting influence from ash dust or ash dump surface water run-off.

State Indicators – Comments on Available Data and Suggestions

The environmental situation in the area is very complex for a number of different reasons. First of all, the environmental setting has been deeply influenced by historical mining activities, with particular regard to geology, hydrogeology and hydrology characteristics. Furthermore, air pollution, especially due to particulate, has been heavily influencing soil quality. See comments on pressure indicators.

Beside ash landfills, other contaminated areas are the old gasification and fertilisers plants and the exhausted mines. Further monitoring activity is necessary in such areas.

Soil in old plants areas does not show visual evidence of being heavily contaminated, but the presence of tanks related to former operations not properly decommissioned and limited waste storage areas represent important issues. This old industrial area at Kosovo A will require clean-up and a soil quality monitoring program is needed.

As pointed out in the previous paragraph, a monitoring campaign has to be launched to better define soil quality conditions.
3.3.3 **Surface Water and Wastewater**

3.3.3.1 **Pressure**

Kosovo does not have proper municipal or industrial wastewater treatment systems. The number of households connected to a sewage system is very limited (28%). In villages and other small settlements, wastewater is disposed of in open channels, which leads to contamination of surface and groundwater. Poor quality drinking water (from wells) and inadequate waste disposal are common complaints of the communities living in the area of interest; for further information please see Paragraph 3.4.17.

No wastewater treatment plants are installed at the mines or power plants; industrial effluents are discharged directly into the rivers. The main sources of surface water contamination in the area of interest are wastewater discharges from KEK facilities and contaminated run off from the ash dumps. In addition, wastewater from urban areas (Municipalities of Lipjan, Fushe Kosova, Prishtina) and other industries are discharged upstream of the KEK facilities.

Permanent monitoring of upstream and downstream flows of Sitnica River is not routinely implemented. Furthermore monitoring program appears insufficient in terms of monitoring points, frequencies and investigated parameters (heavy and rare metals are for example not included).

**Surface Water Consumption**

Water uses for the mines include the following:
- firefighting;
- sanitary uses in repair stations;
- washing of trucks, etc.

Water is supplied by public mains and is transported by tank trucks to the sites and repair stations.

Based on Carl Bro Report the estimated total quantity of water use for the mines is around 350,000 m³/y.

Main water uses in Kosovo A and Kosovo B power plants include:
- Cooling water make up;
- Boiler make up;
- Sanitary use;
- Washing water;
- Water added to ashes to minimize particulate emission at Kosovo A; and
- Slurry preparation for ash transportation at Kosovo B (the ratio between ash and water is 1:1).
Kosovo A water is supplied by the Llapi River; the Iber-Lepenc canal supplies Kosovo B. In emergency conditions (especially during dry season), the canal (see Paragraph 3.3.3.2 for details) is opened to let additional water flow to the river to supply Kosovo A. Both power plants discharge to the Sitnica River.

As stated in the KEK Environmental Report 2006, calculated water consumption is high: while Kosovo B uses around 2.7 m$^3$/MWh, Kosovo A water demand may reach up to 5.3 m$^3$/MWh. Since the power plant does not have a flow rate measurement system, the total water consumption is not known.

Assuming valid the above stated data from KEK, the average water consumptions for the 2004, 2005 and 2006 years, determined on the basis also of the electric domestic production, should have been as shown in the following Table 3.3.3.1a.
### Table 3.3.3.1a
**Estimated Water Consumptions at the Power Plants based on KEK Data**

<table>
<thead>
<tr>
<th>Power plant</th>
<th>2004 Million m³</th>
<th>2005 Million m³</th>
<th>2006 Million m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTPA</td>
<td>4,579,200</td>
<td>3,418,500</td>
<td>4,764,700</td>
</tr>
<tr>
<td>TTPB</td>
<td>6,814,800</td>
<td>8,758,800</td>
<td>8,046,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11,394,000</strong></td>
<td><strong>12,177,300</strong></td>
<td><strong>12,810,700</strong></td>
</tr>
</tbody>
</table>

Total water consumption of Kosovo A and Kosovo B, as declared by Iber Lepenc management, is 0.7 m³/s in dry season.

The Final Report of the study *Water supply from the Iber Lepenc hydro system for the proposed Kosovo C power plant* - (February 2008) funded by the European Agency for Reconstruction (EAR) and developed by COWI consortium reports the same figure for the existing TPPs water consumptions, and in particular:
- 0.20 m³/s for TPPA in dry season (0.08 m³/s the average yearly consumption);
- 0.50 m³/s for TPPB (average monthly and yearly value).

The average annual water consumptions reported in the EAR Water Supply study calculated on the basis of these figures are the following:
- 2,630,000 m³;
- 15,770,000 m³.

Total water consumption for the existing TPPs, as reported in the EAR Water Supply study, is estimated at 18,400,000 m³ per year, with a return from the cooling towers of 60%, or 11 M m³ per year.

No detailed procedures to measure water flow rates are set at the existing facilities, therefore a precise quantification of the indicator is not possible.

### Generation of Wastewater

The water received at the existing facilities leaves by evaporation, discharged to rivers and lakes or infiltrates the surface and ends in the groundwater. A detailed water balance, as reported in Carl Bro (2003), is shown in Table 3.3.3.1b.

### Table 3.3.3.1b
**Water Balance [Thousands m³/year]**

<table>
<thead>
<tr>
<th></th>
<th>To Air (evaporated)</th>
<th>To wastewater treatment</th>
<th>To rivers</th>
<th>To groundwater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mines</td>
<td>1,680</td>
<td>-</td>
<td>960</td>
<td>110</td>
</tr>
<tr>
<td>Gasification plant</td>
<td>420</td>
<td>-</td>
<td>130</td>
<td>51</td>
</tr>
<tr>
<td>Coal yards</td>
<td>14</td>
<td>-</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Power and drying plants</td>
<td>7,830</td>
<td>9,598</td>
<td>3,200</td>
<td>1</td>
</tr>
<tr>
<td>Water preparation plants</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Water treatment plants</td>
<td>0</td>
<td>(9,598)</td>
<td>9,598</td>
<td>0</td>
</tr>
<tr>
<td>Source</td>
<td>To Air (evaporated)</td>
<td>To wastewater treatment</td>
<td>To rivers</td>
<td>To groundwater</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------</td>
<td>-------------------------</td>
<td>-----------</td>
<td>---------------</td>
</tr>
<tr>
<td>Ash and slag handling</td>
<td>0</td>
<td>-</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>Ash and slag disposals</td>
<td>793</td>
<td>-</td>
<td>988</td>
<td>243</td>
</tr>
<tr>
<td>Total</td>
<td>10,738</td>
<td>-</td>
<td>14,911</td>
<td>411</td>
</tr>
</tbody>
</table>

The balance is based on rough estimates as no detailed recording of water consumption and discharge is available.

In the following is presented a brief description of all wastewater production sources:

- Surface dewatering is required in the mines due to rainfall and to the fact that lignite exploitation is carried out below the level of river Sitnica in the Mirash mine. There are no settlement ponds for these waters, they are directly pumped out and discharged into the rivers. Annually, it is estimated that about 918,000 m³ of untreated mine effluents are discharged into the rivers Sitnica (Mirash mine) and Drenica (Bardh mine). At the Bardh mine, there are mine drainage channels running to the river Drenica. However, a major network of ditches is absent at both mines. Frequently, the mine waters are used to extinguish fires in the mines.

- The main source of water to the gasification site was rainfall: about 600,000 m³, of which about 420,000 m³ evaporated, 130,000 m³ was discharged to rivers and 50,000 m³ infiltrated the groundwater.

- The main source of water to the coal yards is rainfall, while only small quantities of raw water is used for fire fighting. The surplus of water is contaminated from the lignite, discharged mainly untreated to the rivers or infiltrates the groundwater. Carl Bro (2003) presents an estimate of about 5,000 m³ of wastewater discharged to the rivers and about 3,000 m³ infiltrated the groundwater.

- The main sources of water for power plants and drying plant are raw water and prepared water for processes (boiler water), while the impact of rainfall is limited. Large quantities are evaporated in the cooling and in the drying processes. This emission is normally considered harmless. Most contaminated wastewater is collected and discharged practically directly to the river systems or infiltrate the groundwater. In fact, the main source of water to the water treatment plants is waste water from demineralisation plant. The water treatment process comprises sedimentation and neutralization. Sludge from water treatment plant is highly contaminated with salts and trace elements. Currently the residuals are temporary stored in an underground tank and disposed in the ash disposal.

- The main sources of water to the ash disposal sites are rainfall and water from transport of bottom ash. Water is not recycled and consequently large quantities are discharged to the rivers or infiltrate the

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groundwater. No recording of water consumption is available but Carl Bro presents an estimate of about 1,000,000 m$^3$ discharged to the rivers and about 250,000 m$^3$ infiltrating the groundwater, as no precautions are taken to avoid infiltration.

Apart from the quantity of evaporated water from the cooling tower process, all the wastewater generated in TPP A and TPP B plants, including industrial effluents, sanitary effluents and rainfall is discharged in Sitnica River without any treatment.

The discharging system includes 22 discharging points into the main sewage system and 3 main discharging points into Sitnica River.

The main pollutants in the wastewater are:
- fuel residuals;
- ash residuals;
- oil and chemical residuals;
- sanitary water.

These residuals contain salts and trace metals, which can be harmful for humans and ecosystem.

Wastewater discharges from the power plants are monitored by INKOS through 17 surface water and 5 underground water monitoring points (5 piezometers, installed around the ash dump at Kosovo B to monitor groundwater quality). Results of wastewater monitoring are included in the KEK monthly environmental report.

Permanent monitoring of upstream and downstream flows of Sitnica River is not routinely implemented. Existing monitoring programs appear insufficient in terms of monitoring points, frequencies and investigated parameters (heavy and rare metals are not included, for example).

The map of wastewater discharge monitoring points for KEK existing facilities, as reported in KEK Environmental Report 2006, is presented in Figure 3.3.3.1a. Table 3.3.3.1c from the KEK report contains the results of the monitoring program carried out between January and June 2007. Beside surface water (discharge and rivers), Table 3.3.3.1c shows also chemical analysis of underground water (points P2, Pa, Pb, Pc, Pd). The results show a very polluted ground water (concentration of some parameters is higher than former Yugoslavia limits set for discharge water).

Table 3.3.3.1c shows also discharge limits established by former Yugoslavia for the different classes of rivers. Based on the results of the analysis reported in

1 Class I: water that, in natural state or after disinfection, can be used for drinking water supply, food industry and fine fish (salmonidae) breeding.
Class II: water appropriate for bathing, recreation, water sports, less fine fish (cyprinidae) breeding, including water that, after basic treatment methods (coagulation, filtration and
the Table, Sitnica River probably falls into class 4; some parameters of river water exceed the discharge limits (suspended solids, KMnO₄ etc).

It has also to be pointed out that no measurements of heavy metals and trace elements have been carried out.
Figure 3.3.3.1a  Map of Wastewater Discharges Monitoring Points for KEK Existing Facilities

Recipient Sitnica
Sample sites:
1-Lismir;
2-Mirash;
3-Palaj;
4-Plemetin;
5-Llap;
6-Lumëmadhi;
7-Shpresë

Effluents
Sample sites:
2.1 - TPP A;
2.2 - TPP A ash deposit;
3.1 – technological waters TPP A;
3.2 – cooling tower water;
3.3-technological waters (main collector);
3.4-gasification,
3.5-Heating TPP B;
4.1-open channel right-eastern side of ash deposit;
4.2-discharged technological waters from units and sanitary waters;
4.3 water discharged from PKU, cooling towers, B1 draining;
4.4-collection of polluted waters into the open channel TPP B;
4.5-collection of all waters discharged by TPP B;
P1, P2, Pa, Pb, Pc-underground samples at TPP B.
Table 3.3.3.1c

Monitoring Wastewater Discharges from TPP A and TPP B to the Recipient Sitnica (Average Values for Period January-June 2007)

ERM – ELC - CSA

THE WORLD BANK – LPTAP ESSAS – DRAFT FINAL SESA

150


According to KEK report “from the analysis it results that the key parameters which exceed maximum allowed values\(^1\) are the pH values, suspended matters and use of KMnO\(_4\). The main sources of exceeding of these values are in effluents of the ash deposit, waters from the gasification area, and the technological waters of TPP A and B. Still, even in recipients there are often very high values, especially near the discharge of waste waters, such as Fushe-Kosova, Kastrioti, etc..

Regarding the mines, acid drainage is a common process in coal mine areas all over the world as the result of sulphide oxidation, mainly pyrite (iron sulphide), which reaction decreases the pH and favours the mobility of heavy metals. Inspections at the mine sites did not show evidences of acid drainage and chemical analyses of these waters confirmed field observations (pH values around 8). This is mainly due to the occurrence of carbonate layers within the lignite seams, which neutralizes the acidity generated. Mine water quality is presented in Table 3.3.3.1d, as per Carl Bro (2003).

### Table 3.3.3.1d Mines Pollution

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Bardh Mine</th>
<th>Mirash Mine</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.2-8.4</td>
<td>6.7-8.7</td>
</tr>
<tr>
<td>Suspended substances (mg/l)</td>
<td>35-900</td>
<td>400-750</td>
</tr>
<tr>
<td>Dissolved oxygen (mg/l)</td>
<td>7-18</td>
<td>5-15</td>
</tr>
<tr>
<td>Cl (mg/l)</td>
<td>50-330</td>
<td>30-220</td>
</tr>
<tr>
<td>NO(_x) (mg/l)</td>
<td>0.9-272</td>
<td>2.7-271</td>
</tr>
<tr>
<td>SO(_4) (mg/l)</td>
<td>55-2304</td>
<td>534-2014</td>
</tr>
<tr>
<td>Phenol (mg/l)</td>
<td>0.007-0.015</td>
<td>0.004-0.05</td>
</tr>
<tr>
<td>Cd (ug/l)</td>
<td>&lt;0.2</td>
<td></td>
</tr>
<tr>
<td>Ni (ug/l)</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Pb (ug/l)</td>
<td>9.7</td>
<td></td>
</tr>
</tbody>
</table>

A major environmental issue is the elevated concentration of suspended substances in the mine water reaching 900 mg/l, which exceeds 36 times the EU-fish water guideline limit (25 mg/l). Sulphate concentrations in mine waters are also high (up to 2,300 mg/l) and may damage the river fauna and flora in case of excessive discharges. Phenol concentrations in the Mirash mine waters are elevated and exceed 2.5 times the respective EU standard for drinking water, which is 0.02 mg/l. Heavy metals are within maximum permit limits for drinking water according to EU standards, excepting Ni, which is a bit higher than the limit (20 micrograms/l). Lead is also close to the limit of 10 micrograms/l.

The release of large amounts of toxic substances in a short time can impact the whole ecological system of the rivers. At the same time, chronic pollution with rather constant toxic emissions of relatively low concentration during long periods may also cause a severe damage on local ecosystems. Surface mine waters are also potential sources of ground water and soil pollution due to in situ leaching of toxic substances. For these reasons, preventive measures should be taken immediately.

\(^1\) As standards, the INKOS has used the maximum value parameters, allowed by water category, namely four categories. Exceeded values have been recorded when these values have exceeded the values for III category of waters.
The expected quality of mine drainage water without any treatment can be assessed using the quality parameters from the water pumped out of the Mirash mine, as presented in STEAG 2006 (see Figure 3.3.3.1b). It has to be taken into consideration that the sampling point does not always represent the quality of pumped mine water since dilution by rainwater might have influenced the sample.

Figure 3.3.3.1b  
**Characteristic of Mine Water Quality**

The concentrations indicate a potential need for mine water treatment depending on the quantity of mine water discharge and the quality and quantity of the receiving stream. Minimum standard would be to install settling ponds to reduce the load of suspended solids and coal dust (STEAG 2006). Natural ponds are being used for this and a drainage system exists.

**Pressure Indicators – Comments on Available Data and Suggestions**

There are no water flow rate measurements at the intakes or outfalls of the plants; a monitoring system should be implemented, in order to measure both water intake and wastewater discharge.

Also the quality of wastewater should be monitored.

Moreover, in emergency conditions (especially during dry season) water for the power plants is supplied by Iber Lepenc canal. Nevertheless the matter has to be investigated: water is a precious good and in perspective new agreement has to be established with Serbia, located downstream of the Iber Lepenc derivation. A rationalisation of the distribution system is strongly recommendable (see also the comments on Water State Indicators).
3.3.3.2 State

Surface Water Reserves

Kosovo’s watershed encompasses four river basins that drain into three seas: the Adriatic, the Aegean and the Black Sea. The Drini i Bardhe is the largest of the four basins (4,649 km²); the second largest is the Iber river basin (4,009 km²), which includes the mountain area in the north of Kosovo. The third basin is the Morave e Binges (1,564 km²), and the fourth is the Lepenc basin (685 km²) in the south of Kosovo.

Figure 3.3.3.2a shows main rivers and catchments in Kosovo region.

Figure 3.3.3.2a Main Rivers and Catchments

Source: Kosovo Atlas, Kosovo Community Information Center
There are practically no natural lakes in Kosovo. Owing to the high flow variations, five reservoirs have been constructed with the maximum capacity of 568 million m$^3$. They are used for water supply, fishery, irrigation, recreation and flood protection.

The Kosovo C TPP project will be located in the Kosovo river basin. The Kosovo basin forms a smoothly shaped plain that is bordered by hills and mountains. This basin includes a well developed hydrological network with the River Sitnica as its main collector. This river crosses the basin from south to north and drains about 80% of the accumulating surface water in a northern direction. Major tributary rivers are the Drenica River in the west and the Llapı River in the east.

The Sitnica run-off varies between a minimum of 0.5 – 1.5 m$^3$/s and a maximum of 50 – 120 m$^3$/s with an average of 5 – 10 m$^3$/s. In flooding periods, the course of the river reaches a width of up to 1,000 m in the flooding areas. On 3 May 1958 a maximum run-off for the river Sitnica near to the mines was measured at 90.3 m$^3$/s.

Due to the lack of actual run-off data the quantities of water discharged by tributary rivers and creeks can only be assessed on the basis of a map of catchment areas, developed from topographical maps.

Figure 3.3.3.2b shows the areas with potential for flooding.

As noted earlier, part of Kosovo A water and all of the water for Kosovo B comes from the Iber-Lepenc canal, which runs parallel to the Iber and Sitnica Rivers. The Iber-Lepenc system is one of the three hydrosystems in Kosovo, completed in 1985 as a multi-purpose project providing water for hydro-electric, domestic, industrial and irrigation purposes. The Lepenc section has not yet been constructed.

The Iber-Lepenc system, administered by the publicly-owned Iber Lepenc Enterprise (ILE), is comprised of the Ujman/Gazivoda reservoir, dam and hydroelectric installation, discharging into the lower Pridvorice reservoir, which acts as a regulator for releases into the Iber River and the 52 km Iber-Lepenc canal.

The European Agency for Reconstruction (EAR) recently awarded a project on the Iber Lepenc Hydro System aimed at proving that the Iber Lepenc Hydro system can support the additional water demand from the new thermo power plant Kosovo C.

The Water Supply for the Iber Lepenc Hydro System for the proposed Kosovo C Power Plant Project was carried out from December 2007 to February 2008 by a consortium lead by COWI.

The Consultant included in the present section most relevant data of the EAR Water Supply Project Final Report (February 2008).
Gazivoda dam is fed by Iber River. Iber River originates from six springs on the Hajla Mountain in eastern Montenegro, runs in Montenegro, Kosovo and Serbia and flows into the Zapadna Morava, central Serbia, near Kraljevo.

The reservoir created behind the dam has an active volume of 328.75 million m³. The big active volume of the reservoir in relation to the average annual inflows (410.772 m³ as estimated in EAR Water Supply study) allows multiyear regulation. This means that some water inflowing in the reservoir in one year can be stored and used the next year or later. The average multiyear (for the period 1947 – 1973) discharge of the river is 13.06 m³/s.

The simplified physical and operational structure of the Iber-Lepenc hydro system is illustrated in Figure 3.3.3.2c, as presented in the above mentioned EAR Study. It reproduces schematically the real system as follows:

- Most of the water used for domestic consumption is taken nearby Mitrovica, at the beginning of the canal;
- Industrial factories are mainly Ferronikeli and Trepca, whose consumption has fallen sharply in the last years;
- Kosovo B (plus partly A and foreseen C) are supplied with water at the end of the canal;
- Most of the irrigated area lies between these two points.
Figure 3.3.3.2c  Iber Lepenc Hydro System as reported in EAR Water Supply Study
Hydro-power plant is installed at Gazivoda dam, one kilometer downstream. The power plant includes two turbines installed in 1983 and now requires relatively costly maintenance. Power distribution is carried out by KOSST (Independent Transmission System and Market Operator) under new power trading rules starting in 2007 in Kosovo. ILE sells power to Kosovo Electricity Company (KEK) through KOSST. The Gazivode Power Station has an installed capacity of 33.35 MW; the production (and sales) of electricity in 2004 – 2006 was 109 GWh.

Immediately downstream the Gazivode Power Station, the Pridvorice dam is located, which creates a reservoir with 480,000 m$^3$ active volume. The Pridvorice–Obiliq canal, with a designed capacity of 22.2 m$^3$/s, starts from the Pridvorice dam with a direction to the south and to the cities of Mitrovica and Pristina in order to cover the needs of different type of consumers.

Losses from this canal, as well as from the total length of the Iber Lepenc canals (147 km) are reportedly very high due to technical (infrastructure damages and lack of maintenance operations) and administration (illegal consumers) reasons. Estimated total losses are around 50-60 % of average water capacity.

The Pridvorice-Obiliq canal serves industrial, domestic and irrigation consumers.

Domestic water use includes urban population of the following four different municipalities:

- Mitrovica, Skenderaj and Vushtrri supplied by Mitrovica Water Supply Company;
- Drenas supplied by Pristina Water Supply Company.

In case of emergency (dry season) water from Pridvorice-Obiliq canal is used to feed Badovci Lake supplying water to the Pristina Water Supply Company.

Data on average monthly water use estimation for 2006, as provided by Iber Lepenc, are reported in Figure 3.3.3.2d.
Based on Iber-Lepenc data, the average yearly water use in 2006 was 2.39 m$^3$/s (about 75 million m$^3$/year), while maximum water use registered in July 2006 was around 6 m$^3$/s.

In the above figure the availability of water resource is assumed 33,844,500 m$^3$/month. In reality this figure represents the total average flow of Iber Lepenc Canal and therefore has to be reduced to take into account the minimum vital flow (see Figure 3.3.3.2c), water losses and possible requirement of potential downstream consumer (Serbian population) – (see next paragraphs for discussion).

Approximate water consumptions detailed per source are reported in the next paragraph.

Present and Future Water Demand and Water Resource
Data on present and future water demand in the region of Iber Lepenc water system are not available at present. In the Balwois International Conference (Macedonia, 2004) on water and climate the Kosovo Ministry of Environment and Spatial Planning representative stated that “There is no reliable information about the present state of water resources and water use in Kosova”.

The Consultant during the preparation of the environmental baseline has identified the following three main reference documents for the evaluation of the present and future water demand for different uses:

- Water Master Plan of Kosovo;
- Water Balance Report, Ministry of Environment and Spatial Planning;
- Water Resource and Future Water Demand (EAR Water Supply Study).
Existing water Master Plan of Kosovo was prepared in 1985 and therefore does not properly represent the actual water demand in the region, since it does not include the socio-economic changes occurred after the last conflict.


The main findings of Ministry of Environment and Spatial Planning representative in Balwois International Conference (Macedonia, 2004) were the following:

- "Kosova has been classified as one of the water-poor areas of Europe and water unevenly distributed.
- Water resources are relatively small in Kosovo, compared to population and arable land.
- Good quality ground or spring water resources are unevenly distributed (mainly in the western part) and are only partly available for water supply.
- In eastern Kosovo rocks and sediments are more impermeable and groundwater cannot be easily exploited."

Furthermore in Kosovo region only 44% of the total population, and 8.4% of the rural population, has access to the water distribution system. People in rural areas rely on village water-supply systems, their own wells or on springs and surface water. Rural wells are generally in bad conditions and the water quality is poor mainly due to organic contamination.

Iber Lepenc water system was originally designed to feed industrial facilities and agricultural land. Nevertheless, on the basis of the previous considerations with particular reference to scarcity of drinkable water, lack of alternative water sources and expected increase of water demand for domestic purposes in the near future, the Iber Lepenc water system use for domestic purposes could be a solution for the existing water shortage problems through the realisation of proper water treatment plants.

A number of water users currently obtain their water from the Iber-Lepenc system:

- Domestic water use includes the urban population of four municipalities:
  - Mitrovica, Skenderaj and Vushtrri supplied by Mitrovica Water Supply Company;
  - Glogovc supplied by Prishtina Water Supply Company;
- Mitrovica’s domestic water consumption, and emergency supplies for Pristina in case of water shortages;
- Pristina’s domestic water consumption from the Gazivoda;
- Industrial consumption from the Trepca factory. Although the factory is not in use at present, it is unclear what the future industrial water consumption will be for that area;
- Industrial consumption by the Feronikeli factory;
- Kosovo A and B use;
- Irrigation water;
- Environmental flows;
- In addition, losses from abstractions from the system along the 52 km of the Iber-Lepenc canal are estimated at around 50% of canal flow.

Water Resource and Future Water Demand (EAR Water Supply Study)
In this paragraph the main findings of the EAR Water Supply study are presented in order to assess the present conditions in terms of:

- Water Demand from Iber Lepenc Hydro System;
- Water Resources in the Gazivoda Lake or main lake.

The EAR estimation was performed through the evaluation of:

- water balance of secondary reservoir;
- water balance, water volume and water excess in the Gazivoda lake, including total discharges to Iber River.

Water Demand Estimation
Estimation of current water demand is a very difficult exercise: it depends on the real and urgent needs of the different competing users of the Iber-Lepenc System. The EAR report assumes the figures shown in the following.

The analysis was carried out for the two following cases:

- Total Water Demand for 5,000 ha to be irrigated (most probable present situation);
- Total Water Demand for 10,000 ha to be irrigated.

Nevertheless, other sources indicate a total water demand for 18,000 hectares to be irrigated.

The EAR study, here utilized, was based on the following hypothesis:

- the outflow from the secondary reservoir must cover at least the compulsory minimum inflow to the main canal (Iber Lepenc canal) and the minimum biological flow for the Iber River;
- the minimum inflow to the main canal was determined considering the useful water consumptions plus losses from the canal mainly due by leakages. Current losses are estimated to be around 50% of the total inflow;
- the minimum biological flow is the minimum flow the Iber River downstream of Gazivoda lake must have to preserve the environment. The minimum biological flow is 0.50 m$^3$/s;
- the Gazivoda lake and the secondary reservoir (0.480 million m$^3$) are able to stabilize natural inflow modulating hydroelectric production. The Hydroelectric utilization for the year 2004-2006 is reported in the
following Table 3.3.3.2a (It has been noted that the electricity produced and consequently the water uses for the hydro power plant are currently the only precise measurement to monitor the entire hydro system).

### Table 3.3.3.2a  Energy Production and Water Consumption

<table>
<thead>
<tr>
<th>Month</th>
<th>Days</th>
<th>Average energy sold in 2004 - 2006</th>
<th>Water used</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MWh</td>
<td>%</td>
</tr>
<tr>
<td>Jan</td>
<td>31</td>
<td>12,798</td>
<td>11.77</td>
</tr>
<tr>
<td>Feb</td>
<td>28</td>
<td>12,353</td>
<td>11.36</td>
</tr>
<tr>
<td>Mar</td>
<td>31</td>
<td>16,365</td>
<td>15.05</td>
</tr>
<tr>
<td>Apr</td>
<td>30</td>
<td>13,703</td>
<td>12.60</td>
</tr>
<tr>
<td>May</td>
<td>31</td>
<td>10,696</td>
<td>9.83</td>
</tr>
<tr>
<td>Jun</td>
<td>30</td>
<td>9,637</td>
<td>8.62</td>
</tr>
<tr>
<td>Jul</td>
<td>31</td>
<td>7,956</td>
<td>7.31</td>
</tr>
<tr>
<td>Aug</td>
<td>31</td>
<td>1,028</td>
<td>0.95</td>
</tr>
<tr>
<td>Sep</td>
<td>30</td>
<td>3,086</td>
<td>1.12</td>
</tr>
<tr>
<td>Oct</td>
<td>31</td>
<td>6,172</td>
<td>5.67</td>
</tr>
<tr>
<td>Nov</td>
<td>30</td>
<td>4,667</td>
<td>4.29</td>
</tr>
<tr>
<td>Dec</td>
<td>31</td>
<td>10,312</td>
<td>9.48</td>
</tr>
<tr>
<td>2006</td>
<td>365</td>
<td>108,772</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: ILE data and Consultant calculation

The future Total Water Demand for the Iber Lepenc Canal to be compared with the water availability and therefore including losses and minimum vital flow, as above stated, is reported in the Tables 3.3.3.2b-c, with reference to the two above described circumstances (5,000 and 10,000 ha to be irrigated) and to the hypothesis for the calculation outlined in the following.

### Table 3.3.3.2b  User Flow, in m³/s with 5,000 ha Irrigated

<table>
<thead>
<tr>
<th>Days</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Year</th>
<th>Year m³*10⁶</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days</td>
<td>31</td>
<td>28</td>
<td>31</td>
<td>30</td>
<td>31</td>
<td>30</td>
<td>31</td>
<td>30</td>
<td>31</td>
<td>30</td>
<td>31</td>
<td>30</td>
<td>365</td>
<td>365</td>
</tr>
<tr>
<td>Households</td>
<td>0.43</td>
<td>0.44</td>
<td>0.43</td>
<td>0.46</td>
<td>0.48</td>
<td>0.48</td>
<td>0.48</td>
<td>0.48</td>
<td>0.48</td>
<td>0.48</td>
<td>0.48</td>
<td>0.48</td>
<td>14.60</td>
<td></td>
</tr>
<tr>
<td>Irrigation</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>15.00</td>
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</tr>
<tr>
<td>Industry</td>
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<td>1.00</td>
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<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
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<td>KosovoA</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.20</td>
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### Table 3.3.3.2c  User Flow, in m³/s with 10,000 ha Irrigated

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<td>4.42</td>
<td>5.54</td>
<td>174.85</td>
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</table>
The Total User Water Demand in the two above cases were estimated on the basis of the following considerations:

- the estimated quantity of water supplied by the Iber-Lepenc hydro system to municipal water companies is around 15 million m\(^3\)/year, as estimated by ILE. Assuming a specific consumption of 200 l/capita/day (specific consumption standard for western country\(^1\)), the number of users would be around 200,000 people; instead, the recorded number of user is a lot less, resulting in an apparent average daily specific consumption of about 340 litres/capita/day. This apparent specific consumption shows that there is a huge number of “illegal clients”, connected to the network but not recorded;

- in 2006, the amount of irrigated land was 668 ha out of a total of 20,000 ha (against 547 ha in 2005 and 526 ha in 2004). Studies and other documents of the Ministry of Agriculture report that the land area that could be irrigated in the near future is much greater (between 5,000 and 10,000 ha). In the above figures, the estimated values are utilised to evaluate the present needs;

- the Kosovo A plant will be in operation until 2020, and the water supplied by the Iber-Lepenc hydro system (via the Llab river) amounts to 0.20 m\(^3\)/s, but only 5 months per year, resulting in an annual average net flow of 0.08 m\(^3\)/s (see also Paragraph 3.3.3.1);

- as for the Kosovo B plant, the net water consumption should be around 0.50 m\(^3\)/s (see also Paragraph 3.3.3.1);

- the average net water consumption of the other industries (metallurgic factories and manufacturing plants) is estimated to be around 1.00 m\(^3\)/s until 2020.

**Water Resource Estimation**

Water availability in the Iber-Lepenc system is dependent on the the water balance in the Gazivoda reservoir. The water balance in Gazivoda is calculated considering the water inflow to the main lake, which consists in the natural inflow, and the water outflow, represented by the inflow to the

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\(^1\) As reference values some recorded specific consumption in the balcan area were Slavonski Brod (Croatia), 145 l/c/d in 2005, Vukovar (Croatia), 141 l/c/d in 2004 and Bijelo Polje (Montenegro) 155 l/c/d.
hydroelectric power plant and by the possible excess of water by-passing the
turbines to ensure the minimum inflow to the secondary reservoir.

In the EAR Water Supply study, total inflow to the Gazivoda lake was
determined on the basis of the statistical water inflow data for the period
1948-1972 (only available data), provided by ILE.
Even the Institute for Hydro-Meteorology in Prishtina was not able to provide
more recent data on rain flows in the catchments' area.
The water inflow to the Gazivoda Lake was determined on the basis of the
above mentioned data provided by ILE that refer to the period 1948 – 1972.
Although this data are old (dating back before the construction of the dam),
they are the only available data.

Table 3.3.3.2d summarizes the average and worst year (1950) values for the set
of water inflow data.

| Water Inflow to the Gazivoda Lake in million m³ (1948 – 1972, EAR Water
Supply Study) |
<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Jan</td>
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<tr>
<td>Average</td>
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<tr>
<td>Median</td>
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<td>Worst year</td>
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</table>

The comparison between water demand and water availability gives a figure
of the present condition of the indicator (see in the following for comments).

Quality of River Water

Contamination of rivers and streams is high all over the project sites.
Although chemical-industrial, mineral and metallurgical production,
previously discharging into surface water, has decreased in the area of
interest, no significant improvement in river water quality has been reported.
Main findings from the Water Surface Quality (MESP Water Department,
2006) are the following:

- Presence of detergent in rivers is reported. This is due to large use of
detergent in household and industry.
- Organic substances are present in most part of the region rivers. This is
proved by high registered values of Biological/Chemical Oxygen
Demand especially in rivers affected by sewage discharges.
- A proper monitoring program of substances classified as micro
pollutant (heavy metals, resistant organic pollutants and
hydrocarbons) is not properly carried out in all Kosovo rivers.
- High values of phenols are reported especially in Sitnica River and its
tributaries. This is probably due to sewage discharges from ash landfill
where phenol waste were disposed of.
- According to the UNECE Standard Statistical Classification of Surface
Freshwater Quality for the Maintenance of Aquatic Life [ESC, 1992]
Sitnica Rivers is classified as III or IV category (water with
medium/high eutrophication that can be used for irrigation and industry, except for food industry, or can be used only after specific treatment process). Sitnica River during 1980s was considered as “dead” river; it regenerated a little after closure of Fertilizing Plant and Gasification Plant.

Based on MESP Water Surface Quality Report, Sitnica River and its tributaries are highly polluted, principally due to the large amount of sewage and industrial discharges, making the Sitnica-Iber river system an open drain of industrial effluent.

Results of monitoring campaign performed by Kosovo Institute of Hydrometeorology in 2006 in Sitnica, Drenica and Llapi rivers are presented in Table 3.3.3.2b. The adopted methodology and the reference limits used to classify waters are not specified.
Table 3.3.3.2b Monitoring of River Water Quality in Rivers in Central- Eastern Kosovo (Kosovo Institute of Hydrometeorology, 2006)

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<th>Sitnica</th>
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<td>0.015</td>
<td>0.143</td>
<td>0.23</td>
</tr>
<tr>
<td>Calcium</td>
<td>57.28</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
<td>54.13</td>
</tr>
<tr>
<td>Magnesium</td>
<td>31.975</td>
<td>27.55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Monitoring results of waste waters discharges from TPP A and B to the Recipient Sitnica, as provided by KEK, are presented in Paragraph 3.3.3.1.

As reference standards, former Jugoslavia regulation points out the legal framework for protection of surface water by means of classification in four classes according to water pollution level and use. Limits are summarized in Table 3.3.3.2c as presented in Order on water classification, official Gazette of Social Republic of Serbia, No. 5/68 (ecological quality parameters) and official Gazette of Social Republic of Serbia, No. 31/82 (chemical quality parameters). With regard to chemical quality parameters, a selection of the most representative is presented in the Table. As a matter of fact, iron, copper, nickel, cadmium, zinc, arsenic and cyanides are the most frequently found in water streams in concentrations above former Yugoslavia and other threshold values.

Indicated classes are:

- Class I: water that, in natural state or after disinfection, can be used for drinking water supply, food industry and fine fish (salmonidae) breeding;
- Class II: water appropriate for bathing, recreation, water sports, less fine fish (cyprinidae) breeding, including water that, after basic treatment methods (coagulation, filtration and disinfection), can be used for drinking water supply and food industry. Class II is then divided in two further subclasses - sub-class IIa and sub-class IIb;
- Class III: water that can be used for irrigation and industries except food industry;
- Class IV: water that can be used only after special treatment.
Table 3.3.3.2c  Surface Water Quality Standards

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Class I</th>
<th>Class II</th>
<th>Sub-class IIa</th>
<th>Sub-class IIb</th>
<th>Class III</th>
<th>Class IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended solids in dry weather conditions [mg/l]</td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>40</td>
<td>80</td>
<td>–</td>
</tr>
<tr>
<td>Total dissolved substances in dry weather conditions [mg/l]</td>
<td>350</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1500</td>
<td>–</td>
</tr>
<tr>
<td>pH</td>
<td>6.8 – 8.5</td>
<td>6.8 – 8.5</td>
<td>6.8 – 8.5</td>
<td>6.5 – 8.5</td>
<td>6.0 – 9.0</td>
<td>–</td>
</tr>
<tr>
<td>Dissolved oxygen [mg/l] (not for groundwater and lakes)</td>
<td>8</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>0.5</td>
</tr>
<tr>
<td>BODs [mg/l]</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>–</td>
</tr>
<tr>
<td>Saprobic level according to Libman (not for groundwater and lakes)</td>
<td>oligo-saprobe</td>
<td>beta-mesosaprobe</td>
<td>beta-mesosaprobe</td>
<td>beta-alfa-meso-saprobe</td>
<td>alfa-meso-saprobe</td>
<td>–</td>
</tr>
<tr>
<td>Level of biological productivity (applicable only for lakes)</td>
<td>oligotrophic</td>
<td>eutrophic</td>
<td>eutrophic</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Most probable number of coliform germs in 100 ml of water, up to</td>
<td>200</td>
<td>6000</td>
<td>6000</td>
<td>10000</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Noticeable waste materials</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Colour</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Smell</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Cyanides</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Iron (mg/l)</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Copper (mg/l)</td>
<td>0.1 (0.01)</td>
<td>0.1 (0.01)</td>
<td>0.1 (0.01)</td>
<td>0.1 (0.01)</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Nikel (mg/l)</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Cadmium (mg/l)</td>
<td>0.005</td>
<td>0.005</td>
<td>0.005</td>
<td>0.005</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Zinc (mg/l)</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Arsenic</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
</tbody>
</table>

% Population with Adequate Water Facilities

In Kosovo region, as stated by Ministry of Environment and Spatial Planning representative in Balwois International Conference (Macedonia, 2004), only 44% of the total population, and 8.4% of the rural population, has access to the water distribution system.

People in rural areas rely on village water-supply systems, their own wells or on springs and surface water. Rural wells are generally in bad conditions and the water quality is poor, due to organic contamination. Domestic water supply is further hampered by several problems, including pipe failures, interrupted power supply and limited storage capacity; the result is very high per capita water consumption of around 340 l/ca.day. Water distribution networks are generally very old and in poor condition as they suffer from a lack of investment and maintenance. Few utilities are able to provide adequate amounts of water to the population. There is an ongoing problem with the collection of fees for water use, owing, in large part, to the lack of functioning water meters.
Twenty percent of Obiliq town is supplied by Prishtina Water Supply Company through the potable water supply network, which gets its water from Batllava and Badovci Lakes. Water quality samples are taken in Obiliq, both from raw water and from the network. The monthly results of 2006 show an exceedance of the limit for total coliform during three months (January, July and December) in waters from the network.

The World Health Organization (WHO), in cooperation with the Institute for Public Health, has developed and distributed instructions to local and international NGOs and communities on standard methods of water sampling, the minimum standard of rehabilitation, protection and disinfection of wells and the frequency of routine sampling for drinking water from the distribution system in each municipality. Municipal sanitary inspectors were trained by WHO and the Institute to carry out the sampling and reporting. In 2000, as part of the routine sampling of the urban drinking-water network, 4000 samples were taken in Prishtinë/Pristina and between 600 and 1000 in Pejë/Pec, Prizren/Prizren, Gjilan/Gnjilane, Gjakovë/Dakovica and Mitrovicë/Mitrovica. The results show that water companies have improved drinking-water quality since early 2000; however, there are ongoing failures. This can be attributed to a number of factors, including the poor state of the network, the lack of chlorine and chlorination points, and, in some cases, poorly protected water sources. As a result, drinking water poses significant risks of water-borne bacteriological diseases.

In Obiliq Municipality, the National Public Health Institute has carried out measurements of the quality of drinking water from wells in rural areas, based on the Regulation on drinking water quality monitoring. Two samples of drinking water have been collected in each of the following villages: Shipitulle, Hade, Bakshi, Millosheve, Hamidi, Lajthishte, Sibovc, Babimoc/Babin Most, Breznice and Kozarice.

The sampling has been carried out in four different periods during 2002: February, July, November and December. In the following are presented the results.

In February, the samples were taken in the two most frequented points of each village: the Health House and the school (when not existing, samples were taken from individual wells of inhabitants of that village). 20 bacteriological and 20 chemical samples were analyzed. Results consistently show a high level of contamination:

- 95% of samples show contamination of faecal origin or total coli-form, not in compliance with WHO indications;
- 55% of samples have high values of nitrites and nitrates, not in compliance with with WHO indications;
- 100% of samples are not drinkable and do not comply with AI 2/99 MSHMS.
In July, the samples were taken from individual wells of inhabitants of the villages. 20 bacteriological and 20 chemical samples were analyzed. Results showed a high level of contamination:

- 90% of samples show contamination of faecal origin or total coli-form and do not comply with WHO indications;
- 45% of samples have high values of nitrites and nitrates and do not comply with AI 2/99 MSHMS;
- 97.5% of samples are not drinkable and do not comply with AI 2/99 MSHMS.

In November, the samples were taken from individual wells of inhabitants of the villages, schools and Health House (from the total number of samples, 6 were taken from school wells and 1 in the health house). 15 bacteriological and 15 chemical samples were analyzed. Results show a high level of contamination:

- 87% of samples show contamination of faecal origin or total coli-form and do not comply with AI 2/99 MSHMS;
- 13% of samples have high values of nitrites and nitrates and do not comply with AI 2/99 MSHMS;
- 100% of samples are not drinkable and do not comply with AI 2/99 MSHMS.

In December, the samples were taken from individual wells of inhabitants of the villages of Millosheve, Raskove, Bakshi and Bajmovc. 8 bacteriological and 8 chemical samples were analyzed. Results show a high level of contamination:

- 38% of samples show contamination of faecal origin or total coli-form and do not comply with AI 2/99 MSHMS;
- 38% of samples have high values of nitrites and nitrates and do not comply with AI 2/99 MSHMS;
- 100% of samples are not drinkable and do not comply with AI 2/99 MSHMS.

In conclusion, results always show a high level of contamination. It has to be added that the analyses did not investigate trace element such as heavy metals, phenols and other contaminants potentially present in the investigated area. Furthermore, anecdotal evidence from the Project’s social baseline survey and consultations shows that a number of communities are concerned with the low quality and quantity of water in their villages. For further information please see Paragraph 3.4 and Tables in Paragraph 3.4.

Moreover, while collecting samples, also the sanitary-hygienic conditions of each well have been reviewed, with the following results:
• in February (samples taken in the two most frequented points of each village: the Health House and the school) 40% of the wells are very highly endangered for contamination, 40% of the wells are highly endangered for contamination and 20% of the wells are averagely endangered for contamination;
• in July (samples taken from individual wells of inhabitants of the villages) 30% of wells are very highly endangered for contamination, 40% of wells are highly endangered for contamination and 30% of wells are averagely endangered for contamination;
• for November (samples taken from individual wells of inhabitants of the villages, schools and Health House) and December (samples taken from individual wells of inhabitants of the villages of Millosheve, Raskove, Bakshi and Bajmovc) no data are available.

No complete inventory of water facilities exists, therefore the indicator cannot be calculated.

State Indicators – Comments on Available Data and Suggestions

Water Reserves
Data on water availability in Kosovo Region do not appear sufficient to clearly define the present situation: water inflow in Gazivoda lake are 36 years old e no systematic data were found on the presence of exploitable aquifers or other water sources in the Kosovo Region from Pristina to Mitrovica.

Nevertheless, if we assume:

• valid the existing data on Gazivoda Lake inflow;
• that Gazivoda lake is practically the only reliable source of water for the Region of interest;
• that the irrigation area is going to be soon at least 10,000 ha;
• that the real present potable water consumption supplied with Iber Lepenc Canal is around 15 Mm$^3$/y (0,46 m$^3$/s);

the water exploitation index (WEI$^1$), defined as the ratio of water demand over water availability, for the area in a near future will assume the value of:

WEI = 6,48/13,02 = 0,5.

According to EAR study, in average, median and worst year, total water availability remains higher than water demand. However, the system is under stress from potentially competing demands, as indicated by the (WEI), an

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$^1$ The water exploitation index (WEI) is part of the Core Set of Indicators of the European Environmental Agency and is defined as the mean annual total abstraction of freshwater divided by the mean annual total renewable freshwater resource at the country level, expressed in percentage terms.
indicator used by the European Environmental Agency to identify water stressed regions or river basins.

As pointed out by Kosovo Lignite Power Technical Assistance - Technical Mission Report of March 2008 “the warning threshold for the (WEI), which distinguishes a non-stressed from a stressed region, is around 20 %. Severe water stress can occur where the WEI exceeds 40 %, indicating unsustainable water use”.

According to the EAR estimation, the WEI (calculated on the present water demand as shown in the previous table) is around 50% for the average year. This high WEI indicates the potential for conflicting demands from various water users and stresses the need for a comprehensive policy, institutional and planning framework for water resource management in the Iber-Lepenc system.

Water stress already occurs, as there are frequent shortages in summer in the potable water supply to Prishtina and other municipalities supplied by the Prishtina Water Supply Company.

Furthermore, it was not considered that part of the Gazivoda Lake inflow could be used downstream the dams, where Iber river crosses the Serbian border.

As a consequence more information has to be collected on water availability in Kosovo and water resources management plans have to be prepared taking into account the Kosovo Water Law (Law No. 2004/24).

The actual situation presents apparently some criticalities and any further increase in water consumption should be evaluated carefully and together with the realization of a proper water management plan.

It is clear that the reduction of canal losses to more reasonable values (no more than 25%) and the installation of a proper monitoring network (river flow rates, potable water volume gauges etc.,) will diminish criticalities.

Water Quality
Data on water quality are available. Nevertheless the monitoring system should be improved and the analysis should be carried out on a periodic (and frequent) basis.

3.3.4 Noise

3.3.4.1 Pressure

Noise is a serious concern for the health and safety of workers at the plants and mines. Key noise sources at mines include vehicles, excavation and transport equipment, and belt conveyors.
Noise coming from mining activities and transport of coal is present mainly during daytime.

People living in villages and towns close to the mines report noise as one of the main environmental problems: whereas workers may wear personal protection equipment, residents do not have the means to protect themselves from mine-related noise.

No monitoring data are available to date with regard to noise impact from the mining site.

Power plant noise comes from belt conveyors, crushing equipment, burners, turbines, generator, ventilators, compressors, pumps, cooling towers and stacks. In several places inside power plants areas, noise emissions likely exceed 85 dB(A), which is generally considered the limit not to be exceeded at 1 m distant.

No monitoring data are available to date with regard to noise emissions. However, since power plants are not positioned in the immediate vicinity of sensitive receptors such as houses, significant noise impact from them is considered unlikely.

Nevertheless, meteorological conditions, mainly wind direction and speed, surface and atmospheric absorption and air humidity may influence the level and distribution of noise; a monitoring campaign is necessary to evaluate the indicator “Noise emissions” for the sites of plants and mines.

Pressure Indicators – Comments on Available Data and Suggestions

There is currently no noise monitoring data: based on limited information available and ERM experience, noise emission has to be considered a key aspect to be addressed for mine development. A noise survey should be undertaken and comparison made with applicable standards, to ascertain potential non compliance and necessary mitigation measures for the protection of both workers and residents.

3.3.4.2 State

A number of residents from villages close to the existing mining facilities have raised concerns about noise levels (for further information please see Sections 3.4.3, 3.4.4.3, 3.4.11.1 and Table 3.4.1.2a, Table 3.4.16c). However, detailed noise mapping has not been carried out. Without a detailed noise baseline, Carl Bro (2003) has calculated the noise as presented in Table 3.3.4.2a.
### Table 3.3.4.2a Noise Estimate

<table>
<thead>
<tr>
<th>Location</th>
<th>Distance</th>
<th>Local noise</th>
<th>Estimated noise level</th>
<th>Limit level day</th>
<th>Limit value night</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obiliq</td>
<td>500m</td>
<td>55-60</td>
<td>63</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>Orloviq</td>
<td>300m</td>
<td>55</td>
<td>58</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>Mirasi</td>
<td>500m</td>
<td>45</td>
<td>55</td>
<td>55</td>
<td>45</td>
</tr>
</tbody>
</table>

During daytime, no noise problems have been recorded in the neighborhood. During the night, noise in Obiliq municipality, around 500 m away from the TPP Kosovo B, seems to exceed the rate for inhabited areas according to Carl Bro; and again, during nighttime the noise is probably above the level (see next paragraph) for residential area.

During the public consultation meetings, residents of settlements located close to the mines, especially Grabovc i Poshtem, raised concerns about the noise emitted by conveyer belts and mining operations.

Reportedly, measurements performed revealed exceedances of noise limit values by approximately 10 dB(A) for night time. An earth dam is planned as mitigation measure to reduce noise levels.

Mitigation measures for noise have to be provided for health and safety protection of the workers and vicinity population.

Local authorities have not defined any acoustic zoning plan, therefore it was not possible to completely define the indicator “Zoning Plan and Noise Immissions”.

### Reference Legislation

The EU Exposure to Noise Directive (2003/10/EC) sets exposure limit values and exposure action values in respect of the daily occupational noise exposure levels and peak sound pressure. The daily exposure limit values are the following:

- exposure limit values: $LEX_{8h} = 87$ dB(A);
- upper exposure action values: $LEX_{8h} 85$ dB(A);
- lower exposure action values: $LEX_{8h} = 80$ dB(A).

The exposure levels to which workers are subject are calculated as being the time weighted average – over eight hours for the daily noise exposure and over five eight-hour days for the weekly noise exposure. Employers have a duty to undertake a risk assessment and, if considered necessary, measure the noise to which employees are subjected. Where the risks of damage from exposure to noise cannot be prevented by other means (such as removal or enclosure of the noise source, limiting the time of exposure), the employer is required to provide employees with adequate hearing protection.

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1 Noise immissions means noise perceived by receptors.
Employers of workers exposed to occupational noise are required to provide health surveillance. Those workers exposed to noise levels above the upper exposure action value has the right to have his/her hearing checked by a doctor.

Preventive hearing testing must also be available for those workers whose exposure exceeds the lower exposure action values where the risk assessment considers it necessary.

_The World Bank/IFC_ guidelines recommend that noise levels, measured at receptors outside the project operations boundary, should achieve either the levels shown in _Table 3.3.4.2c_ or a maximum increase in background levels of 3 dB(A).

The following _Table 3.3.4.2b_ and _Table 3.3.4.2c_ show respectively the Former Yugoslavia standards and the WB guidelines values set for ambient noise.

**Table 3.3.4.2b**

*Former Yugoslavia Noise Limits set by the Regulation on ambient noise limit values, Official Gazette of Republic of Serbia, No. 54/92*

<table>
<thead>
<tr>
<th>Environment</th>
<th>Limit value [dB(A)]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>by day</td>
</tr>
<tr>
<td>Dwelling houses (with closed windows)</td>
<td></td>
</tr>
<tr>
<td>a) Noise source within building</td>
<td>35</td>
</tr>
<tr>
<td>b) Noise source outside the building</td>
<td>40</td>
</tr>
<tr>
<td>Public and other facilities (with closed windows)</td>
<td></td>
</tr>
<tr>
<td>Hospitals, Health centres, etc.</td>
<td></td>
</tr>
<tr>
<td>a) Patients room</td>
<td>35</td>
</tr>
<tr>
<td>b) Medical practises</td>
<td>40</td>
</tr>
<tr>
<td>c) Surgery rooms</td>
<td>35</td>
</tr>
<tr>
<td>Recreation and resting rooms for children and students, bed-rooms of homes for elderly people and pensioners</td>
<td></td>
</tr>
<tr>
<td>a) Noise source within building</td>
<td>35</td>
</tr>
<tr>
<td>b) Noise source outside the building</td>
<td>40</td>
</tr>
<tr>
<td>Educational institutions</td>
<td></td>
</tr>
<tr>
<td>Cinemas</td>
<td>40</td>
</tr>
<tr>
<td>Reading room &amp; libraries</td>
<td>40</td>
</tr>
<tr>
<td>Theatres and auditoriums</td>
<td>30</td>
</tr>
<tr>
<td>Hotel rooms</td>
<td></td>
</tr>
<tr>
<td>a) Noise source within building</td>
<td>35</td>
</tr>
<tr>
<td>b) Noise source outside the building</td>
<td>40</td>
</tr>
</tbody>
</table>

**Table 3.3.4.2c**

*WB Ambient Noise Standard (1)*

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Day (07:00–22:00)</th>
<th>Night (22:00–07:00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential, Institutional</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>Educational</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Industrial, Commercial</td>
<td>70</td>
<td>70</td>
</tr>
</tbody>
</table>

(1) Maximum allowable log equivalent (hourly measurements), in dB(A)
State Indicators – Comments on Available Data and Suggestions

As outlined in the previous paragraph, data are scarce and environmental and occupational noise should be considered as a problem. The scarce indications available do show very probable exceedance of noise immission standards (EU, WB and former Yugoslavia) in the residential areas around mine boundaries and sometimes in the residential areas near Kosovo B. Monitoring of environmental noise should be undertaken and appropriate mitigation measures designed.

3.3.5 Solid Waste

3.3.5.1 Pressure

Waste, both municipal and industrial, is a major environmental challenge in Kosovo, especially mine tailings and flotation sludge. Old waste sites did not have waterproof lining to prevent seepage from polluting groundwater, they were not covered with inert material to keep rainwater out nor did they have gas extraction systems to prevent methane explosions.

The main issues connected with waste production from mines and power plants are the following:

- production of ashes;
- generation of solid waste;
- generation of hazardous wastes.

Production of Ashes

Lignite contains non-combustible materials that forms *ash* during the combustion process. Ashes from the power plants (Kosovo A and Kosovo B) are fly ash and bottom ash. The electrical precipitators collect the largest quantities of fly ash but some are released as dust emissions through the stacks.

The quantity of residuals becomes higher if combustion efficiency drops, or the quality of the lignite is poor.

TTPB fly ash is now hydraulically transported as a suspension of water and ash to the ash landfill where it is discharged in the residual hole of the former Mirash-East mine. Bottom ash is transported to the landfill with trucks and conveyors. TTPA ashes are transported to the existing ash landfill by means of belt conveyors after humidification.
The ashes contain salts and trace metals, which, once wet, can leach out to infiltrate groundwater and surface water. The ash from both plants is either slurry or damp, and is disposed of without protection against rainfall. Unfortunately, no analyses of trace elements are performed, as INKOS has no equipment for this.

Amounts of ash produced by the plants in the period 2005-2006 (as per the KEK report) are presented in Table 3.3.5.1a.

<table>
<thead>
<tr>
<th>Generation Division</th>
<th>Unit</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPP Kosovo A</td>
<td>t/y</td>
<td>232618.7</td>
<td>321577</td>
</tr>
<tr>
<td></td>
<td>t/MWh</td>
<td>0.293</td>
<td>0.3109</td>
</tr>
<tr>
<td>TPP Kosovo B</td>
<td>t/y</td>
<td>820362.7</td>
<td>726559.4</td>
</tr>
<tr>
<td></td>
<td>t/MWh</td>
<td>0.232</td>
<td>0.227</td>
</tr>
<tr>
<td>TOTAL</td>
<td>t/y</td>
<td>1052981.4</td>
<td>1048136.4</td>
</tr>
<tr>
<td></td>
<td>t/MWh</td>
<td>0.2409</td>
<td>0.24241</td>
</tr>
</tbody>
</table>

The methods used to determine these quantities are not known and the exact quantity is not confirmed.

A typical complete Chemical analysis of ash (slug and fly ashes) is reported in Table 39 of KEK report, but no indication is given about the leaching capacity and whether dangerous substances (such as chromium and heavy metals) are present in very soluble form or insoluble form.

Two disposal sites for ash are used near the Kosovo A and B power plants. Kosovo B ash is hydraulically transported in a slurry and disposed of in a depleted area of the Mirash-East mine, which serves as an ash landfill. Ash from Kosovo A is transported to the landfill by means of belt conveyors after humidification. The ash landfills have exceeded the originally intended volume and heaps of ash form a visually dominant element of the landscape. TPP A landfill with overburden occupies an area of approximately 240 ha, while TPP B landfill occupies 55 - 60 ha.

Both landfills have at certain times in the past been used to dispose of other solid and liquid waste (for example, in Kosovo A landfill, oil and phenol ponds were identified); see soil component (Paragraph 3.3.2) for details. INKOS is testing various grass species for covering the ash dumps.

The filter ash of the lignite-fired power plants could be used as a cement substitute for concrete production as well as for the production of masonry bricks and for road construction. Another option that has been proposed is to transport the fly ash to parts of the mine that have been exhausted. No clear implementation plan seems to have been developed by either KEK or the Ministry of Environment and Spatial Planning.

For further details on the ashes in TPP A ash dump, please refer also to the Clean up and Land Reclamation Project (CLRP), devoted to identify the extent of contamination and improve the environmental situation in the
surroundings of KEK mines and power plants, by a reduction of dust emission from the existing TPPA ash dump (Paragraph 3.3.2.1).

*Generation of Industrial Solid Waste*

Waste management in general needs improvement in Kosovo, particularly for industrial facilities. Data on *solid waste production* (urban and industrial) are not easily available due to a lack of waste policies.

In the following an estimation of solid waste production by the mines and the power plants is attempted.

No inventory of wastes generated by the mines exists. Apart from ash, solid wastes come from mine offices and repair stations, which are collected by the municipal waste collection and disposal services. TPP B uses a slurry pipeline to transport ash to the Mirash East.

The main sources of solid waste from the power plants are:
- Combustion residuals (ashes);
- Worn out equipment and materials;
- Residue from water treatment;
- used machinery oil and other hazardous waste.

Waste from both the power plants is managed by a special division within Central Maintenance Department.

Waste inventory for Kosovo includes 32 waste types; ashes are by far the largest problem in terms of quantity (see indicator “Production of ashes”).

Metals are the only waste separately collected and sold to METALKOS; the total amount of scraps removed by the firm in 2006 was around 975,198 t. Other solid waste (a part metals) is collected in containers and disposed off by the municipal waste services company. Spent oil reportedly is recycled by specialised companies.

Like ash, solid waste residuals from the water treatment processes may contain trace metals and salts. Quantities are estimated at about 6 m$^3$/d from Kosovo A and 3 m$^3$/d from Kosovo B. As dry material this equals about 2,100 m$^3$/y of solid waste. The waste is removed as mud and disposed together with the ash.

KEK has a department for management of waste materials and the following quantities were recorded:
- Steel: 2,466.8 t
- Metals: 20.0 t
- Copper: 13.0 t
- Rubber: 19.5 t
- Lead: 3.6 t

Contaminated soil, dropped lignite, ashes and other solid products was collected and disposed in the ash disposals. There are no record of quantities and content of trace elements and salts. A rough estimate of the disposed quantities is 30,000 t of waste from cleaning-up.

Only indicative solid waste production quantities are available.

*Hazardous materials and waste* are currently stored in deplorable conditions at many sites in Kosovo, mainly in the industrial complexes where they were used or generated. There are no proper storage facilities for hazardous waste, although there is a plan to build temporary storage facilities.

No inventory of wastes generated by mines exists. Hazardous waste produced in mines are spent oil (motor, hydraulic, trafo); reportedly there are no spent batteries.

Hazardous waste or potentially hazardous waste (among which transformers oil, batteries, cables, insulation, chemicals, chemicals packaging) from power plants is stored in special areas and disposed of. Specific procedures for waste transportation and disposal are still under preparation.

*Asbestos* was used mainly for installation during construction of Kosovo A, the drying plant and the gasification plant and can be found all over the plants. No asbestos was used for Kosovo B. Asbestos was mainly used for insulation and can be found all over the plants. Reportedly, no asbestos is present in the mining area and none was identified during the site visit.

Reconstruction must have left huge quantities of solid waste with content of asbestos. The materials are mainly disposed together with ashes but there is no record of quantities and disposal places.

Urgent measures should immediately be taken to protect workers from any exposure to asbestos fibres. It primary means controlling of the spread of asbestos within the enclosure. Whenever practical, the point of removal should be isolated, enclosed, covered, or shielded from the workers in the area.

Waste containing asbestos materials must be bagged during or immediately after removal. The material must remain saturated until the waste container is sealed. Waste material with sharp points or corners must be placed in hard airtight containers rather than bags. Whenever possible, large components should be sealed in plastic sheeting and removed intact. Bags or containers of waste must be moved to a special waste area, washed, and wrapped in a bag with the appropriate labels.
According to data available, oil containing PCBs (polychlorinated biphenyls) is not a significant issue at the power plants. Taking into account how old the equipment is and the lack of regular maintenance, it is almost certain that some pieces of equipment contain oils with PCB. Since there is no special care of waste oils discarded into drums without specific labels there is no labelling of oil, which may or may not contain PCB. There are no procedures or instructions for oil control or if there are some, they have not been implemented. There is also no testing on PCB presence in the Kosovo A or B, which have to be provided in future.

The KEK Environmental Report mentions 5 transformers that contain PCBs but are out of operation and 14 transformers containing PCBs that are still functioning at Kosovo B. These transformers should be replaced and properly disposed of in near future.

Larger quantities of PCBs containing transformers were used in the past and have been dismantled and are probably disposed in a not specified area of Kosovo B site.

Only indicative hazardous waste production quantities are available.

**Municipal Waste Generation and Disposal**

Services for the collection, transport and disposal of municipal waste predominantly cover urban areas, but they are now being expanded into rural areas. According to the 2002 Human Development Report, the total population is estimated to range between 1.8 and 2 million; about 35% of the population in Kosovo lives in urban areas and 65% in rural areas. About 60-80% of all municipal waste is collected in urban areas; rural areas have almost no public services.

Nine new landfills are planned. Eight of these are currently in the design phase or under development and construction. Two of them will serve single municipalities that are too remote for waste transport.

Following the 1999 conflict virtually all waste collection ceased. There has been considerable improvement as a result of donations of funds and equipment from the international community, but equipment and transport are still inadequate for the proper collection and disposal of all municipal waste.

There are 30 municipalities in Kosovo, and waste is either dumped at either municipal or regional landfills. In a number of municipalities, dumpsites have been rehabilitated and are being used by waste companies until regional or new landfills can be completed. Rehabilitation has been undertaken in Gjakovë/Dakovica, Glogovë/Glogovac, Istog/Istok, Klinë/Klina, Kamenica/Kamenica, Mitrovë/Mitrovica, Lipjan/Lipljan, Orahovac, Podujevë/Podujevo, Suharekë/Suva Reka, and Ferizaj/Urosevac.
In Novobërdë/Novo Brdo, Obiliq/Obilic, Pejë/Pec, Skenderaj/Srbica, Shtime/Stimljë, Vushtrri/Vucitrn and Zubin Potok/Zubin Potok, the dumps have been decommissioned. In the remaining municipalities, dumpsites have not been rehabilitated and are still in use. For example, the present dumpsite for the largest municipality, Prishtinë/Pristina, is situated about 2 km from the city, in the northeastern corner of Mirash East mine. Prishtina Regional Waste Company manages the Municipal Landfill of Prishtina which is equipped with a leachate pond. The waste is not covered daily with a layer of earth; there is no drainage system and no monitoring. Parts of the waste site are regularly burned by scavengers, resulting in high emissions of dioxins.

Programmes of assistance, primarily from the European Agency of Reconstruction (EAR), the Danish Agency for Development Assistance (DANIDA) and German Technical Cooperation (GTZ), have led to significant improvements in waste collection and disposal since June 1999.

Some of the uncontrolled dumps have been rehabilitated, with open surfaces now covered and a layer of clay to reduce the infiltration of water into the site. However, the majority of sites will continue to pollute the groundwater. These sites are vented, but, owing to their size and the expense involved, none has a gas extraction system. EAR has financed a program of investments into the rehabilitation of old uncontrolled landfills and a program of engineered regional landfills. The key priority will be to ensure that these sites are licensed and operated in accordance with defined environmental objectives and set standards.

There are no recycling facilities in Kosovo except for some minor initiatives for aluminium cans, collected for a small smelter in Janjeva/Janjevo, and a nonfunctioning paper and plastic recycling plant.

Separation and recycling of potential secondary resources from municipal waste will not contribute significantly to resource savings without massive investment in the collection and recycling infrastructure, as well as in public participation and awareness raising. This is currently well beyond the available resources. The major gains are to be found in recycling and reusing commercial and industrial waste. If investment is available it should be targeted at commerce and industry. Here small investments in waste minimization and recycling techniques can produce significant reductions in waste requiring disposal. Schemes targeted at household waste should be undertaken only when they can be demonstrated to be commercially viable without large public subsidy.

Pressure Indicators – Comments on Available Data and Suggestions

Mines and interviews conducted at the site show that waste have historically been abandoned/dumped on site, waiting to be re-used or sold out.

There is a lack of awareness of waste management issues such as waste minimisation, safe storage and handling of waste, waste labelling or
segregated collection. Actions to prevent open dumping at industrial sites should be taken and generated waste should be adequately stored in order to prevent soil and groundwater runoff contamination and to allow recycling/reuse of secondary raw materials. Existing open dumps need to be reclaimed.

### 3.3.5.2 State

No specific waste state indicator has been identified. Nevertheless, waste issues are directly linked to other state indicators, such as Air quality (see Paragraph 3.3.1.2) and Soil quality (see Paragraph 3.3.2.2).

For the sake of completeness, we remind that Kosovo waste law is devoted to protect the environment and human health from pollution and risk of harm from waste through environmentally sound waste management by establishing conditions for prevention and reduction of waste production and its harmfulness.

In particular, the Waste Law (2005) addresses a number of waste management issues including the following:

- Polluter pays principle
- Priorities in waste management: waste reduction, recycle, reuse, thermal treatment (without energy recovery), final disposal.
- Waste classification based on the European Waste Catalogue
- Defines Management Planning documents:
  - Waste Management Strategic Plan for Kosovo (Responsibility of Ministry)
  - Local Waste Plans (Responsibility of Municipalities)
- Defines Plan for equipment and facilities for waste management
- Defines an operational waste management plant for operators.
- Defines authorizations requirements for transport and storage of waste
- Defines documents to be used for annual declarations
- Defines competent authorities.

More recent Administrative Instructions address several specific issues. No specific regulation relative to hazardous waste management has been developed in Kosovo at the present time.

### 3.3.6 Natural Environment

#### 3.3.6.1 Pressure

The pressure on nature and biodiversity comes mainly from forest exploitation, agriculture, industry and illegal construction.
Forest exploitation is putting increasing pressure on the long-term sustainability of Kosovo’s forests and their ecosystems. Since the end of the conflict, the increased need for firewood due to the lack of alternative means of heating, and timber for reconstruction, has led to uncontrolled and illegal felling, with the current cut probably twice the sustainable yield. A quarter of all residents stated during consultations they earn extra income cutting and selling wood for heating. It is not known whether this is on owned or communal land (see Paragraph 3.4.9). Uncontrolled and illegal logging has also increased the risk of erosion in the mountainous areas.

At present, environmental impacts from agriculture are not significant, because fertilizer and agrochemical use is low. This will change as the rural economy improves and fertilizers and pesticides use increases.

Likewise, there is not much pollution from industry because of lack of activity. Nevertheless, former sites of heavy industry remain a source of environmental pollution, since they are contaminated with metal processing waste and various chemicals, which are leaking into surface and groundwater. Particulate from the mines is discussed elsewhere.

Uncontrolled land use and illegal construction also have a marked impact on biodiversity. Illegal houses have been built on forestland and protected areas, including in the Sharr/Sar Mountains National Park. In addition, illegal quarrying is still taking place on a large scale. An overview of the area of interest should be carried out, to include these illegal activities.

Due to the unavailability of detailed data, it was not possible to quantify the indicator “Impact on natural habitats”.

Landscape – Visual Impact

In terms of visual impacts, there are seven dumps located NW, SW, S and SE of Bardh and Mirash mines, which occupy an area of 10 km$^2$ and contain 260 million m$^3$ of clays and silts and significant amounts of organic materials. The environmental damage caused by the dumps located outside the mine area is mainly due to the lack of dump management, questionable long-term geotechnical stability, and lack of revegetation (e.g. the youngest dump dates from 1990). Landslides have occurred in the Mirash West pit due to dump slope instability (which exceed advised height limits - about 10 m - at least 3 times).

Visual estimations show that no more than 10% of the outside dumps have been recultivated. These dumps constitute a potential source of particulate for mining workers and the villages of Bardh and Hade, notably during the summer. At present, there are no plans to start rehabilitation works.

Site inspections carried out in April-May 2003 showed that:

• although dumps have modified the original landscape, with their irregular morphology, the area was not much affected because some of the dumps were deposited in valleys;
• a natural recovery of soils by spontaneous grass vegetation in the dumps improves the local environment; trees and bushes are absent;
• some small lakes have naturally formed in the valleys between dumps, with typical fishery and wetland plants.

In the following are presented some pictures (see Figures 3.3.6.1a – 3.3.6.1e) of the typical landscape in the area of interest, considering both the industrial context and the nearest village of Hade.

**Figure 3.3.6.1a  Kosovo A Power Plant**

**Figure 3.3.6.1b  Lignite Transport Conveyer**
Figure 3.3.6.1c  Lignite Deposit and Ash Dump

Figure 3.3.6.1d  Hade Village
No data are available for the area of interest in terms of impact on natural habitats. An overview of the whole area should be carried out, mainly taking into account the illegal activities ongoing.

3.3.6.2 State

Natural and Protected Areas

Kosovo has a high diversity of ecosystems and habitats. Its total protected area is around 46,000 ha, or 4.27% of its territory; according to Kosovo State of the Environment Report 2002, protected areas in Kosovo include 1 national park (39,000 ha), 11 wildlife sanctuaries (700 ha), 38 natural monuments (4,900 ha) and 2 protected landscapes (1,700 ha).

The area of the Sharr/Sar Mountains was declared a national park by decision of the Assembly of the Province of Kosovo on 28 March 1986. The national park is a mountainous area linked with the Bjeshket e Nemuna/Prokletije Mountains, Durmitor and the coastal Dinara mountains. These mountain ranges, with Sharr/Sar in the middle, represent the Balkan centre of endemic biodiversity. There are more than 2,000 species of vascular flora in the Sharr/Sar Mountain area. That is about 26% of Balkan and 18% of European flora. Analyses of the mountain range show that endemic (about 29%) and sub-endemic taxa (about 10%) are the most numerous, accounting for almost 40% of endemic flora of Sharr/Sar. Among its species, 86 have been declared internationally significant, 26 are included in the European Red List of
Globally Threatened Animals and Plants, and 32 are included in the World Conservation Union (IUCN) Red List of Threatened Plants. The current tasks are the re-establishment of an effective administration, immediate remediation measures, the drafting of a priority action programme and the preparation of a long-term strategy for sustainable integrated development.

The Bjeshket e Nemuna/Prokletije Mountains are another important site of European and Balkan biodiversity. The whole massif is known for its floristic richness with over 750 species of alpine ascular flora, of which 18 are local and 100 Balkan endemic species. In 1985, a proposal was made to make the Bjeshket e Nemuna/Prokletije Mountains a national park. The Mountains stretch across the northeast of Kosovo, and into Albania and Montenegro. The Montenegrin Government has also initiated action to designate them a national park.

*Figure 3.3.6.2a* presents the major natural features, biodiversity and protected areas of former Yugoslavia (UNEP). The location of the area of interest is marked with an arrow.
No internationally important bird areas (IBA) have been delimited in the area of interest according to Birdlife International.

The Ministry of Environment and Spatial Planning has provided information on valuable natural sites in Obiliq and Vushtrri; the location, as reported in Poiry study, is presented in Figure 3.3.6.2b. These objects are mostly trees or springs, and were identified in surveys in 2003-2004. None are located within or in the vicinity of the TPP sites.
In general, data on natural and protected areas are quite old, and should be updated.

**Flora and Fauna**

A field survey of the fauna, flora and habitats in the area of interest was carried out by two biologists in the period 11-15 April 2007.

Several excursions were undertaken to the three potential plant sites, at different times of day (early morning, late morning and dusk) to observe as many vertebrates as possible. The flora and vegetation was mapped at the same time, although the time of the year was not optimal for this task. In order to compare and assess the value of the three sites on a national level, visits were made to areas outside of the area of interest as well.
In addition, the vegetation of the following alternative potential sites was investigated more thoroughly:

- the south-west side of Plemetin (including Kosovo B site);
- environs of Bivolak and Berisha villages (including Bivolak site).

Most species of plants (trees, bushes and herbs) were identified. The natural plant communities and those resulting from anthropogenic factors were noted, as were their biotopes. The biotope of which the plant communities form a part was also identified.

The fauna, vegetation and biotopes for the Kosovo B site and the Bivolak site were described, including prevalence of typical habitats and environs and their ecological value (biodiversity, endangered species and habitats as indicators on a national and European level).

The Kosovo A site was not investigated as it is a wholly industrial area with no natural values.

The biotopes have a high biodiversity of fauna and flora, indicated by protected and endangered species at a national level (*fide* Dr. Schneider-Jacoby, *Euronature*), such as the White Stork (*Ciconia ciconia*) Garganey, (*Anas querquedula*), Redshank, (*Tringa totanus*) and the likelihood of the especially endangered Corncrake (*Crex crex*) and Little Bittern (*Ixobrychus minutus*). The White Stork, Little Bittern and Corncrake, which are listed in Annex I of the EU-Wild Birds Directive as endangered species, are not endemic; all three are found across Europe and parts of Asia as well as elsewhere.

Most of the locations investigated are under anthropogenic influence, i.e. influenced by man. The majority of meadows and forest vegetation are managed by agriculture associations.

In the vicinity of villages there is evidence of ruderal vegetation. Natural biotopes are found close to the Sitnica River and include wet meadows between Bivolak and Prelluzha, willow forests around the river and other wet places; other natural biotopes include bushland around Bivolak and the oak forest west of Bivolak.

A more complete survey of flora and fauna in the area of interest as well as a specific catalogue of endangered species should be prepared.

*Land Use*

*Table 3.3.6.2a* presents the structure of Kosovo in terms of different percentages of land use.
Table 3.3.6.2a  Land Use Structure in Kosovo

<table>
<thead>
<tr>
<th>Type of land</th>
<th>Area (ha)</th>
<th>Area (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural land</td>
<td>574.231</td>
<td>53</td>
</tr>
<tr>
<td>Forest land</td>
<td>450.249</td>
<td>41</td>
</tr>
<tr>
<td>Urban land</td>
<td>12.073</td>
<td>1</td>
</tr>
<tr>
<td>Traffic land</td>
<td>27.796</td>
<td>3</td>
</tr>
<tr>
<td>Water areas</td>
<td>12.344</td>
<td>1</td>
</tr>
<tr>
<td>Other areas</td>
<td>12.814</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,089.507</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Kosovo Cadastral Agency

“Green” areas (including agriculture, forestry and water areas) constitute some 95% of Kosovo’s land area. In addition, Kosovo has a great variety in surface types: mountainous, hilly, flat. This means that in principle the conditions for biodiversity are very favourable, provided the environment is kept clean.

Nearly 51% of all cultivable land (representing 53% of Kosovo) is used to grow crops, less than 1% is used for vineyards, 45% is pasture land and meadows, and the remaining 2% is planted with fruit trees. About 88% of the agricultural land is privately owned while the rest is socially owned.

Forty per cent of the forests are privately owned, while the remaining 60% is under State ownership. The forestry sector has received very little attention in recent years. The wood-processing industry is facing considerable difficulties. The main reasons are the uncertain supply of energy, the unstable supply of logs at competitive prices, the lack of spare parts and the lack of funding. Because of this, production has been badly hampered and the financial situation of the companies is generally poor.

Table 3.3.6.2b contains the number of hectares (and percentage) for each type of land use and Figure 3.3.6.2c shows land use in the area of interest.

Table 3.3.6.2b  Landuse in the Study Area

<table>
<thead>
<tr>
<th>Landuse</th>
<th>Area (ha)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Areas (without existing mines)</td>
<td>545</td>
<td>2.12</td>
</tr>
<tr>
<td>Residential Areas</td>
<td>3,103</td>
<td>12.10</td>
</tr>
<tr>
<td>Overburden Areas</td>
<td>1,160</td>
<td>4.52</td>
</tr>
<tr>
<td>Existing Mines</td>
<td>1,003</td>
<td>3.91</td>
</tr>
<tr>
<td>Ash Dumps</td>
<td>215</td>
<td>0.84</td>
</tr>
<tr>
<td>Forest</td>
<td>4,613</td>
<td>17.99</td>
</tr>
<tr>
<td>Potential Agricultural Areas</td>
<td>15,009</td>
<td>58.52</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>25,648</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Source: calculation of the Consultant (see Figure 3.3.6.2c)

Agriculture is the prevalent land use, followed by forest and then industrial areas.
State Indicators – Comments on Available Data and Suggestions

Available data on natural and protected areas are quite old, more updated data should be collected. Also detailed information on the floral and faunistic population is not available and would be necessary to adequately qualify the existing situation.

As shown in Table 3.3.6.2b, most of the study area is devoted to agricultural activities. Nevertheless, this is a subsistence farming with vast areas not cultivated, also because of the characteristics of the terrains (mainly clay) which do not allow the development of extensive farming.

Data on the real consistency of agricultural land, cultivated species and uncultivated areas would be useful to give a correct view of the social implications of the project.

A discussion on this is attempted in the following sections.
3.4 SOCIO-ECONOMIC BASELINE

3.4.1 Context

Kosovo is a post conflict country which is still undergoing a process of rehabilitation and reconstruction. As such, comprehensive and up to date census information on the Sibovc mine area was not readily available. The information gathered for this social baseline was drawn from reports and discussions with Kosovo government ministries, NGOs, donor organisations and affected communities. Whilst these provided an adequate baseline and overview for the quantitative issues in the area, specific social and economic information about residents in the affected area was insufficient. The need for additional surveys and consultations was identified during the drafting of the first version of the SESA.

3.4.2 Area of Interest and Population

Obiliq municipality is located immediately northwest of Prishtina on the main road to Mitrovica. It was part of the Prishtina municipality until 1989. The municipality now comprises a total of 20 villages including the town of Obiliq itself. Primary data has been gathered from ten of the twenty settlements in Obiliq municipality. These are Hade, Lajthishte, Dardhishte, Sibovc, Grabovci Poshtem, Shipitulle, Hamidi, Palaj/Crkvena Vodica and Obiliq.

There are around 5,300 inhabitants in the town of Obiliq, and around 27,000 inhabitants in rural areas. Population density is variable from one settlement to the other. A large proportion of the population are young and settlements are divided by ethnicity. Although the majority of the population is Kosovo Albanian, villages such as Babimoc/Babin Most, Millosheve/Milosevo, Plemetin/Plemetina and Palaj/Crkvena Vodica are mostly inhabited by Kosovo Serbs and other non-Albanian ethnic minorities. Obiliq town was also a multi-ethnic area before mid-March 2005, but all remaining Kosovo Serbs and some Roma have left the town and settled in Plemetin/Plemetina and other villages.

3.4.3 Public Consultation and Stakeholder Identification

During the preparation of the LPTAP project there was considerable public consultation of key stakeholders in order to introduce the project to communities in the project area (Environmental and Social Safeguards Framework, see Annex C for consultation details). The information gathering and public consultation of the project has been staged in three phases:

- Initial key stakeholder definition and identification;

- Initial consultation of key stakeholders, including affected villages and communities, to identify potential project impacts and concerns of communities; and
• Extensive household survey of affected communities and detailed consultation and focus groups to provide a robust and up to date social base line and to explore further the impacts identified during the first phase of the consultation.

The definition of stakeholder used for identification purposes was taken from the Kosovo-based organization’s Reiinvest report – Community Consultation Guidelines for Mining in Kosovo. It states that: “Stakeholders refers to people who have an interest in mining activities. This includes people who can influence activities, as well as those affected by them. Local communities are themselves stakeholders, but stakeholders also include others from outside the local area, such as non-governmental organisations, businesses, national government, municipalities and employees from outside the community. These broader stakeholders need to be involved in the consultation because they may…be responsible for delivering commitments made through consultation to ensure that the community has sufficient capacity to get involved, or verifying information to ensure that it’s credible.”

The first step in the consultation and information gathering process was to identify who would be directly and indirectly affected both positively and negatively by the project. An initial preliminary stakeholder identification was undertaken between January and July 2007 by the Ministry of Mines and Energy and the LPATP office (see Annex C for log of consultation).

3.4.3.1 Village Consultations

As a first step, a series of village consultation meetings was held from October 22 to November 1, 2007 in Shipitulle, Grabovc i Poshtem, Hade, Sibovc, Lajthishte, Plemetin, Dardhishte, Hamidi, and Obiliq. In addition to the individual village meetings, the project office held a final meeting with village representatives to disclose the findings of the nine village meetings (1), to verify information and to discuss key requests of residents. Attendance was high, with an average number of seventy people at each meeting. The meetings identified key issues that were further explored for the social assessment baseline and have informed the methodology of subsequent consultations with village communities in the area of interest.

(1) A complete attendance list for each meeting is available from the LPATP project office. Specifically, the objectives of these initial meetings were to: establish a two-way dialogue, identify key issues of concern and the most appropriate methods for future consultations with these communities; identify specific issues for different community groups, especially those who may have been excluded from traditional consultation methods on the basis of ethnicity, age or gender; and discuss the key issues and potential impacts of the project.
3.4.3.2 Stakeholders’ Key Issues and Levels of Interest and Influence

The stakeholders in this project are quite diverse and have a range of issues that concern them. In order to deliver a more effective consultation programme the Project disaggregated the stakeholders according to their key issues and areas of influence. By doing this the appropriate methodology for each stakeholder can be applied it also ensures that key issues are addressed.
from the perspective of those who have raised them and are affected by them. Equally important is the inclusion of people from less powerful groups or those who have little influence. For example, during initial consultations the villagers of Plemetin (a largely Serbian community) stated that the potential impact of the project was great but that they had little influence or power to change or mitigate the effect of the project. For this reason the stakeholder analysis has been refined to map the level of interest and influence that stakeholders have in relation to the project. These are defined as:

- **Influence** - the power a stakeholder has to help, stop or hinder the project
- **Importance** – the priority given to stakeholder’s interests and needs by the project
- **Interest** – the level of interest the stakeholder has in the project.

The key issues of concern for each stakeholder and their levels of influence and interest in relation to the project respectively are captured in Table 3.4.3.2a and Table 3.4.3.2b. The information in these tables is based on discussions and meetings with key stakeholders.
### Table 3.4.3.2a Stakeholder Interest

<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Level of Interest</th>
<th>Issue</th>
</tr>
</thead>
</table>
| Government          | Kosovo Ministry of Mining and Energy (MEM), (including The Ministry’s section for the development of mining communities) | High              | • Economic Development  
• Community development of mining communities  
• Resettlement of affected mining communities  
• Natural Resource use  
• Policies, procedures and laws in the mining sector  
• Mine sector development |
|                     | Ministry of Labour and Social Welfare                               | High              | • Social and economic impacts of labour rationalisation  
• Economic community development and economic diversity opportunities  
• Labour and social policies  
• Training opportunities |
|                     | Ministry of Environment                                              | High              | • Resettlement of affected mining communities  
• Community environmental issues |
| Municipality of Obliq | Municipality of Obliq                                                | High              | • Economic Development  
• Community development of mining communities  
• Resettlement of affected mining communities  
• Natural Resource use  
• Consultation  
• Information dissemination  
• Community social cohesion |
<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Level of Interest</th>
<th>Issue</th>
</tr>
</thead>
</table>
|          | KEK (environmental managers) | High | • Retrenchment  
• Environmental impacts  
• Community development of mining communities |
|          | LPTAP Project Team | High | • Economic Development  
• Community development of mining communities  
• Resettlement of affected mining communities  
• Natural Resource use  
• Policies, procedures and laws in mining sector  
• Mine sector development |
|          | World Bank  
United Nations Development Programme(UNDP) | High  
High | • Economic Development  
• Community development of mining communities  
• Resettlement of affected mining communities  
• Natural Resource use  
• Policies, procedures and laws in mining sector  
• Mine sector development  
• Poverty alleviation |
|          | Aureola | High | • Education  
• Human rights  
• Gender issues  
• Environmental protection  
• Public health  
• Transparency  
• Public participation |
<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Level of Interest</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Peace with Nature</td>
<td>Medium</td>
<td>• Resettlement&lt;br&gt;• Consultation&lt;br&gt;• Community participation</td>
</tr>
<tr>
<td></td>
<td>Advocacy Training Centre</td>
<td>High</td>
<td>• Civil society participation&lt;br&gt;• Consultation&lt;br&gt;• Inter-ethnic dialogue</td>
</tr>
<tr>
<td></td>
<td>Millennium NGO</td>
<td>High</td>
<td>• Civil society participation&lt;br&gt;• Consultation&lt;br&gt;• Inter-ethnic dialogue</td>
</tr>
<tr>
<td></td>
<td>Riinvest</td>
<td>High</td>
<td>• Consultation&lt;br&gt;• Public consultation</td>
</tr>
<tr>
<td></td>
<td>Kosovo Women’s Initiative</td>
<td>Low/medium</td>
<td>• Gender issues&lt;br&gt;• Livelihoods restoration</td>
</tr>
<tr>
<td>Affected communities/villages</td>
<td>Hade</td>
<td>High</td>
<td>• Resettlement&lt;br&gt;• Compensation</td>
</tr>
<tr>
<td></td>
<td>Sibovc Lajthiste</td>
<td></td>
<td>• Air pollution&lt;br&gt;• Dust&lt;br&gt;• Noise</td>
</tr>
<tr>
<td></td>
<td>Grabovc</td>
<td>High</td>
<td>• Employment&lt;br&gt;• Retrenchment&lt;br&gt;• Enterprise development&lt;br&gt;• Resettlement&lt;br&gt;• Infrastructure provision&lt;br&gt;• Mine closure planning&lt;br&gt;• Skills development</td>
</tr>
<tr>
<td></td>
<td>o Shiptule</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Dardhishte</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Mazgit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Plemetin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Obliq</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stakeholder Influence</td>
<td>High importance/low influence</td>
<td>High importance/high influence</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------</td>
<td>------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Affected Communities:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shiptule</td>
<td></td>
<td>Hade</td>
<td></td>
</tr>
<tr>
<td>Sibovc</td>
<td></td>
<td>Grabovc</td>
<td></td>
</tr>
<tr>
<td>Lajthiste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dardhishte</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mazgit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plemetin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obliq</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NGOs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kosovo Women’s Initiative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government</td>
<td>Kosovo Ministry of Mining and Energy (MEM), Ministry of Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kek</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LPTAP Project Team</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Government</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ministry of Labour and Social Welfare</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Municipality of Obliq</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Donor(s)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The World Bank</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Nations Development Programme</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NGOs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advocacy Training Centre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reiinvest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Low importance/low influence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NGOs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peace with Nature</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Low importance/high influence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NGOs</strong></td>
<td></td>
<td></td>
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<tr>
<td>Aureola</td>
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</tbody>
</table>
3.4.4 Household Surveys and Focussed Community Consultation

In order to address data gaps, LPTAP commissioned two Kosovo-based companies (Prism Research and Community Development Fund-CDF) to carry out a detailed household survey and ongoing consultation with affected communities and villages. The purpose of the household survey was to provide accurate and up to date primary social data. Information from the household survey was used to supplement the secondary data and to provide qualitative information on people’s attitudes, perceptions and concerns about current and future mine and plant development.

<table>
<thead>
<tr>
<th>Village</th>
<th>Number of people per village</th>
<th>Number of households participating in survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hade</td>
<td>1156</td>
<td>334</td>
</tr>
<tr>
<td>Palaj</td>
<td>484</td>
<td>104</td>
</tr>
<tr>
<td>Grabovc i Poshtem</td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>Hamidi</td>
<td>88</td>
<td>14</td>
</tr>
<tr>
<td>Dardhishte</td>
<td>987</td>
<td>209</td>
</tr>
<tr>
<td>Lajithishte</td>
<td>921</td>
<td>208</td>
</tr>
<tr>
<td>Plemetin</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sibovc</td>
<td>1114</td>
<td>259</td>
</tr>
<tr>
<td>Shipitulle</td>
<td>91</td>
<td>25</td>
</tr>
<tr>
<td>Obiliq</td>
<td>1741</td>
<td>412</td>
</tr>
</tbody>
</table>

Participants frequently identified community meetings that would represent their village’s concerns and act as a point of contact between the project and the community as good mechanisms for ongoing consultation. In line with this expressed interest and with the Community Consultation Guidelines (see footnote 8), Community Development Forums have been established for the majority of affected communities and have had active participation from community members.

3.4.4.1 Primary Household Survey Methodology

Prism Research consultancy used the following methodologies for their household survey, carried out between January and March 2008:

- Quantitative Survey Research.
- Qualitative Survey Research

Presented below is a description of the main research components, and the order in which the various components were carried out.
3.4.4.2 **Quantitative Research – Household Survey**

Prior to initiation of the field work in each settlement included in the sample, Prism’s staff were present at meetings organized with the general community in the respective settlements where the field work took place. The primary aim of these meetings was to inform them about the activities that were planned to commence in their settlement (implementation of a survey and establishing of Community Development Forums). The information pertaining to the survey included background on the methodology that was going to be used, description of the information that the research project was interested to obtain from local inhabitants and agreement with them on the date when the field work could commence. These meetings were facilitated by other stakeholders in the project (primarily Community Development Foundation) and all meetings were generally well attended by local inhabitants.

At each meeting there was an opportunity for all participants to pose questions or provide comments they considered relevant for all stakeholders.

### Table 3.4.4.2a Survey Methodology Summary

<table>
<thead>
<tr>
<th>Time of the survey</th>
<th>January – March, 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data gathering method</td>
<td>Personal interviews with the head of the household (1)</td>
</tr>
<tr>
<td>Instruments</td>
<td>Questionnaire developed by Prism Research with input from the LPTAP</td>
</tr>
<tr>
<td>Surveyed population</td>
<td>Inhabitants of target settlements in the municipality of Obiliq</td>
</tr>
<tr>
<td>Sample size</td>
<td>1580 household</td>
</tr>
<tr>
<td>Representation</td>
<td>All households/random walk technique (2)</td>
</tr>
</tbody>
</table>

**Method of Interviewing**

The survey was based on face-to-face interviews. The questionnaire contained both open-ended and closed questions. Interviewers read aloud the closed

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(1) Whenever the head of the household was not present, the survey was carried out with a person who was appointed by the head of the household (partner, oldest son, etc.). This information (for the substitution of the information-provider) was explained to the general population in the General Community Meetings, where they were informed that they needed to appoint a family member – in case they are absent – on the given period when interviewers visited each settlement to provide information about the household.

(2) Methodology utilized in four locations that are planned to be dislocated (Hade, Dardhishte, Lajthishte and Sibovc) consisted of surveying all households in these locations, whereas for others the approach of random selection was used.
questions and possible (coded) answers from the questionnaire or gave ‘show cards’ to the respondents. In the case of the open end questions, the interviewers only read the question. Throughout the interview, the interviewers held a copy of questionnaire on which they recorded the answers (please see Annex D for full Prism report).

**Box 3.1 Key Results from Settlement Surveys**

Hade: 48% of respondents strongly support the project and 46% think it will have a positive economic impact. Lajthishte: 46% of the population strongly support the project and 44% believe that the project will result in a positive economic impact for them.

Dardhishte: 25% of the population strongly oppose the project and believe it will increase pollution and industrial water waste.

Sibovc: The main concerns were fears that the survey questionnaire would be misused and future employment.

Grabovci Poshtem: The main concerns were environmental pollution, noise, lack of potable water (pollution has damaged the local supply of spring water), health and displacement.

Shipitulle: The main concerns related to resettlement. 60% believe the project will create new employment opportunities for residents and result in poor public transport.

Hami: 46% believe the project will have a positive impact on the economy. 77% believe the project will have a very negative impact on the environment.

Palaj/Crvena Vodica: 67% believe the project will have a very positive impact on the municipality. The communities’ main project concerns were unemployment, pollution and health.

Obiliq: The communities’ main project concerns were environmental pollution. Source: Prism Research, April 2008.

**3.4.4.3 Community Consultation and Development Forum Methodology**

Following on from the initial consultation in October 2007 The Community Development Fund conducted a second phase of consultation between February and March 08. The purpose of these meetings was as follows:

- Assist in the implementation of the consultation guidelines (as laid out above);
- Co-ordinate and document the project’s consultation with affected communities;
- Assist in the development and implementation of a grievance mechanism;
- Establish and facilitate community development forums;
- Define the roles and responsibilities within the community forums; and
- Liaise with other consultation teams and local authorities to limit information duplication.

This exercise was a more targeted approach to consultation with the aim of consulting with previously identified marginalized groups, such as women and youths. A total of 57 community meetings were organized and comprised of preliminary, general community and focus group meetings in addition to nine forum establishment meetings.
The meetings were held in Hade, Lajthishte, Dardhishtë, Grabovc, Shipitulle, Hamidid, Obiliq, Crkvena Vodica/Janjine Vode and Palaj/Mirash. Two additional meetings were organized in Sibovc and Plemetin, but are pending or abandoned due to a reported lack of readiness or refusal to participate.

Establishment of the community forums, including assignment of roles and responsibilities, was conducted using a voting procedure. A total of 230 participants were present in the meetings, each of which averaged between 4-10 members.

3.4.5 National Context

Until February 2008 Kosovo was under a United Nations’ (UN) interim administration (UNMIK), pursuant to UN security Council Resolution 1244 (1999) of June 10, 1992, supported by a NATO-led Kosovo Force (KFOR), and with increasingly autonomous Provisional Institutions of Self-Government (PISG). Its population of about 2 million inhabitants is among the youngest in Europe, with half the population under 25. The population is predominantly Albanian. Other ethnic groups represent less than 12 percent of the population and are composed predominantly of Serbs, Slav Muslims and Roma. Kosovo is also the poorest economy in the Balkans, with a GDP per capita of approximately US$790 in 2003 [Source: World Bank Poverty Assessment].

3.4.6 Project Area and Population

Obiliq municipality is located immediately north-west of Priština on the main road to Mitrovica. The municipality was created in 1989, prior to which it formed part of Priština municipality. It now comprises a total of 20 villages including the town itself and the Plemetina camp for internally displaced persons (IDPs), which has recently closed. Primary data has been gathered from ten of the twenty settlements in Obliq municipality. These are Hade, Lajthishta, Dardhishtë, Sibovc, Grabovc, Shipitullë, Hamidi, Crkvena Wolfica, Palaj and Obiliq. Table 3.4.6a presents the total number of people and households participating to the survey for each village.

<table>
<thead>
<tr>
<th>Village</th>
<th>Total number of people per each village</th>
<th>Total number of household who participate in survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hade</td>
<td>1,156</td>
<td>334</td>
</tr>
<tr>
<td>Palaj</td>
<td>484</td>
<td>104</td>
</tr>
<tr>
<td>Grabovc i Epërma</td>
<td>85</td>
<td>15</td>
</tr>
<tr>
<td>Hamidi</td>
<td>88</td>
<td>14</td>
</tr>
<tr>
<td>Dardhishtë</td>
<td>987</td>
<td>209</td>
</tr>
<tr>
<td>Lajthishtë</td>
<td>921</td>
<td>208</td>
</tr>
<tr>
<td>Plemetin</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Sibovc</td>
<td>1,114</td>
<td>259</td>
</tr>
<tr>
<td>Shipitullë</td>
<td>91</td>
<td>25</td>
</tr>
<tr>
<td>Village</td>
<td>Total number of people per each village</td>
<td>Total number of household who participate in survey</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Obilqiq</td>
<td>1,741</td>
<td>412</td>
</tr>
</tbody>
</table>

Box 3.2 sets out key characteristics of each of the settlements surveyed as part of this study.
**Box 3.2 Surveyed Settlements**

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Participants</th>
<th>Meetings</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hade</strong></td>
<td>Total of 104</td>
<td>3</td>
<td>Total of 104 participants in February Meetings (76 in total, 12 in women’s group and 16 in youth group). There were three focus group meetings in March 08 (General/Youth/Women’s with an average 8-10 participants). 158 families (664 people) resettled in 2004/2005 as part of an emergency safety measure. 492 families (784 people) remaining in the settlement. Large number of residents have enough food, but not enough money to buy clothes. 48% of respondents strongly support the project and 46% think it will have a positive economic impact.</td>
</tr>
<tr>
<td><strong>Lajthishte</strong></td>
<td>Total of 57</td>
<td>1</td>
<td>Total of 57 participants in February Meetings (37 in general, 9 in women’s group and 11 in youth group). There was one focus group meeting in March 08. Residents use their land for subsistence farming and 65.9% own arable land in addition to the land they inhabit. High proportion of the population believe they earn below or significantly below the average wage. 46% of the population strongly support the project and 44% believe that the project will result in a positive economic impact for them.</td>
</tr>
<tr>
<td><strong>Dardhishte</strong></td>
<td>Total of 61</td>
<td>1</td>
<td>Total of 61 participants in February Meetings (35 in general, 12 in women’s group and 14 in youth group). There was one focus group meeting in March 08. Residents use their land for subsistence farming. 11% have no running water and 37% earn between 101-250 Euros a month. 23% of the population strongly oppose the project and believe it will increase pollution and industrial water waste.</td>
</tr>
<tr>
<td><strong>Sibovc</strong></td>
<td>Total of 115</td>
<td>0</td>
<td>Total of 115 participants in February Meetings (78 in general, 5 in women’s group and 32 in youth group). There were no focus group meetings in March 08. Agricultural production is the main source of income and a large portion is obtained from the sale of smoked and fresh meat. 63.3% own arable land in addition to the land they inhabit. 37% do not have any running water. The main concerns were fears that the questionnaire would be misused and future employment.</td>
</tr>
<tr>
<td><strong>Grabovc</strong></td>
<td>Total of 44</td>
<td>1</td>
<td>Total of 44 participants in February Meetings (20 in general, 18 in women’s group and 16 in youth group). One focus group meeting in March 08. 40% of population substitute their income with milk and dairy production, 20% substitute with agriculture and meat production. 53% of the population strongly support the project, 27% think the project will have a very negative impact on the municipality. Main concerns were environmental pollution, noise, lack of potable water (pollution has damaged the spring water), different diseases and displacement.</td>
</tr>
<tr>
<td><strong>Shipitulle</strong></td>
<td>Total of 28</td>
<td>0</td>
<td>Total of 28 participants in February Meetings (10 in general, 9 in women’s group and 9 in youth group). There were no focus group meetings in March 08. 832% reported to have above average income and assets. Limited agricultural production, main focus is dairy. 92% of residents own arable land in addition to the land they inhabit. 84% also own grasslands for grazing. Main concerns relate to resettlement. 60% believe the project will create new employment opportunities for residents. Poor public transport, a walk of 37 minutes to the nearest transport stop.</td>
</tr>
<tr>
<td><strong>Hamidi</strong></td>
<td>Total of 26</td>
<td>0</td>
<td>Total of 26 participants in February Meetings (13 in general, 5 in women’s group and 8 in youth group). There were no focus group meetings in March 08. 871% of the population own arable land in addition to the land they inhabit. 40% of the population substitute their income with milk and dairy production. 46% of the population believe the project will have a positive impact on the economy. 77% believe the project will have a very negative impact on the environment.</td>
</tr>
<tr>
<td><strong>Crkvena Vodica</strong></td>
<td>Total of 51</td>
<td>2</td>
<td>Total of 51 participants in February Meetings (21 in general, 9 in women’s group and 21 in youth group). There were two focus group meetings in March 08. One of the Kosovo Serb settlements in the municipality. 33% of the population believe they live on the existential edge. 67% of the population believe the project</td>
</tr>
</tbody>
</table>
will have a very positive impact on the municipality. The communities’ main project concerns are diseases, collective displacement, unemployment and pollution.

**Palaj:** Total of 55 participants in February Meetings (21 in general, 17 in women’s group and 17 in youth group). There were no focus group meetings in March. 98.33% of the population live on the poverty line. 54% of the population own arable land in addition to the land they inhabit. 67% of the population believe the project will have a very positive impact on the municipality. The communities’ main project concerns are unemployment, pollution and diseases.

**Obiliq:** Total of 50 participants in February Meetings (26 in general, 12 in women’s group and 12 in youth group). There were no focus group meetings in March. 08.38% of the population earn between 101-250 Euros a month. The communities’ main project concerns are environmental pollution.

Source: Prism Research April 2008.

The population of this municipality is estimated to be around 32,300, but accurate figures do not exist. There are around 5,300 inhabitants in the town and around 27,000 inhabitants in rural areas. The average population density is 304 inh/km² (beyond the Kosovo average). The population density, although large (304 inh/km²), is variable from one settlement to the other.

The largest concentration of the population is in the urban areas (Source: 2006: Ministry of Environment and Spatial Planning, “Spatial Analysis of Obiliq”). The population is very young with the average age being approximately 24. Since a population census has not been made since 1981, accurate figures on gender and ethnic structure and the population age is not available (Spatial Planning Analysis of Obiliq).

Information gathered from the ten surveyed settlements shows that 32% of the population are aged between 26-45 and 14% are between 19-25 and 46-60 respectively. There is an even split between men and women and just under half the population (42.5%) is married.

Although the majority of the population is Kosovo Albanian, villages such as Babin Most/Babimoc, Miloševo/Milloshevë, Plemetin/Plemetina and Cravodidë/Crkvena Vodica are mostly inhabited by Kosovo Serbs and other non-Albanian ethnic minorities. Obiliq town was also a multi-ethnic area before the Mid-March troubles of 2005, but unfortunately, due to the violence, all remaining Kosovo Serbs and some Roma have fled the town and sought refuge in Plemetin/Plemetina and other villages inhabited mostly by Kosovo Serbs [Source: 2005: OSCE ‘Municipal Profile: Obiliq].

**Summary - Comments on Available Data and Suggestions**

Following years of conflict and ongoing ethnic divisions Kosovo is in the process of nation building after the declaration of independence from Serbia in February 2008. Accurate population figures are limited, therefore identifying trends is not precise. The introduction of a national census would help to address this and identify the social characteristics of Kosovo.
The Project area consists of a large rural population, with varying population density. A large proportion of the population is young and settlements are divided by ethnicity. Information has been gathered for the purpose of this report, however there are a number of gaps and limitations. Ethnic tensions resulted in limited data collection in certain settlements. In order to obtain more in depth data and analysis further study will be required.

3.4.7 Migration

The phenomenon of ‘depopulation’ is prevalent in the Municipality of Obiliq (see Figure 3.4.7a), and specifically accentuated in settlements at greater distances from Obiliq town centre. According to government sources, this is due to the difficult conditions present in these settlements, conditions caused by natural, economic and social factors, undeveloped infrastructure, and poor service levels. Anecdotal evidence from local communities confirms this view.

Figure 3.4.7a Depopulation

The population data, above, shows that after 1999, the greatest depopulation trend took place in the Obiliq town, Dardhishtë (Krushevc) and Hade Villages. A major cause of this depopulation, especially in Obiliq town itself was the dislocation of the non-Albanian population, especially the Serbian population after 1999. The Albanian depopulation phenomenon also affected other settlements including Hade, Krushevc, Grabovc, Bakshi and Kozaricë. The majority of inhabitants of these settlements went to live in Obiliq town after 1999, due to better opportunities for work in Obliq.

Economic and social circumstances have resulted in a large population movement towards urban areas, transforming daily and weekly commuters
into permanent migrants. The migration from the rural areas has impacted rural areas as the young and educated labour force move into towns abandoning agricultural land and causing a decline in the number of marriages and births. Urban areas have also been affected as immigration has increased property prices, raised the cost of living and lead to unplanned and uncontrolled expansion of towns and cities. (2006: Ministry of Environment and Spatial Planning, “Spatial Analysis of Obliq”).

### 3.4.7.1 Returnees

According to UNHCR information, there are currently 8,615 persons originally from this municipality displaced in Serbia and Montenegro and 170 people in FYR Macedonia. By December 2003 635 internally displaced persons (IDPs) had returned to their place of origin. Many Kosovo Serbs and Ashkali IDP families have shown a genuine interest in returning. A Municipal Working Group on Returns (MWGR) has been established to improve the ‘returns’ coordination process. Riots in March 2004 increased the number of IDPs. All remaining urban Kosovo Serbs, and some Roma, fled and their properties were burned or vandalized. The activity of the MWGR was suspended for more than two months, but has now resumed. The reconstruction process of the damaged and the burned houses, and also of the apartment buildings in this Municipality has been mostly finished, with the exception of some 20 families who have returned to the so called “School centre” and five families that have returned to their newly reconstructed houses, there is no major return of the March IDPs.

In February 2005, Municipal authorities of Obiliq and Kosovo’s PISG, together with the municipalities of Mitrovica, Fushë Kosovë, Srbica and Lipjan began implementing an agreement to remove IDPs from the Plemetin camp back into the municipality of their origin. Each municipality will be responsible for providing accommodation for their residents [2005: OSCE ‘Municipal Profile: Obliq].

**Summary - Comments on Available Data and Suggestions**

Conflict in and around the Project area have lead many people to flee the area. A working group has been established to try to assist the process of returning displaced people to their original settlements. Riots in 2004 temporary disrupted this process, however work has now resumed.

### 3.4.8 Cultural Properties

There are eight mosques in the municipality; two are located in Obiliq town, while six are in villages with an Imam as leader of the municipality’s Islamic Union. A new mosque was recently built in 2005, in the centre of Obiliq town. There are also small Serbian Orthodox churches in the villages of Babin Most/Babimoc and Plemetin/Plemetina, covered by the same Orthodox priest. During the March 2004 events the Serbian Orthodox Church in Obiliq
town was severely damaged. There is also a House of Culture in the municipality owned by the Kosovo Energy Corporation (KEK), but it is not functioning and needs renovation [2005: OSCE ‘Municipal Profile: Obiliq].

Table 3.4.8a Location of Cultural Properties

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Typology of cultural heritage monuments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Obiliq</td>
<td>Monument of Freedom Martyrs</td>
</tr>
<tr>
<td>2. Obiliq</td>
<td>WWII Monument</td>
</tr>
<tr>
<td>3. Obiliq</td>
<td>Mosque in the Old Obiliq</td>
</tr>
<tr>
<td>4. Obiliq</td>
<td>Church in Obiliq</td>
</tr>
<tr>
<td>5. Obiliq</td>
<td>Mosque in new Obiliq</td>
</tr>
<tr>
<td>6. Obiliq</td>
<td>Culture House, KEK</td>
</tr>
<tr>
<td>7. Upper Mazgit</td>
<td>Monument of Kosovo Fighters</td>
</tr>
<tr>
<td>8. Upper Mazgit</td>
<td>Sultan Murat Turbe</td>
</tr>
<tr>
<td>9. Upper Mazgit</td>
<td>Gazi Pasha Turbe</td>
</tr>
<tr>
<td>10. Lower Mazgit</td>
<td>Monument of Ferid Curri</td>
</tr>
<tr>
<td>11. Lower Mazgit</td>
<td>Mosque in Mazgit</td>
</tr>
<tr>
<td>12. Hade</td>
<td>Monument of KLA Martyrs</td>
</tr>
<tr>
<td>13. Hade</td>
<td>Mosque in Hade</td>
</tr>
<tr>
<td>14. Hamidi</td>
<td>Mosque in Hamidi</td>
</tr>
<tr>
<td>15. Hamidi</td>
<td>Museum Home in Hamidi</td>
</tr>
<tr>
<td>16. Graboc</td>
<td>Mosque in Graboc</td>
</tr>
<tr>
<td>17. Graboc</td>
<td>Monument</td>
</tr>
<tr>
<td>18. Graboc</td>
<td>Mill</td>
</tr>
<tr>
<td>19. Millosheva</td>
<td>Mosque in Millosheva</td>
</tr>
<tr>
<td>20. Breznicë</td>
<td>Mosque in Breznicë</td>
</tr>
<tr>
<td>21. Baimovcë</td>
<td>Church in Baimovc</td>
</tr>
<tr>
<td>22. Plemetinë</td>
<td>Youth Centre</td>
</tr>
<tr>
<td>23. Plemetinë</td>
<td>Church</td>
</tr>
</tbody>
</table>

Figure 3.4.8a Hade
Summary - Comments on Available Data and Suggestions

There are a number of cultural properties located within the municipality, the majority of which are centred around religious buildings. There are a number of war memorials and monuments, but only one youth centre for the whole population.

3.4.9 Economic Environment

Prior to the 1999 conflict, KEK was the main source of employment in the area, through its two main power stations, service provision, and facility building and maintenance. KEK is still an important employer in the municipality and owns the Ambulance, Culture House, Sports Ground, Fire Station, and other properties.

Based on the number of jobseekers registered by the municipal employment office, the unemployment rate in Obiliq is around 16%. However, this figure only represents those registered and is based on available population figures, which are not up to date. The real figure is likely to be higher as the majority of jobseekers do not register (2006: MESP, “Spatial Analysis of Obiliq”). Evidence suggests that the municipal figure is as high if not higher than the national average (41.4%, as reported in 2006 Report of the Statistical Office of Kosovo), and the figure differs across settlements.

Information gathered from the ten surveyed settlements showed that 21% of the population are permanently employed and 13% of those employed work for KEK. 19% of the population are housewives and 17% were unemployed. The economic base of Obiliq is sustained by the large mine. However, levels of employment and support by KEK have been reduced and the municipality has suffered economically as a result, particularly Kosovo Serbs who have been unable to resume work since the conflict. According to the household survey, alternative income generation in the area is limited. A quarter of all residents earn extra income cutting and selling wood for heating. Agricultural production for income generation is focused on a small number of settlements.

As a result of poor economic and employment opportunities in the area 23% of the surveyed population reported that they do not have enough money to buy food and 16% consider that they live a “hand to mouth” existence, which equates to living on the poverty line. A further 40% stated that they have enough food, but do not have enough income to buy clothes. There were few differences noted between the urban and rural population, the only marked difference is in the perception of income generation: 42% of the urban population believed they earn below the average income, whereas this figure is 36% for the rural population. However, the rural population is more likely to live at or near the poverty line. Incomes vary, but the highest proportion of the population (33%) earn between 101-250 Euros a month. The remaining
22% earn 251-500 Euros/month, 16% earn 51-100 Euros/month, 11% earn over 501 Euros a month and the remaining 8% earn between 30-50 Euros monthly.

Summary - Comments on Available Data and Suggestions

The municipality has a high unemployment rate and alternative sources of income are limited. Income levels are low and most inhabitants are reliant on subsistence farmed for some, if not all, of their food supply. Additional income is generated through agricultural production, wood cutting and small scale farming.

The Project would provide limited paid employment for some residents, however, economic advantages are limited for most.

3.4.10 Land Use and Potential Loss

According to data obtained from the DBKO, the Municipality is spread out over a total of 1.0531 ha of land, 6.677 ha is privately owned and 3.854 ha is communal. The GIS Analysis shows that 48% of the Obiliq Municipality territory is agricultural land and 37% is forestry (see Paragraph 3.3.2 for further detail regarding land use). Ownership and usage varies across settlements. All residents own land around their houses or ‘yards’ on which 80-97% grow crops and cereals for household consumption. 38.7% of the surveyed settlements also owned arable land and fields. The highest was found in Shipitulle where 92% of population own arable land and 84% own forests. A large proportion of residents in Hamidi, Lajthishte, Sibovc and Palaj also own arable land. It was found that the largest land ownership in terms of area was in Palaj.

Land ownership is often based around traditional forms of transferral. There is no formal sale and oral or written agreements are not officially registered. It is common for land to be transferred along family lines, passing from father to son or grandfather to grandson. For this reason the land officially registered to an inhabitant is often less than the land they own. The majority of land is owned in close proximity of residents and renting of land is not a common practice in the area.

The New Mining Field area is mainly inhabited by large families who work in agricultural enterprises or independently as subsistence farmers. Approximately 60% of the population living in the region are farmers. The production and sale of agricultural products is cited as an important source of income support by local residents. The area of interest is representative of the municipality as agriculture and forestry are the most important forms of land use, although their importance is decreasing.

The new mine will acquire approximately 13% of the territory of the Obiliq Municipality. This area, planned for mining development, is largely
composed of fertile land, while the remaining parts are settlements, roads or forests (2006: MESP, “Spatial Analysis of Obiliq”).

Summary – Comments on Available Data and Suggestions

A large proportion of land is used for agricultural purposes (48%) followed by forestry (37%). Land ownership varies between settlements, but the majority of residents own the land they inhabit and a ‘yard’ area used for subsistence farming. The Project will acquire most of the fertile land in the surrounding area.

There is no information at this stage on how communities will be compensated for the loss of land, as this is dependent on the designed project. Compensation for any lost land is especially important due to the reliance on agricultural production for both subsistence farming and as an additional source of income. This should be taken into consideration during the decision making process and project planning.

3.4.11 Resettlement

At present, the old resettlement law dates back to the Serbian era and is still applicable. A new law is only available in a draft version. Therefore, all issues relevant to resettlement have to be decided by the Parliament, which can be a lengthy process. In order to ensure the legal bases of lignite extraction and future land purchase, it is necessary to declare the Sibovc field a reserved mining area. This pre-requisite was established with the UN-Resolution dated 18.11.2004 when The Special Representative of the UN-Secretary-General authorised the evacuation of Hade village. In addition to this a zone of special interest and property assessment criteria have been devised, all of which are included in Executive decision No. 2004/28 of the 18th of Nov 2004” (Source: “Complementary Mining Plan for Sibovc SW - Part III – Environmental Assessment”, European Agency for Reconstruction, STEAG Consortium, 2006).

Respondents who saw the possible need to move away from the area due to the project as a problem were the most numerous in Hamidi (43%) and Obiliq (39%) and least numerous in Dardhishtë (16%). Also, Palaj/Crkvena Vodica and Hade had the greatest number of respondents who said that introduction of significant limitations on construction of new or reconstruction of old buildings related to the building of Kosovo C would be a problem (54% and 49%). Shipitulle had the least number of respondents supporting the latter opinion (12%).

Most participants in the focus groups supported the idea of resettlement, as all the villages included in the focus groups experience negative impacts from the current power plant on their lives. In this regard, the explicit request coming from the majority of focus group respondents in two settlements, Hade and the Serb community living in Crkvena Vodica, was immediate relocation of all households living in these two villages. Their request comes as a result of current pollution levels, extensive noise coming from current
activities at the power plant and insecurity about the future progress of the new mine. Respondents from Grabovci Poshtem/Lagja e Berisheve also indicated a great need for immediate action, as KEK’s excavator is operating very near their houses and the noise coming from this operation is continuous and causes frustration.

3.4.11.1 Hade

The village of Hade has a population about 2,500 inhabitants and is located at the northern edge of the Bardh/Mirash mine. The village is situated above a steep slope and there is a danger of it sliding into the mine. In the interest of public safety and lignite supply security, a total of 158 families (664 individuals) from the village were resettled between 2004-2005.

All inhabitants of Hade, especially the families living close to the mine edge, were informed about the necessity of resettlement (see Box 3.3). A safety (emergency) zone was declared around their land and 65 families were ordered by UNMIK in March 2004 to vacate the zone by December 2004. Last registration of property of the village Hade (dated 22.05.2003) was enforced by the Independent Housing Inspection Team and 22 families were forcibly removed in June 2005.

Box 3.3 Hade Resettlement

Due to potential slope failure, part of the village of Hade had to be urgently evacuated. There are 85 resettled families living in temporary accommodation in Obiliq town; others (mainly landowning non-residents) have been compensated in the form of a cash payment. There are 495 families remaining on the site who will need to be resettled before the planned mining works and safety measures can continue. Group discussions showed that the remaining residents of Hade are keen to be resettled. Conditions for those still occupying the village are poor, with 26% earning significantly below average income and 21% living on less than 30 Euros a month. Environmental conditions are also a leading factor. The close proximity of the mine results in impacts from noise, particulate and safety issues related to the large trucks traveling on local roads.

Eighty-five of the resettled families are living in temporary accommodation in Obiliq town, others (mainly landowning non-residents) have been compensated in the form of a cash payment. There are 495 families remaining on the site who will need to be resettled before the planned mining works and safety measures can continue. Group discussions showed that the remaining residents of Hade are keen to be resettled. Conditions for those still occupying the village are poor, with 26% earning significantly below average income and 21% living on less than 30 Euros a month. Environmental conditions are also a leading factor. The close proximity of the mine results in impacts from noise, dust and safety issues resulting from large trucks travelling on local roads (for environmental baseline information on noise, and dust please see Sections 3.3.1.1 and 3.3.4).
Summary – Comments on Available Data and Suggestions

Resettlement has already had an extremely adverse impact on the community of Hade and it is expected that other settlements will be resettled as a result of project activities. There are mixed views among local residents regarding future resettlement. Certain settlements are in favour of a move due to poor environmental and social conditions in their current location. Prior to any future resettlement it is recommended that a full Resettlement Action Plan is conducted. The aim of this is to minimise future negative impacts and gain an understanding of the issues facing communities. Additional data collection will be used to adequately compensate affected communities and work to enhance positive impacts.

3.4.12 Employment

According to Ministry of Labour and Social Welfare’s Department of Labour and Employment the national unemployment figure for registered job seekers is 42% (Source: 2006: Department of Labour and Employment ‘Annual Report’).

Based on the number of jobseekers registered as unemployed by the Employment office at a municipal level, the unemployment rate in Obiliq is around 16%. However, this figure only represents the number of unemployed registered by the employment office and is based on available population figures, which are not kept up to date. The real figure is likely to be higher as the majority of jobseekers do not register at the office (2006: Ministry of Environment and Spatial Planning, “Spatial Analysis of Obliq”). Evidence suggests that the Municipal figure is as high if not higher than the national average, and the figure differs across settlements. Figure 3.4.12a represents the different levels of unemployment across the Obiliq municipality.
The above figure suggests that the highest rate of unemployment is found in the villages of: Breznica, Obiliq, Plemetin and Kozaricë. The factors affecting the high unemployment rate are different and they may be classified into three groups, physical-geographical (natural conditions), economic and social, as follows.

- **Physical-geographical factors – hilly-mountainous areas.**

- **Economic factors** have a direct impact on the high unemployment rate in these areas. Economic activities exist only at a lower level in these areas. They also enjoy less agricultural land areas, less developed infrastructure, and are characterized by a smaller number of trade activities and other businesses.

- **Social factors** such as poor education (especially among women), large families and a mainly agricultural population, are also contributory factors to unemployment (2006: Ministry of Environment and Spatial Planning, “Spatial Analysis of Obiliq”).

Information gathered from the ten surveyed settlements showed that 21% of the population are permanently employed and 13% of those employed work for KEK. 19% of the population are housewives and 17% were classed as unemployed. As mentioned in the previous section agricultural production is an important source of income for the local population and the majority of the population are involved either commercially or more commonly for...
subsistence purposes. The lack of permanent employment is substituted with casual or part time work and remittances from relatives working abroad.

Summary – Comments on Available Data Suggestions

Official figures on unemployment rates in the municipality are lower than estimated. Both national and regional unemployment rates are high with less than a quarter of the local population permanently employed.

Methods used for collecting data on unemployment mean that only those registered as unemployed are recorded. This is a distorted figure due to the nature of income generation in Kosovo and a high dependence on subsistence farming in the project area.

3.4.13 Infrastructure

3.4.13.1 Roads

Regional roads connect larger settlements and the majority are asphalted. Due to the high level of usage they constantly require rehabilitation and maintenance. Only a small number of regional roads connect to the Municipality of Obiliq (2006: Ministry of Environment and Spatial Planning, “Spatial Analysis of Obliq”).

The local road network is good with 150 kilometres of roads connecting villages and towns throughout the municipality. However, road conditions are poor with only 30 paved roads and the majority of these are heavily pot-holed. From a total of 20 settlements of the municipality, only 8 settlements have asphalted roads (main and regional roads), or 40% of settlements. Outside Obiliq town, paved roads are only found near other population centres while the rest are connected by dirt and gravel roads. At least three villages are effectively cut off during periods of extended rain and heavy snow.

The main road M2 Prishtina-Mitrovica passes through the Municipal territory. This road connects the municipality of Obiliq and its centre with other municipalities, such as Prishtina and Vushtrri. The M2 road is asphalted, but like all regional roads it has been damaged over time and requires constant repair due to volumes of heavy traffic. Settlements which are served by the main M2 Prishtina-Mitrovica road are: Bainoc, Miloshevë, Llazarevë, Mazgit and Shkabaj.

A further issue arose during the household surveys related to KEK related traffic. Respondents complained that local roads are not safe to travel on as they are frequently used by KEK transport vehicles (see Sections 3.2.1, 3.3.1.1). The condition of the roads is not suitable for this type of vehicle and the level of usage.
Summary – Comments on Available Data and Suggestions

There is a well developed road network around the project site, however road conditions and quality are poor. Local roads are unable to cope with large vehicles and volumes of traffic. A full traffic assessment has not been conducted, therefore accurate data on traffic numbers and future road improvement projects are not available.

3.4.13.2 Public Transport

Public transport services with bus and mini-vans are provided to 14 settlements, or 65% of settlements, while 7 settlements, or 35%, do not have access to public transport. The public transport service for the municipal territory is relatively satisfactory, although not provided to all settlements. The settlements with access to public transport are: Obiliq (New and Old Obiliq), Palaj, Hade, Lajthishtë, Sibofc, Hamidi, Muzakaj, Raskovë, Bakshi, Llazarevë, Breznicë, Kozaricë, Shkabaj. Settlements without access to public transport are: Mazgit I, Mazgit II, Dradhishtë, Shipitullë, Grabovc, Plemetin, Bajmoc (2006: Ministry of Environment and Spatial Planning, “Spatial Analysis of Obiliq”).

The issue of public transport was raised during the household surveys. Although a large percentage of those surveyed have access to public transport (82%), rural households face problems due to a lack of provision or irregular service. 23% of the surveyed population have issues with the distance of public transport stops. The average walking time to transport stops is 23 minutes, but residents of reported a walking time of 37 minutes.

Summary – Comments on Available Data and Suggestions

Around two thirds of the settlements within the Project Area are connected to the public transport system. Rural settlements often experience difficulty accessing the available transport and often complain about the irregular service and or the distance between stops.

3.4.13.3 Electricity Supply

Electricity supply is provided by KEK. However, despite the fact that the sole location of electricity generation capacity is within Obiliq’s territory itself, there are shortages and deficiencies in electricity supply. The supply grid is rather outdated. The duration of daily electricity supply cuts varies from zone to zone, with the average daily reduction being 3 hours. According to information from municipal institutions, all settlements have electricity transformer stations. 16 settlements have a normal voltage in electricity supply, while 5 settlements have a poorer supply (2006: Ministry of Environment and Spatial Planning, “Spatial Analysis of Obiliq”).
Electricity supply is intermittent and unreliable despite the close proximity of KEK. All settlements have access to electricity, but the system is in need of repair and 5 settlements are classed as having a poor supply.

### Water Supply

The main water supplies in the municipality are the Batllava Company and the Regional Water Supply Company of Prishtina or ‘Prishtina’ Water Supply. Prishtina supply water to 13 settlements, or 65% of settlements. Not all households within these 13 settlements are connected to the local water supply, as only 60% of the population is provided with water from these systems (for further information on water supply please see Sections: 3.2.1, 3.3.3.1).

Settlements which are supplied from the regional public water supply system in Prishtina, and the municipal systems, are: Obiliq, Mazgit 1, Mazgit 2, Dardhishtë, Palaj, Hade, Lajthishtë, Plemetin, Muzakaj, Raskovë, Bashki, Llazarevë and Shkabaj.

The water quality is good in these settlements. The municipal water supply system has a capacity of 42 l/sec. The supply, despite experiencing restrictions, is at a satisfactory level. Small or remote villages do not have access to the main water supply system due to infrastructure neglect, damage, or lack of access. This is a particular problem for villages in the west of the municipality where the quality of water is poor and much of the population has to fetch their supplies. Many villages also suffer from the lack of an adequate sewage system, which poses a threat to basic health and hygiene [2005: OSCE ‘Municipal Profile: Obiliq].

The most frequent shortages occur during the summer season and villagers are often reluctant to drink the well water from fear of contamination. Contamination is also an issue for the inhabitants of the cities due to the age of the water supply network.

Water supply from wells is used in 7 settlements, or 35% of municipal settlements. The ground water is generally of good quality and reaches the minimum standard for drinking water. This is not true for the settlements close to KEK facilities, such as Hade, Lajthishtë and Hamidi where groundwater has been contaminated (please see Sections: 3.2.1, 3.3.3). The settlements using wells are: Shipitullë, Grabovc, Sibovc, Hamidi, Kozaricë, Bajmoc and Breznicë.

According to municipal sources, investment has been made in the distribution and expansion of the water supply systems in the Municipality of Obiliq. These investments include:
• Installation of the water supply system in Hamidi Village, from Plementin, at the length of 3 km’, donated by CDF, in 2001.

• The water supply network Palaj - Hade – Lajthishtë, at the length or around 12 km’, donated by USAID.

• Refurbishment of the water supply network within the Obiliq town, at the length of 2 km’, donated by CDF, 2001- 2002.

• The water supply grid Obiliq - Milloshevë - Raskovë – Bakshi (length of 11 km) donated by CDF.

A priority objective of the municipality is installation of water supply grids in villages of Sibovc, Breznicë, Kozaricë and Babimoc. Development of a water production facility in the Obiliq territory is also proposed.

The water supply for the whole of the Kosovo is an issue as only around 50-60% of the population is supplied with water from water supply systems and for those using other sources water quality is unknown (2006: Ministry of Environment and Spatial Planning, “Spatial Analysis of Obliq”).

Summary– Comments on Available Data and Suggestions

Not all of the 13 settlements in the local area are connected to the main water supply due to infrastructure neglect, damage or lack of access. Those that are connected are provided with good quality water. The alternative water supply for those not connected is often of a poor standard as local waterways have been contaminated by environmental pollution. Improvements to the local water supply system are a priority for the Municipality. Specific data on future upgrade projects was not publically available at the time of writing.

3.4.14 Health

Health care facilities are divided along ethnic lines. Three health centres cover the Kosovo Serb population from the villages of Babin Most/Babimoc, Plementin/Plemetina, and Caravodicë/Crkvina Vodica. An additional three health centres cover the Kosovo Albanian population from the villages of Breznicë/Breznica, Siboc/Sibovac and Miloševo/Miloshëvë. The main primary family health centre in Obiliq/Obilic Municipality provides health care services for all patients from the whole population of the municipal geographical area (2005: OSCE Municipal Profile – Obilq).

Information gathered from the household surveys showed that the five main health issues affecting communities are: respiratory diseases, heart and lung disease, cancer, mental health problems and diabetes. Respiratory diseases are the most prevalent health issue in Hade, Palaj and Grabovc, all of which are in close proximity to the existing Kosovo A and B sites. However, 38% of all respondents are smokers. Cancer was cited as being the most common
cause of death for residents of Dardhishte and Sivovc. Twenty-six per cent of all respondents stated that they or members of their household had experienced serious health problems in the last 5 years (Source: 2008: Prism Research LPTAP Household Survey).

The surveyed communities reported that when experiencing health problems (of any kind) 50% visited a doctor in the local medical facility, 39% were treated at a hospital and 21% received treatment from a private doctor. The reasons sited for limited access and not seeking health care were the cost of transport, mistrust of health care providers, previously received a poor service and the cost.

**Summary - Comments on Available Data and Suggestions**

Health care facilities are ethnically divided with both Serb and Albanian Kosovans having access to three health care centres. The main centre at Obiliq serves all ethnic groups from the surrounding area and municipality as a whole. Local communities reported the major health care issues affecting them are respiratory disease, heart and lung disease and cancer. The main factors limiting access to health care are poor infrastructure and transport links and cost.

### 3.4.15 Education

The schools in the municipality are separated by age groups, with the exception of a Kosovo Albanian school, which opened in Plemetin in 2000 and operates under a shift system. There is one Kosovo Albanian high school in Obiliq town and seven Kosovo Albanian primary schools situated in Plemetin Milošev, Babin, Hade and Breznica. Approximately 5,240 pupils attend school within the municipal area (Source: Municipal Education Department cited in (2005: OSCE Municipal Profile – Obliq).

Details about the levels of education of the residents in the mine development area are not well documented, however, anecdotal evidence from discussions with villagers would suggest that there is a significant number of people, both women and men educated at the tertiary level with skills in engineering, teaching, electrical maintenance and languages (1).

*Figure 3.4.15a shows the level of education in the surveyed settlements. 40% of respondents completed secondary education (all 4 grades), but very few residents went onto higher education with only 2.2% completing education to degree level. 21% of the population did not progress past primary school level education.*

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(1) Village meetings 22 October – 1 November 2007.
SUMMARY - COMMENTS ON AVAILABLE DATA AND SUGGESTIONS

There is limited information on education levels by settlement, however local levels suggest that a high percentage of the local population complete secondary school education. A small number go on to tertiary level education, however, many in the wider area are trained teachers, engineers and electrical maintenance.

3.4.16 Social Networks

When asked about socialising and social interactions, surveyed communities stated that they did not believe there were any major differences between residents within a community and that all residents were closely connected. All communities socialised on a regular basis, often sharing meals with friends or neighbours. Sixty per cent of respondents had shared a meal with someone of a different social or economic status in the last 30 days. Differences between urban and rural populations were small. Socializing with someone of a different religion or ethnic group was more likely in urban areas than rural, but both are rare. Respondents felt that they could rely on the community to help in times of need.

SUMMARY - COMMENTS ON AVAILABLE DATA AND SUGGESTIONS

Social networks are important to local communities with many settlements centred around family groups. A large proportion of the population regularly socialize with their neighbours and often sharing a meal.
### 3.4.17 Community Aspirations, Attitudes and Concerns and Consultation

Initial village community meetings were held during October 2007. The main objectives of these meetings were to gather some preliminary information about the concerns and current situation of people living and working in the Sibovc mine development area and to inform the design of the detailed household survey and consultation. The meetings also provided local residents with key project information and details of how their specific community would be affected by the power plant mine development. Table 3.4.17a provides a summary of key outcomes and issues raised in all meetings. Subsequent Tables 3.4.17b-i provide details with an explanatory narrative of issues raised in individual villages.

#### Figure 3.4.17a Grabovc Meeting

As mentioned in the previous sections eight focus group meetings were conducted in March 2008 in addition to household surveys. There were two general public meetings in Hade and Lajhishte, two youth group in Hade and Grabovc, two women focus groups in Hade and Dardhishte and two minority community meetings in Crkvena Vodica. Each focus group had between 8 to 10 participants.

In addition to focus group meetings the Community Development Fund conducted meetings in nine of the affected communities: Hade, Lajhishte, Dardhishte, Grabovc, Siptulle, Hamidi, Crkvena Vodica and Janjine Vode and Palaj and Mirash. A total of 230 people participated in the meetings. The findings from these meetings are in line with the previous findings from October 07 meetings. The most common issues and concerns are detailed in Table 3.4.17a.

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(1) All the information in the tables was gathered during the village meetings between 22 October and 1 November 2007.
### Table 3.4.17a  Key Issues for All Villages

<table>
<thead>
<tr>
<th>Most Frequently – Mentioned Issues and Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Employment</td>
</tr>
<tr>
<td>2. Lack of infrastructure (roads, water supply, sewage system)</td>
</tr>
<tr>
<td>3. Pollution: Air, water and soil</td>
</tr>
<tr>
<td>4. Irregular Electricity Supply</td>
</tr>
<tr>
<td>5. Resettlement: land expropriation, compensation, legal framework</td>
</tr>
</tbody>
</table>

### Figure 3.4.17b  Hade Women Looking at Project Map
Although certain project concerns were more prevalent in some communities than others, there were general points raised in all the public consultations. 96% of all participants were informed about the upgrade to the project site, however, the level of detail varied. Most public meetings were attended by the heads of households and/or men, therefore women and youths tended to be less informed. 31% want to be told information by the municipality authority representatives, 22% wanted representatives from the mine, 16% favoured public meetings/gatherings and 13% wanted to be informed via television. 67% of the total population want to take part in the project planning process.

Half the populations of Grabovc, Hade and Lajthishte strongly support the project and believe it will bring positive economic impacts. Hade also believes that the project will have a positive economic impact and 83% of all participants believe the project will create employment opportunities.

Although the project gains support due to the expectation that it will have a positive impact on the local economy and employment opportunities many residents feel there will be negative impacts. 58% of all residents believe the project will have a negative impact on the environment and in Hamidi this figure rises to 77%. One participant from Crkvena Vodica stated:

“Pollution with the old power plants is enormous. Since the new power plant will also use coal to produce electricity, then it will not have any positive impact in the environment, and on the health of the people living here.”
There is concern that the current pollution problem will increase and the area will become uninhabitable. 23% of the Dardhishte population strongly opposes the project and a further 27% view the project as very negative. Other issues brought up during focus group meetings include the concern that employment opportunities will not favour local workers and that they will have to put up with pollution and poor environmental conditions without gaining any benefits.

Resettlement was favoured by some, but not by others. 66% of the total population surveyed believes resettlement will not create a problem, 33% believed it will be a problem. Resettlement is a concern for some as communities do not want to be split from each other, which makes them feel insecure.

Individual settlement concerns are further discussed in Table 3.4.17b to Table 3.4.17i.

<table>
<thead>
<tr>
<th>Specific Requests from Village Representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Clear and Transparent employment policy for local residents</td>
</tr>
<tr>
<td>• Change name of Sibove Mine</td>
</tr>
<tr>
<td>• Address impact of ash disposal</td>
</tr>
<tr>
<td>• Support school in preparing students for employment</td>
</tr>
<tr>
<td>• Establish community forums</td>
</tr>
</tbody>
</table>

**Figure 3.4.17d Consultation Process**
### Table 3.4.17b  Key Concerns - Grabovc

<table>
<thead>
<tr>
<th>Issues/Concerns</th>
<th>Comments/Context</th>
<th>Significance</th>
</tr>
</thead>
</table>
| Employment                      | • According to residents 225 people have applied to KEK for work and only 5 people have been employed. Residents feel that they suffer from discrimination. Have a very high unemployment rate. Many people requested guaranteed employment of 230 people by KEK.  
• People are supportive of Kosovo C as they hope it will be more efficient and cleaner than Kosovo A and B.                                                                                     | High         |
| Infrastructure (sewage and roads)| Residents believe that Grabovc suffered the worst impacts of the war and that nothing has been properly rehabilitated since the war. They claim there is no sewage system – one was constructed in 2006 but has not been completed. Raw sewage leaks onto the road. Requests for KEK to mend the roads | High         |
| Air pollution                   | People said that they have been negatively impacted by the mine since 1963. Dust is a big issue for them and asked why the power plants A and B do not have filters to decrease the pollution.                                                                                         | Medium       |
| Resettlement                    | Because of the noise and dust pollution people want to be resettled immediately. Some claim that people are concerned about the cancer risk of living in the area and that some residents have already moved away                                                                 | Medium       |
| Compensation                    | People want adequate compensation from 2003 damage. Compensation of 9,000 Euros per hectare was paid, which they believe is inadequate. People also want compensation for damaged property caused by landslides and general tectonic movement.                                            | High         |
| Project Participation           | • Residents would like to have a memorandum of understanding between the village and the project in order to discuss and resolve some of these key concerns and to be kept up to date on one issue and to identify roles and responsibilities of communities and the project.  
• People have not been consulted under old the regime. According to the municipal assembly 70% of mine land belongs to Grabovc | High         |
### Table 3.4.17c  Key Concerns - Shiptulle

<table>
<thead>
<tr>
<th>Issues/Concerns</th>
<th>Comments/Context</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>• Residents want the project to give special priority to families without a head of household. Want KEK to guarantee jobs for a specific number of residents.</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>• Most people in support of the project but concerned about the current and future negative impacts.</td>
<td></td>
</tr>
<tr>
<td>Resettlement</td>
<td>Issues of land registry and ownership. One resident bought some land many years ago but the land is still registered in someone else’s name but the resident is paying taxes. There were request for people households who had lost people in the war to be given priority compensation and fast track resettlement. Land compensation should be based on land value and not on land category. Several residents claimed that land has started to shift. People have concerns about where they will be moved to in 2018.</td>
<td>High</td>
</tr>
<tr>
<td>Name of Mine</td>
<td>People pointed out that as the mine is located in Hade/Shiptulle it should not be called Sibovc mine</td>
<td></td>
</tr>
</tbody>
</table>

### Table 3.4.17d  Key Concerns - Hade

<table>
<thead>
<tr>
<th>Issues/Concerns</th>
<th>Comments/Context</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Case Treatment</td>
<td>All residents felt that Hade should be treated as a special case as a result of the emergency evacuation that took place in 2003/4</td>
<td>High</td>
</tr>
<tr>
<td>Employment</td>
<td>• High unemployment in Hade. People want to have preferential access to jobs of the present and future project.</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>• Women - The women’s group was particularly concerned about the employment of youth and future of the community of young people left the community to seek work elsewhere. The women also mentioned that quite few people were on social assistance which only lasts one year.</td>
<td></td>
</tr>
<tr>
<td>Resettlement</td>
<td>The resettlement of 2003 was a very negative experience. The village is now a fractured one as it was only partially resettled and people say they suffer from the affects of this. People wasn’t to ensure that the same process is not employed again and want assurances about adequate compensation and that if Hade needs to be moved it will be moved as one. Some people have still not received their compensation from 2003/4. Although people do not want to leave they say that life has becomes difficult with lack of transport and pollution that they would like to be moved sooner rather than later.</td>
<td>High</td>
</tr>
<tr>
<td>Infrastructure(public transport)</td>
<td>Bad travel connections mean that they there only 4 pupils per class in the local school. Lack transportation also has implications for access to health care, further education and economic opportunities.</td>
<td>High</td>
</tr>
</tbody>
</table>
**Table 3.4.17e  Key Concerns - Sibovc**

<table>
<thead>
<tr>
<th>Issues/Concerns</th>
<th>Comments/Context</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>Only 7% of Sibovc is employed according to villagers. People require preferential access to jobs but are wary of the business practices of foreign investors. People are concerned that they will be paid low wages and not given good benefits. Any jobs that are available should pay a good rate of pay and have good benefits. Many residents wanted to know how Kosovo would benefit from foreign investment and what mechanisms are in place to ensure that Kosovo will not be exploited and that the local Municipalities would receive adequate tax revenues from the mine development.</td>
<td>High</td>
</tr>
</tbody>
</table>
| Resettlement          | • There are concerns about land expropriation and compensation. several residents have problems with registering their land with the municipality and therefore do not have the relevant papers and this could jeopardise their getting adequate compensation if land expropriation will be necessary.  
• **Women** - Women were concerned about the level of compensation. Using Hade as an example they fear that the compensation will not sufficient for them to purchase housing and land elsewhere. | High         |
| Project Participation | Requests for memorandum of understanding between community and project. The establishment of the village meetings and plans for ongoing consultation were welcomed. Requests for municipality representatives to be members of the project steering committee.                                                                                                                                  | High         |
| Pollution             | Complaints about dust and noise. Lack of agriculture produce is blamed on the dust and contaminated soil.                                                                                                                                                                                                                                                                  | High         |
### Table 3.4.17f  Key Concerns - Lajthishte

<table>
<thead>
<tr>
<th>Issues/Concerns</th>
<th>Comments/Context</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollution</td>
<td>Air and dust pollution are key concerns of residents. Many people believe that they cannot grow vegetables as a result of the dust and poor soil. One resident said that Obliqe was known as the most polluted area in Kosovo.</td>
<td>High</td>
</tr>
<tr>
<td>Resettlement</td>
<td>Many residents want to be moved immediately because of pollution. People wanted information about how they would be resettled for example, by</td>
<td>High</td>
</tr>
<tr>
<td>Employment</td>
<td>• High unemployment in the village. Residents want to see employment opportunities in KEK.</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>• Retrenchment - Residents concerned about the closure of Kosovo B and C and the impact on employment of those currently employed there.</td>
<td>High</td>
</tr>
</tbody>
</table>

### Table 3.4.17g  Key Concerns – Plemetin (including Serbian Community)

<table>
<thead>
<tr>
<th>Issues/Concerns</th>
<th>Comments/Context</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>Many residents have not worked for 8 years. Some claimed that there was discrimination against Serbian employees at KEK. Many residents suggested that the project should have discussions with the trade unions.</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Although this was a meeting primarily for the Serbian community the majority of people came from Sibovc (from the Serbian community) Some residents said that after 10 December, the proposed date for Kosovo deciding on independence their views would be irrelevant as they would leave Kosovo and go to Serbia.</td>
<td>High</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>There is no reliable water supply and electricity supply is either non-extents. Residents do not understand why they have no electricity supply when they live near 2 power plants.</td>
<td>High</td>
</tr>
</tbody>
</table>
### Table 3.4.17h  **Key Concerns - Dardishte**

<table>
<thead>
<tr>
<th>Issues/Concerns</th>
<th>Comments/Context</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollution</td>
<td>Dardishtë is centrally located within the mine development area and is directly impacted by the ash removal project and therefore has suffered from significant negative impacts from removal of ash from the mine. Residents claim that the level of pollution has been identified as the most polluted in Europe, People are concerned about: • Phenols • Ash disposal • Impact on health for houses that are located very near to the ash dumps.</td>
<td>High</td>
</tr>
<tr>
<td>Health</td>
<td>Several people cited the mine and ash disposal as the reason for their respiratory diseases and deaths by cancer in the village.</td>
<td>High</td>
</tr>
<tr>
<td>Employment</td>
<td>Residents requested that as part compensation for the pollution they should be given priority treatment regarding employment in KEK and in the new mine development project.</td>
<td>High</td>
</tr>
</tbody>
</table>

### Table 3.4.17i  **Key Concerns – Kastriot (Mazqit, Obliq, Plemetin - Albanian Community)**

<table>
<thead>
<tr>
<th>Issues/Concerns</th>
<th>Comments/Context</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure</td>
<td>Poor electricity supply. Residents complained of having to pay very high bills for electricity but not gaining the benefit of a good and consistent electricity supply.</td>
<td>High</td>
</tr>
<tr>
<td>Employment</td>
<td>Residents particularly concerned about employment for young people and recently graduated university students. Young people.</td>
<td></td>
</tr>
<tr>
<td>Efficacy of project</td>
<td>Several participants asked if there had been studies about the viability of Kosovo and if the current design complies with EU standards and other international agreements and guidelines</td>
<td></td>
</tr>
<tr>
<td>Project Participation</td>
<td>Participants welcomed the meeting but wanted more in depth and continuous consultation throughout the project. Many participants wanted broader representation of communities in the project steering team and develop some form of community forum that would report back to the communities.</td>
<td></td>
</tr>
</tbody>
</table>
Summary - Comments on Available Data and Suggestions

Community knowledge of the proposed project is generally high, although the level of detailed knowledge varies. There are a number of common concerns with employment and environmental pollution being the most frequent. Generally, communities are in favour of the project and hope that it will bring with it economic and employment opportunities. Most communities believe that it is unlikely that the project will result in improvements to local pollution and environmental damage.

Focus groups were not formed in two villages and a number of communities were not fully consulted. In the case of the focus groups there were two main reasons: refusal to participate in a democratic voting system or lack refusal to participate in focus group meetings. Consultation was limited due to some hostility towards the data collection team by some communities, who did not want to take part in the household survey.
4 ALTERNATIVE DEVELOPMENT SCENARIOS FOR KOSOVO C TPP DEVELOPMENT

4.1 REVIEW OF SECTOR DEVELOPMENT STRATEGIES

4.1.1 The Energy Sector

4.1.1.1 Energy Production and Demand

Historically, energy and mining were mainstays of the Kosovo economy, providing direct and indirect employment, sources of revenue, export earnings, and inputs to downstream industries. However, from being a contributor to economic growth, the power sector has become a drain on public resources. In addition, unreliable electricity supply has emerged as one of the main obstacles to growth. Kosovo continues to suffer from regular electricity black-outs. Surveyed companies in Kosovo reported the lack of reliable electricity supply as the main barrier to their operations, causing losses of sales and additional costs for purchasing and operating generators.

The electricity sector in Kosovo has been dominated for a long period by Korporata Energjetike e Kosovës - KEK, a vertically integrated system composed of two lignite mines at Bardh and Mirash, two lignite fired power plants Kosovo A and B, with an overall effective capacity of 645 to 710 MW (from an installed capacity of 1478 MW), and the Ujmani HPP, with an installed capacity of 35 MW, transmission and dispatching system, distribution network and supply.

In recent times an unbundling process has taken place, with the formation of two joint associations, namely KEK sh.a and KOSTT sh.a. Table 4.1.1.1a and 4.1.1.1b, extracted from the Poyry study on the electric system development\(^1\), show the electric domestic production in the period 2000-2006 and the electricity balance during the same period.

Table 4.1.1.1a Domestic Electricity Production (GWh)

<table>
<thead>
<tr>
<th>Year</th>
<th>Kosovo A</th>
<th>Kosovo B</th>
<th>Hydro</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>582</td>
<td>1,281</td>
<td>51</td>
<td>1,914</td>
</tr>
<tr>
<td>2001</td>
<td>1,025</td>
<td>1,452</td>
<td>91</td>
<td>2,568</td>
</tr>
<tr>
<td>2002</td>
<td>1,134</td>
<td>1,939</td>
<td>80</td>
<td>3,153</td>
</tr>
<tr>
<td>2003</td>
<td>1,582</td>
<td>1,629</td>
<td>51</td>
<td>3,262</td>
</tr>
<tr>
<td>2004</td>
<td>864</td>
<td>2,524</td>
<td>112</td>
<td>3,500</td>
</tr>
<tr>
<td>2005</td>
<td>645</td>
<td>3,244</td>
<td>111</td>
<td>4,000</td>
</tr>
<tr>
<td>2006</td>
<td>899</td>
<td>2,972</td>
<td>101</td>
<td>3,972</td>
</tr>
</tbody>
</table>

Table 4.1.1.1b  

<table>
<thead>
<tr>
<th>Year</th>
<th>Energy Production GWh</th>
<th>%</th>
<th>Net Import – Export GWh</th>
<th>%</th>
<th>Energy Avail. GWh</th>
<th>%</th>
<th>Direct Customers GWh</th>
<th>%</th>
<th>Net Distribution Losses GWh</th>
<th>%</th>
<th>GWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1,914</td>
<td>66.7</td>
<td>955</td>
<td>33.3</td>
<td>2,869</td>
<td>81</td>
<td>1.3</td>
<td>28</td>
<td>1,431</td>
<td>49.9</td>
<td>1,357</td>
</tr>
<tr>
<td>2001</td>
<td>2,568</td>
<td>82.5</td>
<td>544</td>
<td>17.5</td>
<td>3,112</td>
<td>85</td>
<td>2.7</td>
<td>27</td>
<td>1,555</td>
<td>50.0</td>
<td>1,472</td>
</tr>
<tr>
<td>2002</td>
<td>3,153</td>
<td>95.0</td>
<td>168</td>
<td>5.0</td>
<td>3,321</td>
<td>124</td>
<td>3.7</td>
<td>37</td>
<td>1,829</td>
<td>55.1</td>
<td>1,368</td>
</tr>
<tr>
<td>2003</td>
<td>3,262</td>
<td>90.1</td>
<td>358</td>
<td>9.9</td>
<td>3,620</td>
<td>192</td>
<td>5.3</td>
<td>53</td>
<td>1,883</td>
<td>52.0</td>
<td>1,545</td>
</tr>
<tr>
<td>2004</td>
<td>3,500</td>
<td>88.7</td>
<td>446</td>
<td>11.3</td>
<td>3,946</td>
<td>93</td>
<td>2.3</td>
<td>23</td>
<td>2,093</td>
<td>51.7</td>
<td>1,814</td>
</tr>
<tr>
<td>2005</td>
<td>4,000</td>
<td>93.9</td>
<td>260</td>
<td>6.1</td>
<td>4,260</td>
<td>102</td>
<td>2.4</td>
<td>24</td>
<td>2,010</td>
<td>47.2</td>
<td>2,148</td>
</tr>
<tr>
<td>2006</td>
<td>3,972</td>
<td>93.0</td>
<td>299</td>
<td>7.0</td>
<td>4,271</td>
<td>107</td>
<td>2.5</td>
<td>25</td>
<td>1,974</td>
<td>46.3</td>
<td>2,190</td>
</tr>
</tbody>
</table>

It may be noticed the very high amount of the transmission and distribution losses, which can be partly (about 18%) attributed to technical reasons, but for the remaining portion are related to non technical reasons, such as illegal connections and metering problems.

The most comprehensive forecasts of electricity demand in Kosovo are available in key publications such as the ESTAP\(^1\) and GIS\(^2\) studies. The forecast from each of these sources have been used to put in context the supply/demand balance for the coming years.

The Poyry study\(^3\) (see Table 2.1.1.1c) represents the most recent forecast, extending to the year 2020, and prepared on the assumption of a medium growth scenario (MGS).

Technical losses are expected to decrease from the present level of 18% to 13% in 2020, while non technical losses, included within the “electricity consumption” item, are expected to drop within the same year from 29% to 5%.

---


\(^2\) REBIS:GIS - SEE Region Demand Forecast – Appendix 6 of Volume 4 (Electricity Demand Forecast), PCW/MWH/Atkins, on behalf of EU CARDS Program, December 2004.

Table 4.1.1.1c  Electricity Demand Forecast (MGS)

<table>
<thead>
<tr>
<th></th>
<th>Unit</th>
<th>2000</th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>GWh</td>
<td>276</td>
<td>563</td>
<td>780</td>
<td>980</td>
<td>1,163</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>11.8</td>
<td>15.1</td>
<td>18.3</td>
<td>20.2</td>
<td>21.5</td>
</tr>
<tr>
<td>Services</td>
<td>GWh</td>
<td>290</td>
<td>546</td>
<td>777</td>
<td>1,057</td>
<td>1,303</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>12.4</td>
<td>14.6</td>
<td>18.2</td>
<td>21.8</td>
<td>24.1</td>
</tr>
<tr>
<td>Households</td>
<td>GWh</td>
<td>1,699</td>
<td>2,613</td>
<td>2,601</td>
<td>2,677</td>
<td>2,790</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>72.4</td>
<td>69.9</td>
<td>60.9</td>
<td>55.2</td>
<td>51.6</td>
</tr>
<tr>
<td>Electricity consumption</td>
<td>GWh</td>
<td>2,265</td>
<td>3,722</td>
<td>4,157</td>
<td>4,713</td>
<td>5,256</td>
</tr>
<tr>
<td>KEK consumption</td>
<td>GWh</td>
<td>82</td>
<td>18</td>
<td>114</td>
<td>133</td>
<td>155</td>
</tr>
<tr>
<td>Total electricity consumption</td>
<td>GWh</td>
<td>2,347</td>
<td>3,740</td>
<td>4,271</td>
<td>4,846</td>
<td>5,411</td>
</tr>
<tr>
<td>Technical losses</td>
<td>GWh</td>
<td>515</td>
<td>821</td>
<td>865</td>
<td>850</td>
<td>808</td>
</tr>
<tr>
<td>Total electricity demand</td>
<td>GWh</td>
<td>2,862</td>
<td>4,562</td>
<td>5,136</td>
<td>5,696</td>
<td>6,219</td>
</tr>
</tbody>
</table>

Under the same MGS hypothesis, the maximum capacity demand is expected to reach a level of close to 1,400 MW in 2020. This would correspond to a Load Factor of 0.51 (well below the potential Load Factor of the TPPs), wherefore it can be stated that the reported value of capacity makes allowance for reserves and maintenance.

In the high growth scenario (HGS), on the other hand, the total electricity demand is expected to reach 8,477 MW in the year 2020 and the maximum capacity demand almost 1,900 MW in the same year.

Regardless of the actual future level of growth, it is evident that a very significant gap exists between electrical generation capacity and demand. Even assuming that Kosovo B can continue operation beyond the year 2020, the new Kosovo C plant would need to dedicate close to 1,000 MW of available capacity just to satisfy the demand of the whole Kosovo. Another important element to be underlined is the fact that industry and services demand is expected to grow at a much higher rate than the households one. This means that an adequate supply of electricity represents a basic requirement for the economic development of the country.

As refers to the integration of the Kosovo electrical system within the regional context of South Eastern Europe (SEE), a strategy has been developed to create modern and efficient energy infrastructure networks (for electricity, oil and gas), in order to ensure that the energy system of the region can meet the energy demands of each country. The development of energy infrastructures should therefore ensure an adequate supply of energy, the region’s security of supply and the necessary interconnection between the region and the neighbouring systems. It should also develop interconnections of regional interest within SSE, achieve lower prices for consumers and create opportunities for investments.
For this purpose, in November 2002, UNMIK signed the Athens Memorandum of Understanding for the establishment of the Regional Electrical Energy Market in South Eastern Europe. In December 2003, UNMIK signed the second Memorandum of Understanding, including the establishment of the regional gas market and the proposal for a common approach on environment.

In October 2005 UNMIK, on behalf of PISG, signed, together with the European Union and eight other parties of SEE (Croatia, Bosnia and Herzegovina, Serbia, Montenegro, FYROM, Albania, Romania and Bulgaria) the Treaty relevant to the Energy Community of the South Eastern Europe (ECSEE), due to create a legal framework for an integrated energy market. In this aspect, the Kosovo Government is facing a huge challenge to develop the energy sector for a short and medium term in order to:

- Comply with all commitments put forward for the establishment and operation of the Energy Community, and at the same time
- Qualify for exploitation of all opportunities that come out from its involvement in the Regional Energy Market of South Eastern Europe.

As refers to the complete range of energy sources besides electricity, the figures of Table 4.1.1.1d, derived from the ESTAP I study, show the primary energy consumption of Kosovo in the years 2000 and 2015 (projected).

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>2000</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PJ</td>
<td>GWh</td>
</tr>
<tr>
<td>Coal (lignite)</td>
<td>36</td>
<td>10,000</td>
</tr>
<tr>
<td>Oil</td>
<td>17</td>
<td>4,800</td>
</tr>
<tr>
<td>Wood</td>
<td>13</td>
<td>3,700</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
<td>18,500</td>
</tr>
</tbody>
</table>

As shown in the table, total energy demand is expected to almost double within 2015 compared with the data of the year 2000, in particular with respect to lignite and oil consumption. The large lignite increase may become even greater if the current plan of involving private investors in the development of new mines and power plants will be fully successful and Kosovo will become a net exporter of electricity.

For the oil sector in absolute volumes the transport sector doubles its consumption. The residential sector will see a steep relative increase from the present marginal role, but will remain a minor actor. However in case of conversion to CHP of existing thermal power plants, the oil sector will lose an important “client”, i.e. Prishtina DH.

---

The consumption of firewood is stable over the period (consequently reducing its relative share) and hydro, not even shown in the table, is low and supposed unchanged.

The balance does not assume the development of natural gas networks and does not consider solar and other minor sources. The forecast on primary energy by ESTAP I has been on the whole confirmed by the values reported in the study by MEM on energy demand forecast in the year 2007\(^1\). According to this study, in 2006 the primary energy consumption in Kosovo was as presented in the following Table.

<table>
<thead>
<tr>
<th>Source</th>
<th>Consumption (GWh)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lignite</td>
<td>14,800</td>
<td>60</td>
</tr>
<tr>
<td>Oil and Derivates</td>
<td>7,000</td>
<td>29</td>
</tr>
<tr>
<td>Fuel wood</td>
<td>2,500</td>
<td>10</td>
</tr>
<tr>
<td>Hydro + others</td>
<td>300</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24,600</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Regardless of the considered information sources, it can be observed that lignite plays a predominant role in primary energy consumption, both at present and in future projections, accounting for **55-60% of the total**. The entire primary energy consumption of coal, oil and wood can then be divided into four main energy sectors (residential, industrial, commercial and transport - plus conversion, i.e. production of electricity).

The power sector consumes about 57% of all primary energy in Kosovo as the other sectors mainly rely on the electricity produced there. Of the primary energy used for power production less than 30% becomes today electricity, indicating an average conversion efficiency of less than 30%. The situation may significantly improve in the future with the construction of thermal power plants with higher efficiency.

The transport sector use of gasoline and other oil products will increase significantly. The main shift for the residential sector is mostly related to an increased consumption of oil, which presently is very low.

### 4.1.2 The Role of Lignite in the Energy Strategy of Kosovo

It is clear from all the work done in Kosovo over the years that the potential for power generation from lignite remains far and away the major asset. The Energy Strategy takes the view that these resources could be used to meet the demand of Kosovo and that of neighboring countries. This would allow Kosovo not only to substitute imports, but also to gain foreign currency from exports.

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\(^1\) “Energy Demand Forecast in Kosovo for 2007”, MEM, December 2006
A review of the energy sector in South-Eastern Europe\(^1\), conducted as an extension of the GIS (Generation Investment Study), concluded that the development of lignite mining in Kosovo for power generation and sale to the regional market is part of the least-cost solution to close the emerging gap in generation capacity in the region.

Elimination of the non-cost effective rehabilitation projects has a direct impact on the investment requirements for the new generation capacity. The investment requirements increase proportionally to replace the retiring non-competitive capacity of existing plants. Also, some lignite-fired plants are displaced especially when carbon credits are taken into account. However, low-cost lignite-fired capacity continues to play an important role in the generation expansion of the region. In particular, lignite plants in Kosovo remained the least-cost option for the region; in fact, as carbon credit values increase and existing power plants become less cost-effective, there is need for more efficient plants burning Kosovo lignite; more specifically, the baseline plan included 4,200 MW of new plants burning Kosovo lignite, but when the carbon credits were included, the new plant capacity burning Kosovo lignite increases to 5,500 MW over the planning period (2005-2020).

Moreover, as stated in the Energy Strategy\(^2\), the importance of the energy sector for the future development of Kosovo should be seen from two aspects:

a) At the function of the establishment of energy infrastructure for a dynamic economic and social development.

b) The importance of considerable primary energy resources, in particular lignite and its rational exploitation, in the context of the overall [economic] development strategy of Kosovo.

The Energy Strategy clearly identifies few key aspects:

c) The importance of lignite as national energy source;

d) The importance of a well functioning electricity sector as a driver for the economic and social development of Kosovo;

e) The importance of the electricity sector itself, seen as a major industry creating job opportunities and well being.

The following paragraphs will discuss these aspects, but it may be useful to report here a sentence of the Project Appraisal Document\(^3\) of the World Bank: Kosovo’s key energy resource is its extensive lignite deposits; the New Mining Field alone is estimated to hold about one billion tons of geological reserves. Kosovo has no other fossil fuel resource and only a very modest hydroelectric potential. It does not import natural gas and has limited gas supply infrastructure, consisting of about 250 km of lines, presently unusable due to

---

\(^1\) "Development of Power Generation in South East Europe – Implications for Investments in Environmental Protection", S.E.E.C. on behalf of the World Bank, April 2005


\(^3\) "Project Appraisal Document on a Proposed International Development Association Grant in the Amount of SDR 5.8 million (US$ 8.5 million equivalent) to the United Nations Interim Administration Mission in Kosovo for the Benefit of Kosovo for a Lignite Power Technical Assistance Project", the World Bank, September 2006
lack of maintenance during the period 1990-2008. It has no oil refinery and depends entirely on imported liquid fuels. This has the potential to produce a multiplier effect on business investment, and on job prospects.

4.1.1.3 Economic Justification of the Development of Lignite

In order to better frame the economic convenience of developing lignite for electricity generation within the context of the country, the main socio-economic features of Kosovo are summarized hereafter, as extracted from the recently completed study on the heat market in Kosovo

a) Country outlook

Present Status: UN administered territory according to UN Security Council, Resolution 1244.
Final Status: Under negotiation
Area: 10,877 km²
Borders: Serbia (North and East), Macedonia – FYROM (South), Albania (Southwest) and Montenegro (Northwest)
Climate: Continental with warm summers and cold winters
Capital: Prishtinë / Priština (in English Pristina)
Number of Municipalities: 30
Population Density (resident): 193 persons per km²
Inhabitants 2.1 millions

b) Economic conditions of population

GDP per capita: 1,565 US $ per year
Population below poverty line (below $1.75 per adult equivalent per day): 37%
Population in extreme poverty (below $1.14 per adult equivalent per day): 15%

The data on investments (Table 4.1.1.3a) show:

• a rapid reduction of outside Donors
• the first steps of the Government, and
• a persistent level of investments in the housing sector even after the end of the emergency period after 2001.

(1) This number is slightly lower in summer when seasonal workers may join the Kosovarian living abroad and higher in winter.

(2) “Kosovo Brief 2006”, the World Bank. It should be reminded that during the reference year (2006) the exchange rate was approximately 1.25 US$ for 1 Euro.
#### Table 4.1.1.3a
**Investments in the Period 2001 – 2005 ( Millions of Euros)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment</td>
<td>661</td>
<td>598</td>
<td>526</td>
<td>528</td>
<td>576</td>
</tr>
<tr>
<td>Donor sector</td>
<td>245</td>
<td>180</td>
<td>126</td>
<td>96</td>
<td>86</td>
</tr>
<tr>
<td>General</td>
<td>21</td>
<td>42</td>
<td>96</td>
<td>115</td>
<td>150</td>
</tr>
<tr>
<td>Government</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Investment</td>
<td>395</td>
<td>376</td>
<td>304</td>
<td>317</td>
<td>340</td>
</tr>
<tr>
<td>Housing</td>
<td>300</td>
<td>255</td>
<td>199</td>
<td>206</td>
<td>221</td>
</tr>
<tr>
<td>Other</td>
<td>95</td>
<td>121</td>
<td>105</td>
<td>111</td>
<td>119</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1717</td>
<td>1572</td>
<td>1356</td>
<td>1373</td>
<td>1492</td>
</tr>
</tbody>
</table>

**Table 4.1.1.3a** shows the huge export / import unbalance of Kosovo. Such unbalance will not disappear in the near future and it will represent a constant characteristic of the economic outlook of Kosovo. Such export / import unbalance of Kosovo suggests the opportunity to carefully evaluate any massive use of foreign “imported” fuel. Therefore the “valorization” of local lignite represents not only an important driver to economic development (as suggested and practically supported by the World Bank through an 8.5 millions US$ technical assistance) but also one of the few alternatives, apart from emigrant remittances, to reduce the current trade unbalance.

#### Table 4.1.1.3b
**Export and Import in the Period 2001–2005 (Millions of Euros)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net exports of GNFS</td>
<td>-1,686</td>
<td>-1,493</td>
<td>-1,379</td>
<td>-1,299</td>
<td>-1,220</td>
</tr>
<tr>
<td>Exports</td>
<td>269</td>
<td>217</td>
<td>186</td>
<td>190</td>
<td>185</td>
</tr>
<tr>
<td>Local consumption of expatriates (incl. soldiers)</td>
<td>246</td>
<td>190</td>
<td>150</td>
<td>139</td>
<td>114</td>
</tr>
<tr>
<td>Of which re-exports</td>
<td>67</td>
<td>51</td>
<td>46</td>
<td>49</td>
<td>40</td>
</tr>
<tr>
<td>Other exports</td>
<td>23</td>
<td>27</td>
<td>36</td>
<td>51</td>
<td>71</td>
</tr>
<tr>
<td>Imports</td>
<td>1,955</td>
<td>1,710</td>
<td>1,565</td>
<td>1,488</td>
<td>1,405</td>
</tr>
<tr>
<td>Imports related to donor financed spending</td>
<td>888</td>
<td>700</td>
<td>577</td>
<td>493</td>
<td>390</td>
</tr>
<tr>
<td>- Wages of expatriates</td>
<td>490</td>
<td>427</td>
<td>355</td>
<td>301</td>
<td>229</td>
</tr>
<tr>
<td>- Wages of local employees</td>
<td>185</td>
<td>149</td>
<td>122</td>
<td>106</td>
<td>97</td>
</tr>
<tr>
<td>--- Other goods and services</td>
<td>213</td>
<td>124</td>
<td>99</td>
<td>86</td>
<td>64</td>
</tr>
<tr>
<td>Imports related to humanitarian assistance</td>
<td>18</td>
<td>9</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other imports</td>
<td>1,049</td>
<td>1,001</td>
<td>984</td>
<td>996</td>
<td>1,015</td>
</tr>
<tr>
<td>--- Private sector consumer goods</td>
<td>663</td>
<td>652</td>
<td>662</td>
<td>657</td>
<td>667</td>
</tr>
<tr>
<td>- Private investment goods</td>
<td>228</td>
<td>203</td>
<td>159</td>
<td>163</td>
<td>168</td>
</tr>
</tbody>
</table>
| Source: World Bank and IMF staff estimates
Finally, Table 4.1.1.3c shows some additional economic indicators, in particular the evolution of the GDP and the number of unemployed people, which remained essentially constant in the last 4 years.

Table 4.1.1.3c  
Key Statistics in the period 2003-2007

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP (% change)</td>
<td>-0.1</td>
<td>2.1</td>
<td>0.3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reg. unemployment</td>
<td>282.3</td>
<td>302</td>
<td>319.7</td>
<td>326</td>
<td>327.6</td>
<td>330.2</td>
<td>331.1</td>
</tr>
<tr>
<td>CPI (SOK)</td>
<td>1.2</td>
<td>-1.1</td>
<td>-1.4</td>
<td>0.6</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Fiscal balance</td>
<td>62.6</td>
<td>-134.3</td>
<td>-57.7</td>
<td>76.5</td>
<td>43.7</td>
<td>108.6</td>
<td>114.1</td>
</tr>
<tr>
<td>Exports (€mn)</td>
<td>35.6</td>
<td>56.5</td>
<td>48.9</td>
<td>79.2</td>
<td>1.4</td>
<td>7.3</td>
<td>17.4</td>
</tr>
<tr>
<td>Imports (€mn)</td>
<td>973.1</td>
<td>1,063.20</td>
<td>1,180.00</td>
<td>1,314.60</td>
<td>79.6</td>
<td>187.5</td>
<td>308.30</td>
</tr>
</tbody>
</table>

Note: Monthly fiscal balance, export and import figures are non-cumulative.
SOK (CPI) is % change year-on-year (e.g. Oct 2004 is change from Oct 2003 to Oct 2004). Registered unemployment in thousands.
Source: BPK, SoK, MFE, Kosovo Employment Office and IMF staff estimates

On the basis of the above presented economic aspects, it can be concluded that the development of the local lignite resources, through the installation of a new TPP due to satisfy local demand and to generate surplus energy for export, is basically justified by the following expected results:

- The use of local energy source can ensure, at least in the long-term, the equilibrium of the balance of payment, providing at the same time an opportunity to significantly boost trade links between Kosovo and Southeast Europe and thus facilitate closer integration with the rest of Europe.
- The “industry” of generating electricity creates, besides a direct impulse to the economy (it should be mentioned that KEK is a major provider of job in Kosovo, employing presently about 8,000 people, of which nearly one half are in lignite mine operations), additional benefits related with the associated economic development (industries, agriculture, handicraft, etc.) and can thus contribute to a significant reduction of the presently very high unemployment rate and of the number of people falling below the poverty line.

An attempt of quantifying the economic direct and indirect benefits associated with the installation of a new lignite fired power plant with a 600 MW capacity is contained in the PAD of the Lignite Power Technical Assistance Project\(^1\), as in the following.

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\(^1\) "Project Appraisal Document on a Proposed International Development Association Grant in the Amount of SDR 5.8 million (US$ 8.5 million equivalent) to the United Nations Interim Administration Mission in Kosovo for the Benefit of Kosovo for a Lignite Power Technical Assistance Project", the World Bank, September 2006
The proposed New Mine/Plant will generate substantial direct and indirect benefits to Kosovo. The benefits would be as follows:

- Royalties payable to the government for mining and selling lignite to the owners of the power plant for generating electricity. The present value of these royalties is estimated at approximately €7 millions;
- Economic rents payable to the government for the use of lignite by the owners of the power plant for exporting electricity. The present value of the economic rent to the government is estimated at approximately €41 millions;
- The tax revenues to the government are estimated at around €5-6 millions from the mine and €78 millions from the power plant in present value terms;
- The new power plant will substantially reduce the need to import power from neighboring countries and also improve the overall reliability of supply for domestic consumption. The present value of these benefits to the government is estimated at €228 millions;
- Kosovo will benefit from increased employment of approximately 2,000 jobs during the construction of the New Mine/Plant from 2008 through 2012 and 1,300 jobs during the operations period from 2012 through 2038. A multiplier of 2.2 thus would result in approximately 4,000 jobs in Kosovo. The present value of the employment increase is estimated at approximately €57 millions.

In addition to the direct benefits, there are substantial indirect benefits to Kosovo as a result of the proposed New Mine/Plant. There is an investment made by the private sector (approximately €300 million for the mine and approximately €770 million over a six-year period: 2008-2013).

This is a substantial increase in overall investment compared to the recent figures and will undoubtedly provide some impetus to economic growth in Kosovo. Based on a simple accelerator macro model, it is estimated that by 2013 the GDP is approximately €150 million or 4.8% higher than without the Project. The average annual rate of growth of GDP without the Project over the period 2008-2013 is 3.2% and with the Project it is 3.6%.

It should be stressed that, considering that the overall development of the power plant is due to be well over the 600 MW assumed in the PAD economic analysis, the corresponding benefits shall be proportionally much higher.

It is also worth adding that, besides the economic benefits identified by the World Bank, an extremely important “social” benefit would derive from the possibility of providing reliable, low cost power to meet domestic needs. In this respect, some of the above mentioned direct benefits, e.g. the lignite royalties, may be at least partly converted to allow affordable electricity to the poorest sector of the population.

4.1.1.4 Lack of Valuable Local Alternatives

Numerous studies have been carried out to identify local alternatives, which may replace at least partly lignite as energy source for the production of both electricity and of heat for space and tap water heating. These studies were in part specifically addressed to the reduction of environmental problems.
related with the emission of pollutant elements from the lignite mines and from the operating plants of Kosovo A and Kosovo B, which are critically affecting the air quality in the area of Prishtina. As detailed hereafter, some alternatives have been identified, which however can only marginally contribute to the energy requirements of the country.

Hydro resources

The only operating hydroelectric plant in Kosovo is the Ujmani one, with an installed capacity of 35 MW and a production in the year 2006 of 101 GWh. In a study carried out by the Albanian Association of Energy and Environment for Sustainable Development1, 18 sites were identified for the installation of hydro power plants with a capacity ranging between 0.3 MW and 8.3 MW, while 5 more existing sites were singled out as deserving rehabilitation activities. The total capacity which could be achieved through the construction and rehabilitation process amounts to about 70 MW and the annual energy production to 300 GWh.

With reference to the potential development of these resources, the following sub-program PG 05 was identified in the Program for the implementation of the Kosovo Energy Strategy for the Period 2006-20082:

MEM, in coordination with ERO and the respective distribution companies owning the small hydro plants of Dikance, Istog, and Radavc, will investigate the possibilities for establishment of public-private partnerships, in the form of Build (revitalise) – Operate – Transfer, or similar, for the revitalization of these plants. For the investigation and eventually the preparation of tender documents, specialized technical assistance will be provided through an appropriate arrangement with donors. The requirements concerning environmental protection in accordance with the existing legislation and regulations as well as the provisions of the EU Directives for old plants will apply.

In this context it should be mentioned that the Lumbardh HPP, with a capacity of 8.3 MW and an annual production of about 22 GWh, has been given for rent and rehabilitation by private capital.

The same report of the Albanian Association mentions the additional hydroelectric potential present along the Drini I Bardhe and Ibri rivers, close to the Albanian border and with a potential energy production of about 700 GWh/year. The most important prospect corresponds to the Zhur HPP, studied at feasibility level by the Croatian company Electroprojekt and having an estimated capacity of 293 MW and annual production of about 400 GWh3.

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1 “Prefeasibility Study for Identification of Water Resources and their Utilization through Small Hydro Power Plants on Kosovo”, Albanian Association of Energy and Environment for Sustainable Development, on behalf of MEM, May 2006


Similarly to the small hydro plants, the Zhur one is also foreseen to be offered to private investors for construction through concession and to start operation in the year 2016. At any rate, all these units are not going to contribute to the coverage of the base load, since they are due to operate for supplying peak energy.

In consideration of the above, the full exploitation of the hydroelectric resources of Kosovo can be considered as a useful integrative measure, but can not definitely be classified as a global solution to satisfy the future electricity demand.

**Solar and Aeolian**

The exploitation of solar energy for electricity production is viewed as a long term solution to counteract the future depletion of fossil fuels. At the present state of arts, large scale production requires very sophisticated technology and is not competitive from the economic viewpoint with alternative sources. For the above reasons, solar energy can become an opportunity in Kosovo for tap water heating, but is not viewed, at least in the medium-term period, as a viable source for generation of electricity.

Similar concepts are applicable to the Aeolian energy as well, although in principle the country offers favourable physiographic conditions for its exploitation in terms of average wind speed and of hilly configuration.

**Geothermal**

Some low enthalpy geothermal prospects are known to exist in Kosovo. As shown in Table 4.1.1.4a, they are characterized by relatively high salinity and by low flow rate. These conditions, together with their maximum temperature of just over 50 °C, make the prospects totally unsuitable for energetic production (heat or electricity).

<table>
<thead>
<tr>
<th>Location</th>
<th>Temperature (°C)</th>
<th>Flow Rate (l/s)</th>
<th>Salinity (ppm)</th>
<th>Main Salts</th>
<th>Depth (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pejes</td>
<td>48</td>
<td>4</td>
<td>2,000</td>
<td>CO₂, H₂S, Rn</td>
<td></td>
</tr>
<tr>
<td>Klokotit</td>
<td>34</td>
<td>10</td>
<td></td>
<td>CO₂</td>
<td>483</td>
</tr>
<tr>
<td>Banjška</td>
<td>54</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poklek</td>
<td>15</td>
<td>1</td>
<td>3,900</td>
<td>CO₂</td>
<td>518</td>
</tr>
<tr>
<td>Dekani</td>
<td>12</td>
<td>2</td>
<td></td>
<td>CO₂, H₂S</td>
<td>645</td>
</tr>
</tbody>
</table>

**Agricultural and Urban Wastes**

Important amounts of biomass are available in Kosovo from agricultural waste (in particular wheat straws and corn poles and cobs) and from urban solid waste. The utilization of such material for production of electricity is associated with considerable technological and environmental problems, which make their potential role totally marginal, at least in the short to medium term period.
Wood

Wood is largely used in Kosovo for space heating, tap water heating and cooking, with an estimated yearly consumption of 2.5 million m³ of stacked wood. Wood presently covers the following portion of the energy demand for domestic uses:

- Space heating: 48%
- Tap water heating: 10%
- Cooking: 25%

On the base of an analysis conducted within the framework of the study on the Kosovo heat market, the total available wood deriving from the natural growth of the existing Kosovo forests amounts to some 1.2 to 1.5 million m³/year. Such value was estimated assuming the following parameters:

- Total area forested in Kosovo: 450,000 ha;
- Yearly volume increase of wood: 4/4.5 m³/ha (corresponding to about 5% of the whole wood stock);
- Useful percentage of increased volume for logging purpose: 60-80%.

The important unbalance between wood demand and local availability indicates that the present consumption not only poses a severe strain on the forestry resources of the country, but also that a significant portion of the demand is satisfied by material smuggled from neighbouring countries. Under this situation, it is unconceivable to consider wood as an alternative energy source for electrical generation, even more taking into account the negative effects on the air quality which would be generated by the wood fed boilers.

4.1.1.5 Heat Market and Poor Perspective of Direct Use of Lignite

The lignite market in Kosovo is clearly dominated by the demand of the local thermal power plants, which makes up for 98% of the total lignite production. The minor part of the lignite production is being used as payment in kind for the KEK workers (sold at a discounted price) and processed - wet - at the “lignite drying plant” to be sold to industrial consumers (Table 4.1.1.5a). There is presently no market for District Heating facilities and very limited market for private households.

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(7) “Analysis of the Potential for Increased Firewood Production in Kosovo”, Swedish International Development Agency (SIDA), September 2003

Table 4.1.1.5a  Wet Lignite Production and Consumption in the year 2005

<table>
<thead>
<tr>
<th>Lignite (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total lignite production</td>
</tr>
<tr>
<td>Total lignite consumption</td>
</tr>
<tr>
<td>Industry</td>
</tr>
<tr>
<td>Schools</td>
</tr>
<tr>
<td>Direct households</td>
</tr>
<tr>
<td>Payment in kind / households</td>
</tr>
</tbody>
</table>

The commercial exploitation of raw lignite for purposes other than electricity production is in principle limited, due to its very low calorific value and high volatile matter compared to other fuels, which results in high specific transport costs. This makes lignite a fuel for local or regional use rather than an export product. Moreover, private households have to deal with residues and bad smell when using raw lignite in stoves or fireplaces.

In Kosovo, however, infrastructures and availability of competitive fuels are limited at the time being, so that selling of minor quantities of raw lignite to other customers besides the thermal power plants can be considered.

In the past it was often assumed that the availability of alternative fuels would have improved during the mid- and long-term period, so that any market for raw lignite would shrink rather than expand. Actually, the higher than expected price of oil and gas products and the resumed operations of the railway offer a slightly better perspective to a market that will remain anyway limited.

A lignite drying plant presently exists next to the Kosovo A power plant complex and it operates according to the Fleissner principle. About 1 t of dried lignite is produced out of 2 t of wet lignite, 0.4 t of steam are required to produce 1 t of dry lignite, 1 t of mined lignite is required to produce 7.5 t of steam.

The plant had no production in the year 2006 and is presently undergoing a restructuring program which may bring its potential production back to close to 400,000 t/year, although there is some uncertainty whether the cost situation will allow for an economic operation of the drying plant in the long-term prospect.

At present, in the industrial sector dry lignite has a potential market (partly supported by letters of interest) of around 200,000 t/year, including export. Moreover, a higher share of dry lignite consumption might be achieved in the future, especially in the public sector with central heating systems, as a result of the increased costs of the oil products.

An eventual wider use of dry lignite in the industry, central heating systems and residential market would require the development and enforcement of strict technical standards for combustion devices and the enforcement of environmental regulations at municipal level. The potential environmental
impacts of high temperature combustion devices with closed combustion chamber in densely populated areas should be seriously considered. In synthesis, perspectives for a large expansion of the lignite market, either dry or wet, in the industrial, district and individual heating and commercial sectors, appear anyway rather weak, wherefore also in the future it is expected that the largely predominant share of lignite utilization shall correspond to electricity generation.

4.1.2 Size of the Planned Expansion

No final decision has been taken yet on the overall capacity of the Kosovo C TPP or on the sequence of installation. Several factors concur in singling out a final capacity of 2,000 MW as the optimum solution in view of the physical, economic and regional context. A justification of such opinion is provided in the following paragraphs.

Moreover, a project on the Iber-Lepenc Hydro System aimed at proving that the Iber-Lepenc Hydro system can support the additional water demand from the new thermo power plant Kosovo C has been recently carried out, funded by the EAR. According to this report, 2,000 MW is compatible with water resources availability.

4.1.2.1 A Strategic Decision

As stated in the Energy Strategy\textsuperscript{1}, “electricity production shall be oriented towards fulfilling domestic consumption demands with stable and uninterrupted production and competing prices, as well as export of energy surpluses to regional and wider markets.

In accordance with this objective, by the year 2015 full domestic energy demand should be met, while 30-50% of the available energy could be exported, and the net system capacity would be around 1800-2000 MW. This goal assumes a series of events, besides the installation of 1,000 MW at Kosovo C, which not necessarily are going to verify, namely the rehabilitation of Kosovo A, the construction of the Zhur HPP (total installed capacity of 293 MW, for a foreseen electricity production of around 400 GWh) and the construction of small HPP by private investors.

The Energy Strategy adds that construction of new capacities above the mentioned level in existing location of TPP Kosova B or other locations is an option that requires further study and assessment of its developmental impact on Kosovo, possibilities of export having in mind regional demand but also effects on urban and spatial development, environment and use of water. Depending on these possibilities Kosovo remains open and interested to cooperate with strategic investors (independent power producers) within Kosovo and abroad.

While it is agreed that further studies are required for a final decision, it is our opinion that the 2,000 MW final capacity is very likely to constitute the optimum option, not only for the reasons expressed in the next three paragraphs, but also considering that the assumptions stated in the Energy Strategy, in particular the rehabilitation of Kosovo A and the construction within the next decade of Zhur HPP and of the mini-hydro power plants, not necessarily are going to materialize. Finally, it should be mentioned that any new hydropower development would be geared towards peak and not base load capacity.

4.1.2.2 The Size to Fit the New Mining Field

The New Mining Field, singled out as the highest priority for development based on coal quality and overburden (see Paragraph 4.2.1), contains adequate coal reserves to feed a new power plant of 2,000 MW for a period in excess of 40 years, which is the timeframe usually assumed for the life of the plant in economic and financial analyses. Such value has been calculated in accordance with the minable reserves (830 Mtons of lignite), the specific consumption of lignite (1.1 tons/MWh) and the yearly generation of the 2,000 MW power plant (15,000 GWh/year assuming a plant factor of 0.85). Considering that Kosovo B shall be also operating for the next two decades, the overall requirement of lignite for electricity generation would amount to about 20 Mtons/year.

It is obvious that, in the process of implementation of an energy project, the mine is chosen as a function of the installed capacity of the power plant to be fed and not vice versa. However, it is useful to underline that a continuous development of the mine itself up to its full potential is more cost-effective as compared with a development associated with long interruption periods.

4.1.2.3 Economy of Scale

All the technical and economic indications collected to date support the viability of the proposed 2,000 MW new power plant. Provided that the investor has sufficient risk taking and funding capability, it would be quite advantageous to build the complete plant without dismantling the construction organization, i.e. units should follow each other with 12-18 month interval. The economy of scale of such size, partially supported by export, should ameliorate the economics of the project.

4.1.2.4 A Regional Market Opportunity

As mentioned in Paragraph 4.1.1.1, the participation of Kosovo in the Regional Electrical Energy Market in South Eastern Europe poses huge challenges to the Government in terms of adequate development of the energy sector, but at
the same time offers important opportunities for a market badly in need of power, as examined in detail in the above mentioned GIS studies.

These concepts are well expressed in the Poyry study\(^1\), through an estimate of the sales potential in the region (Table 4.1.2.4a) and a summary list of the items of major relevance in the future electric market situation. The potential sales shown in the table below refer to what is called the “first tier of markets”, that is to those neighboring countries with direct grid connection and politically acceptable. In principle, additional markets could correspond to more remote countries with more complicated grid access (e.g. Bulgaria) or to countries outside the area (e.g. Italy).

<table>
<thead>
<tr>
<th>Country</th>
<th>Energy Demand in 2015 (TWh)</th>
<th>Output Level (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>2.4-4.8</td>
<td>500-800</td>
</tr>
<tr>
<td>Macedonia</td>
<td>2.5</td>
<td>200-300</td>
</tr>
<tr>
<td>Montenegro</td>
<td>2.5</td>
<td>200-300</td>
</tr>
<tr>
<td>Kosovo, base load</td>
<td>3.7</td>
<td>500(^2)</td>
</tr>
<tr>
<td>Kosovo, seasonal</td>
<td>&lt;2</td>
<td>Up to 500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13.5-15.5</strong></td>
<td><strong>1,400-1,800</strong></td>
</tr>
</tbody>
</table>

- The Kosovo C power plant should be a very competitive plant in the SEE region.
- The demand for power is high in SEE, and capacity shortages are expected at least in the medium run.

Because of

a. regulatory and political uncertainty;
b. ongoing deregulation processes under Athens Treaty;
c. existence of low regulated prices in most customer segments;
d. state-controlled nature of market players;
e. uncertainties related to Kosovo C development;
f. likely privatizations of many utilities;
g. risk of “stranded contracts” in deregulation and privatization;
h. uncertainties related to CO\(_2\) emissions after 2012 in SEE.

the willingness of many utilities to enter into binding long-term power sales contracts must be considered quite limited at this point in time.

- Potential investors may have to rely on a portfolio of shorter term power sales contracts and thus accept some risk typical of merchant power plants.

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\(^2\) Actually, as discussed in paragraph 2.3.3.3, even assuming that Kosovo B TPP is in operation, the capacity requirements from Kosovo C TPP in the year 2015 to satisfy the Kosovo base load are well in excess of 500 MW.
4.1.3 Other Potential Development Projects

4.1.3.1 Potential Development Projects in the Energy Sector

In the study on the Kosovo heat market\(^1\), several potential alternatives were identified to the present predominant use of wood and electricity for space and water heating, namely heat pumps, solar energy and LPG. On the other hand, the only significant alternative to the use of lignite for electricity generation, besides the limited contribution which can be provided by hydro resources (see Paragraph 4.1.1.4), corresponds to natural gas.

In various documents and officially published maps, Kosovo is foreseen as potential transit territory for major natural gas flow from the Black Sea area toward Western Europe.

Security of supply of natural gas to Kosovo could be based on two options that ideally may be combined:

- Kosovo as a transit area for natural gas flow to third markets and integration of regional gas grids, in which case security is based on interrelations between major suppliers and consumers,
- Kosovo supplied from a number of different sources of natural gas via few distinct routes.

Taking into account such potential security of supply, the above mentioned heat market study examined the possibility and convenience of introducing gas as a fuel for space and water heating, as well as for cooking, in combination with the use of gas for power generation. The following considerations could be made:

- In a reasonable future there is not room for gas in the power generation sector of Kosovo, unless urgency to provide additional power, private investors desires or comparative feasibility study completed on behalf of the competent decision making authorities favor the distributed gas fired generation against large centralized lignite fuelled generation. At this stage, it seem not probable that an international project will cross Kosovo or – even less probable – that regional funding from the European Commission could support the gas development.
- Without the need of gas for generation or massive transit to third markets, the capital cost of the infrastructure is considerably high.
- Obviously, import of large quantities of gas for power generation would significantly affect in a negative way the already critical trade balance of the country.

The Energy Strategy reports that natural gas may be supplied in Kosovo through the pipeline branches of the neighboring countries. It is not anticipated in the near future for any bulk transit gas pipelines to cross the western Balkans. The only project


\(^{12}\)
currently under preliminary consideration in Southeast Europe is the Nabucco trans gas pipeline that is scheduled to start from Turkey, and through Bulgaria, Romania, and Hungary to reach Vienna. One of the opportunities for new gas pipelines from the Caspian Sea give possibility for Kosovo to be as transit road which is foreseen to reach Vienna in Central Europe.

It is also stated that the assessment of the domestic natural gas market for power generation should focus on its use for the firing of open cycle gas turbines for system load modulation and reserve capacities, as well as a substitution of petroleum and HFO for flame support in the existing TPP. Under this situation, it is felt that gas can not be considered as a viable alternative to lignite for power generation, although, in view of its potential utilization in the heat market, special attention should be paid to all international projects that foresee the possibility of constructing a pipeline passing through Kosovo.

4.1.3.2 Potential Development Projects in the Same Geographical Area

No specific large scale economic development and infrastructural projects are known to exist in the general area of the new Kosovo C TPP. The only significant “direct” effect of the TPP construction over the non-energy-related sector refers to the proposed clean-up and reclamation project, which is expected to make available about 6 km² of land for industrial, agricultural and commercial purposes. Some doubts exist over the utilization of the reclaimed land for community development, due to the existence of some residual contamination levels, although the Clean-up Project sponsored by the World Bank mentions the possibility of use for “new housing developments or recreation”.

Moreover, a mention is made of the possibility of constructing a motorway in the area, due to pass across Field D.

4.2 ANALYSIS OF KEK PLANS

With reference to the previous Paragraph 4.1.1.2, in which a general outlook on the strategic importance of lignite as key energy source of Kosovo has been provided, the present paragraph details the present and future potentialities of the KEK resources with respect to the possible Lignite development.

4.2.1 Existing Mines and Future Supply

The present situation of the lignite resources in Kosovo can be summarized as follows:

The main energy resources in Kosovo are located in two big lignite basins, named “Kosova” and “Dukagjini” with exploitable lignite reserves of good quality (Figure 4.2.1a). The estimated lignite quantity is between 11.55 - 14 billion tons. Lignite

reserves have low content of sulfur, relatively good concentration of lime (calcium oxide) for partial sulfur absorption during burning. The proportion between the wasteland and lignite is very favourable, a fact that makes mines very attractive for exploitation.
Two open mines of lignite (Bardh and Mirash) operate from 1963/64. Currently these two mines supply two power plants with approximately 7 million tons of lignite per year. According to last estimates existing mines will exhaust completely until 2007/2009, which depends from the intensity of energy generation compared to the lignite reserves in existing mines. In view of this occurrence, overburden stripping is already ongoing in the proposed New Mining Field.

The quality of the lignite presently under exploitation is shown in Table 4.2.1a. The same table indicates the characteristics of one of the new fields identified in the same area (Sibovc), due to feed both the existing TPPs and the new one.
Table 4.2.1a  Lignite Quality of Operating and New Mines

<table>
<thead>
<tr>
<th>Area</th>
<th>Ash (%)</th>
<th>Moisture (%)</th>
<th>Heating Value (kJ/kg)</th>
<th>Heating Value (kCal/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bardh</td>
<td>14.1</td>
<td>47.7</td>
<td>7,860</td>
<td>1,880</td>
</tr>
<tr>
<td>Mirash West</td>
<td>14.4</td>
<td>47.5</td>
<td>7,750</td>
<td>1,850</td>
</tr>
<tr>
<td>Mirash East (Sitnica)</td>
<td>19.9</td>
<td>43.9</td>
<td>7,928</td>
<td>1,890</td>
</tr>
<tr>
<td>Sibovc</td>
<td>15</td>
<td>42</td>
<td>8,300</td>
<td>1,980</td>
</tr>
</tbody>
</table>

With reference to future supply of the existing and new TPPs, three lignite fields have been identified in the vicinity of the Bardh and Mirash mines (Figure 4.2.1b), namely:

- Sibovc, which is located north of and adjacent to the Bardh mine;
- Field South, which is located south of the Bardh and Mirash mines, and
- Field D, which is located to the east of the Bardh and Mirash mines and south of Kosovo A TPP.

Figure 4.2.1b  Location of New Lignite Field

1 – Kosovo A TPP  2 – Kosovo B TPP  3 – Mirash mine  4 – Bardh mine
Each of the above potential fields were considered for mining development\textsuperscript{1,2} to serve the Kosovo A and B plants after the Bardh and Mirash Mines are exhausted and to provide lignite for the proposed Kosovo C TPP. The main characteristics of the three prospects are summarized in the following Table 4.2.1b.

### Table 4.2.1b

**Comparison of Mines Activities**

<table>
<thead>
<tr>
<th>Field</th>
<th>Field Sibovc</th>
<th>Field South</th>
<th>Field D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal content:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- geological</td>
<td>990 Mtons</td>
<td>537 Mtons</td>
<td>395 Mtons</td>
</tr>
<tr>
<td>- minable</td>
<td>830 Mtons</td>
<td>370 Mtons</td>
<td>280 Mtons</td>
</tr>
<tr>
<td>Sufficient for:</td>
<td>2,000-2,500 MW</td>
<td>About 1,000 MW</td>
<td>About 600 MW</td>
</tr>
<tr>
<td>O:C (m(^3)/t)</td>
<td>0.9:1</td>
<td>2.8:1</td>
<td>0.9:1</td>
</tr>
<tr>
<td>Net Calorific Value</td>
<td>8,300 kJ/kg</td>
<td>8,000-8,300 kJ/kg</td>
<td>7,300 kJ/kg</td>
</tr>
<tr>
<td>Disadvantages</td>
<td>Resettlement of Hade</td>
<td>Most expensive O:C ratio</td>
<td>Limited coal content</td>
</tr>
<tr>
<td>Result</td>
<td>Best possibility for TPP&gt;1,000 MW</td>
<td>To be postponed</td>
<td>Eliminates an environmental liability</td>
</tr>
</tbody>
</table>

In the 2005 report, Vattenfall reported that:

- the mining of the Sibovc field offers the best possibility to supply coal to a new large power plant as well as to the existing ones;
- the mining of Field South is the most expensive due to less favourable geology and stripping ratios;
- Field D has limited coal reserves, although it is characterized by low overburden thickness and limited environmental and social impact.

Subsequently Vattenfall and STEAG proposed that the optimal solution is to plan on developing the Sibovc SW field as soon as possible, with the opportunity later to develop the rest of the Sibovc field. In this scenario, the proposed new Kosovo C TPP was rated at 1,000 MW, at least in the initial stages, with an additional two 500 MW units added by 2025.

### 4.2.2 Cleaning up Existing Mines and Ash and Overburden Dumps

Here below an extract is provided of the proposed Kosovo Clean-up Project sponsored by the World Bank\textsuperscript{3}, aimed at supporting the Government of Kosovo and KEK in its efforts to enhance the country’s long-term power development and electricity supply, while improving cleaner environment for the population through promoting higher standards of environmental and social sustainability. The overall objective of the proposed project is to:

\textsuperscript{1}“Main Mining Plan for New Sibovc Mine,” Vattenfall/DMT on behalf of EAR, July 2005.
\textsuperscript{2}“Complementary Mining Plan for Sibovc SW,” STEAG Consortium on behalf of EAR, April 2006.
a) address environmental legacy issues related to open dumping of ashes on land;

b) enable KEK to free land currently taken by overburden material for community development purposes and to enable KEK to remove Kosovo A ash dump; and

c) build capacity in KEK for continued cleanup and environmentally conscious mining operations.

The Project included the following components and activities:

**Component A. Preparation of Mirash Open Pit Mine for Ash Management**

This component objective was to include site preparation works at the existing Mirash open pit mine to develop proper conditions for sustainable storage of ash and overburden materials collected from the ash dump facilities and future lignite mining developments. A separate component will include direct ash disposal into the Mirash Open Pit Mine from the current Kosovo A thermal power plant operation.

The Mirash open pit mine offers sufficient capacity and favorable geotechnical and hydrogeological conditions for the safe storage of ash and overburden materials of up to 200 million m$^3$. However, proper preparation work is necessary to allow sustainable ash disposal such as the construction of a base liner and cell structures for hydro-transported ash using clay from overburden material. Currently, the open mine area is covered by a thin layer of overburden materials and in many parts the coal is exposed. As far as ash disposal is concerned there is still discussion how to proceed. In any case after rehabilitation of Kosovo A the transport will be carried out by hydraulic transport system.

**Component B. Study of Relocation of Kosovo A Ash Dumps into Mirash Open Pit Mine**

The objective of this component was to remove the ash and overburden materials of the Kosovo A storage facility and ash dump which have to be transported to the engineered disposal sites in Mirash Open Pit Mine, dumped and properly backfilled. After the first evaluation it was proposed to hydraulically transport ashes from TTP A to Mirash Mine but to maintain old ashes in the existing landfill after proper reshaping and vegetation.

**Component C. Reclamation of Overburden Dump Sites**

This component objective was to mobilize existing KEK earth moving equipment (budgets for spare parts) and reclaim about 6.5 km$^2$ of land through reshaping and re-cultivating the South Field overburden dump and the overburden dump west of the Bardh mine. The reclaimed land should represent in the future an area suitable for community development, e.g. for agriculture, new housing developments or recreation.

**Component D. Project Management**

This component objective was to provide support to KEK to implement the project. It will include support for: (i) project management and technical
assistance in such areas as detailed design, construction supervision, procurement and financial management; and (ii) monitoring and evaluation of project impacts, including implementation of an environmental management plan for construction activities carried out under the project.

Following the first results of these activities: “It has to be assessed that the practically realisation of the main concept of the pre-feasibility study (i.e. relocation of Kosovo A ash dump) is difficult and coupled with manifold dependencies, assumptions and high expenditures. This reassessment was necessary because of changed situation in the mines and on the international mechanical engineering market. The Complementary Mine Plan Sibovc South West is delayed, major refurbishments are delayed or cancelled that means KEK CPD may require more existing mining equipment for the opening up of the new mine to ensure the coal supply to the existing power plants. Moreover, the goal of a short term improvement of environmental impacts caused by the ash dump can not be achieved by realisation of this concept.”

Following this reassessment “The main concept is the redistribution of masses from the dangerous and contaminated parts of the ash dump to other ash dump parts, respectively to depositing areas in case of contamination. Goal is the construction of an ash dump with a more or less homogeneous design. Fast reduction of dust emissions can be achieved by rearranging TPP A ash removal system to wet type ash removal. Moreover this alternative offers the possibility for additional lignite extraction in the western part of the ash dump inside the KEK property. So the fuel supply to the TPPs can be improved in mid term period additionally”.

As a consequence of this first result it is likely that Kosovo A ash dump will be reshaped and vegetated and that TPP A ash will be transported hydraulically to the old Mirash mine.

No action plans are foreseen for Kosovo B ash dump.

A project devoted to identify soil contamination in the old fertiliser and gasification plants is in progress.

4.2.3 Kosovo A TPP

The viability of rehabilitating the Kosovo A power plant has been analyzed in the year 2005 by a Consortium led by Aets through a study financed by EAR for the benefit of MEM. In the following a brief summary.

The Kosovo A TPP includes 5 units with a total installed generating capacity of 800 MW, of which only 145 MW are presently available. The following Table 4.2.3a shows the present status of Kosovo A.

(1) Inception Report of the work “Site Investigation, Technical/Organizational Planning and Determination of Environmental Impact Assessment and Preparation of Environmental Management Plans Contract 4075 / 23.07.07” (shortly Kosovo A site investigation)

(2) “Economic and Technical Feasibility of the Rehabilitation of Units of the Kosovo A Power Plant – Task Report”, Consortium Aets/Aea Technology/Allplan/Iberdrola, on behalf of EAR, September 2005
Table 4.2.3a  Present Status of Kosovo A

<table>
<thead>
<tr>
<th>Kosovo A</th>
<th>Nominal capacity MW</th>
<th>Net available capacity MW</th>
<th>Operated from</th>
<th>Out of service from</th>
<th>Definitively shut down in</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>65</td>
<td>35</td>
<td>1962</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>125</td>
<td>0</td>
<td>1964</td>
<td>1990</td>
<td>2002</td>
</tr>
<tr>
<td>A3</td>
<td>200</td>
<td>0</td>
<td>1970</td>
<td>July 2004</td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>200</td>
<td>0</td>
<td>1971</td>
<td>March 2004</td>
<td></td>
</tr>
<tr>
<td>A5</td>
<td>210</td>
<td>110</td>
<td>1975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>800</td>
<td>145</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

At the beginning of the study, the Consultant suggested rehabilitation decision criteria as follows: “if specific estimated rehabilitation cost is lower than half the specific cost of new equivalent power unit and also lower than equivalent imported energy the rehabilitation plan is fully justified, and strongly recommended” ...............

In the present operational context of Kosovo A, the capital rehabilitation concerns only units A4 and A5, consequently the Consultant recommends as follows:

- **To rehabilitate unit A4.** In the logic to keep the working units in operation, A4 which is out of order should be the first unit to rehabilitate. Moreover, the decision should be taken as soon as possible because any delay would reduce the return on investment. With a decision taken at an early stage, unit A4 might be back to commercial operation only 16 months after beginning of its construction.
- **To rehabilitate unit A5.** Therefore, A5 rehabilitation should proceed only after A4 is back in operation.
- **To overhaul unit A1.** The unit is still in operation, however considering the short remaining life time, a decision to perform the overhaul should be taken as soon as possible. After a very long period without any overhaul, the turbo-generator presents the risk of an unforeseen major breakdown.
- **To overhaul unit A3.** As previously mentioned and when the time for overhaul will come back, some time between 2009 and 2010, the Consultant suggests either to continue overhauling the unit or to study the possibility of CR, depending on the energy context.

The current situation has been modified as follows:
- Units A3 and A4 are now in operation;
- Unit A5 will be ready to operate from the beginning of April 2008;
- Lignite will be taken from a small mining are near Sitnica river (Sitnica project).

Following the presentation of the above recommendations, the following subprogram PG 04 was identified in the Program for the implementation of the Kosovo Energy Strategy for the Period 2006-2008:

An EAR funded study on the technical and economic feasibility of rehabilitating “Kosovo A” units has just been completed, concluding positively on whether such an action should proceed against decommissioning of respected units and the required energy being imported. In accordance with the recommendations of the study, KEK, under MEM’s supervision, should proceed with the following works:

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Capital rehabilitation for units A4 and A5, sequentially, within 2006.
Major Overhaul of unit A1, to be carried out in 2006.
Major Overhaul of unit A3, to be carried out in 2009-2010.
The requirements concerning environmental protection in accordance with the existing legislation and regulations as well as the provisions of the EU Directives for old plants should apply.

It should be mentioned however that the convenience of proceeding with the rehabilitation of the Kosovo A TPP is not universally accepted. As expressed in the World Bank PAD relevant to the “Lignite Power Technical Assistance Project”, as for Kosovo A, rehabilitation of three units (A3, A4 and A5 each with a 200 MW nominal capacity) to extend operating life by about 12 to 15 years is technically feasible; but since the cost of environmental compliance with EU standards would be costly, these units are not expected to be cost-effective compared with a new power plant. As an alternative to a full rehabilitation, the overhaul of these three Kosovo A units for limited life extension, until a new power plant becomes operational, is deemed feasible. Further, there is a looming shortage of lignite supply from 2009 onwards, since the existing mines (Bardh and Mirash) are nearing exhaustion and the start of development works at KEK’s next mine (the Sibovc SW Mine) has suffered delays due to lack of financing.

Actually, in accordance with the latest decisions of KEK, an intermediate approach between the two extreme above mentioned options is going to be adopted, wherefore interventions of partial rehabilitations will be carried out, by which the plant is expected to extend its operations until the year 2017 with a total capacity of 280 MW.

4.2.4 Kosovo B TPP

It is assumed that both units of Kosovo B plant would be shut down for rehabilitation in early 2010’s, with Kosovo B1 expected to undergo 18-month rehabilitation period around 2013 and Kosovo B2 to be rehabilitated in 2015 in a similar manner. In the long run, unit Kosovo B1 is expected to be operational until 2029 and unit B2 until 2030.

It is assumed that both units of Kosovo B plant will undergo minor rehabilitation (change of rotors) in the year 2009, wherefore the overall capacity of the plant shall increase from 580 MW to 610 MW. Major interventions shall be carried out in sequence over both units during the period 2014-2016, determining a shut down of 18 months for each unit. In the long run, unit Kosovo B1 is expected to be operational until 2029 and unit B2 until 2030 with a capacity of 305 MW each.

As refers to the operation of the power plant, the following is foreseen:

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• The load factor of the plant will be in the order of 0.6-0.67, stabilizing at 0.64 after the year 2012.
• The total time availability of both units would be 79%. Outage is assumed 12% planned, 9% unplanned.
• The average efficiency of the Kosovo B units would be 1.4 tons of lignite/MWh net generated.

4.3 DEVELOPMENT PLAN AND ALTERNATIVE DEVELOPMENT SCENARIOS

In considering alternative development scenarios for the proposed Kosovo C power plant and New Mining Field development, sector strategies were reviewed, in terms of energy production and demand, role of lignite and economic justification for its development, lack of viable local alternatives, size of the planned expansion, and other related development plans. KEK planning for clean up of mines and ash and overburden dumps, as well as future supply, was also reviewed. Based on all the studies noted above, the energy development plans include the following:

• new lignite fired power plants (Kosovo C) using modern technology;
• up to 2,000 MW of new power generation; and
• New Mining Field development.

Alternative scenarios for development of the Kosovo C TPP were evaluated, with a view to selecting the “preferred option” from environmental and social viewpoints. The “alternative zero” (no new power plants) was also considered.

The following paragraphs present all relevant variables in terms of different development scenarios analysis and the foreseen environmental and social interferences of the potential development plan.

4.3.1 Key Assumptions Common to all Scenarios Definition

There are several key assumptions common to all scenarios, as far as the SESA Report is concerned, which refer to the future role of TPP Kosovo A and TPP Kosovo B as described in the following. Moreover, also the future role of Kosovo C is a constant to all scenarios.

In particular, the impact evaluation included in the present document and the comparison between different scenarios depends on the following key assumptions (common to all scenarios):

• in order to supply domestic demand, Kosovo A TPP will need to remain in operation until it can be replaced by Kosovo C (with a short overlap for reasons of energy security). As mentioned in Paragraph 4.2.3, it is expected that Kosovo A will undergo some rehabilitation, so
that it can remain operational until 2017 with a capacity of 280 MW. Kosovo C will then allow Kosovo A units to be retired completely or used as cold reserve for seasonal peaks; any other continued use of Kosovo A would depend on further rehabilitation based on EU environmental requirements;

- both units of Kosovo B will undergo rehabilitation (proposed schedule 2014-2016, during which time it will operate at reduced capacity), remaining in operation until 2030 (Paragraph 4.2.4) with a nominal net capacity of 2x305 MW;
- the first unit of Kosovo C will begin operation in 2014, with one or two new units to be installed, one every 18 months thereafter. It is assumed that the initial installed capacity will be 900-1,000 MW, depending on the choice of unit size (300 or 500 MW).

As already mentioned, Kosovo A and B are both far from achieving environmental compliance with EU standards. In particular, according to the Large Combustion Plants (LCP) Directive (2001/80/EC), existing plants must fully comply with LCP standards after December 31, 2015. The values of the emissions, as extracted from the SEE study, are shown in Table 4.3.3.1a, together with the standards indicated in the LCPD (2001/80/EC), referred to existing plants with a capacity of 100-500 MW.

### Table 4.3.3.1a  Emissions from the Kosovo A and Kosovo B TPPs

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<th>Unit</th>
<th>Particulate</th>
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It can be observed that the situation is especially critical with respect to the emissions of particulate, which, in the case of Kosovo A, are 7 to 10 times more than the LCPD standard.

Within the operations which are foreseen for the rehabilitation of Kosovo B, it is recognized the necessity to implement interventions, in order to comply with the European standards.

As stated in the Electrowatt/Ekono study, if the Kosovo B units shall continue unlimited operation well into the future it will be necessary to improve the level of environmental mitigation measures of the plant.

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(1) “Development of Power Generation in South East Europe – Implications for Investments in Environmental Protection”, S.E.E.C. on behalf of the World Bank, April 2005

(2) “Pre-feasibility Study for Pollution Mitigation Measures at Kosovo B Power Plant – Lot 2”, Electrowatt/Ekono, on behalf of EAR, February 2006
significantly. Dust and NO\textsubscript{x} emissions will have to be reduced, which will require investments in abatement technology.

These interventions shall include abatement of air pollution (SO\textsubscript{2} by installing a Flue Gas Desulphurization System, although the present values are already at the threshold limit, dust through an electrostatic precipitator and NO\textsubscript{x} through optimization of the existing combustion system), abatement of water pollution, waste management, fuel storage, soil and groundwater protection.

4.3.2 Significant Variables for Scenarios Definition

Based on what discussed in Chapter 1 and proceeding from the assumption that the overall capacity of the TPP will reach 2,000 MW, the principal aspects of the alternative scenarios to be compared are the following:

- Timing of Power Plant Development;
- Timing of New Mining Field development;
- Power Plant Location;
- Unit size; and
- Plant technology.

All the above are briefly described in the following.

4.3.2.1 Timing of Power Plant Development

As already discussed, many elements point to the opportunity to achieve a final capacity of 2,000 MW for Kosovo C TPP. However, such capacity can be reached within a different range of time, through different schemes of evolution that is proceeding with the continuous installation of the units or adopting a phased approach. To simplify the assessment of the scenarios, two approaches were considered in reaching final capacity of 2,000 MW for Kosovo C TPP, namely:

- Approach A: Rapid Development. Under this approach, units are installed in sequence, one after the other (construction time about 18 months for each unit), until the final programmed capacity of the TPP is achieved. For example, assuming that 500 MW units are selected and that construction starts in 2010/2011, the first unit would be in operation by January 2014 and the final capacity of 2,000 MW would be achieved by June 30, 2018 (see Table 4.3.2.1a). The first 1,000 MW could be obtained either with two 500 MW size power plants or with three about 300-350 MWe size power plants, depending on electric network problems (see Paragraph 4.2.3). In this latter case the full capacity will be obtained a little later but in terms of environmental and social impacts the situation will be very similar (as discussed in Paragraph 4.2.3). Power plants size will be therefore decided after the EIA procedure;
• **Approach B: Phased Development.** Under this approach, the first units are installed as a function of current local demand, with additional units installed (one after the other) on an as needed basis. Again, assuming that 500 MW units are selected and that construction starts in year 2010/2011, 1,000 MW capacity would be achieved by 30 June 2015, with the additional 1,000 MW to be installed as soon as it becomes apparent that the energy/power demand curve in a medium growth scenario will exceed the installed supply (this is tentatively estimated to be between 5 and 10 years from now, depending on the evolution of the local and regional power market - see Table 4.3.2.1b as an example).

*Table* 4.3.2.1a and *Table* 4.3.2.1b represent an attempt to estimate the energy balance which is achieved under the two hypotheses in the period 2008-2025. For this purpose, the following parameters are taken into account:

- Capacity of Kosovo A, B and C TPPs and of Zhur HPP, expected to start production in the year 2016 with a capacity of 293 MW and a yearly generation of about 400 GWh.

- Electric energy generation of Kosovo A, B and C TPPs, assuming values of load factor partly derived from the historical data (although, in case of Kosovo B, a sharp improvement of the load factor is foreseen after the rehabilitation interventions) and partly on forecasts of the new plant operation.

- Lignite production of the existing and new mines, assuming unit consumption of the three TPPs differentiated according to their efficiency.

- Electricity demand, both in terms of power and energy, as derived from the Poyry study under the hypotheses of medium and high growth scenarios (MGS and HGS).

- Balance of power and energy (supply minus demand) under the MGS and HGS hypotheses.

The resulting balance of power and energy, under the hypothesis of MGS, is represented in a graphic form in *Figures* 4.3.2.1a and 4.3.2.1b.

It is evident that the resulting balances are purely indicative, since they are based on theoretical assumptions, especially with reference to the load factor. At any rate, some useful elements can be derived, due to have a significant impact of the future choices about Kosovo C implementation:

- The two development strategies (fast and phased) are essentially the same in terms of absolute values, differing with respect to the year when these values are reached.
• The indicated quantities of lignite production correspond to the ones shown in Table 4.3.2.1b and depend on the assumed load factor of the various plants. At any rate, it can be noticed that the full production of about 21 Mtons/year in the New Mining Field must be achieved within the year 2019 in case of rapid development.

• Under the MGS hypothesis, the critical situation of electrical supply, requiring the import of significant amounts of energy, extends until the year 2013-2014 for both fast and phased strategies.

• Following that year, the excess of capacity and energy allowing export of electricity is relatively modest in case of phased development, at least until the year 2022, and well below the potential opportunities of the regional market.

• Under the HGS hypothesis and in case of phased strategy, the power capacity balance remains negative throughout a large portion of the considered period and the energy surplus is relatively limited, precluding the possibility of an important export.

• Under the same HGS hypothesis and in case of rapid development, for a period of 10 years the excess capacity is in the order of 600-1100 MW and the energy surplus of 8-11 TWh/year, wherefore electricity export would represent an important asset towards the trade balance objective.
Figure 4.3.2.1a  Rapid Development Strategy: Power and Energy Balance (MGS)

Figure 4.3.2.1b  Phased Development Strategy: Power and Energy Balance (MGS)
### Table 4.3.2.1a  Approach A: Rapid Development

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**Assumptions:**
- Partial rehabilitation of Kosovo A expected to operate until the year 2017.
- Kosovo B units rehabilitated in the period 2014-2016 and in production until 2029/2030
- Load Factor: Kosovo A: 0.4, Kosovo B: 0.6/0.67, Kosovo C: 0.85
- Coal Consumption: Kosovo A: 1.7 tons/MWh, Kosovo B: 1.4 tons/MWh, Kosovo C: 1.1 tons/MWh
Table 4.3.2.1b  Approach B: Phased Development

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Assumptions:
Partial rehabilitation of Kosovo A expected to operate until the year 2017.
Kosovo B units rehabilitated in the period 2014-2016 and in production until 2029/2030
Load Factor
Kosovo A: 0.4    Kosovo B: 0.6/0.67    Kosovo C: 0.85
Coal Consumption
Kosovo A: 1.7 tons/MWh    Kosovo B: 1.4 tons/MWh    Kosovo C: 1.1 tons/MWh
The operation of Kosovo C TPP shall obviously generate emissions to air which, for a small period of time (up to Kosovo A and B rehabilitation) will add to the emissions of the other TPPs in the area. An estimate of the amount of the emissions (particulate, NOx and SO2) which shall take place in the hypothesis of the fast and phased developments are presented in Table 4.3.2.1a and Table 4.3.2.1b.

The base for this estimate has been the study carried out by Poyry, which however assumes unrealistically high load factors (0.85 for Kosovo A and B and 0.9 for Kosovo C), therefore the calculated emissions have to be considered as high figure while the real ones are probably lower than those shown in the table. The following assumptions have been adopted for the estimate:

- Load factor and coal consumption (tons/MWh) as shown in Table 4.3.2.1a and Table 4.3.2.1b.
- Operation of Kosovo A, B and C as shown in Table 4.3.2.1a and Table 4.3.2.1b (including rehabilitation of Kosovo B in the period 2014-2016).
- Emissions of the TPPs, expressed as percentage of the coal burned as reported in the Poyry study:
  - Kosovo A: particulate 0.29%; NOx 0.42%; SO2 0.19%
  - Kosovo B (before rehabilitation): particulate 0.063%; NOx 0.28%; SO2 0.23%
  - Kosovo B (after rehabilitation): particulate 0.027%; NOx 0.11%; SO2 0.23%
  - Kosovo C: particulate 0.013%; NOx 0.09%; SO2 0.09%.

On the base of the above assumptions, the estimated emissions of the TPPs for the period 2008-2018 are shown in Tables 4.3.2.1c and 4.3.2.1d.

**Table 4.3.2.1c**

Rapid development: Estimated Emissions (1,000 tons/year)

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Table 4.3.2.1d  Phased Development: Estimated Emissions (1,000 tons/year)

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It may be observed from the tables that the improved technology to be adopted for emissions control compensates to a large extent the foreseen larger generation.

In fact, making reference to the rapid development, in spite of the fact that electrical generation is due to almost quadruple from 2008 to 2018, total emissions of particulate are expected to be reduced to less than a half (as soon as Kosovo A stops operation) and NO\textsubscript{x} ones to remain the same. Only in case of SO\textsubscript{2} an increase of air emissions is expected, unless a DeSOx plant is installed to comply with European standards during rehabilitation. A similar outcome is registered in case of phased development, although the effects of the increase of SO\textsubscript{2} emissions are delayed.

It should be remembered, at any rate, that the interruption of production from Kosovo B, expected to take place around the year 2030, is due to generate a very important improvement in the air quality, especially with respect to SO\textsubscript{2}.

### 4.3.2.2 Timing of New Mining Field Development

As mentioned in Paragraph 4.2.1, the criteria used by the previous Consultants (in particular Vattenfall and STEAG) to rank the mining fields have been reviewed. Briefly, the conclusions of the studies can be stated as follows:

- The New Mining Field contains adequate coal reserves to supply the current TPPs until the end of their producing lives and the proposed new Kosovo C plant with up to 2,000 MW capacity for in excess of 40 years;

- Field South has the most unfavorable geological conditions and the large overburden thickness would make this the most expensive and least favorable option for development;
• Field D would be the most favorable site in terms of environmental and social impact, as well as of post mining use. The stripping ratio is comparable to that of the New Mining Field. However, the field does not contain enough coal reserves to supply the proposed increased TPP capacity and the net calorific value is lower than in Sibovc. In addition there would be conflict with the spatial planning proposals for the area, as there is a proposal to construct a motorway through the area, which could effectively sterilize part of the minable lignite.

Based on the above considerations, all indications concur in pointing out the New Mining Field as the most convenient one for exploitation.

The present Consultant concurs with this recommendation. It is noted that the site visit in September 2007 established that KEK has already started preparatory works to strip the overburden at the southern end of Sibovc SW. The main characteristics of the Sibovc lignite are listed here after:

• Heat value: 8,300 kJ/kg (range of 6,000-10,000 kJ/kg)
• Moisture: 42%
• Ash: 15%
• Sulphur: 1.1% total, 0.35% combustible (range of combustible: 0.1-0.7%)
• Harmful elements: Cl, F, Na, K, Hg, V, Pb, Zn, Cd
• Ample calcium for desulphurization
• Ash sintering temperature: <1,000 °C; melting point: 1,300 °C.

The future development of the mine, as related with the progressive phasing off of the Bardh and Mirash mines, is represented in a schematic form in Figure 4.3.2.2a.

Figure 4.3.2.2a   Connected Development of New and Existing Mines

The rate of development of New Mining Field, which has adequate reserves to supply a 2,000 MW plant for a period in excess of 40 years, depends on the
development strategy chosen for Kosovo C TPP and will be linked to progressive phase out of the Bardh and Mirash mines. Adoption of Approach A would imply highly accelerated development of the mine, which would have to be capable of producing about 20 million tons/year of lignite by 2019. Major efforts would be required in operational organization and equipment purchase in order to achieve such goal.

A typical demand profile (see also previous Table 4.3.2.1b) in the hypothesis of phased development would look like Table 4.3.2.2a below (reported values are obviously approximate, since they depend on the actual load factor of the TPPs, as well as on the unit consumption of coal for each generated MWh).

**Table 4.3.2.2a  Lignite Demand – Phased Development (Mtons/year)**

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<th>Lignite demand for Kosovo C</th>
<th>Total lignite demand</th>
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(1) In Italics lignite supplied by existing Bardh/Mirash mines
(2) It is assumed that Kosovo A ends production in 2017, while Kosovo B continues until 2030

It is noted that this demand profile assumes that in a first stage the Kosovo C plant will consist of two 500 MW units (1,000 MW), to be followed by a second set of two units after 2022.

Up to 2014 the demand is also consistent with the scenario provided in the original Vattenfall report of 2005, although the assumptions regarding the power plants were different. However, in subsequent years the required coal demand prediction rises up to 21 Mtons/year.

Should it be decided that the two additional 500 MW units should be provided at an earlier stage (i.e. a total capacity at Kosovo C of 2,000 MW), then the coal supply would increase to about 21 Mtons/year from the year 2019 (see Table 4.3.2.1a).

All the scenarios assume that the coal produced from the New Mining Field will come on stream in 2010-2011, which is assessed to be the last period of significant production from Mirash/Bardh mines. Thus, whichever scenario is adopted, the preparatory work for developing the New Mining area should
be progressing now. This is consistent with the finding that overburden stripping is already underway.

For the purposes of the following analyses, limiting criteria will be assumed, as follows:

- the earliest date that significant production can be produced from the New Mining Filed is 2010/2012;
- Sibovc will be in full production in 2012.

The principal differences in the scenarios relate to the year when the maximum production of 21 Mtons/year shall be achieved, that is to the timing of the impacts.

As refers to the development of the New Mining Field, the following considerations are expressed in the above mentioned Vattenfall report (relevant to the high production scenario):

The lacking advance in the preparation works of the opening-up of Sibovc is problematic. Therefore, a high capacity will be required right at the beginning of works. Already in 2008 a new equipment complex consisting of BWE (bucket wheel excavator), conveyer belt (1.8 m width, belt speed of 6.5 m/s and capable of transporting about 2,200 t/h) and spreader will have to be commissioned. Nevertheless considerable overburden removal works will be required using shovel / truck. This service should be contracted with third parties.

The following main equipment will be used:

Overburden
- E 8B SRs 1300
- E 9B SRs 1300
- New BWE
- E 9M SchRs 650 and in coal operation

Coal
- E 10M SchRs 650
- E 8M SRs 1300
- E 10B SRs 1300
- New SchRs 650 or SRs 1300 or equivalent (2016).

In addition there are two spreaders A2RsB-5200 and one A2RsB-4400. The new spreader should have a capacity of 8000 lcm/h matching the new BWE.

The capacity for overburden removal with the afore-mentioned equipment would amount to 19.8 Mm³/year as reliable assumption and to 25.2 Mm³/year as maximum assumption. On the other hand, the nominal capacity for the coal excavation would amount to 20.5 Mt/year as reliable assumption and to 25.0 Mt/year as maximum assumption.

Owing to the existing overburden to coal ratio of the mine, this equipment complex is suited for the long-term operation of Sibovc.

With reference to the employment level to be achieved in the New Mine, it should be mentioned that currently the Mirash and Bardh mines employ some 3,420 persons. On the other hand, it is acknowledged that this level of employment is high by world standards and that if a private sector company
is asked to acquire and manage the future mines, the employment level will be significantly lower.

The predictions for the level of employment for the two main scenarios described above are as follows:

- Production rising to 21Mt/year: 2,700 (by 2012)
- Production at 9 Mt/year: 1,420 (by 2012)

However, it should be noted that these estimates are still higher than the manning that would be expected from an internationally competitive mine and so the diminution of jobs in the medium to long term may be greater than anticipated above.

In compensation for the loss of jobs, it is likely that the fewer jobs would be better paid for the improved productivity.

The maps presented in Figures 4.3.4c and 4.3.4d show indicative mine development lines in 2023 and 2033, under the phased Approach B.

4.3.2.3 Power Plant Location

In terms of site requirements for the new power plants, the results of the “Pre-Feasibility Studies for New Lignite Fired Power Plant and for Pollution Mitigation Measures at Kosovo B Power Plant” were also taken into consideration. Requirements for plant sites include the following:

- Unoccupied free land or able to be easily vacated, preferably zoned for industrial activity;
- Relatively flat topography;
- Reasonable soil conditions, no seismic faults nearby, not prone to flooding;
- Downwind from population centres and no large population centres in immediate vicinity;
- No natural parks, wildlife and archaeological sites nearby;
- Not highly visible; and
- Satisfactory economics evaluation.

The area required to accommodate the power plant, including offices, water treatment, oil storage and maintenance shops, depends on the actual design of the structures (e.g. need or less of a flue gas desulphurization plant), but is anyway in the order of 600 x 400 m for a 4x500 MW plant. An additional surface of 200 x 500 m should be foreseen for lignite storage.

The following connection requirements must be also considered (reported values refer to the full capacity of 2,000 MW):

---

1 “Pre-feasibility Studies for New Lignite Fired Power Plant and for Pollution Mitigation Measures at Kosovo B Power Plant,” Electrowatt/Econo, on behalf of EAR, February 2006.
• **Lignite fuel.** Assuming a unit consumption of 1.1 tons/MWh, 2,200 tons/h of lignite are needed during the plant operation period. Such lignite shall come from the New Mine through a belt conveyor system, wherefore the distance between mine and plant becomes an essential element.

• **Water.** Raw water requirements, mostly for the cooling tower, amount to about 5,600 m$^3$/h, corresponding to around 43 million m$^3$/year. Such water needs pre-treatment prior to its use. Water can be delivered through the already existing multipurpose (irrigation and industrial use) system, consisting of a 40 km long channel which originates from the Gazivodo Lake and is operated by Ibër-Lepenc, a public enterprise created for the task.

• **Electric power.** Regardless of the chosen location, the electric power from the plant has to be transferred by means of 400 kV lines to the 400 kV switchyard located close to Kosovo B TPP, from where all the cross border lines, including the new one to Albania, are leaving.

• **Ash disposal.** Approximately 400 tons/h of ash are produced during plant operation, for a total of around 93 million tons during the life of the plant. Its disposal through dumping must be strictly controlled to avoid soil and groundwater contamination from ash derived alkaline waters, wherefore adequate sealing of the dumps bottom has to be foreseen.

• **Water disposal.** About 20% of the plant water consumption has to be disposed of, following a process of purification / neutralization. Such percentage may drop to about 15%, in case the hydraulic system for ashes transportation is adopted.

• **Access.** A good access to the plant site, by road or rail or both is a must, especially during the construction phase, when pieces of as much as 500 tons are transported for installation.

In accordance with the TOR, three development scenarios need to be investigated for the potential location of the new TPP.
A prefeasibility study in 2006 initially identified three sites: Kosovo B, Bivolak and Grabovc i Poshtem In early 2007, another potential site next to Kosovo A TPP was added, replacing Grabovc i Poshtem, which had been found unsuitable.

The three sites (Kosovo B, Bivolak and Kosovo A – see Figure 4.3.2.3a) have been analysed in a study commissioned from EAR to a consortium formed by Poyry, CESI, Terna and Decon as Task 4 of a more exhaustive study and the corresponding (draft report was submitted in June 2007).

From a technical point of view (morphology, foundation, distance from existing facilities, etc.) the three sites, which are separated by only a few kilometers, are quite similar. As noted in the 2007 Poyry study, however, they have very different environmental and social characteristics. The final choice of location will thus depend on these considerations (see Section 5).

**Figure 4.3.2.3a Location of the Alternative Plant Sites**

Follows a brief description of the three identified sites, extracted from the Poiry study.

**Kosovo B Site**

*There is free space to the north of the existing power plant reserved for future blocks as plans to locate 2,100 MW generating capacity to the site have existed since the 1980’s (Figure 4.3.2.3b).*

---

The site topography is flat. The site is just outside of the lignite seam. The foundation conditions are reasonable. The existing plant structures (350 MW units) are sitting on a reinforced concrete slab of 3.5 metres thick immersed at 7 metres depth.

The site is bordered by the Sitnica River in the west. There is a risk of flooding along the river banks. In February-March 2006 the heavy rainfall associated with melting snow in the mountains raised the level of the river by 2.9 meters in 24 hours. The lignite yard and lignite handling facilities were submerged and the plant operations had to be stopped.

To the west of this free area there is a huge fly ash dump of approximately 15 million tons. The ash dump occupies an area of 50 - 60 hectares (600 x 1000 m). The ash dump is no longer utilized for ash disposal as the ash is now taken to the Mirash mine through a new double pipeline. The ash dump, or at least a part of it have to be relocated if Kosovo C including the lignite yard is going to fit there.

The 400 kV switchyard receives all the cross border 400 kV lines and it is located less than a kilometer to NE from the site.

There is a double conveyor belt system feeding the existing B1 and B2 units from the mines.

The water supply channel to the plant has been designed for 21,000 m³/h and only 1,500 – 2,000 m³/h is currently used by the plant. The delivery limit between Iber-Lepenc and KEK is on the western side of the Sitnica River about 1 km from the plant. There is a screening and metering plant at the supply point and the water flows to the plant by gravity.

The operation at this site makes it possible to have many joint auxiliary functions with Kosovo B units if considered advantageous and acceptable for both parties.
Figure 4.3.2.3b  Kosovo B Site

The area outside of the north-eastern corner of the Sibovc field is a slightly undulating hilly agricultural area. The area is fairly densely populated, and the village Bivolak is located close to the site (Figure 4.3.2.3c).

Some 15% of the site is in the Sitnica floodplain, the rest on the top of the lignite seam. The seam thickness is less than 10 meters, and the overburden thickness is less than 10 meters as well. The site of the existing Kosovo B TPP is similar, and the foundation systems could be similar as there. More extensive site preparation and excavations would, however, be required as the height difference between the floodplain and the hill top is about 25 to 30 m.

The water supply is close as the bifurcation station of Ibër-Lepenc (Feronikel and Kosovo B) is located at the site.
The area needs a new two lane access road and the Sitnica River and river plain have to be crossed with a good bridge. The estimated length of the access road is 5 - 6 km from Miloshevo.

There are 400 kV transmission lines crossing the area. The distance to the 400 kV Kosovo B substation is approximately 3 km.

**Figure 4.3.2.3c  Bivolac Site**

Kosovo A Site

The Kosovo A site is located just to the west from the existing Kosovo A TPP. There are old currently abandoned fertilizer, gasification and heating plant facilities. That area can be used after dismantling the existing fertilization and gasification structures for the new power plant (Figure 4.3.2.3d).

The site topography is flat. The site is just outside of the lignite seam. The foundation systems could be similar as for the existing TPP’s.

The site is recognized as a probable source of extensive phenol contamination in the river Sitnica and needs to be rehabilitated. No exact figures on the extent of the soil and river pollution exist.
There is a double conveyor belt system feeding the existing Kosovo A from the Mirash mine. The site is bordered to the west by a railroad to Obiliq. Road access is good.

The 400 kV switchyard at Kosovo B receives all the cross border 400 kV lines and it is located some 2 kilometers from the site. At the site in its eastern side there are 110 and 220 kV switchyards.

For water supply either the Ibër-Lepenc channel system has to be lengthened or the actual supply source for Kosovo A TPP can be used. Currently the Kosovo A TPP receives its water from a pump house located some 4 km to NE in Prugovc village. There are 3 x 600 l/s and one 300 l/s pumps. The pipeline can transfer more than 2 m$^3$/s water to the plant.\(^1\)

The operation at this site makes it possible to have many joint auxiliary functions with Kosovo A units if considered advantageous and acceptable for both parties.

Figure 4.3.2.3d Kosovo A Site

\(^1\)Actually, according to recent information from local authorities, the alternative of supply from the Prugovc village is excluded, wherefore, in case of construction of Kosovo C TPP within the location of Kosovo A, water shall be obtained from the Ibër-Lepenc canal.
4.3.2.4 Unit Size

Different sizes of individual units were considered - 125, 300, 500 and 750 MW. In principle, the largest possible size is the most efficient. However, other factors influence the decision, in particular the characteristics of the transmission network and the selected plant technology. In the present case, the existing network cannot support units any larger than 500 MW, in order not to lose synchronicity on the grid in case of transmission line loss. With regard to plant technology, the choice of CFB technology (see next Paragraph) would mean a unit size of 300 MW.

The smallest unit size of 125 MW was eliminated from consideration because it does not meet the high efficiency standards required to minimize carbon dioxide or other emissions (the consolidate industry design for such unit foresees a less sophisticated thermodynamic cycle). In addition, such units occupy larger areas per MW installed and have higher unit costs than larger ones. The only two principles that theoretically would justify this choice do not apply here. Indeed, the system stability does not require so small units (see the size of Kosovo B) or the characteristics of the demand and demand growth. As a matter of fact all previous studies do not consider 125 MW a viable option or mostly do not consider the 125 MW units at all.

The final unit size will therefore be either 300 or 500 MW and will depend on the technology chosen.

4.3.2.5 Plant Technology

Different technologies are potentially applicable for the power plant. Their adoption must take into account, among others, the size of the individual units (due to problems connected to the electric grid stability, in Kosovo the maximum viable net capacity is limited to 500 MW).

With respect to the technology to be adopted in the plant, in accordance with the Poyry study the most probable concept is 4x500 MW net (around 535 MW gross) pulverized fired (PF) plant with supercritical steam parameters (260-275 bar/580-600 °C with reheat and condenser pressure of 0.045 bar). Its efficiency would be 42-43%, versus the 30% of the presently operating plants, and it will be equipped with wet flue gas desulphurization plant after the actual steam boiler.

The plant cleans its flue gases from dust in the electrostatic precipitators. Thereafter the flue gases are planned to be taken into the large cooling tower and mixed with the exiting water vapour of the tower, i.e. the highly visible stack is eliminated.

The final flue gas emissions, in accordance with the EU LCP rules for >500 MW TPPs, shall be as follows (values are lower than those shown in Table 4.3.2.1a, since they refer to new TPPs):

- Sulphur dioxide, SO₂ <200 mg/nm³
- Nitrogen oxides, NOx  <200 mg/nm³
- Particulates    <30 mg/nm³

The main characteristics of the pulverized firing (PF) technology are reported hereafter:

- Traditional method for large scale plants 100-2000 MW, heat release capacity in single boiler (1100 MWe).
- Needs uniform fine particle size for complete combustion, <0.1 mm.
- Maximum temperature leakage point and half ball around or above the ash melting point of Sibovc lignite,
- Lignite dried with hot flue gases from the furnace in the beater wheel pulverizer.
- Low NOx-burners reduce nitrogen oxides production and for Kosovar lignite is enough to meet the limits.
- Emissions normally to be handled after the furnace by separate systems.

As an alternative, a similar plant with the same steam parameters but applying circulating fluidized bed (CFB) might be adopted, with slightly lower efficiency and no need for wet flue gas desulphurization. However, the largest CFB lignite fired boiler currently in operation has a capacity of 300 MW (one of 460 MW is now under construction), thus the applicability of such technology to larger units has not yet been tested. The main characteristics of the circulating fluidized bed (CFB) technology are reported hereafter:

- Combustion takes place at constant temperature around 900 °C – air is introduced at different levels.
- Suitable for wet or hard to ignite fuels as hot bed material dries and ignites the fuel – high ash is allowed.
- Accepts coarse fuel < 10 mm maximum particle size.
- Ideal temperature for calcination if limestone present – desulphurization takes place in the bed, Ca/S mole ratio >3 required for 90% S capture.
- Low combustion temperature keeps NOx formation low.

Various fuels can be combusted simultaneously.

In consideration of the above, it can be stated that the 500 MW unit size offers several advantages, including the possibility of applying more efficient technologies and supercritical steam production, the lower emission of greenhouse gases and the smaller land required to fit the complete 2,000 MW power plant.

The 300 MW unit size, on the other hand, is associated with a higher operation flexibility and can adopt without restrictions the CFB technology.
Table 4.3.2.5a compares the two technologies in terms of compatible sizes and efficiency and presents plant configurations and related environmental needs, whereas Table 4.3.2.5b compares the two technologies and sizes against air emissions.
Table 4.3.2.5a Technology vs Sizes and Related Efficiencies and Environmental Requirements

<table>
<thead>
<tr>
<th>Technology</th>
<th>Typical Size (and Maximum) [MW]</th>
<th>Reference Plant Config. [MW]</th>
<th>Effic. (^1) [%]</th>
<th>Land Occupation (^2) [m(^2)/MW]</th>
<th>Water Consump. (^3) [m(^3)/h-MW]</th>
<th>Waste Water (^4) [m(^3)/h-MW] (^1)</th>
<th>Raw Material (limestone)(^5) [kg/MWh]</th>
<th>Solid Waste (ash and sludge)(^6) [kg/MWh]</th>
<th>Emissions(^7)</th>
<th>Noise(^8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulverized firing (PF)</td>
<td>300-600 (950)</td>
<td>6x300</td>
<td>38</td>
<td>290</td>
<td>2.9</td>
<td>0.58</td>
<td>6</td>
<td>205</td>
<td>See Table B</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4x500</td>
<td>41</td>
<td>320</td>
<td>2.7</td>
<td>0.58</td>
<td>6</td>
<td>190</td>
<td>See Table B</td>
<td>Low</td>
</tr>
<tr>
<td>Circulating fluidized bed (CFB)</td>
<td>100-200 (300)</td>
<td>6x300</td>
<td>39</td>
<td>310</td>
<td>2.6</td>
<td>0.56</td>
<td>0</td>
<td>200</td>
<td>See Table B</td>
<td>Low</td>
</tr>
</tbody>
</table>

1. Net efficiency, taking into account self consumption. In case of PF technology, 1% has been deducted due to the necessity to operate the desulphurization plant.
2. General infrastructure, lignite storage yard and (in the case of PF) desulphurization plant. No CO\(_2\) capture facilities have been considered.
3. The small difference between PF and CFB technologies is due to the water requirements for the desuphurization plant (about 30 m\(^3\)/h for a 500 MW unit). The estimate is based on the assumption of natural draft cooling towers.
4. Amounts to about 20% of consumed water and corresponds to water coming from the purge of the cooling towers, washing of the sand filters and, in case of PF, the desulphurization plant
5. Corresponds to material (limestone) to be introduced into the desulphurization plant for gypsum precipitation
6. Includes about 20 kg/MWh of gypsum, produced either in the boiler (CFB) or in the desulphurization plant (PF). The small differences in waste production reflect the efficiency variations among different unit sizes and technologies
7. Emission values are detailed in the following table
8. No absolute values of noise emissions could be found: it can only be said that no significant differences are expected as a function of the applied technology
Table 4.3.2.5b  Technology and Sizes vs Emissions

<table>
<thead>
<tr>
<th>Technology</th>
<th>Reference Plant Config. [MW]</th>
<th>NOx 2 [kg/MWh]</th>
<th>SOx 3 [kg/MWh]</th>
<th>CO2 4 [t/MWh]</th>
<th>Particulate 5 [kg/MWh]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulverized firing (PF)</td>
<td>6x300</td>
<td>1.0</td>
<td>0.5</td>
<td>0.92</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>4x500</td>
<td>1.0</td>
<td>0.5</td>
<td>0.85</td>
<td>0.14</td>
</tr>
<tr>
<td>Circulating fluidized bed (CFB)</td>
<td>6x300</td>
<td>1.0</td>
<td>1.0</td>
<td>0.89</td>
<td>0.14</td>
</tr>
</tbody>
</table>

1 No particular differences in terms of air emissions are recognized for the various technologies. Both PF and CFB require ash removal equipment and do not need a De-NOx plant. Wet flue gas desulphurization (FGD) equipment is required for PF technology and it implies lower emissions. No CO2 capture equipment has been considered.

2 Based on a concentration of NOx of 200 mg/Nm³ in flue gases.

3 Based on a concentration of SO2 of 200 mg/Nm³ for CFB and of 100 mg/Nm³ for PF.

4 Based on the following lignite characteristics: C content of 22% and 1,980 kcal/kg.

5 Based on a concentration of particulate of 30 mg/Nm³ in flue gases.
4.3.3 Scenarios Identification

In conclusion, it is deemed that the initial choice among the various scenarios shall concern the development strategy (fast or phased), which largely depends on the macro-economic context of the country and is only marginally affected by the above described aspects.

Within each strategy, however, the above described aspects have a very important bearing (as shown at qualitative level in Table 4.3.3a) and must be closely analyzed to come up with the best solution.

**Table 4.3.3a Potential Impact of Different Aspects for Scenarios Selection**

<table>
<thead>
<tr>
<th></th>
<th>Technical</th>
<th>Economical</th>
<th>Financial</th>
<th>Environmental</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing of PPs Development</td>
<td>■</td>
<td>■</td>
<td>▲</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Development of New Mining Field</td>
<td>■</td>
<td>■</td>
<td>▲</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Location of the Power Plants</td>
<td>▲</td>
<td>▲</td>
<td>^</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Size of the Units</td>
<td>▲</td>
<td>▲</td>
<td>▲</td>
<td>limited</td>
<td>limited</td>
</tr>
<tr>
<td>Plants Technology</td>
<td>■</td>
<td>▲</td>
<td>▲</td>
<td>limited</td>
<td>limited</td>
</tr>
</tbody>
</table>

■ Major impact
▲ Fair impact

Table 4.3.3a shows that the main issues impacting social conditions and environment are the timing of development (of power plants and therefore of New Mining Field) and the location of the power plants.

Nevertheless, the SESA will focus only on the location of the power plant. However, a brief analysis of advantages/disadvantages connected to all other parameters identified (timing of power plants and mine development, plant size and plant technology) will be presented in Section 5.

Section 5 will therefore present a detailed comparison between different site alternatives in terms of environmental and social impacts, while Section 6 will identify potential mitigation and compensation measures. All other parameters (timing of power plants and mine development, plant size and plant technology) will be considered as constants in each identified scenario and no indication of the “preferred option” will be given; such assumption is based on the fact that the other variables have limited influence on environmental and social aspects.

Moreover, also the assumptions specified in Paragraph 4.3.1 on the future role of TPP A and TPP B will have the same environmental and social impacts on all scenarios, while from an economical and financial point of view they present big differences.
Based on the above, the SESA (Section 5) will therefore compare the impacts related to the three identified scenarios concerning site location: Kosovo B, Bivolac and Kosovo A. Such three scenarios will be examined and discussed (through the help of proper environmental/social indicators), in order to identify the most suitable option for future development, in terms of site location.

4.3.4 Foreseen Environmental and Social Interferences in TPP Development

Starting from the present situation (2008) already described in Section 3, two alternatives are considered: no development (alternative zero) or development (phased or rapid) of Kosovo C (2,000 MW). Two different time sequences are reviewed: short term (2023, when the first unit of Kosovo C will come on line and Kosovo A will have shut down) and long term (2033, when Kosovo C will be fully operational at 2,000 MW, and Kosovo A and B will have shut down), both assuming a phased development. Figures 4.3.4a-d present respectively:

a. alternative zero in 2023;
b. alternative zero in 2033;
c. development of Kosovo C in 2023;
d. development of Kosovo C in 2033.

Please note that the future layouts shown in Figures 4.3.4c and 4.3.4d take into account an area dedicated to CO₂ capture and therefore represent the worst case in terms of occupied area (the final layout may or may not include such areas). Moreover, the presented layout considers 4 plants with 500 MW size.

Figures 4.3.4e-g show the comparison between the present situation (2008) and future situation (2023 and 2033), assuming a phased development, in terms of power plant and mining development (please refer also to Table 4.3.2.1b for a better understanding).
**Figure 4.3.4e** Present Situation (2008)

**Figure 4.3.4f** Future Development (2023)
There are a number of issues that can affect the project, irrespective of the chosen development option and specific variables (timing of plant and new mine development, location of plants, size of units, plant technology). These should be considered in project design and implementation:

- Kosovo would be energy self-sufficient and possibly an electricity exporter;
- higher total lignite consumption (but lower specific consumption);
- higher total water consumption (but lower specific consumption);
- soil remediation and final reclamation of mining area;
- lower total atmospheric emissions (NOx, SO2, particulates);
- higher total CO2 emissions (but lower specific CO2 emissions);
- lower wastewater production;
- higher total waste production (ash and sludge) production;
- hydraulic ash transport system to be implemented with minimal environmental impact;
- improvement/modification of existing infrastructures (for example, Iber canal, electric grid, roads, etc.);
- skilled/trained available local labour;
- people/villages to be resettled;
- conflict between communities; and
- conflict between local communities and the project.

Table 4.3.4a presents a comparison between the present situation (2008), alternative zero (in 2023 and 2033) and the proposed development (in 2023 and 2033), assuming phased development is selected. The numbers presented in the Table are purely indicative; a precise estimate will be available only after the final energy project is designed.
Table 4.3.4a  Environmental and Social Aspects (Phased Development)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Present</th>
<th>Future Alternative zero</th>
<th>Future Kosovo C (2,000 MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2008</td>
<td>2023 2033</td>
<td>2023 2033</td>
</tr>
<tr>
<td>Installed capacity [MW]</td>
<td>860</td>
<td>903 293</td>
<td>2,153 2,293</td>
</tr>
<tr>
<td>Electricity production [GWh]</td>
<td>4,385</td>
<td>3,871 1,283</td>
<td>13,127 15,506</td>
</tr>
<tr>
<td>Electricity Demand [GWh]</td>
<td>4,874</td>
<td>6,566 7,842</td>
<td>6,566 7,842</td>
</tr>
<tr>
<td>Kosovo electric energy production – electric energy demand [GWh]</td>
<td>-489</td>
<td>-2,695 -6,559</td>
<td>6,561 7,664</td>
</tr>
<tr>
<td>Lignite consumption [Mt/y]</td>
<td>6.4</td>
<td>4.9 0</td>
<td>15.0 21.2</td>
</tr>
<tr>
<td>Water consumption [Mm$^3$/y]</td>
<td>13.4</td>
<td>9.4 0</td>
<td>31.0 35.7</td>
</tr>
<tr>
<td>Occupied land [ha]</td>
<td>2,923</td>
<td>396 0</td>
<td>756 804</td>
</tr>
<tr>
<td>Particulate emissions [Mt/y]</td>
<td>7.8</td>
<td>1.7 0</td>
<td>3.7 2.8</td>
</tr>
<tr>
<td>NOx emissions [Mt/y]</td>
<td>20.3</td>
<td>7.0 0</td>
<td>20.5 19.1</td>
</tr>
<tr>
<td>SO$_2$ emissions [Mt/y]</td>
<td>13.8</td>
<td>11.4 0</td>
<td>24.9 19.1</td>
</tr>
<tr>
<td>CO$_2$ emission (Mt/y)</td>
<td>5.2</td>
<td>3.9 0</td>
<td>12.1 17.1</td>
</tr>
<tr>
<td>CO$_2$ emissions [t/MWh]</td>
<td>1.2</td>
<td>1.1 0</td>
<td>0.9 0.9</td>
</tr>
<tr>
<td>Waste production (ash and sludge) [t/y]</td>
<td>0.96</td>
<td>0.73 0</td>
<td>2.25 3.18</td>
</tr>
<tr>
<td>Wastewater production [m$^3$/y*10$^3$]</td>
<td>9,500</td>
<td>6,511 0</td>
<td>7,614 7,400</td>
</tr>
</tbody>
</table>

Note: the following assumptions have been made:
1. Hydropower plant Zhur (future): 293 MW
2. TPP B load factor for alternative zero: 0.65; Zhur load factor for alternative zero: 0.155; medium growth scenario (MGS)
3. Water consumption has been estimated considering a specific consumption of 2.4 m$^3$/MW
4. Occupied land = land occupied by plants and mines (industrial areas) + overburden dumps + ash dumps – reclaimed land
5. SO$_2$ concentration in emission of Kosovo B rehabilitated 400mg/Nm$^3$
6. Waste water from Power plants

The zero alternative is theoretical: in such case, huge quantities of energy would need to be imported from other countries and the corresponding impacts would begin at the border. Furthermore, the country’s economics would be heavily impacted by the need for large expenditures to cover energy imports. This option is thus provided as touchstone to identify impacts.

The main anticipated issue is connected to water availability and water balances. For such reason Paragraph 5.1.4 presents a detailed analysis of surface water demand and reserves.

Another important impact is the increase of CO$_2$ emissions. At present the project foresees plants for CO$_2$ capture; should the final design differ from this, other alternatives would need to be investigated.

There is no available quantitative data relating to the positive and negative aspects of each project option, therefore, the above Table does not include figures for the socioeconomic issues. The development project will result in resettlement. As noted in the social baseline section, local communities are willing to be resettled but would prefer to be moved in one phase or at least over a short amount of time. The prospect of being resettled in 2033, for example, means for many of them that it is difficult to plan for their future.
and a number of residents have said that they would move anyway before the proposed date for development. Uncertainty or a protracted period of “planning blight” is likely to exacerbate impacts on communities. Findings from the consultations and the households survey suggest that the preferred option is to develop Kosovo C; in particular, residents surveyed and consulted believe that the current situation, living near to the existing power plants and mine, is either bad or intolerable (alternative zero). The communities of Hade, Lajthishte and Grabovci Poshtem/Lagja e Berisheve would like to be resettled immediately as they believe that the pollution of air and soil is having a negative impact on their health and agricultural production. As to site options, little difference was noted. Further, since the existing Kosova A and B do not meet current required EU emission standards, any development that cleans up the existing plants and leads to a new and cleaner plant will have a positive impact. Additionally, all communities consulted believe that the construction and establishment of Kosovo C will bring a number of benefits to them. These include: improved health, cleaner air and employment opportunities.

The number of people employed in mining activities will decrease (due to modern available technologies), but will be more than compensated by the increase of people employed in the power plants and in induced activities.

For further details on foreseen mine development refer also to the Draft NMFDP.
The following paragraphs discuss anticipated environmental and social impacts of the proposed development plans.

Impacts focus on the area of mine development but take into consideration the interaction of various activities in nearby areas.

Figure 5a presents the area of impacts with the location of present and future facilities, including the three potential sites for power plant development. In Paragraph 5.4, using environmental and social parameters/indicators, a ranking of the different future power plants sites is attempted in order to suggest the “preferred option” (in terms of site location).

5.1 ENVIRONMENTAL IMPACTS

5.1.1 Preamble

As anticipated in Section 3, several Pressure-State-Response indicators have been identified and (whenever possible) quantified to describe the present environmental situation in Kosovo (mainly due to the existing KEK facilities).

In the present Section, a discussion is given on potential modification of the indicators (for each environmental component) with reference to the future situation; whenever the available data are not adequate to properly quantify the indicators (in both present and future scenarios), a qualitative evaluation is presented, based on professional judgment.

5.1.2 Air

5.1.2.1 Pressure Indicators

Emissions of Greenhouse Gasses

Lignite is an important source of energy and international Community reliance on this fossil fuel for electricity generation is growing. The combustion of lignite, however, adds a significant amount of carbon dioxide to the atmosphere per unit of heat energy, more than the combustion of other fossil fuels.

Nevertheless, new power plants, with higher conversion efficiency, are able to reduce specific emissions (emissions of carbon dioxide per unit of electrical energy production).

Table 4.3.4 shows the anticipated increase in CO₂ emissions from the present value of about 5.2 Mtons/y to about 17.1 Mt/y, when 2,000 MW will be
installed. The table shows also that the specific emission will drop from about 1.2 t/MWh to 0.9 t/MWh.

The above values are of course approximate since the right value depends on the technology and the size of the plants, which are still under design.

We must however recall that greenhouse gases emission is a global problem, since it influences climate, and that the quantity (quote) of carbon dioxide emission that will be attributed to Kosovo for its energetic development is still under discussion.

Among the different solutions to reduce carbon dioxide emissions, one of the most realistic is the Carbon Sequestration (CS).

This is an approach to mitigate global warming by capturing carbon dioxide from large point sources, such as fossil fuel power plants, and storing it instead of releasing it into the atmosphere. Technology for large scale capture of CO$_2$ is already commercially available and fairly well developed. This consists in “washing” flue gases with absorption by alkaline solutions, such as amines, in order to separate, liquefy carbon dioxide and reinject it in impervious underground reservoir.

Although CO$_2$ has been injected into geological formations for various purposes, the long term storage of CO$_2$ is a relatively untried concept and yet no large scale power plant operates with a full carbon capture and storage system.

Carbon sequestration (CS) applied to a modern conventional power plant could reduce CO$_2$ emissions to the atmosphere by approximately 80-90% compared to a plant without carbon sequestration. Nevertheless, capturing and compressing CO$_2$ requires energy and would increase the fuel needs of a coal-fired plant with CS by about 25%, therefore increasing the cost of energy from a new power plant with CS by more than 25%.

Furthermore CS applies to locations where an underground storage reservoir is near, i.e. where suitable geological formations capable of receiving and maintaining underground the CO$_2$ exist.

For the present project the problem of CO$_2$ reduction has to be investigated taking into account international agreements, site potentiality and overall economics of the project: a partial sequestration could be a viable solution.

Nevertheless, the proposed preliminary layout of future plants, as presented in Section 4 (see Figures 4.3.4c-d), includes also an area, for each plant, in which CO$_2$ will be captured.
Emissions of SO$_2$, NO$_x$, Particulate

As above mentioned, emissions from the new plant will depend on the choice of technology and the size of the units, which are still under design, although in general, new power plants, which have higher conversion efficiency, are able to reduce specific emissions (emissions per unit of electrical energy production).

As shown in Tables 4.3.2.1d and 4.3.2.1e, the emissions of NO$_x$, SO$_2$ and particulates will be reduced as soon as the first Kosovo C unit will be put into operation and, as a consequence, the production from Kosovo A, the most impacting power plant, will be reduced and then closed.

The situation could sooner be improved with some intervention on Kosovo A and B power plants.

In fact, concerning policy requirements, the environmental performance of existing plants will have to comply with the Letter of Energy Sector Development Policy (LESDP, June 2006), which recommends full compliance with EU regulations. LESDP, in particular, has the following list of urgent environmental investment:

- Waste water treatment;
- Electrostatic precipitators;
- Ash handling;
- Environmental monitoring.

Some activities to improve the environmental performance of Kosovo A units are in program and/or in progress (ex. Electrostatic precipitators, ash handling, Clean up project).

Moreover, the Athens Treaty (ECSEE) sets obligations for existing TPPs to fully comply with LCP Directive after 31 December 2017. There is no policy in place that might allow these units to run a limited number of hours after 31 December 2017. LCP Directive states that “plants may be exempted from compliance with the emission limit values and from their inclusion in the national emission reduction plan if the operator of an existing plant undertakes a written declaration not to operate the plant for more than 20 000 operational hours starting from 1 January 2008 and ending no later than 31 December 2015”. It is assumed that any power plant operating in Kosovo after 2017 will comply with LCP directive (therefore both TPP A and TPP B).

The future situation at regime (TPP C 2,000 MW) will improve due to more efficient technology: for example, particulate emissions from the plants (as already presented in Table 4.3.4a) will be 2.8 Mt/y, compared to the present value which is about 7.8 Mt/y; NOx emissions will be also slightly reduced from 20.3 Mt/y to 19.1 Mt/y, while SO$_2$ could increase from present 13.8 Mt/y to 19.1 Mt/y.
5.1.2.2  

**State Indicators**

**Climate**

The new plants will not have an impact on climate features of the area.

As above discussed, CO\textsubscript{2} emissions may impact climate but on a large scale and no influence is foreseen in the interested area.

On the contrary, local climate conditions influence the impacts of the development, mainly in terms of wind direction (downwind areas are more affected by air emissions – see Paragraph 5.3).

**Air Quality**

When Kosovo C is fully operational, the air quality will improve (due to the fact that the new power plant will comply with the LCP Directive and the existing plants will be shut down).

In fact:

- particulate emissions will drop significantly, NOx emissions will decrease and SO\textsubscript{2} emissions will slightly increase;
- flue gas dispersion will occur inside the cooling towers. This method will allow a good mixing of pollutants with air and will increase plume rise in such a way to disperse pollutant over a wider area, therefore decreasing ground concentration. This is confirmed by the study carried out by Poiry et al (EAR Reconstruction, Contract nr 05KOS01/04/005 - Studies to support the development of new generation capacities and related transmission – Kosovo UNMIK, 2007) in which the concentration of the main pollutants during future operation is estimated. The results show that concerning “the maxima of the immission and deposition caused by the stack, current and future emissions of all TPPs are below 10 % of the limit values. The maxima are situated about 8 km SSW from Kosovo Bsite and about 800 to 1,000 m north of Bardh”;
- major sources of the present bad air quality, i.e. Kosovo A and B dust emissions and ash belt transportation, will be eliminated: ash transportation from Kosovo A to ash dump A will be converted from belt conveyor to hydraulic transportation, Kosovo A and B ash dumps have to be vegetated.

During the transitory phase up to the installation of Kosovo C power plants, the operation of Kosovo A and Kosovo B not yet revamped to comply with air emission EU standards will produce a slight increase of the present level of air emissions and therefore a slight increase of NOx and SO\textsubscript{2} concentrations.

A detailed air quality monitoring system will be put in place, allowing identification of hot spots and necessary mitigation measures.
5.1.3 Soil and Groundwater

5.1.3.1 Pressure Indicators

Occupied Land

In the present situation, the main areas occupied, directly or indirectly, by energy production facilities include the following:

- Power plants;
- Mining areas;
- Overburden dumps;
- Ash dumps.

The proposed new power plants, new mining development areas and connected infrastructures will require additional land. Nevertheless, areas currently occupied by ash and overburden dumps would be reclaimed. As already presented in Table 4.3.4a (and shown in Figures 4.3.4a-d), occupied land would decrease from the existing 2,900 ha to approximately 800 in 2033.

Moreover, a large residual pit of about 5 km² will remain in the northern part of the New Mining Field. In the long term (about 40-50 years from now), this pit could be developed as a recreational lake, surrounded by a greenbelt, located within easy reach of Prishtina.

Sources of Soil and Groundwater Contamination

Current and past operations have had an important role as sources of soil and groundwater contamination.

When Kosovo C is fully operational, existing facilities will be shut down, allowing the areas they occupied to be better investigated, cleaned up as necessary and reclaimed.

Modern technologies, which will be adopted for Kosovo C and new mining development, comply with legislative standards and best practices; therefore, the quality of soil and groundwater is not anticipated to be significantly affected by their operation. Deposition of air pollutants should also improve in future, since particulate emissions will sharply decrease, as discussed in the previous paragraph.

5.1.3.2 State Indicators

Geology

The proposed new plants and mining development will not have an impact on the geology of the area. On the contrary, the geologic conditions will be analyzed in detailed in order to select the best location for the new plants.
**Hydrogeology**

The proposed new plants and mining development will not have an impact on the hydrogeology of the area, since it is anticipated that the water supply for the new power plants will come from surface water resources and/or canals.

**Quality of Groundwater and Soil**

At present, the areas occupied by energy production facilities (including power plants, mines, ash dumps and overburden dumps) present high levels of soil and groundwater contamination.

As already mentioned, modern technologies, which will be adopted for Kosovo C and new mining development, grant compliance with legislative standards and best practices. Therefore the quality of soil and groundwater will not be impacted significantly by the operation of new plants.

Moreover, when Kosovo C will be fully operational, the existing plants will be shut down and the areas at present occupied by all facilities will be cleaned up (as necessary) and reclaimed.

Since air emissions will decrease, also the quality of soil, connected with the deposition of air pollutants, will improve in the future situation.

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5.1.4 **Surface Water and Wastewater**

5.1.4.1 **Pressure Indicators**

**Surface Water Consumption**

According to EAR Study, raw water consumption from the Kosovo C TPP will be around 47.93 Mm$^3$ per year.

Specific consumption (consumption per unit of generated energy) will improve when Kosovo C is fully operational (2,000 MW) thanks to more modern and efficient technology.

The future Total Water Demand in the area as reported in the “EAR Water Supply study”, including Kosovo C water use, is presented in Tables 5.1.4.1a-b, for the following two circumstances (see also Paragraph 3.3.3.2):

- Total Water Demand for 5,000 ha to be irrigated;
- Total Water Demand for 10,000 ha to be irrigated.

**Table 5.1.4.1a** **User Flow, in m$^3$/s with 5,000 ha Irrigated**

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<thead>
<tr>
<th>Days</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
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<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Year m$^3\times 10^6$</th>
</tr>
</thead>
</table>

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300
The Total Water Demand was determined on the basis of the foreseen water uses, as reported in Paragraph 3.3.3.2 of the this Report, and considering a specific water consumption for Kosovo C of 1.52 m$^3$/s, that corresponds to the most water-consuming technology.

Raw water will be taken from Iber-Lepenc Hydro system. A monitoring system will need to be in place to measure water take. Major issues are connected to water availability, therefore please refer to indicator “Surface water reserves” for a complete analysis of the foreseen impacts and water balance.

**Generation of Wastewater**

The present and past operations have generated wastewater stream which has been discharged to surface water without any treatment producing significant impact on rivers and surface water.

Kosovo C wastewater production will decrease, passing from the present 9.5 Mm$^3$/y to about 7.4 Mm$^3$/y (as noted in Table 4.3.4a), as a result of recycling and utilization of wastewater for hydraulic ash transport.

Kosovo C will need to be fitted with an adequate water treatment plant (WWTP) that collects all polluted streams from the power plant (boiler blow...
down, oily waters, cooling tower blow down, demineralization effluent etc). The WWTP has to be designed to comply with all EU standards for surface water discharge. The use of water coming from the WWTP for cooling tower make up is also recommended to further minimize water consumption (see following paragraph).

At the same time TPPA and B will have to be rendered compliant with EU standards.

Also the new mining development will grant compliance with legislative standards and best practices, so that mine wastewater will be collected separately, monitored and treated before discharge.

In summary, a significant improvement is anticipated at the discharge point in Sitnica River.
A monitoring system will be needed to measure wastewater quality.

5.1.4.2 State Indicators

Surface Water Reserves

As already anticipated, the new plant will require additional water, which will be taken from the Iber-Lepenc Hydro system. No modification to the existing surface water resources are foreseen but the planned development anticipates that the Iber-Lepenc water system will be upgraded to reduce losses from leakage and that a monitoring system will be implemented, in order to measure water flow rates.

The impacts of Kosovo C water use on the Iber-Lepenc water system were analyzed in detail in the above mentioned “EAR Water Supply study”, which considered two cases of Total Water Demand (5,000 and 10,000 ha to be irrigated) and was based on the assumptions described in Paragraph 3.3.3.2. together with the following further assumptions:

• the losses will be reduced to 25% of the total inflow to the system;
• the estimated quantity of water supplied by the Iber-Lepenc hydro system to municipal water companies will remain around 15 million m³/year, that means capable of supplying 200,000 people with an average consumption of 200 l/day/capita;
• other assumptions, as discussed in the previous paragraph on pressure indicators, i.e Kosovo C consumption of about 1.5 m³/s, Kosovo A and Kosovo B at the present consumption of 0.08 and 0.4 m³/s respectively, other industrial requirements at 1 m³/s.

The total projected future demand from the Iber-Lepenc system for 2016 anticipates an increase in domestic water users. Tables 5.1.4.2a and 5.1.4.2b present a summary of the EAR water supply Study evaluation.
Table 5.1.4.2a  Water Demand in the Future [m$^3$/s], with 5,000 ha Irrigated

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* The value presented in EAR report has been modified since that report has not considered the expected additional use of water resource for Prishtina water supply by the Prishtina Regional Water Company (to reduce water shortage to Prishtina Municipality), equal to 1 m$^3$/s
** Kosovo A is included for illustration purposes only. The three power plants (A, B and C) will not be operating at full capacity at the same time.

Table 5.1.2.4b  Water Demand in the Future [m$^3$/s], with 10,000 ha Irrigated

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</table>

* The value presented in EAR report has been modified since that report has not considered the expected additional use of water resource for Prishtina water supply by the Prishtina Regional Water Company (to reduce water shortage to Prishtina Municipality), equal to 1 m$^3$/s
** Kosovo A is included for illustration purposes only. The three power plants (A, B and C) will not be operating at full capacity at the same time.

If we compare the future situation with the present situation (see Tables 3.3.3.2b and 3.3.3.2c), we note that through improvements in the Iber-Lepenc canal, the increased water demand from Kosovo C will be mainly balanced by a reduction in losses in the overall system. Nevertheless, the Water Exploitation Index (WEI) for the Iber-Lepenc system will increase to 57%, 65% and 93% for the average, median and worst year respectively, a stark increase as compared to the current situation. The high WEI indicates that conflicting demands from various water users on the system will increase. These are rated as likely to emerge in the medium term (5-10 years) and very likely to emerge in the longer term. Since potable water supply and environmental flows have priority use, the sectors most likely to be competing for water use will be the industrial sector, including Kosovo C TPP, and irrigated...
agriculture. Emphasis should therefore be placed on development of a comprehensive policy, institutional and planning framework for water resource management in the Iber-Lepenc system.

The EAR Water Supply report suggests the following main conclusions:

- For multi-annual average inflows, if the total losses from the canal are lower than 25%, the system is able to supply enough water to cover all users’ needs (as defined above); for the multi-annual average inflow to the main lake, the maximum permissible losses are 68%.
- Even if the inflows to the main lake are equal to the worst year values (1950), the system is able to supply enough water to all users, including to the 10,000 ha of irrigated area; for the worst year inflows to the main lake, the maximum permissible losses are 38%.
- In the first hypothesis (multi-annual average flows and 5,000 ha irrigated) the water reserve is effective: the annual inflow to the main lake may decrease from 410 million m³ to around 201 million m³ without affecting the users, but the total volume of the main lake at the end of the year will be lower. This value is equal to the total annual outflow from the main lake.
- In the 25 years of available data, the total inflow has never gone below 201 million m³ per year.
- In the second hypothesis (worst year flows and 10,000 ha irrigated), the water reserve is also effective: the annual inflow to the main lake may decrease from 410 million m³ to around 220 million m³ without affecting the users, but the total volume of the main lake at the end of the year will be lower. This value is equal to the total annual outflow from the main lake.
- In the 25 years of available data, the total inflow has never been lower than 220 million m³ per year.
- At the same time, it is very important to use current flow compensation with the secondary reservoir's spillways and the excess water from the main lake to ensure the necessary flow to the main canal.

The EAR report concludes that the Iber-Lepenc system can supply the planned development, provided that:

- the main canal is repaired, so as to reduce its losses to 25%. If current estimated losses (50%) remain unchanged, the system will be able to supply enough water to all users, but the annual inflow to the main lake will have to be greater than 271 million m³, otherwise the lake will empty. During the 1948-1972 period, the annual rainfall has been lower than this value twice, in 1950 and 1956;
- a buffer basin is built at the end of the main canal, with a capacity corresponding to 10 days of Kosovo C and B’s average consumption (approximately 1,750,000 m³) in order to ensure a regular and permanent supply, even in emergency cases, and to enable to make the necessary repairs to the main canal;
- the water compensation in the secondary reservoir is made with accuracy;
• the weather does not change drastically and the average rainfall does not decrease dramatically (below the worst year – 1950).

Provided these measures are undertaken and competing demands are managed within a comprehensive framework, the conclusion of the EAR report, that the Iber-Lepenc hydro system will be able to supply water to the Kosovo C power plant in 2016, remains valid.

Further Comments on Water Resources Issues related to Kosovo C TPP

Concerns about water resources availability were also raised by a World Bank technical mission that took place in March 2008, aimed at assessing water resources issues related to the proposed new Kosovo C power plant and to contribute to the SESA. The main findings of the mission with regard to the water issues were as follows:

• EAR Water Supply study does not take in consideration current and planned additional use of water resource for Pristina water supply by the Pristina Regional Water Company (around 1 m$^3$/s to reduce water shortage to Pristina Municipality).

• The study includes two different scenarios for the agriculture irrigation developments, i.e. 5,000 and 10,000 ha, that are far-away the figure considered as reference value at the time of the canal construction (20,000 ha). The Ministry of Agriculture, Forestry and Rural Development foresees bringing 18,000 ha under irrigation (with water from the Iber irrigation canal) to further develop the agriculture sector in the medium (5-10 years) to long-term.

• The assumption of the study to reduce the specific water consumption from the current 340 l/ca.day to 200 l/ca.day by 2016 is realistic only if significant investments in the internal potable water distribution network are made and water demand management is introduced in Mitrovica and Pristina Municipalities.

• The study does not take into account return flows from the power plant to the Iber-Lepenc river basin. These return flows are approximately 60% of the intake volumes of the plants and can likely be used for irrigation.

• The Water Exploitation Index (WEI), calculated on the basis of the yearly average water demand (198 million m$^3$), and the yearly water availability, equal to 410 million m$^3$ as the multi-annual average and 250 million m$^3$ as the worst year case, is 48% and 79% respectively which are significantly above the WEI warning threshold of 20%, distinguishing the non-stressed from a stressed region. Severe water stress can occur where the WEI exceeds 40% indicating unsuitable water uses.

• Competing water demands are likely to emerge in the medium-term (5-10 years) and very likely to occur in the longer term.

• Institutional settings and water strategy development as specified in the Kosovo Water Law (Law No, 2004/24) is at its first stage considering that at this moment no water management plan or river basin management plan have been prepared. As a result there is a limited oversight regarding the availability of water resources in the Iber system, non clear policy for strategic
allocation of water over various sectors or the issuing of long-term water usage agreements, nor a well done mechanism for the resolution of competing water demand.

Furthermore, the EAR Water Supply study does not include the analysis of water demand associated to Iber river downstream Gazivoda lake. A comprehensive study of existing and planned water uses in the complete Iber River basin should be carried out in order to develop a single river basin management plan as recommended by the 2000/60/EC Directive.

Moreover, with reference to the World Bank OP 7.5 on Projects on International Waterways, the following recommendations have to be applied:

- the cooperation and goodwill of riparians is essential for the efficient use and protection of the waterway. Therefore, it attaches great importance to riparians’ making appropriate agreements or arrangements for these purposes for the entire waterway or any part thereof.

- The beneficiary state is required, if it has not already done, formally to notify the other riparians of the proposed project and its Project Details

- Furthermore it shall be ascertained whether the riparians have entered into agreements or arrangements or have established any institutional framework for the international waterway concerned.

In conclusion, a number of steps are recommended to ensure the long-term reliability and sustainability of water supply to the Kosovo C TPP and water resources in the Iber-Lepenc system overall. Key steps include:

- allocating funds to rehabilitation of the Iber-Lepenc canal;

- developing a river basin management plan for the Iber-Lepenc system along the guidelines specified in the EU Water Framework Directive;

- development of water infrastructure investment plans and feasibility studies for the Iber-Lepenc system, identified in the river basin management plan;

- revising the water legal framework to allow for long-term water usage rights for industrial water users and mechanisms for addressing competing water demands; and

- developing a policy framework and criteria to guide strategic allocation of water resources to various water using sectors with competing water demands.

In addition, based on a more thorough assessment conducted within the framework of a river basin management plan, greater use might be made of more water efficient technologies in Kosovo C, such as a dry cooling tower system, in order to reduce water consumption from the Iber-Lepenc system, making it more available to other uses.
Impact of this design change over the economics of the project and over the carbon dioxide emissions as a consequence of the reduced efficiency of the power station should be deeply investigated.

Quality of River Water

Contamination of rivers and streams is high all over the project sites. Modern technologies, which will be adopted for Kosovo C and new mining development, will comply with legislative standards and best practices. In particular, the new plant will monitor and treat wastewaters prior to discharge into rivers. Water quality should therefore improve.

The existing monitoring system will be improved, in order to keep always surface water quality under control.

% Population with Adequate Water Facilities

At present, no complete inventory of water facilities exists. Nevertheless, water distribution networks are generally very old and in poor condition and few utilities are able to provide adequate amounts of water to the population.

The future project will improve the situation, since new facilities will be built and a higher percentage of population will be reached by an adequate amount of water.

5.1.5 Noise

5.1.5.1 Pressure Indicators

Noise Emissions

Considering present operating plants and mines (and belt conveyors), noise is perceived by the population as a serious problem.

The planned project would be developed according to legislation in force (all equipment will comply with noise standards and guidelines) and the power plant and mines will be located as far as possible from villages; should the future situation become intolerable, people would be resettled (see Paragraph 5.2.5).

The houses most affected are those located within 1,000 m from the power plants and 100 m from the belt conveyors.

Monitoring activities will be carried out to identify hot spots, mitigate impacts as necessary and verify compliance with applicable standards, both for workers and residents.
5.1.5.2 State Indicators

Zoning Plan and Noise Immissions

A detailed noise mapping has never been considered necessary and carried out. As resulted during the public consultation meetings (see Paragraph 3.4), the resettlements located close to the mines, especially Grabovc and Hade villages, are affected by noise emitted by conveyer belts and mining operations.

A similar situation will likely occur also in the future, meaning that the receptors closer to the mines and belt conveyors and to the power plants will be exposed to continuous noise levels.

Good equipment design, monitoring before and during project implementation, and use of natural or artificial barriers will need to be adopted for Kosovo C and new mining development, and the development will need to comply with legislative standards and best practices.

As a consequence an improvement is foreseen.

A monitoring campaign of environmental noise will be carried out.

5.1.6 Solid Waste

5.1.6.1 Pressure Indicators

Production of Ashes

Waste production in terms of ashes and sludge, when Kosovo C is fully operational (2,000 MW), will increase, passing from the present 1 Mt/y to about 3.2 Mt/y (as already presented in Table 4.3.4a). However, ashes produced by Kosovo C will be used to fill exploited parts of the new mine and will contribute to land reclamation at the end of mine development (see Figures 4.3.4c and 4.3.4d for indicative mine development lines in 2023 and 2033, assuming a phased development).

Generation of Industrial Solid Waste

At present, only indicative solid waste production quantities are available. Under Kosovo C, measures will be taken to collect and manage industrial waste according to best practices as applicable (specific procedures to be defined).

Hazardous materials and potentially hazardous waste from the power plant (such as transformer oil, batteries, cables, insulation, chemicals and chemical
packaging) will be stored in adequate conditions. *Asbestos* will not be used in Kosovo C power plants or connected facilities.

5.1.6.2 **State Indicators**

*Municipal Waste Generation and Disposal*

Household waste generation will not be impacted by the project. No new landfills are foreseen in the area of interest.

There are no recycling facilities in Kosovo except for some minor initiatives. Waste have historically been abandoned/dumped on site; such procedure will no longer be adopted for the future plants and mining facilities (particular attention will be devoted to recycling, reuse and disposal).

As compensation measure to the project, investment in the collection and recycling infrastructure, as well as in public participation and awareness raising, could be proposed.

5.1.7 **Natural Environment**

5.1.7.1 **Pressure Indicators**

*Landscape - Visual Impact*

The area in which the development is planned has no special value in terms of natural environment.

Future plans for the area of existing mines, ash dumps and overburden dumps include reclamation and revegetation, which will improve the visual impact of the area of interest.

On the other hand, new power plant units will be built (with a visual impact for neighbouring villages) and a new mining field will be opened. That said, it is planned that the new mine will be reclaimed in a phased process.

5.1.7.2 **State Indicators**

*Natural and Protected Areas*

The project will not interfere with any natural or protected area.

*Flora and Fauna*

Based on a survey carried out in 2007 in the area of interest, most of the investigated locations appear under anthropogenic influence, i.e. influenced by man. Most parts of (semi)natural meadows and forest vegetation are found among the agriculture associations.
The Kosovo A site was not investigated as it is entirely an industrial area without any natural value.

Considering the potential site locations, the project will not interfere with endangered species.

Land Use

Figure 3.3.6.2c and Table 3.3.6.2b shows actual land use in the study area. The prevalent land use is agriculture, followed by forest and then residential and industrial areas.

As already presented in Table 4.3.4a, after the project, the situation will improve: areas at present industrial (including power plants, mines, ash dumps, overburden dumps) will be reclaimed and revegetated, therefore the percentage of natural areas in the area of interest will significantly grow (see also Paragraph 5.1.3.1).
5.2 **Socio-Economic Impacts**

5.2.1 **Introduction and Methodology**

This section of the SESA report will describe the potential impacts on the residents of the power plants and mine development area. Information from the household baseline survey and the various community consultations has informed the impact analysis. The impact analysis will also identify data gaps and where additional assessments or studies need to be conducted in order to ascertain the significance of certain impacts as well as the distribution of those impacts. In some cases the exact site location is unlikely to have major significance for individual indicators or issues. This will be clearly identified in the report.

*Table 5.2.1a* summarizes the key impacts and areas of concern identified during the SESA process via the community survey, consultation meetings and the meetings of the Community Development Forums. In addition to the issues presented in the table, concerns were also raised about the performance of the current management team of KEK in terms of the relationship between the mine and surrounding communities. There are expectations that this relationship will improve in the future.

*Table 5.2.1a High Impact Issues (based on Village Surveys and Community Forum Meetings)*

<table>
<thead>
<tr>
<th>Impact Issue</th>
<th>Extent of Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Employment Opportunities Associated with Development of the Mine and current levels of unemployment</td>
<td>All Communities</td>
</tr>
<tr>
<td>• Resettlement of Communities</td>
<td>Majority of Communities</td>
</tr>
<tr>
<td>• Air Pollution/Particulate</td>
<td>Majority of Communities</td>
</tr>
<tr>
<td>• Health Status/Access to Facilities</td>
<td>Majority of Communities</td>
</tr>
<tr>
<td></td>
<td>• Dardhishte</td>
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<tr>
<td></td>
<td>• Grabovc i Poshtem</td>
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<td></td>
<td>• Hade</td>
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<td></td>
<td>• Lajthishte</td>
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<td></td>
<td>• Shipitulle</td>
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<td></td>
<td>• Hamidi</td>
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<tr>
<td></td>
<td>• Crkvena Vodica</td>
</tr>
<tr>
<td></td>
<td>• Palaj/Mirash</td>
</tr>
<tr>
<td>• Public Transport</td>
<td>Majority of Communities</td>
</tr>
<tr>
<td></td>
<td>• Grabovc i Poshtem</td>
</tr>
<tr>
<td></td>
<td>• Hade</td>
</tr>
<tr>
<td></td>
<td>• Lajthishte</td>
</tr>
<tr>
<td>• Water Pollution</td>
<td>Majority of Communities</td>
</tr>
<tr>
<td></td>
<td>• Dardhishte</td>
</tr>
<tr>
<td></td>
<td>• Grabovc i Poshtem (including illegal sites)</td>
</tr>
<tr>
<td>• Soil Pollution</td>
<td>Majority of Communities</td>
</tr>
<tr>
<td></td>
<td>• Dardhishte</td>
</tr>
</tbody>
</table>
|                                                                             | • Limest
### Impact Issue | Extent of Impact
--- | ---
• Waste Management | Majority of Communities
  • Dardhishte
  • Crkvena Vodica
  • Palaj/Mirash
• Roads | Majority of Communities
  • Grabovc i Poshtem
  • Hamidi
• Sewerage | Majority of Communities
  • Grabovc i Poshtem
  • Plemetin
• Water Supply | Majority of Communities
  • Grabovc i Poshtem
  • Plemetin
  • Hamidi
• Compensation | Majority of Communities
  • Grabovc i Poshtem
• Power Supply | Majority of Communities
  • Plemetin
  • Shipitulle
• Participation in the Project | Majority of Communities
  • Grabovc i Poshtem
  • Sibovc

### 5.2.2 Demographics

Current information highlights only resettlement as a direct impact on those communities to be moved (see Paragraph 5.2.5 for further information). Project construction and operation could also have impacts on the structure and profile of the area. Figures are not currently available for the number of construction and operational workforce, where this workforce will be sourced from and whether worker housing is required. The introduction of a large workforce will impact local communities in both the long and short term. Further information is needed to adequately assess the level of impact the project will have on demographics. Furthermore there are currently non-project related impacts on the demographics such as high out migration, especially from the young which is predicted to continue.

### 5.2.3 Economic Environment

The impacts of land acquisition involve much more than the loss of housing. In the first place, given that the affected areas are largely rural, it could result in a significant loss of livelihoods. The results of the consultations suggest that there are high levels of unemployment and under-employment in the area; this means that people depend on their farmland for a significant part of their subsistence and cash income. This makes resettlement particularly difficult, since international standards rightly require affected families to be compensated for the loss of their livelihoods and/or subsistence. In addition the land take for the mines and power plant may affect some small businesses and result in people losing employment.
5.2.4 Employment

There are very high expectations related to employment issues among the affected communities. This is seen as an important aspect of the project and underpins the positive views of the project in many of the communities. It will be important that current channels of communication are maintained and that information on significant topics, such as the likely levels of employment for local people, is communicated clearly and in sufficient time. The Community Development Forum could fulfill a valuable role in this process.

Regarding employment, the number of people employed in mining activities will decrease (due to modernization of technology), but at least until 2017 this will be more than compensated by the increase in people employed in the new power plants and in induced activities. Currently the Mirash and Bardh mines employ some 3,420 persons. This level of employment is high by world standards; if a private sector company manages the future mines, the employment level will likely be significantly lower. The predictions for the level of employment, assuming a phased development, are as follows:

- Production rising to 21Mt/year: 2,700 (by 2025);
- Production at 9 Mt/year: 1,420 (by 2015).

These estimates are still higher than what would be expected from an internationally competitive mine; the decrease in jobs in the medium to long term thus may be greater than anticipated. It is likely that these fewer jobs would be better paid given improved productivity. Furthermore, Kosovo C will require both directly and indirectly employed personnel, therefore the total number of employees is likely to be the same (induced activities will bring new employment opportunities and compensate the loss).

On a strategic level there needs to be more collaboration between the education and labor ministries so that young people are better prepared for the current and future labor market in terms of training and technical education. There is a good network of vocational training centers, managed by the Ministry of Labor in Obiliq, which is not fully utilised. The Ministry of Labor has stated that it would welcome more involvement in the analysis of skills in the area and provide relevant training programs where there is a skills deficit.

5.2.5 Land Use and Resettlement

The legacy of the resettlement in 2003-2004 in the area has left both those remaining and those resettled extremely angry about the process. Residents are concerned that the Hade experience will be repeated. In the immediate future, resettlement is an issue that affects the village of Hade. However, discussions with communities and relevant ministries revealed that the social impact of future planned resettlement is already being felt by several communities. For example, in villages such as Lajthishte, which are not
scheduled to be moved until 2035, or in others not scheduled until 2038, people are concerned about their property prices and many young people have already left the communities to live abroad or in other parts of Kosovo, as they see no economic future in the area.

The process and timing of resettlement should be clearly communicated and the information on this topic should be regularly updated. Uncertainty over the extent and timing of any resettlement is likely to exacerbate real or perceived economic disadvantage. The potential role of the Community Development Forums in this process should be carefully evaluated. They have the potential to provide a valuable engagement tool on this issue.

5.2.6

Infrastructure

Roads

As discussed in the baseline section of this report current road conditions around the Project site are poor (Paragraph 3.4.13.1). Communities complained of large vehicles travelling on local roads increasing levels of dust and noise and causing road safety issues (Paragraph 3.4.17). If the road network is not upgraded and regularly maintained road safety will become a major impact to local communities. It is understood that some improvements are planned, however, this may not be adequate to limit the impact of increased road usage on local communities.

Water Supply

Current local water supply is inconsistent with some communities connected to the mains and others reliant on other sources. Local waterways and groundwater are contaminated and not safe for drinking. It is understood that the project will invest in waste water treatment and address local water pollution with the aim of meeting international standards. This will be a significant improvement and therefore have a positive impact on local communities.

The Project will require substantial amounts of water for operations, which it plans on sourcing from the local water system through pipelines.

Sewage

As discussed in previous sections the Project is required to build a waste water treatment plant. It is anticipated that some communities will be able to utilize this for household waste water. At present villages and other small settlements dispose of wastewater in open channels contaminating surface and groundwater. The introduction of a waste water treatment plant in the area will improve the environmental conditions of local water ways, therefore this is viewed as being a positive impact for local communities.
Solid and Liquid Waste Management

Waste management is addressed in Sections 3.3.5 and 5.1.6. Waste management will be addressed through improvements to ash management and overburden. The current method of disposal of ash at Kosovo A will be stopped and a safe waste storage facility will be developed at the Mirash Open Pit Mine. Improvements to waste management will have a positive impact on local communities who cited air pollution from waste ash as an issue [see Table 3.4.16a]. All transportation of waste materials outside and between sites will need to be addressed to ensure waste is properly secured, safely transported and traffic movements are limited. Measures to address these issues are also cited within this report.

5.2.7 Health

Health concerns have been raised during consultation with local communities and participants believe that current operations have resulted in direct health problems (Paragraph 3.4.14). Respiratory disease was sited as the most prevalent health condition in surveyed communities. It is understood that current levels of air, noise and water pollution in the local area are significant and it is likely that this has had an impact on the health of local communities. The Project aims to improve current levels of pollution in the long term, but there may be some increased pollution in the short term, depending on the chosen development model. Associated impacts to the health of local communities should be monitored, which will require a detailed health baseline showing current conditions.

Data collected during this assessment only contains limited data on health and a detailed health assessment has not been conducted. Determining the level of health impact will require further data gathering and monitoring of health conditions, along with noise, air and water quality. The extent and level of impact can not be determined at this stage, however health is believed to be a major impact by surveyed communities.

5.2.8 Social Networks

Another significant impact of land acquisition and the other changes brought by the project is the disruption of social networks if people have to move away from their relatives, friends and neighbours or a large influx of contract workers moves to the area. There will be a loss of cultural heritage and local memories. The project affected communities have already been adversely impacted by the vagaries of war and the challenges of living near the mine and power plants. Apart from the environmental effects this has had an impact on the social structure and fabric of the communities. Anecdotal evidence from some local authorities suggests that the incidence of depression has increased in the area which in turn has an impact on families and communities. However, some level of mitigation could be achieved through a sensitive social support programme that would take local people’s concerns
and expectations into account. This would include measures to remove and restore local historical and cultural sites, such as mosques, cemeteries, churches and war memorials. It could also include assistance to help the most vulnerable people, especially the elderly, readjust to their new homes and new locations, for instance, facilitating contact with social and health services at their new site.

5.2.9 Community Aspirations, Attitudes and Concerns

Consultation with affected communities found that support for the project is mixed. Half the populations of Grabovc i Poshtem, Hade and Lajthishte strongly support the project and believe it will bring positive economic impacts. Eighty-three percent of all participants believe the project will create employment opportunities.

Participants in the focus groups also indicated that their expectations are that job opportunities will increase. However, they are skeptical how the recruitment procedure will be organized, as they mentioned many cases where workers in the power plant are being recruited without any criteria. They see as a project pre-condition that employment will be provided to those who deserve it the most; they hope therefore that the foreign investor will apply appropriate recruitment procedures. In this regard, all agree that they (in each group, all participants presented their own village as being the most negatively affected by mine activities) should be given priority in employment opportunities, as they are the ones who suffer the most from air pollution, or were previously excluded from employment opportunities, or again, municipal authorities failed to provide adequate conditions for living (poor infrastructure).

Although the project has support due to the expectation that it will have a positive impact on the local economy and employment opportunities, many residents feel there will be negative impacts. In terms of the effects of Kosovo C on the environment, the majority of respondents to the household survey expected it to be negative (58.3%), primarily because of the pollution which they fear will destroy the environment, while another 20.8% expected it to be positive. Only 5.8% of the respondents expect the building of Kosovo C not to have any impact on the environment. Rural respondents are more likely to expect the building of Kosovo C to have very positive impacts on the environment, while urban respondents are more likely to expect it to have somewhat positive or somewhat negative effects. There were no differences by other socio-demographic variables.

In terms of the impact of Kosovo C on the natural environment in their settlements, Hade had the greatest number of respondents (24%) who expected it to be very positive, while Hamidi had the greatest number of respondents who expected it to be very negative (77%).
Focus group discussions support the data obtained from the household survey, where most respondents claim that they are skeptical about the environmental impact the new power plant will have. Since all participants complained about current conditions pertaining to the environmental issues in their settlements, the construction of a new power plant is expected to have further impact on the environment. Since it is a coal-based power plant, the belief of these participants is that it is not possible for the power plant to be environmentally friendly.

At household level the survey indicates that most respondents expect the building of Kosovo C to have positive effects (32% somewhat and 36% very positive), a little over a tenth (12%) expect it to have negative effects and 9% expect it not to have any economic effects on their household. Urban respondents are more likely not to expect building of Kosovo C to have any economic effects on their households, while rural participants are more likely to expect negative effects from it. The main reasons why respondents expect positive economic effects of the project include increased employment opportunities and increased quantities of electric power for export.

At present, from the surveys carried out and other stakeholder engagement activities, the project is expected to have both positive (employment and economic) and negative (pollution) impacts on surrounding communities. Resettlement is also an area of potential concern.

Most residents of the area of interest have a generally positive opinion about the plan/activities for the mine and voice their support for it (37% strongly and 35% generally support the plan). Rural respondents were more likely to support (41% strongly and 35% generally support) and urban respondents were more likely to oppose (13% strongly and 16% generally oppose) the plan.

Grabovci Poshtem (53%), Hade (48%) and Lajthishte (46%) had the greatest number of strong supporters of these activities, while Dardhishte had the greatest number of respondents who strongly oppose them (23%).

5.2.10 

Consultation

Past consultation in the area has been poor or non-existent. The majority of people support the building of Kosovo C and further mine development, but also want to play a meaningful part in the decision-making process of the project. The project provides a good opportunity to establish a comprehensive and representative consultation mechanism. If the project’s current approach to informed consultation continues (through community development forums and communication with key stakeholders, including Obiliq municipality) during mine development, this is likely to be beneficial to the overall sustainability of the project and the communities of the area of interest.
5.3 **IMPACTS RELATED TO SIGNIFICANT DEVELOPMENT VARIABLES COMMON TO ALL SCENARIOS**

As detailed in Section 4, the following aspects may influence choices relevant to the implementation of the new TPP:

- Timing of power plants and associated New Mining Field development;
- Location of the power plants; and
- Size of the units and plant technology.

The impacts connected to all the above aspects have already been partly discussed in Section 4 (see Paragraph 4.3.2) and will be further examined in the following. In particular, the impacts connected with site location will be analyzed in more detail in Paragraph 5.4.

5.3.1 **New Lignite Mine Development and Timing of Power Plants**

The development of the mine is linked to the TPP development strategy and coal demand in the existing plants; the additional impact identified, independent of the chosen alternative, is related to the required acquisition of 86% of Obiliq territory, an area of mostly fertile land, for the development of the New Mining Field.

During community consultation the lack of fertile land was raised as an issue (see Paragraph 3.4.10), however, most residents reported that they were not planning on extending current land ownership by purchasing additional land (Prism Research 08). This in addition to the planned resettlement should therefore limit the impact of this additional land acquisition.

Rapid development is associated with the following potential advantages:

- significantly improving the currently unfavorable trade balance through electricity export to neighboring countries (see Section 4);
- cost savings by building the whole plant without having to dismantle the construction organization and completing construction in a shorter time. This would also reduce environmental impacts related to construction activities; and
- faster employment increase.

On the other hand, the rapid strategy has the following potential disadvantages:

- accelerated need to organize resettlement (see Section 4) and hence
- accelerated need for financial and economic resources; and
- accelerated need to identify appropriate solution to issues of access to water resources.
Phased development has the following potential advantages:

- extended timeframe for funding requirements, with a consequent increase in number of potential private investors;
- reduction of financial risks, due to ability to adjust timing of installation in response to evolution in electricity market; and
- possibility to install the second 1,000 MW phase on the site of Kosovo A (which will be out of operation after 2017).

On the other hand, phased development has the following potential disadvantages:

- need to dismantle construction organization between the two 1,000 MW phases; hence
- major construction phase impact (longer total construction phase).

Rapid development would reduce the time communities are disrupted by construction impacts (traffic, noise etc) and limit the time between closure of Kosovo A and opening of Kosovo C. This would contribute to limiting further environmental pollution impacts from the plants on local settlements.

However, the need for rapid resettlement resulting from this option would exacerbate the current impacts discussed in Paragraph 3.4.11 of the baseline Chapter and Paragraph 5.2.5 of this Chapter. Resettlement has been identified as a major impact and communities have been impacted by previous resettlement. Without adequate planning and consultation further resettlement could lead to an increased impact significance.

The phased development option would increase the disruption to local communities caused by construction and lessen employment levels over the near term.

On the other hand, this approach would allow for appropriate levels of forward planning for resettlement of affected communities, including adequate consultation and allocation of alternative accommodation. A carefully planned schedule may assist in lowering the impact significance of resettlement on affected communities.

The advantages and disadvantages connected to different development of the mine are strictly connected to the chosen TPP development strategy; the only additional impact identified is related to the required acquisition of 86% of the Obiliq territory, an area of mostly fertile land, for the development of the New Mining Field.

During community consultation the lack of fertile land was raised as an issue (see Paragraph 3.4.10), however, most residents reported that they were not planning on extending the current land ownership by purchasing additional land (Prism Research 08). This in addition to the planned resettlement should therefore limit the impact of this additional land acquisition.
5.3.2 Size of the Units and Plant Technology

Please refer to Section 4 for a detailed comparison of different plant technologies (pulverized fired – PF or circulating fluidized bed - CFB) in terms of efficiency and applicable unit size.

In summary the advantages associated with different unit sizes are the following:

- 300 MW: higher operating flexibility; possibility to use CPB technology and as a consequence avoid large wet desulphurization units (DeSOx); no need for limestone; impacts from lengthy construction phase (for larger space requirements) avoided;
- 500 MW: more efficient technologies applicable; lower greenhouse gases emissions; supercritical steam production applicable; all units required (to reach 2,000 MW) would fit in a smaller site.

The disadvantages associated with different unit sizes are the following:

- 300 MW: lower efficiency and as a consequence higher greenhouse gases emissions; more units required (to reach 2,000 MW), larger land take required;
- 500 MW: lower operating flexibility; need for DeSOx equipment and, as a consequence, major raw material need (limestone) and major waste production (gypsum).

As already pointed out in Paragraph 5.1.4, water resources availability could be a problem for the foreseen development. There are two options for the cooling system: wet and dry cooling towers.

Dry cooling towers, i.e. a cooling system utilizing air instead of water, could drastically reduce water consumption and avoid the need for a pond at the Kosovo C power station. Dry cooling towers are very expensive, however, and significantly increase unit energy consumption and decrease net efficiency. In addition, they occupy larger areas for lower net cooling; condenser pressure is higher and overall efficiency of the power plant is decreased, with higher greenhouse gas emissions.

An hybrid solution could be the most viable solution.
5.4 COMPARISON OF ALTERNATIVE SCENARIOS (SITE LOCATION)

5.4.1 Preamble

In the present Section, the most important environmental and socio-economic parameters/indicators impacted directly by site selection are presented, in order to compare the three different scenarios identified with the present situation and suggest the “most preferred” option (in terms of site location).

In particular, the following paragraphs present:

- the identification and analysis of environmental and socio-economic parameters/indicators directly/indirectly connected and relevant to site selection (Paragraph 5.4.2);
- the proposed methodology for indicators/parameters significance evaluation (Paragraph 5.4.3);
- the comparison of alternative sites (Paragraph 5.4.4).

5.4.2 Parameters/Indicators Directly/Indirectly Connected and Relevant for Site Selection

Not all the above described/evaluated indicators (see Paragraphs 5.1 and 5.2) have different direct/indirect influence concerning site selection and requirements for power plants development. This section refers only to the variables that have an influence on site selection; the parameters analyzed elsewhere are considered not linked to the selection of the site and are therefore not considered here.

The most important environmental and socio-economic parameters/indicators impacted directly by site selection (and therefore relevant for the comparison of the three different scenarios identified in terms of site location) are:

- Climate and Air quality: population downwind of the future power plants;
- Geology: type of soil;
- Seismicity;
- Morphology: hilly or flat site;
- Quality of groundwater and soil (a contaminated soil is preferred provided that soil is reclaimed before power plant construction);
- Land use: occupation of greenfield or brownfield (brownfield is preferred);
- Surface water reserves: distance from areas at risk of flooding;
- Noise: number of houses less than 1,000 m from the boundary of the power plants (and within 200 m from the belt conveyors);
- Landscape - visual impact: distance from nearest village;
- Natural and protected areas: vicinity to protected areas;
- Flora and fauna: number QUALITY of impacted species;
• Natural resources: distance from lignite mine;
• Electric line: vicinity of 400 kV switchyard;
• Land ownership: proportion of KEK and privately owned land;
• Belt conveyors: existing or new required; and
• Connections (railways, roads, water canal): existing or new required.

Moreover, the social analysis of the potential impacts on affected communities does not lend itself to strict parameters and indicators of significance using a quantative approach. The majority of the information we have gained from communities is largely subjective and these impacts cannot be directly linked or ‘de-linked’ with the project without further specific assessment. There are two main issues that are having and will continue to have an impact on local communities and these are land acquisition and resettlement and air and noise pollution, which are discussed in detail in other parts of the report. Moreover, such parameters, as well as employment, depend mainly on mining development rather than on power plants location.

Nevertheless, the following socio-economic parameters/indicators will be considered in the evaluation:

• Land acquisition and resettlement of communities;
• Health and related impacts such as air, water and noise pollution (indirect indicator, already included in the above environmental parameters);
• Employment and labour rationalisation (indirect indicator, since the type of skills needed to work in the mine development are dependent on prevailing training and education capacity of the local communities and local and national government).

5.4.3 Proposed Methodology for Indicators Significance Evaluation

Since the parameters/indicators presented in the previous paragraph have been identified mainly to describe and compare the different development scenarios, the potential impact connected to site selection will be evaluated assigning to each parameter/indicator a different weight in terms of significance of the impact, taking into account:

• the area of impact: impacting large or small area and many or few people/households;
• the impacted resources: protected/rare resources or renewable.

Based on the above, the significance of each parameter/indicator will be evaluated according to the matrix presented in Table 5.4.3a.
### Table 5.4.3a Significance Evaluation Matrix

<table>
<thead>
<tr>
<th>Resources</th>
<th>Weight</th>
<th>People/Area</th>
<th>Few households/Local</th>
<th>Village/Local</th>
<th>Villages/Regional</th>
<th>Villages/Transboundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common/renewable/non strategic</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Common/non renewable/non strategic</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Common/renewable/strategic</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Rare/renewable/non strategic</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

As presented in the above table, the weights range from 1 (low impact) to 16 (high impact). Table 5.4.3b presents the global weight assigned to each environmental and socio-economic parameter/indicator.
### Table 5.4.3b  
**Global Weight of Significant Environmental and Socio-Economic Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Global weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate and air quality: approximate number of houses downwind of the future power plant (considering the prevailing wind direction and a buffer zone of 1 km)</td>
<td>4</td>
</tr>
<tr>
<td>Geology: type of soil (terrain foundation)</td>
<td>1</td>
</tr>
<tr>
<td>Seismicity</td>
<td>1</td>
</tr>
<tr>
<td>Morphology: hilly or flat site</td>
<td>2</td>
</tr>
<tr>
<td>Quality of groundwater and soil (potential pollution)</td>
<td>9</td>
</tr>
<tr>
<td>Land use: occupation of greenfield or brownfield</td>
<td>6</td>
</tr>
<tr>
<td>Surface water reserves: distance from Sitnica River flood risk area</td>
<td>9</td>
</tr>
<tr>
<td>Noise: approximate number of houses within 1,000 m (buffer zone) from power plants (and 200 m from belt conveyors)</td>
<td>4</td>
</tr>
<tr>
<td>Landscape – visual impact: distance between center of power plant and center of nearest village</td>
<td>6</td>
</tr>
<tr>
<td>Natural and protected areas: vicinity of protected areas</td>
<td>12</td>
</tr>
<tr>
<td>Flora and fauna: number/quality of impacted species</td>
<td>12</td>
</tr>
<tr>
<td>Natural resources: distance from lignite mine</td>
<td>2</td>
</tr>
<tr>
<td>Electric line: vicinity of 400 kV switchyard</td>
<td>2</td>
</tr>
<tr>
<td>Land ownership: KEK owned or private</td>
<td>1</td>
</tr>
<tr>
<td>Belt conveyors: existing or new required</td>
<td>2</td>
</tr>
<tr>
<td>Connections (railways, roads, water canal): existing or new required</td>
<td>2</td>
</tr>
<tr>
<td>Land acquisition and resettlement of communities</td>
<td>8</td>
</tr>
<tr>
<td>Employment and labor rationalization</td>
<td>12</td>
</tr>
</tbody>
</table>

### 5.4.4  
**Comparison of Alternative Scenarios**

A brief description of  
The relevant environmental and socio-economic parameters/indicators, identified and evaluated in the previous paragraphs, are presented in summary in **Table 5.4.4a** for each alternative site, in order to compare the likely levels of impact.

### Table 5.4.4a  
**Environmental and Social Indicators in Three Site Alternatives**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>TPP C close to TPP A</th>
<th>TPP C close to TPP B</th>
<th>TPP C close to Bivolak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate and air quality: approximate number of houses downwind of the future power plant (considering the prevailing wind direction and a buffer zone of 1 km)</td>
<td>31 (see Map 4)</td>
<td>0 (see Map 5)</td>
<td>140 (see Map 6)</td>
</tr>
<tr>
<td>Geology: type of soil (terrain foundation)</td>
<td>Alluvium</td>
<td>Alluvium</td>
<td>Lignite and alluvium</td>
</tr>
<tr>
<td>Seismicity</td>
<td>Same seismic conditions in the three sites (additional geophysics study for micro seismic conditions required)</td>
<td>Same seismic conditions in the three sites (additional geophysics study for micro seismic conditions required)</td>
<td>Same seismic conditions in the three sites (additional geophysics study for micro seismic conditions required)</td>
</tr>
<tr>
<td>Indicator</td>
<td>TPP C close to TPP A</td>
<td>TPP C close to TPP B</td>
<td>TPP C close to Bivolak</td>
</tr>
<tr>
<td>------------------------------------------------------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Morphology: hilly or flat site</td>
<td>Flat, no significant change in visual aspect</td>
<td>Flat, no significant change in visual aspect</td>
<td>Undulating hilly, significant change in visual aspect</td>
</tr>
<tr>
<td>Quality of groundwater and soil (potential pollution)</td>
<td>Old structures to be dismantled; uncertainties regarding environmental liabilities (extensive phenol contamination)</td>
<td>Presence of a huge ash dump, to be removed</td>
<td>The green area is probably clean</td>
</tr>
<tr>
<td>Land use: occupation of greenfield or brownfield</td>
<td>Industrial site</td>
<td>Industrial site</td>
<td>Agricultural site</td>
</tr>
<tr>
<td>Surface water reserves: distance from Sitnica River flood risk area</td>
<td>Site outside flood risk area</td>
<td>Site inside flood risk area</td>
<td>Small part of layout inside flood risk area.</td>
</tr>
<tr>
<td>Noise: approximate number of houses within 1,000 m (buffer zone) from power plants (and 200 m from belt conveyors)</td>
<td>906</td>
<td>330</td>
<td>338</td>
</tr>
<tr>
<td>Landscape – visual impact: distance between center of power plant and center of nearest village</td>
<td>About 1,700 m from Obiliq</td>
<td>About 1,400 m from Obiliq and about 1,700 m from Plemetin</td>
<td>About 700 m from Bivolak</td>
</tr>
<tr>
<td>Natural and protected areas: vicinity of protected areas</td>
<td>No natural or protected area present in area of interest</td>
<td>No natural or protected area present in area of interest</td>
<td>No natural or protected area present in area of interest</td>
</tr>
<tr>
<td>Flora and fauna: number/quality of impacted species</td>
<td>No particular species will be impacted by the project</td>
<td>No particular species will be impacted by the project</td>
<td>No particular species will be impacted by the project. Nevertheless since the site is a greenfield, some disturbance of existing vegetation and fauna probable</td>
</tr>
<tr>
<td>Natural resources: distance from lignite mine</td>
<td>About 5 km from Sibovc SW</td>
<td>About 4 km from Sibovc SW</td>
<td>About 5 km from Sibovc SW</td>
</tr>
<tr>
<td>Electric line: vicinity of 400 kV switchyard</td>
<td>400 kV switchyard located ca 2 km from site</td>
<td>400 kV switchyard located less than 1 km to NE of site</td>
<td>Site is 3 km from switchyard</td>
</tr>
<tr>
<td>Land ownership: KEK owned or private</td>
<td>KEK owned</td>
<td>KEK owned</td>
<td>Private ownership</td>
</tr>
<tr>
<td>Belt conveyors: existing or new required</td>
<td>A double conveyor belt from Bardh/Mirash mines is already in place</td>
<td>A double conveyor belt from Bardh/Mirash mines is already in place</td>
<td>A new belt would be required</td>
</tr>
<tr>
<td>Connections (railways, roads, water canal): existing or new required</td>
<td>Existing good rail and road connection. Site next to Iber-Lepenc canal</td>
<td>Existing good rail and road connection. Site is 1 km from Iber-Lepenc canal and existing connection to canal already available</td>
<td>A new 5-6 km access road with bridge would be required. Iber-Lepenc canal should be extended about 3 km</td>
</tr>
</tbody>
</table>
Table 5.4.4b compares the likely levels of impact across the three development scenarios. In particular, for each parameter/indicator, the three alternative sites are given different values:

- 1 meaning the best solution (lowest impact);
- 2 meaning the mean solution (mean impact);
- 3 meaning the worst solution (highest impact).

In case the impact is the same in all sites, all will have a value equal to 2; in case two sites are equal and one is better (or worse), two sites will have 3 and the other will have 1 (or two sites will have 1 and the other 3).

The result presented for each parameter/indicator and in each site is obtained multiplying the global weight of the indicator (as defined in Table 5.4.3b) for the corresponding value for the site. The global result is the sum of the results of each single indicator.
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Global weight</th>
<th>Score for TPP C close to TPP A</th>
<th>Result (Weight * score)</th>
<th>Score for TPP C close to TPP B</th>
<th>Result (Weight * score)</th>
<th>Score for TPP C close to Bivolac</th>
<th>Result (Weight * score)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate and air quality: approximate number of houses downwind of the future power plant (considering the prevailing wind direction and a buffer zone of 1 km)</td>
<td>4</td>
<td>2</td>
<td>8</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Geology: type of soil (terrain foundation)</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Seismicity</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Morphology: hilly or flat site</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Quality of groundwater and soil (potential pollution)</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td>2</td>
<td>18</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>Land use: occupation of greenfield or brownfield</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Surface water reserves: distance from Sitnica River flood risk area</td>
<td>9</td>
<td>1</td>
<td>9</td>
<td>3</td>
<td>27</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Noise: approximate number of houses within 1,000 m (buffer zone) from power plants (and 200 m from belt conveyors)</td>
<td>4</td>
<td>3</td>
<td>12</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Landscape - visual impact: distance between center of power plant and center of nearest village</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>12</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Natural and protected areas: vicinity of protected areas</td>
<td>12</td>
<td>2</td>
<td>24</td>
<td>2</td>
<td>24</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td>Flora and fauna: number/quality of impacted species</td>
<td>12</td>
<td>1</td>
<td>12</td>
<td>1</td>
<td>12</td>
<td>3</td>
<td>36</td>
</tr>
<tr>
<td>Natural resources: distance from lignite mine</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Electric line: vicinity of 400 kV switchyard</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Land ownership: KEK owned or private</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Belt conveyors: existing or new required</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Connections (railways, roads, water canal): existing or new required</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Land acquisition and resettlement of communities</td>
<td>8</td>
<td>2</td>
<td>16</td>
<td>2</td>
<td>16</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Employment and labor rationalization</td>
<td>12</td>
<td>2</td>
<td>24</td>
<td>2</td>
<td>24</td>
<td>2</td>
<td>24</td>
</tr>
<tr>
<td><strong>Global result</strong></td>
<td></td>
<td>143</td>
<td>162</td>
<td>230</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the following is presented a brief explanation of the score assigned (1 to 3) to each parameter/indicator in each potential site, followed by a discussion on site selection.
**5.4.4.1 Explanation of Score Assigned to Each Parameter/Indicator**

**Climate and Air Quality: Population Downwind of the Future Power Plants**

The emissions from the new plants will be the same for the three sites (they depend only on technology and size of the plants), therefore no differences are foreseen due to site selection, even considering that the possible overlapping of operation of Kosovo A and Kosovo C will produce an increase of the present level of air emissions.

The emissions from the new plants will be the same for the three sites (they depend only on technology and size of the plants), therefore no differences are foreseen due to site selection (the impact extension is an area of about 15 km radius).

Given the height of the stack, the dilution of flue gas with air of cooling towers, the large quantity and temperature of the flue gas, it is expected that the largest immission values will occur at about 10 km from the emission point and that ground concentration will be low as compared with EU standard (see Poyry study). Therefore, the location of the power plant will have a scarce influence of this issue.

Although the future power plant and lignite supply system will be properly designed, it is likely that some dust emission will occur. This emission is likely to impact local population and climate conditions (mainly wind direction, which is predominantly blowing from north and northeast) may have an effect on air quality. Therefore the three potential locations present differences in terms of the approximate number of houses downwind (considering the prevailing wind direction and a buffer zone of 1 km):

- 31 for the site close to TPP A (see Figure 5.4.4.1a);
- 0 for the site close to TPP B (see Figure 5.4.4.1b);
- 140 for the site close to Bivolac (see Figure 5.4.4.1c).

**Geology: Type of Soil**

In terms of terrain foundation, the three alternative sites are quite similar: while sites close to Kosovo A and Kosovo B are alluvium, the one close to Bivolac is lignite and alluvium.

**Seismicity**

According to the information provided by the Seismologic Institute of Ministry of Energy and Mines¹, the three proposed locations are characterized by the same seismic conditions.

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¹ Documentation:
- Studies to support the development of new generation capacities and related transmission, EAR, 2007. Task 4 - Site selection, Volume 2 – Study Report, Annex – Profile description and data analysis
Additional geophysics study for micro seismic conditions will be required during project development.

**Morphology: Hilly or Flat Site**

In terms of morphology, the three alternative sites are quite different: while the sites close to Kosovo A and Kosovo B are flat (and do not need any modeling), the one close to Bivolac is undulating hill. Moreover, from a landscape point of view Kosovo A and B are preferable also considering they are already impacted and no significant change in visual is foreseen.

**Quality of Groundwater and Soil**

In terms of potential soil pollution, the situation is the following:

- Site close to Kosovo B: presence of a huge ash dump, to be removed;
- Site close to Kosovo A: old structures to be dismantled; big question mark on environmental liabilities (extensive phenol contamination);
- Site close to Bivolac: the green area is probably clean.

The score has been considered assuming that the best location is the one in the most polluted area, because such selection implies the necessity for clean up and remediation activities before the construction of the new plants.

**Land Use: Occupation of Greenfield or Brownfield**

In terms of land use, the three alternative sites are quite different: while the sites close to Kosovo A and Kosovo B are dedicated (industrial), the one close to Bivolac is agricultural.

**Surface Water Reserves: Distance from Areas at Risk of Flooding**

Considering the flooding risk:

- The site close to Kosovo B is inside the flooding risk from Sitnica river (see Figure 5.4.4.1b);
- The site close to Kosovo A is outside the flooding risk from Sitnica river (see Figure 5.4.4.1a);
- A small part of the layout in the site close to Bivolac is inside the flooding risk from Sitnica river (see Figure 5.4.4.1c).

*Figure 5a* presents the overall flooding area.

**Noise: Number of Houses less than 1,000 m from the Boundary of the Power Plants (and within 200 m from Belt Conveyors)**

The three potential locations present differences in terms of number of houses within 1,000 m (buffer zone) from the power plants:

- ICMM, Geology, Geological_Map_Kosovo_200000, Tectonic_Map_Kosovo_200000
• 906 for the site close to TPP A (see Figure 5.4.4.1a);
• 330 for the site close to TPP B (see Figure 5.4.4.1b);
• 338 for the site close to Bivolac (see Figure 5.4.4.1c).

**Landscape - Visual Impact: Distance from Nearest Village**

In terms of distances between the center of the power plant and the center of the nearest villages, the situation (see Figure 5a) is the following:

• the site close to TPP A is about 1,700 m from the center of Obiliq;
• the site close to TPP B is about 1,400 m from the center of Obiliq and about 1,700 m from the center of Plementina;
• the site close to Bivolac is about 700 m from the center of Bivolac.

**Natural and Protected Areas: Vicinity of Protected Areas**

No natural or protected area is present in the area of interest.

**Flora and Fauna: Number/Quality of Impacted Species**

No particular species will be impacted by the project. Nevertheless Bivolac site is a green field and therefore some trouble to the existing vegetation and fauna is foreseen.

**Natural Resources: Distance from Lignite Mine**

In terms of vicinity of lignite fuel (see Figure 5a), the three alternative sites are quite different:

• The site close to Kosovo B is 4 km from Sibovc SW;
• The site close to Kosovo A is 5 km from Sibovc SW;
• The site close to Bivolac is 5 km from Sibovc SW.

**Electric Line: Vicinity of 400 kV Switchyard**

In terms of vicinity of the 400 kV switchyard (see Figure 5a), the three alternative sites are quite different:

• the 400 kV switchyard is located less than a kilometre to NE from Kosovo B site;
• the 400 kV switchyard is located some 2 kilometres from Kosovo A site;
• Bivolac is 3 km from the switchyard.
**Land Ownership: Proportion of KEK and Privately Owned Land**

In terms of land ownership (see Figure 5a), the three alternative sites are quite different: while the sites close to Kosovo A and Kosovo B are KEK owned, the one close to Bivolac is private.

**Belt Conveyors: Existing or New Required**

In terms of existence of belt conveyors (see Figure 5a), the three alternative sites are quite different: while for the sites close to Kosovo A and Kosovo B a double conveyor belt from Bardh/Mirash mines is already in place, for the site close to Bivolac a new belt would be required.

**Connections (Railways, Roads, Water Canal): Existing or New Required**

In terms of connections (see Figure 5a), the three alternative sites are quite different: while the sites close to Kosovo A and Kosovo B have existing good rail and road connection, for the site close to Bivolac a new 5-6 km access road with bridge would be required.

Moreover, in terms of water supply, the three alternative sites are quite different (see Figure 5a):

- The site close to Kosovo B is 1 km from the Ibër-Lepenc canal and an existing connection to the canal is already available;
- The site close to Kosovo A is next to Ibër-Lepenc canal;
- For the site close to Bivolac the Ibër-Lepenc canal should be extended about 3 km.

**Land Acquisition and Resettlement of Communities**

Local villages will need to be resettled elsewhere. As mentioned earlier, local communities are quite willing to be resettled because of current conditions but would prefer to be moved in one phase or at least in a short amount of time. Moreover, since people are already moving out of the Mine development area to look for jobs and a better environment, the significance of impact of the three different site location is probably very small. Findings from the consultations and the households survey would suggest that little difference are noted for the different sites expect for the Kosovo B site option. As the village of Plemetin is very close to the proposed site there would be an impact on this village characterized by increased noise and increased pollution during construction.

The affected area is rural with a few fairly large, nucleated or semi-nucleated villages. The total population of the affected area is estimated at around 1500 families. The largest villages are Hade, Shiptulle, Lajthishte, Sibovc and Plemetin.

The affected areas can be divided into three separate categories:

- the areas that will be directly required for the mining and power complex, including the areas needed for any ancillary facilities. If
Kosovo C is built within the boundaries of the Kosovo A or B plant, there will be no need for additional land acquisition for the power plant;

- the areas required for the safety zone of the mine (i.e. in the 200m or more from the side of the excavations) and the safety zones for any new roads, sub-stations and transmission lines;
- the areas that are not required for the mining and power complex or for the formal safety zones but which suffer or will suffer significant social and environmental impacts: such as dust, noise, light, air pollution and contamination of ground and surface water, etc [Source: LPTAP Resettlement Policy Framework].

**Employment and Labor Rationalization**

Employment opportunities and rationalization will be the same independently on site selection.

### 5.4.4.2 Discussion

According to what presented in the above Table 5.4.4a, the “preferred option” (in terms of site location) would be to build the new power plants close to the existing Kosovo A plant, although the score for the alternative site near Kosovo B is very close. The site at Bivolak should be excluded since it has a very high score.

In terms of limiting factors:

- Kosovo A contains old structures to be dismantled and has several uncertainties regarding environmental liabilities (extensive phenol contamination) due to past operations;
- Kosovo B has a huge ash dump to be removed from the potential location and the site is inside the area of flooding risk from Sitnica River.

The utilisation of the old gasification and fertiliser plant areas for the development of Kosovo C power plants would allow the safe dismantling of old contaminated equipment and cleaning up the soil and the area during the construction of the power plants. Personnel from the Kosovo C power plant would perform monitoring of possible soil contamination and control potential remediation activities.

Should phased development be chosen, the last units for Kosovo C could be constructed on the site of Kosovo A after proper decommissioning of existing facilities and soil reclamation. This would allow a reduction in overall land occupation as reclaimed land from the old gasification and fertilizer plant area could be used to install the last units of Kosovo C. At least a portion of the noisy equipment would be further away from Plemetin. On the other hand, this solution would increase the impacts on inhabitants of Obiliq.
6 MITIGATION MEASURES AND MONITORING PLAN

The present section describes the proposed Strategic Environmental and Social Management Plan (SESMP) and includes:

- recommended mitigation measures based on recognised environmental impacts connected to the present situation;
- proposed socio-economic mitigation measures;
- recommendations with regard to the legislative and institutional framework;
- proposed environmental monitoring plan.

6.1 MITIGATION MEASURES

Proposed mitigation measures have been identified based on the analysis undertaken in the framework of the Environmental Assessment and fully validated based on the findings of the Environmental and Social Baseline, which is fully detailed under Section 3.

6.1.1 Environmental Mitigation Measures

Identified environmental findings and non compliances with international (EU and World Bank) regulations and Former Yugoslavia regulations, when applicable, together with related proposed environmental mitigation measures are fully described in Table 6.1.1a, including:

- ID – a progressive code;
- Description of the issue – a concise description is given in the table, together with reference to the section of the study where full details are available;
- Mitigation Measure – description of proposed mitigation measures to be addressed;
- Timing – a rough timeline to undertake the mitigation measure is reported based on ERM experience and available technical data;
- Estimated Cost - when estimated cost is below 25,000 Euro an indication of Minor costs is reported.

The mitigation measures have been grouped by environmental issue (e.g. air emissions, wastewater effluents, etc.); in addition, under the section on human health, there are several urgent safety measures that are recommended to be implemented as soon as possible.

With regard to timing, no detailed implementation schedule can be provided at this stage with regard to mitigation measures due to many uncertain issues to be defined in the course of the Project "Private sector participation in the
development of new generation capacity, related transmission and the development of the Sibovc lignite field”.

As far as the cost estimate is concerned, it should be highlighted that, in view of the nature of this study, it has not been feasible to secure even budgetary costings from major technology vendors. The Consultant has thus undertaken the cost estimation almost wholly based on in-house data and experience from similar plants and projects. Therefore, the presented costings have to be considered as indicative estimates for budget allocation. To provide a more detailed estimate, a more in-depth analysis of full applicability of proposed design solutions and a validation of collected data (e.g. through direct monitoring) should be undertaken.

Finally, it should be noted that the mitigation measures reported in this section are related to the existing facilities and to historical and current activities undertaken at the sites. Mitigation measures related to Project development are included in the NMFDP.

Table 6.1.1a Proposed Mitigation Measures

<table>
<thead>
<tr>
<th>ID</th>
<th>Issue</th>
<th>Proposed Mitigation Measures</th>
<th>Cost Estimate (Euro)</th>
<th>Timing</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Human Health</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Burning of open mines and explosion/burning of waste dump sites</td>
<td>Immediate securing (including fencing) of the open mine and waste dump sites to prevent unauthorized access</td>
<td>Minor costs</td>
<td>3 month</td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Risk of exposure to hazardous substances into the open pits/open dumps</td>
<td>Implement access restriction devices and maintain them in operation through a periodic verification service</td>
<td>Minor costs</td>
<td>1 month</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Direct contact with contaminated soils (with particular reference to TPP B ash dumps, et.) Based on available data and potential future monitoring to be undertaken, impacted soil mapping should be prepared and appropriate fencing/labelling should be introduced</td>
<td>Minor costs</td>
<td>1 year</td>
<td>This activity should be preliminary to the reclamation of the dump as per EAR project1</td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Ingestion of contaminated food</td>
<td>Based on available data with regard to soil quality, adequate land use should be ascertained; quality of water for irrigating purposes should be also monitored with particular reference to private wells in rural areas</td>
<td>Minor costs</td>
<td>1 year</td>
<td>See above</td>
</tr>
<tr>
<td>1.5</td>
<td>Pollution at work places (dust, noise emissions, etc.) Monitoring campaign on noise to measure 8 hours dose and air quality especially at the mines</td>
<td>Minor cost</td>
<td>3 months</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) : Site Investigation, Technical Organisation, Planning and Determination of Environmental Impact” was initiated (July 2007) as part of the Clean up and Land Reclamation Project (CLRP)
<table>
<thead>
<tr>
<th>ID</th>
<th>Issue</th>
<th>Proposed Mitigation Measures</th>
<th>Cost Estimate (Euro)</th>
<th>Timing</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Air emissions and air quality monitoring</td>
<td>Installation of continuous monitoring devices at TPPA and TPPB stacks and introduction of air quality monitoring in Obiliq Municipality and surrounding affected areas. Air monitoring details are further described in Paragraph 6.2.</td>
<td>570,000</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Particulate emissions from TPPA</td>
<td>Feasibility Study to install new electrostatic precipitators. Due to the state of the plant only limited interventions are possible. A feasibility study to reduce particulate emissions could provide support in the identification of most suitable action.</td>
<td>50,000 feasibility</td>
<td>3 months + 1 year</td>
<td>A request for proposal for a feasibility study was already requested by EAR.</td>
</tr>
<tr>
<td>2.3</td>
<td>NOx, SOx from TPPA</td>
<td>TPP A not in compliance with EU air emission standards. Due to the state of the plant, only limited interventions are likely possible to allow operation until 2017. A feasibility study is proposed.</td>
<td>50,000 Feasibility</td>
<td>3 months</td>
<td>The program to comply with EU standards has to be agreed with the competent authority</td>
</tr>
<tr>
<td>2.4</td>
<td>NOx, SOx and Particulate emissions from TPPB</td>
<td>TPPB not in compliance with EU standards. Feasibility study and installation of DeSOx/DeNOx end revamping of existing electrostatic precipitator required as soon as possible, after feasibility study and agreement with authority.</td>
<td>50-100 millions</td>
<td>18 months</td>
<td>See above</td>
</tr>
<tr>
<td>2.5</td>
<td>Particulate emissions from TPP A transport system and from ash dumps</td>
<td>Hydraulic ash transportation, flattening side slopes and establishing vegetation on newly formed surfaces where deposition has been stopped. Refer to Final outputs of Clean-Up and Remediation Project.</td>
<td>See Waste Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6</td>
<td>Particulate emissions from TPP B ash dumps</td>
<td>See Point 4.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Water Supply and Wastewater Effluents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Water recycle and reuse</td>
<td>A water balance should be prepared including quantities of water consumed per each activity, source, use and final discharge. Based on this balance, possible water consumption reduction measures should be identified and implemented (reuse, recycle, etc.). A periodical monitoring campaign of water (e.g. on a yearly basis) should be evaluated. The installation of a proper waste water treatment plant (water reuse plant) capable of recycling the discharge and diminishing water consumption is strongly recommendable for TPP C</td>
<td>Minor costs</td>
<td>1 year</td>
<td></td>
</tr>
</tbody>
</table>

(2) EAR request for proposal 2007: Assessment of the technical status of the existing electrostatic precipitators of Kosovo A3 and A4 units
<table>
<thead>
<tr>
<th>ID</th>
<th>Issue</th>
<th>Proposed Mitigation Measures</th>
<th>Cost Estimate (Euro)</th>
<th>Timing</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td>Effluents from TPPs</td>
<td>Wastewater treatment plant at TPP A and TPP B and sewer system revamping, including separation of process water from rain water (to be collected and used as process water to reduce raw water consumption) and recycling of wastewater. For TPP A revamping, see comments above.</td>
<td>2-4 millions</td>
<td>18 months</td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Mine water</td>
<td>Installation of settling ponds to reduce the load of suspended solids and coal dust in mine water (STEAG 2006).</td>
<td>200,000</td>
<td>1 year</td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>Contaminated stormwater due to leaching of contaminated soils/waste heaps including TPP A and TPP B ash dumps</td>
<td>Leachates from contaminated soils and waste heaps should be collected and treated in dedicated WWTP.</td>
<td>See below</td>
<td>See below</td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>As above</td>
<td>In the long-term, capping/recycling of contaminated soils/waste heaps to avoid leaching should be addressed.</td>
<td>See section Waste Management 4.1 and 4.2</td>
<td>See section Waste Management 4.1 and 4.2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Waste Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Ash dump at TPP A (including by-products of former gasification plant) and outside overburden dumps</td>
<td>Based on findings of the CLRP investigation phase and Interim Report, plans for: - Conversion of present dry dumping of TPP A ash to wet ash removal and covering ash dumps surfaces with cohesive material; - Partial removal of ash and overburden from unstable areas of ash dump TPP A as well as outside overburden dumps; - implementation of proper measures to avoid washing out of area where high risk contaminants from former gasification and fertilizer plants are located.</td>
<td>Refer to CLRP Draft Report</td>
<td>Refer to CLRP Draft Report</td>
<td>Refer to CLRP Draft Report</td>
</tr>
<tr>
<td>4.2</td>
<td>Ash dump TPP B</td>
<td>Complete ash dump characterization based on waste inventory in terms of types, amount and current location, including chemical characterisation by means of waste excavation, sampling and chemical analysis. Risk assessment of potential impacts deriving from presence of waste with regard to release into air, surface water, groundwater and soil.</td>
<td>400,000 for the characterization (60,000 for risk analysis)</td>
<td>12 months</td>
<td>The vicinity of Sitnica River and the frequent floodings require an immediate examination of the problem</td>
</tr>
<tr>
<td>ID</td>
<td>Issue</td>
<td>Proposed Mitigation Measures</td>
<td>Cost Estimate (Euro)</td>
<td>Timing</td>
<td>Comments</td>
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<td>-----</td>
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</tbody>
</table>
| 4.3 | Ash dump TPP B                             | Based on risk assessment results, mitigation measures should be designed and implemented including:  
- removal of ash from unstable areas;  
- ash dump capping (waste should be adequately profiled in order to assure stormwater runoff discharge and then capped with geomembranes and cohesive material) | Additional data are needed for the estimation of partial removal and transport of ash  
About 20,000 Euro/ha for capping | To be defined based on the results of investigation phase |                                                                          |
<p>| 4.4 | Waste management TPP A, TPP B and mines    | Preparation of a waste management plan                                                       | Minor cost                                   | 1 year                     |                                                                          |
| 5   | Noise                                      | A noise survey should be undertaken both at the workplace or at the main receptors to be identified. A proper comparison with applicable standards should be performed in order to ascertain potential non compliance and necessary mitigation measures. | Minor cost                                   | 6 month                     |                                                                          |
| 6   | Chemicals and hazardous substances         |                                                                                             |                                               |                            |                                                                          |
| 6.1 | Chemicals/oils/coal                       | An inventory of chemicals stored and handled at the power plant and mines site should be prepared including details regarding age and status of maintenance of the tanks/drums, environmental protection devices presence (secondary containment, leakage detection system, etc) and an environmental management plan including periodical visual inspection and integrity testing should be put in place. | Minor cost                                   | 6 month                     |                                                                          |
| 6.2 | Asbestos containing materials              | A comprehensive ACMs inventory and mapping should be conducted to ascertain the presence, location and conservation status of the asbestos containing materials. | Minor cost                                   | 6 month                     |                                                                          |
| 6.3 | PCB-oils containing equipment              | A comprehensive inventory of all PCB-oil containing equipments installed at each site is recommended based on sampling and monitoring of potentially containing PCBs oils. | Minor cost                                   | 6 month                     |                                                                          |
| 7   | Soil and Groundwater                      |                                                                                             |                                               |                            |                                                                          |
| 7.1 | No detailed information is available with regard to local geology and hydrogeology. | Specific survey should be undertaken at the site including data review, monitoring wells and borehole drilling, core-logs preparation, phreatimetry elaboration and reporting. See for details Paragraph 6.2. | 75,000                                       | 6 months                    |                                                                          |</p>
<table>
<thead>
<tr>
<th>ID</th>
<th>Issue</th>
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<th>Cost Estimate (Euro)</th>
<th>Timing</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2</td>
<td>Groundwater monitoring at TPP A and TPP B ash dumps</td>
<td>Groundwater monitoring for TPP A and TPP B ash dumps should be carried out through a network of piezometers to be drilled downgradient of the ash dumps. Details on groundwater monitoring are reported in Paragraph 6.2</td>
<td>30,000</td>
<td>1 month for drilling and set up</td>
<td></td>
</tr>
<tr>
<td>7.3</td>
<td>River sediments characterisation</td>
<td>Sediment sampling should be undertaken every 250 m on the two banks of the Sitnica River. Sediment samples should be analyzed for: pH and heavy metals (Pb, Cd, Zn, Cu, Cr, Ni, As, Hg) and phenols.</td>
<td>25,000</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>7.4</td>
<td>Potential for air pollutants deposition on the soil from power plants</td>
<td>Superficial soil sampling is proposed in an area of 10 km radius from the power plants to ascertain potential risks for human health deriving from direct exposure and/or food chain pathways. See for details Paragraph 6.2.</td>
<td>30,000</td>
<td>6 months</td>
<td></td>
</tr>
<tr>
<td>7.5</td>
<td>Potential for air pollutants deposition on the soil from TPP A and TPP B ash dumps</td>
<td>Top soil sampling and analysis in the areas 1 km downwind of TPP A and TPP B ash dumps is foreseen, aimed at detecting presence of heavy metals and PAHs in the surface soil with particular reference to agriculture lands.</td>
<td>30,000</td>
<td>4-5 years</td>
<td></td>
</tr>
<tr>
<td>7.6</td>
<td>Presence of chemicals and waste from old gasification plant</td>
<td>Sampling program should be undertaken, along with analysis for disposal options, geologic/hydrogeologic/hydrologic survey for the site, tank emptying and disposal of hazardous waste [see also CLRIP]</td>
<td>6.9 millions</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Negative Side Effects Deriving from the Proposed Environmental Mitigation Measures**

The proposed environmental mitigation measures will obviously have a number of positive environmental impacts in terms of reduction of the pollution load and contamination status of the area.

However, in principle, it can not be excluded that implementation of the mitigation measures may be accomplished by negative environmental side effects deriving from the implementation of the mitigation measures.

The identification of negative side effects is at this stage not feasible since very little detail is available with regard to technical details (e.g. number and location of treatment facilities, necessary auxiliaries, generated wastes, etc.). However, based on ERM experience, it can be anticipated that, since no high impact treatment facilities are proposed (e.g. incinerators, abatement plants, etc.), these negative side effects are not expected to be significant.
6.1.2 Socio-Economic Mitigations

This section will describe both the project and strategic mitigation measures that will need to be adopted to reduce the negative impacts and to enhance the positive impacts of those described in the impacts section.

Demographics

There is currently insufficient information to determine the possible impacts on the entire demographics apart from the resettlement process. When the proposal for project development will be available, information on numbers of contract workers from outside the area will be known.

Any influx of foreign contract workers will need to be managed carefully. A better option would be to ensure a high rate of local employment. This would provide stability to the demographics as well as have a positive impact on the economics of the area and could possibly contribute to stemming the flow of young people leaving the area and the country.

According to the village consultations people are also leaving or want to leave the area because of the poor environmental conditions including air and noise pollution. The mine development needs to adequately address the existing pollution issues. Mitigating the current pollution would also have an indirect positive impact on the demographics of the area.

Economic Environment and Employment

As described in the baseline the economic and employment status of the mine development area is very low. Any opportunity for direct and indirect employment in the future mine development will have a positive effect on the economic situation of the area. Direct employment in the project such as technical, engineering and management roles would be the most directly advantageous. Preferential employment practices should be used by the developer, where possible. Contracting local people for jobs such as vehicle maintenance and catering services would also significantly improve the economic and employment profile of the affected communities. The increased income of local people would in turn benefit the local economy as whole as the multiplier effect would be instigated.

On a wider strategic level there is quite a serious skills shortage in the area, according to some government officials (source: interviews with Kosovo Ministry of Labour officials). Specifically this means that there is currently a discrepancy between the education that young people receive and the skills that are needed for Kosovo’s economy. The Ministry of Labour has a national network of local vocational training centres, including one in Obiliq, where young and unemployed people are trained in relevant skills. In order to optimize this resource the mine developer should liaise closely with these centres and draft a strategy that would identify skills shortages in the area and provide the relevant training.
This strategy would address skills shortages to meet both needs of the project and those of Kosovo as a whole.

The receipt of tax revenues from the project was raised by some residents at village meetings (please see Table 3.4.16e). Transparent and equitable distribution of tax revenues to the local area and royalties should be enhanced in order to ensure that the local communities derive the maximum benefit from the mine development.

Land Use and Resettlement

In addressing and mitigating the effects of resettlement there are several issues that need to be part of any planning of future resettlement:

- **Legal Land Title:** It is estimated that a significant number of residents in the rural areas do not have legal title for land and property in Hade and other communities. Under current Kosovo legislation these people would not be entitled to compensation. Whereas under international standards such as the World Bank’s Operational Policy on Involuntary Resettlement (OP 4.12), people without legal title are still entitled to compensation and assistance with moving;

- **Compensation Issues from 2003-2004:** There are still people who have not been compensated for the emergency evacuation in 2003;

- **Availability of agricultural land:** There is not enough replacement of agricultural land to resettle people who rely on farming for their livelihoods. Therefore:
  - revision of current land expropriation law should include clauses on household data collection, census and inventory;
  - the drafting of a Resettlement Action Plan should be a legal requirement when carrying out resettlement;
  - consultation should be an integral part of the resettlement process;
  - a government body responsible for resettlement should be established that includes representatives from different ministries in order to harmonise different government policies and approaches; and
  - to mitigate impacts on social networks, some level of mitigation could be achieved through a sensitive social support program that would take local people’s concerns and expectations into account. This should be closely integrated into any consultation strategy with the communities. It would include measures to remove and restore local historical and cultural sites, such as mosques, cemeteries, churches and war memorials. It should also include assistance to help the most vulnerable people, especially the elderly, readjust to their new homes and new locations, for instance, by facilitating contact with social and health services.
A separate Resettlement Policy Framework which conforms to international standards has been drafted for the LPTAP project (see Annex D), please refer to this for more detailed mitigation measures for resettlement.

Infrastructure

Roads
Due to the poor quality of local roads
The development plans should aim to upgrade roads leading to the project site or that will be used as a result of mining and power plant activities. Improving the local road system would benefit the local community and assist in reducing the impacts caused by large vehicles and additional traffic traveling on local roads.

In addition, road safety measures should be adopted including driver training for staff, road safety awareness training for local communities, appropriate road markings and signage and strict rules on vehicle handling for all staff.

Water Supply
As discussed in the baseline and impacts sections, the local water supply varies in quality and accessibility between settlements. The planned activities will require substantial amounts of water for operations, which will be sourced from the local water supply infrastructure (Iber-Lepenc system) through pipelines. As noted above in the section on environmental impacts, a number of steps will need to be taken to ensure adequate supply. Water consumption in the Kosovo C power plant has to be reduced as far as possible; the utilisation of a water reuse treatment plant or of an air cooling system could help in dealing with critical water issues.

In addition, improvements to the local water supply infrastructure should be implemented, which will be a major benefit to the local community.

Sewage
As discussed in previous sections the Project is required to build a waste water treatment plant. It is anticipated that some communities will be able utilizes this for household waste water. At present villages and other small settlements dispose of wastewater in open channels contaminating surface and groundwater. The introduction of a waste water treatment plant in the area will improve the environmental conditions of local water ways, therefore this is viewed as being a positive impact for local communities.

Solid and Liquid Waste Management
Waste management is addressed in Sections 3.3.5 and 5.1.6. Waste management will be addressed through improvements to ash management and overburden. The current method of disposal of ash at Kosovo A would
stopped and a safe waste storage facility will be developed at the Mirash Open Pit Mine. Improvements to waste management will have a positive impact on local communities who cited air pollution from waste ash as an issue (see Table 3.4.16a). All transportation of waste materials outside and between sites will need to be addressed to ensure waste is properly secured, safely transported and traffic movements are limited. Measures to address these issues are also cited within this report.

Health

Health is a major community concern and one that needs to be addressed in more detail. It is recommended that further study is carried out to understand the current health situation in the communities surrounding the project site and identify if and how the project impacts upon this. The impact significance of the project on community health will not be fully understood until this is carried out.

Social Networks

The impacts on social networks will come from a number of sources. Resettlement, influx of contract workers are project-related and should be mitigated by the measures identified. However, other prevailing conditions such as the status of the economy, recovery from the war and the impact of Kosovo’s new statehood continue to provide challenges for local communities which need integrated and transparent government polices to mitigate the negative impacts of the existing and future conditions.

Community Aspirations, Attitudes and Concerns

To mitigate against negative impacts (see Section 5), it is important that the Project manage community expectation, enhance employment opportunities and work with the local Government to aid training and alternative income initiatives. Combating negative attitudes by rehabilitating the current operation and lowering the level of pollution will also assist in minimising negative impacts in terms of community attitude towards the Project.

The majority of respondents to the household survey believe that meetings with municipal authority representatives would be the most effective way to inform the population of the area of interest about planned activities to upgrade the operation of the mine (31%); 22% of respondents opted for meetings with representatives of the mine; 16% for public meetings and gatherings; and 13% for television, while 12% said they did not know or refused to answer when asked about the most effective way to disseminate relevant information. Brochures, leaflets, daily newspapers and radio were the least frequently mentioned information sources. Moving forward effective communication and consultation is a key aspect of impact mitigation for the project. Current initiatives need to be maintained and reinforced.
6.1.3 Identification of Institutional Training and Strengthening to Implement Mitigations

Section 2 of this Report provides a description of the existing legislative framework related to environmental management at national, regional and local levels and a gap analysis with reference to relevant international standards and regulations.

The Section includes also most relevant recommendations on the following main issues of concern for the implementation of the Environmental Mitigation Measures:

- Air Emission and Air Quality;
- Wastewater and Water Supply;
- Waste Management;
- Hazardous Substances Management and Handling;
- Soil and Groundwater Quality.

A complete overview of the existing Institutional Framework for the protection of the environment is reported in Activity II First Draft SESA Report prepared by the Consultant and submitted on the 26th of October 2007.

The main considerations on capability of institutions at national and municipal levels, with regards to environmental management and monitoring are the following:

- The main institution empowered for the management of the protection of the environment in Kosovo is The Ministry of Environment and Spatial Planning (MESP). The MESP is responsible both for the general policies of environmental protection and spatial planning and the implementation of related regulations through its departments.
- Municipal structures communicate with central level through regional coordinators of the Ministry (5 main regional focal points). Only one Municipality has a special Directorate for the Environment while in the other 25 municipalities environmental matters are part of other directorates. Only one Municipality has specific municipal regulations on the environment; in 15 municipalities environmental matters are addressed in general regulations, while in 11 municipalities environmental matters are not addressed at all at local level.
- In Obiliq Municipality no environmental assessments of plans are made at the present time. Reportedly, planning has been made for an environmental inspector, but at the moment, the economic resources of the Municipality do not allow for it. It may be concluded that the Municipality has no capacity for either environmental assessment or monitoring of environmental management plans.
- KEPA is identified as the governmental body which should coordinate and carry out all environmental monitoring, and collect, analyze, store and elaborate all environmental monitoring data at central and local level.
It should also be the focal point for Kosovo environmental data in the international scenario.

- Our understanding is that at the present moment KEPA has very limited capacity and is working in cooperation with a number of institutions which were responsible for environmental monitoring and analysis in the past. These include the following: (i) Hydro Meteorological Institute of Kosovo; (ii) Institute for Public Health Kosovo; (iii) The various departments of the MESP; (iv) Ministry of Agriculture, Forestry and Rural Development; (v) Ministry for Transport and Communications; (vi) Statistical Office of Kosovo; (vii) Energy Corporation of Kosovo.

- The Environmental Protection inspectorate has been established by Administrative Instruction No 2/2004 which sets out the duties and responsibilities of the Inspectorate which reportedly presently has 14 inspectors. The Inspectorate is part of the MESP and covers the following sectors: (i) Environmental Protection; (ii) Water protection; (iii) Spatial Panning, and (iv) Urbanization. Reportedly, in the past five years inspections have focused on the sand and gravel extraction sectors and recently started facilities. In the current year, inspections have focused on drinking water uses, metal landfills and old cars.

- The main conclusion is that all environmental management functions are located at national level under Ministerial responsibility and that reportedly, at the moment, very limited, if no, environmental planning, management and monitoring capacity exists at decentralised level in the country.

Institutions at the central and local level cope with a lack of financial and human resources.

The move towards creating greater financial independence such as through the set up of local environmental funds is a key step forward. Even though the funds expected to be collected are not nearly enough in comparison to the environmental infrastructure investment needed, they do provide a first step in the right direction.

Much remains to be done in terms of training staff at the local level, set up stable coordination and cooperation mechanisms between different authorities and different levels of government, awareness raising on environment (outside as well as inside government), development of tools and guidance for the implementation of environmental laws, strengthening of the environmental inspectorate through training etc.

Specific relevant recommendations in term of actions to be undertaken at institutions at national and local levels in order to strengthen or expand them so that the Environmental Mitigation Measures can be implemented are the following:

- Training on implementation of the environmental protection laws at all levels.
• Strengthening of the local municipality environmental offices (additional experts, additional trainings and necessary equipment, better coordination between local and central level, etc.).
• Established Local Environmental Fund and training of the experts.
• Development of a strategic approach to inspection through the development of inspection plans at all levels;
• Creation of coordination mechanism between the inspectorates at national and local level.
• Training for environmental inspectors.
• Further development of the monitoring system (clarify the role of certain elements in system and obligations of relevant subjects).
• Strengthening institutions relevant for monitoring system (especially KEPA).
• Solving the problem of further financing of the existing air and surface water monitoring systems.
• Improvement of the self monitoring system in companies (mainly KEK) and coordination with national monitoring system.

The EMP has to be the instrument that provides, on one hand, a constant updating of the state of the environment useful for keeping the mitigation process under control and that, on the other hand, makes sure that the predefined goals are punctually achieved.

Moreover, the establishment of an Environmental Advisory Committee (EAC) is recommended with the main objective to monitor the implementation of the agreed mitigation measures and monitoring activities.

A detailed description of the composition, the roles, responsibilities and procedures of the EAC is described in the following.

The members of the EAC will be the following:
• one representative of the Ministry for the Environment and Spatial Planning;
• one representative of KEPA;
• one representative of the Municipality of Obiliq, Fushe Kosove e Vushtrri;
• one representative of the Ministry of Agriculture, Forestry and Rural Development;
• one representative of Ministry of Energy and Mining;
• one representative of KEK;
• one representative of the investor;
• one representative of NGOs;
• representatives of local communities.

Local and national regulators together with results-oriented members of environmental groups will be invited to participate in the development and implementation of the monitoring plan.
The environmental program goals and objectives will be clearly outlined: at the beginning of the process the proposed program will be described in details.

The EAC members will:

- analyse monitoring data, evaluating the trend and comparing new data with previous ones;
- discuss and interpret monitoring results;
- suggest eventually corrective actions;
- check the implementation of foreseen mitigation measures and suggest further measures eventually required;
- report on monitoring results and mitigation work in progress; the periodic reports will be available for the population on Web site (KEPA or Ministry of Environment and Spatial Planning).

In particular, routinely meetings (every month) are foreseen to discuss progress and results and suggest measures to address findings, so that action plans can be developed in time to prevent problems. The EAC will invite the necessary cross-section of experienced stakeholders to participate in these types of discussions. A cooperative process for resolution of any potential regulatory disputes will be developed.

After each meeting, a member of the EAC will issue a report on the results and interpretation of the results, in which specifics on water, air, soil and miscellaneous environmental concerns will be noted.

The reports will help decision-makers and public institutions at the various stages of the process, with the introduction of any necessary mitigation and compensation measures and the definition of new environmental activities or corrective actions that can be taken to address the observations or findings.

The reports will be distributed to the managers responsible to ensure the implementation and effectiveness of the mitigation measures to discuss any problems and ensure that problems are addressed.

The reports will contain:

- the intermediate monitoring results foreseen by the EMP;
- the state of progress of the environmental programmes;
- the identification of any corrective actions.

Every six months the EAC will meet with the managers responsible to ensure the implementation and effectiveness of the mitigation measures to discuss any problems and ensure that problems are addressed.

One of the tasks of the EAC will be also to review the authority and capability of institutions at local, provincial/regional and national levels and recommend steps to strengthen or expand them so that the monitoring plan can be implemented. The recommendations may extend to new laws and
regulations, new agencies or agency functions, intersectional arrangements, management procedures and training, staffing, operation and maintenance training, budgeting, and financial support.

Upon being formed, the EAC will begin an environmental monitoring training program for institutions, population and stakeholders on how to convey the importance of the monitoring plan, its goals and how their contribution and commitment could improve the success of the plan itself.

Once a year, the EAC will arrange a public conference and present results and progress.
6.2 DEVELOPMENT OF AN ENVIRONMENTAL MONITORING PLAN

The proposed Environmental Monitoring Plan (EMP) is aimed at monitoring the performance of mitigation measures to be included in the NMFDP for implementation of new investments and rehabilitation of existing facilities. This section provides an outline of monitoring program objectives, identifying the variables of concern and establishing baselines against which the nature, magnitude and significance of future changes can be evaluated.

The environmental situation of Obiliq Municipality and a number of other nearby settlements (Bardh and Fushe Kosova and villages of Dardhishte, Plementin, Hade and Grabovc) are affected by environmental pollution due to mining and power generation of existing and future activities.

Furthermore, current environmental contamination of the area derives also by previous activities (especially from gasification and fertilise plants) with particular regards to contaminated soil and infiltration of trace metals and salts in the soils resulting in contamination of groundwater and rivers.

A number of environmental studies have been carried out in the past years or are still under going by a number of national and international funds. However, these studies have been based on existing data and no comprehensive environmental monitoring has been carried out in recent years. In order to describe the environmental baseline and fully identify the environmental impacts the proposed environmental program is considered crucial to complete the set of available environmental data with additional information including, amongst others, air quality and air emissions characterisation, wastewater effluents quality definition, adequate geological and hydrogeological sections, complete soil and ground water characterization with particular reference to the ash dumps areas and gasification and fertilizer site etc..

The proposed EMP, as detailed in the following paragraphs, is therefore aimed to:

- acquire new elements to complete the environmental data collection;
- provide an outline of a tool which will help to monitor the environmental data and assess the implementation and the efficiency of the planned environmental mitigation measures.

Specifically, the scope of the EMP is to define methods, parameters, frequency and reporting of monitoring activities that will be carried out. The key objectives are to:

- identify potential sources of negative environmental impact on air, water and soil;
- demonstrate compliance with applicable treaties, laws and standards;
- assess the efficiency of the implemented mitigation measures;
• monitor the achievement of environmental objectives and targets and provide potential corrective measures;
• provide information to environmental authorities and stakeholders.

Monitoring activities performed at present, mainly carried out on KEK’s responsibility, as described in Paragraph 2.4 of Annex A Environmental Assessment of Existing KEK Operations, will continue.

6.2.1 Approach and Methodology

The EMP has to be the instrument that provides, on one hand, a constant updating of the state of the environment useful for keeping the mitigation process under control, and that, on the other hand, makes sure that the predefined goals are punctually achieved.

For such purpose it is proposed to appoint an Environmental Advisory Committee (EAC), gathering a group of highly qualified experts, which will have the duty to monitor the implementation of the agreed mitigation measures and monitoring activities as above specified.

A detailed description of the composition, the roles, responsibilities and procedures of the EAC is described in Paragraph 6.1.3.

6.2.2 Technical Description of EMP

In order to gain statistically significant environmental monitoring data, at least a 5 year monitoring program is developed and implemented, starting from the signature of the contract aimed at the realization of the Sibovc Lignite Field development. This will allow for the establishment of background data and comparison of impacts before and after mitigation measures implementation. This is particularly important for air, water and soil quality monitoring programs.

Environmental monitoring information will be gathered for air quality, water supply, wastewater, soil and groundwater contamination and noise. The EMP, as detailed in the following paragraphs, provides also information on environmental monitoring protocols in terms of how and where the monitoring has to be performed.

The parameters taken into account in the comprehensive environmental monitoring program have been identified based on the review of existing environmental studies and on the proposed mitigation measures. The sampling locations (when feasible) and frequencies have been chosen in order to have the appropriate spatial and temporal coverage, in relation to specific parameters or effects.
Monitoring measures identified for air quality, wastewater and soil and groundwater are described in the following paragraphs, including, per each issue identified, the following details:

- description of the proposed monitoring measures to be implemented;
- method/equipment to be used to carry out sampling activities;
- location of where the sample has to be taken (when feasible);
- proposed monitoring frequency;
- estimated cost (please note that when the estimated cost is below 25,000 Euro, an indication of “minor cost” is reported).

### 6.2.2.1 Air Quality

Monitoring activities foreseen for air quality and emissions to air characterisation are described in the following paragraphs.

*Installation of Continuous Monitoring Devices at Kosovo A and Kosovo B Stacks*

No monitoring is currently undertaken at air emissions from both TPP A and TPP B due principally to limited budget availability.

In both the power plants, most air emissions are calculated based on fuel characteristics and combustion process parameters (Stein methodology for SOx and particulate). TPP B power plant is provided with equipment for online monitoring of particulate; nevertheless, measuring equipment is neither calibrated nor properly maintained.

The installation of continuous monitoring devices at the stacks (main sources of pollution) of both TPP A and TPP B is foreseen. The continuous monitoring system includes the measurement of flow rate, temperature and pollutants concentration of flue gases in the stacks.

Complete continuous flue gas analysis of CO, O\(_2\), SO\(_2\), CO\(_2\), NO, NO\(_2\) and Total NOx and particulate is essential for both efficient and environmentally acceptable performance. Data acquisition and analysis software systems would also be installed. The devices would be connected to a computer network which would receive all the data and ascertain their compliance with applicable standards.

In case values above permitted limits are detected, an early warning system would inform site management to adopt required measures (reduction of work-load, check of efficiency of abatement system and work stoppage if need be).

The data would also be reported on monthly to maintain statistics and provide information to Kosovo Environmental Protection Agency (KEPA) and the Ministry of Environment and Spatial Planning (MESP).

Estimated cost for the proposed continuous monitoring devices is about 210,000 Euro.
**Spot Sampling of Air Emissions**

In order to complete the description of the air emission scenario, quarterly monitoring is proposed at the main stacks of Kosovo A and Kosovo B to investigate the chemical composition of particulate for trace elements: heavy metal contents (vanadium, Nickel, Cadmium, Lead, Copper, Zinc and Arsenic and) and PAH.

Sampling would be undertaken by means of a sampling pump according to national and international guidelines. All the stacks would have to be provided with an adequate sampling point to be positioned according to national and international guidelines. Chemical analysis for parameters screening would need to be undertaken by a certified laboratory.

A minor cost is annually foreseen for equipment (provision of adequate sampling points at the stacks and sampling unit) and analysis.

**Air Quality Monitoring in Obiliq Municipality and Surrounding Areas**

TPP A, TPP B and the mines are today the largest concentrated source of air pollution in Kosovo, but the current poor air quality is also caused by other industrial activities (i.e. Feronikeli), civil construction and traffic.

Two air quality monitoring stations are currently installed and have been operating since 2006: the first in Obiliq city (Kastriot) and the second in INKOS Institute. SO$_2$, soot and deposition rate are monitored at such two stations. Sediment samples are used for the determination of total particulate and soluble and insoluble matters. Sediments are analysed in terms of:

- total particulate;
- general inorganic matter;
- general soluble matter;
- pH;
- soluble chloride content;
- soluble sulphate content.

An integral ambient air quality monitoring system would need to be established since existing monitoring system is incomplete.

The air quality monitoring program includes two further monitoring stations for the detection on a continuous basis of the following substances: CO, NO$_x$ (NO + NO$_2$), SO$_x$, O$_3$ and particulate (PM$_{10}$ and PM$_{2.5}$). The monitoring program also includes a meteorological station and hardware/software equipment for registration/transmission of data.

The new monitoring stations should be equipped with radiometers and/or solar devices to measure solar radiation and temperature gradient, in order to be able to reconstruct stability classes.
The following Table 6.2.2.1a specifies reference measuring methods for each substance to be monitored.

**Table 6.2.2.1a Reference Measuring Method for Air Quality Monitoring**

<table>
<thead>
<tr>
<th>Element</th>
<th>Reference measuring method</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>NDIR (Non Dispersive InfraRed)</td>
</tr>
<tr>
<td>SO₂</td>
<td>Fluorescence</td>
</tr>
<tr>
<td>NOₓ (NO + NO₃)</td>
<td>Chemiluminescence</td>
</tr>
<tr>
<td>O₃</td>
<td>UV absorption</td>
</tr>
<tr>
<td>Particulate (PM₁₀ e PM₂,₅)</td>
<td>Beta Rays Absorption</td>
</tr>
</tbody>
</table>

The following Table 6.2.2.1b specifies measurements ranges for each substance to be monitored.

**Table 6.2.2.1b Reference Measuring Method for Air Quality Monitoring**

<table>
<thead>
<tr>
<th>Element</th>
<th>Min.measurement range</th>
<th>Max measurement range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>0 – 10 ppm</td>
<td>0 – 200 ppm</td>
</tr>
<tr>
<td>SO₂</td>
<td>0 – 50 ppb</td>
<td>0 – 20 ppm</td>
</tr>
<tr>
<td>NOₓ (NO + NO₂)</td>
<td>0 – 50 ppb</td>
<td>0 – 20 ppm</td>
</tr>
<tr>
<td>O₃</td>
<td>0 – 100 ppb</td>
<td>0 – 10 ppm</td>
</tr>
<tr>
<td>Particulate (PM₁₀ e PM₂,₅)</td>
<td>0 – 100 µg/m³</td>
<td>0 – 10.000 µg/m³</td>
</tr>
</tbody>
</table>

In order to evaluate the impacts of the mines activities on air quality, other priority pollutants may be included in ambient air monitoring as Total HC, Non Methane HC and CH₄ and BTEX (Benzene, Toluene, Xilene) for own monitoring stations.

All the monitoring stations would be fitted with a data acquisition and data transmission system capable of transferring data to KEPA for continuous control. Intervention protocols would need to be established in case limits are exceeded. Key personnel within the site management would be trained to adopt required measures to bring pollution under limits (reduction of work-load, check of efficiency of abatement system and work stoppage if need be). The data would also be reported on monthly to maintain statistics and provide information to the public.

Periodic reports would be issued (comparing the results with legislative limits) and sent to the KEPA, the Ministry of Environment and Spatial Planning and other authorities; such reports will be available on the WEB site.

Locations of monitoring stations are determined on the basis of the results of pollution dispersion model and the location of the receptors.

An estimated cost of 360,000 Euro is foreseen for the equipment and minor costs for the analysis.
6.2.2.2 Wastewater

All the wastewater generated in TPP A and TPP B plants, including industrial effluents, sanitary effluents and rainfall are discharged in Sitnica River without any treatment, apart from the quantity of evaporated water from the cooling tower process.

The discharging system includes 22 discharging points into the main sewage system and 3 main discharging points into Sitnica River.

Wastewater discharges from the power plants are monitored by INKOS through 17 surface water and 5 underground water monitoring points (5 piezometers, installed around the ash dump at TPP B to monitor groundwater quality). Results of wastewater monitoring are included in KEK monthly environmental report.

The drained waters of Bardh and Mirash mines deriving from lignite exploitation are collected in natural ponds and then discharged into the Drenica and Sitnica rivers. Water quality is monitored by INKOS and data is made available on a monthly basis.

Monitoring activities foreseen for wastewater flow rates and quality are described in the following paragraphs.

Flow Rates Monitoring

Flow rates of processing wastewater discharged from the power plants would be monitored on a periodical/continuous basis in order to have reliable data for preliminary design of WWTP; these effluents include: process waters from the power plants (boilers blow down and other streams); blow down from the cooling towers; and sanitary waters.

Storm waters flow rates would be evaluated based on precipitation rates, drainage surfaces and soil characteristics. The survey would require close cooperation of water specialists with site personnel, who should give specific input with regard to reliability of data to be collected.

Estimated cost for this survey is about 30,000 Euro.

Wastewater Quality

Generated wastewater would be analysed before and after treatment to ascertain quality of effluents discharged and to monitor efficiency of wastewater treatment plant (WWTP) to be installed.

Wastewater monitoring would be undertaken every three months, to ensure that all recorded parameters are in compliance with the legislative limits in force and shall include the following parameters – at a minimum: pH; temperature; dissolved oxygen; chemical oxygen demand; total suspended solids.
matter; metals including - at a minimum – Cd, Cr, Cu, Hg, Pb; toxic organics such as phenols and chlorophenols; polynuclear aromatics such as benzo(a)pyrene, carbon tetrachloride, PCBs; and oil and grease.

Standard water sampling equipment and laboratories are required.

Assuming a WWTP is installed, a minor cost is expected for monitoring every year.

6.2.2.3 Soil and Groundwater

Most relevant criticalities for the soil and groundwater contamination in mines and power plant sites are the following:

- Gasification and fertilizer plant area (including phenol deposits, dumping PAH (Polycyclic aromatic hydrocarbons) and Phenols dumps; tar-like substance hardened on the surface, etc)
- Kosovo A ash dump;
- Kosovo B ash dump.

For soil and groundwater, the following monitoring activities are foreseen:

Soil and Groundwater Investigation at Gasification and Fertilizer Plant Area

A site investigation in the gasification plant area is included in a sub-project funded by the World Bank in the framework of the CLRP. This is scheduled to start shortly, and would include a geological/(hydro)geological survey and environmental site investigation of soil and (ground)water at and around the gasification plant site as well as in the Kosovo A ash dump where tars and phenols, etc., have been dumped.

The monitoring of groundwater quality would include drilling of 5 piezometers and water sampling to monitor the actual and potential for contamination of the groundwater.

The parameters to be analysed include BTEX, PAH, phenols and hydrocarbons.

Groundwater monitoring shall be carried out quarterly until two years after the complete remediation of the gasification and fertilizer plant site.

Groundwater Investigation at Kosovo A and Kosovo B Ash Dumps

The CLRP includes investigation on soil, surface and groundwater for Kosovo A ash dump and overburden dumps located to the southwest of the Kosovo A site and existing Mirash/Bardh mines.

No soil and groundwater investigation for TPP B ash dump is reported.
A monitoring program on groundwater quality is proposed also, taking into consideration the results of the CLRP soil and groundwater investigation, and includes the following:

- groundwater sampling in around 5 upgradient and 10 downgradient piezometers (existing and new one to be drilled) for each Kosovo A and Kosovo B ash dump;
- the final number and position of the piezometers would be defined: (i) on the basis of an in-depth study on the local hydrogeology and identification of exact groundwater flow direction; and also (ii) considering the results of the first monitoring program for Kosovo A ash dump;
- groundwater samples would be collected at two different depths corresponding to the surface yellow/grey clay layer and the lignite layer; an analysis of the aquifers’ interconnection through tracing substances would be performed;
- the groundwater monitoring campaign would be repeated twice a year; and
- the groundwater analysis would include, at a minimum: (i) BTEX; (ii) PHAs; (iii) phenols; and (iv) metals with particular reference to heavy metals (Pb, Cd, Zn, Cu, Cr, Ni, As, Hg). The final parameters to be detected would be defined on the basis of the results of the first year groundwater analysis program.

The estimated cost for the first year ground water monitoring is 100,000 Euro (including piezometers installation and chemical analysis); the cost for monitoring in the following years is about 20,000 Euro.

**Topsoil Investigation**

A topsoil investigation is recommended as follows:

- sampling and analysis of topsoil in the areas downwind of the Kosovo A and Kosovo B ash dumps is planned, aimed at detecting the presence of heavy metals and PAHs from ash dispersion, in the surface soil, particularly in agricultural lands. The topsoil sampling shall be conducted starting from the boundaries of the ash dumps to 1 km distant, on the basis of a regular grid (a representative sample for a 500 x 500 meter grid). The monitoring program would be carried out twice a year until two years after the ash dump remediation; and

- a superficial soil sampling is proposed in an area of 10 km radius from the power plants to ascertain potential risks for human health deriving from direct exposure and/or food chain pathways.

A minor cost is estimated for the topsoil investigation.
River Sediments Characterisation

With regards to the Sitnica River, sediment sampling along river banks should be undertaken and analysed for detection of pH, heavy metals (Pb, Cd, Zn, Cu, Cr, Ni, As, Hg) and phenols.

Sediment samples should be collected every 250 m on the two banks of the river. The distance of sampling locations could be modified depending on the findings of an on site assessment.

Monitoring should be repeated once a year to ascertain the self-treatment of the river and to monitor eventual further impacts deriving from the mines and power generation operations.

An estimated cost of 25,000 Euro is foreseen.
Annex A

Environmental Assessment (EA) of KEK existing generation and mining installation and facilities
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1 INTRODUCTION

1.1 BACKGROUND

The Consortium (the Consultant) led by Environmental Resources Management (ERM) Italy and supported by ELC Electroconsult and CSA Group Ltd was commissioned by the Kosovo Lignite Power Technical Assistance Project (LPTAP) of the Ministry of Energy and Mining of Kosovo (MEM) to undertake the assignment “Environmental and Social Safeguards Services for Private Sector Participation in the Development of new generation capacity, related transmission and the development of the Sibovc Lignite Field” between July 2007 and March 2008.

This document represents the environmental assessment of Existing KEK Operations to be included in the description of the environmental/socio-economic baseline as per Task 3/A1.

This document is a separate Annex of the First Draft SESA Report.

1.2 SCOPE OF WORK

Scope of the work is to undertake an environmental assessment of KEK’s existing generation and mining installations and facilities, including identification of potential environmental impacts and environmental audits to analyze existing conditions.

For each of KEK’s functions (mining and generation) the Consultant has determined the extent of non-compliance with environmental legislation and regulations (1) and actions to bring operations under compliance.

Furthermore the Consultant suggested the necessary actions to be undertaken to repair or clean up the high priority environmental issues.

1.3 CONSULTANT’S APPROACH

The Consultant’s mission in Kosovo took place between September 17th and September 21st 2007. Meeting and interviews with the management and staff were held and the following visits to KEK existing facilities were performed:

- one day site visit of the existing mines Bardh and Mirash;
- two days site visit of Kosovo A power plant (TPP A) and Kosovo B power plant (TPP B).

(1) Standards according local, regional (Former Yugoslavia) and international (EU and World Bank) regulations and guidelines were taken in consideration.
The investigation on the existing mines was conducted by ERM in cooperation with CSA International.

During the kick-off mission undertaken in July-August 2007 a preliminary visit of KEK mines and power plants was performed by ERM in order to have an overview of status of existing facilities and most relevant environmental issues.

The persons met from KEK during the site visits are presented in Table 1.3a. The persons met from KEK were very helpful, engaged and dedicated to their work.

### Table 1.3a  Meetings and Discussions

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mr Shefqet Baca</td>
<td>KEK</td>
<td>Acting Director of Mining Division</td>
</tr>
<tr>
<td>2. Mr Fatmir Emni</td>
<td>KEK</td>
<td></td>
</tr>
<tr>
<td>3. Mr Behxhet Shala</td>
<td>KEK. Environmental Department</td>
<td>Environmental Manager</td>
</tr>
<tr>
<td>4. Mr Lulzim Korenica</td>
<td>Ministry of Energy and Mining</td>
<td>Head of Environmental Department</td>
</tr>
<tr>
<td>5. Ms Arbresh Isufu</td>
<td>MEM</td>
<td>Environmental Department</td>
</tr>
<tr>
<td>6. Mr Bashkim Pllana</td>
<td>MEM</td>
<td>Environmental Department</td>
</tr>
<tr>
<td>7. Mr Hamdi Gashi</td>
<td>KEK</td>
<td>Director of TPP A power plant</td>
</tr>
<tr>
<td>8. Mr Luigj Ymeri</td>
<td>KEK</td>
<td>Director of TPP B power plant</td>
</tr>
<tr>
<td>9. Agim Morina</td>
<td>KEK</td>
<td>TPP A and TPP B</td>
</tr>
<tr>
<td>10. Nazim Derguti</td>
<td>KEK</td>
<td>Environmental Manager</td>
</tr>
<tr>
<td>11. Ismail Simnica</td>
<td>KEK</td>
<td></td>
</tr>
</tbody>
</table>

The field trips carried out by the consultant included the following:

- Discussion in the KEK offices with the environmental officers
- Visit of the Mirash and Bardh Mines, including some of the overburden disposal areas and the southern boundary of the Sibovc area.
- Overview of the Ash disposal site
- Overview of the Municipal Landfill
- Visit of the mine water outfall into the Drenica River
- Visit of workshops
- Visit of petrol station
- Visit to TPP A external facilities
- Visit to TPP B external facilities
- Visit to TPP A and TPP B ash landfills
- Visit to gasification and fertilizer plants area
- Visit to TPP B waste water discharge point

### 1.4  THIS REPORT

The remainder of this Report is structured as follows:
Section 2 gives a general description of the existing facilities
Section 3 describes the present management of environmental issues, identifying and discussing the key issues;
Section 4 presents Conclusions and Recommendations


1.5 AVAILABLE REPORTS

The following listed reports and studies were available and considered.

  • Environmental Audit (EA). May 2003
  • Environmental Action Plan. June 2003
  • Environmental Impact Assessment. June 2003


1.6 DATA IDENTIFICATION, COLLECTION AND ORGANISATION

Data related to environmental issues is only available if the specific issue represents a cost for the Company, i.e. water usage, solid waste disposal. No information is presently available on the volumes or quantities involved and
on issues such as quantities of spent oil generated and its management spent
batteries and environmental monitoring of any kind.

Data on environmental monitoring on air emissions, air quality and waste
water discharges are reported in monthly and annual reports prepared by
KEK Environmental Department; monthly reports are submitted also the
Ministry of Environment and Spatial Planning.
OVERVIEW

2.1 KEK

The Kosovo Energy Corporation (Korporata Energjetike e Kosovës - KEK) is a vertically integrated system composed of two lignite mines at Bardh and Mirash, two lignite fired power plants Kosovo A and B, with an overall effective capacity of around 830 MW (from an installed capacity of 1478 MW), and the Ujmani Hydro-Power Plant (HPP), with an installed capacity of 35 MW, transmission and dispatching system, distribution network and supply. In recent times an unbundling process has taken place, with the creation of two joint stock companies, namely KEK J.S.C. and KOSTT J.S.C.

The power plants were built within the period of 1960-1984, while the HPP Ujmani/Gazivode begun operation in 1983. Gasification Plant located close to TPP A site has not been working since 1988 while the Drying Facility as an independent joint stock company works in a rather limited capacity. A Fertilizer Plant and industrial heating are present in the area but out of operation since 1988.

2.2 THE MINES

Mining operations are carried out in two surface mines, Bardh and Mirash mines, which cover an area of approximatively 9 km². The Bardh Open-Cast Mine has an exploitation area at the length of 2.5 km and width of 1.8 km (approx. 4.5 km²).

The open-cast mine has installed equipment with a lignite exploitation capacity of $8.2 \times 10^6$ t/year and $14 \times 10^6$ m³/year overburden. For the realization of design capacities two lignite systems and three overburden systems have been installed with the engagement of 9 rotor excavators with automotive belts and three spreaders. This equipment has been in use for the last 15 to 36 years. The Mirash Open-Cut Mine is operated since 1956. It covers a surface area of approx 10.2 km². The mine has in use 11 rotor excavators, but also other excavators, many bulldozers and other accessory vehicles, for the operation of excavating and transport of overburden and coal. The design capacity of the mine is $8.6 \times 10^6$ (t/year) of lignite and $14\times 10^6$ (m³/year) of overburden (KEK 2006).

Both the coal mines Bardh and Mirash, will be exhausted by 2011. Based on KEK data, coal production in February 2008 was 20,000 t/month (overburden was 35,800 m³/month); coal capacity is very closed to coal production.

Lignite is excavated by electrically driven bucket wheel excavators and transported by two open, electrically driven belt conveyors to the TPPs coal yard. The conveyor belts (type OPB 02/03) have a transport capacity of 1,400 t/h (33,000 t /d). The conveyor belts for the transport of coal from mine
to TPP B separation unit is 1.4 m wide, while the conveyor belt for transport to TPP A is 1.2 m wide.
Both separation plants are equipped with crashers; crasher performance is up to 30 mm at TPP A and up to 40 m at TPP B. Deposition of coal is going to be done with help of combined machinery.

Excavations are performed using diesel driven truck and shovel technologies as well as electrically driven bucket wheel and belt conveyors.

Both mines work in the same area with opposite advance directions. In 2005 restructuring measures became necessary because the two opencast mines of Bardh and Mirash interconnected in increasing scale. Since then both opencast mines have been developed as one mine. Nevertheless the mines are called further on by their original names.

The existing coal mines will be exhausted within the next 3 years. The first excavator was already set free and was moved into the future field of Sibovc-SW (North of Bardh). Presently five overburden lines are in operation in the mine complex, one of them in the future mine.

Besides the overburden, the ash of both TPPs’ was dumped on outside dumps for a long time. Only for TPP B the ash dumping has been changed to inside spoiling in the residual hole of the former Mirash-East mine.

**Figure 2.2a** Layout plan of the mines and the surroundings (Vattenfall 2007) – Visited during the site inspection: OCM Bardh and Mirash, Mirash East incl. ash dump and landfill
Mining activities take a total area of around 3,300 ha, detailed as follows:

- Mining activities (craters) area is around 1,470 ha;
- Overburden dump area is 1,559 ha;
- Ash dump for TPP A is 241.4 ha;
- Ash dump for TPP B is 73 ha.

The mines work on three shifts per day.

2.3  THE POWER PLANTS

2.3.1  Location

The integrated Kosovar electricity system is composed of two above described lignite mines and of two lignite fired power plants Kosovo A (TPPA) and B (TPPB) with an overall effective capacity of around 830 MW (960 MW from April 2008), from an installed capacity of 1,478 MW.

The plants and the disposal sites are located in the municipality of Obiliq and Fushe Kosove, about 3 km from the city limit of Pristina (see Figure 2.3.1a). The average altitude is around 550 m above sea level.
2.3.2 Thermal Power Plant Kosovo A

TPP A has 5 units which were built in two phases (from 1962 to 1964 and from 1970 to 1975) and which have thermal capacities variable in the range 180 - 550 MWth.

TTP A has a total installed generating capacity of 800 MW, of which only 275 MW are presently available. The following Table 2.3.2a shows the present status of TPP A, together with used fuel and operation year.

Table 2.3.2a Total TPP A Nominal Installed Capacity, Available Capacity, Used Fuel and Operation Year

<table>
<thead>
<tr>
<th>PP Kosovo A</th>
<th>Installed capacity MW</th>
<th>Available capacity net MW</th>
<th>Fuel</th>
<th>Operated since</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit A1</td>
<td>65</td>
<td>25</td>
<td>Lignite/Diesel</td>
<td>1962</td>
</tr>
<tr>
<td>Unit A2</td>
<td>125</td>
<td>0</td>
<td>Lignite/Diesel</td>
<td>1964</td>
</tr>
<tr>
<td>Unit A3</td>
<td>200</td>
<td>125</td>
<td>Lignite/Diesel</td>
<td>1970</td>
</tr>
<tr>
<td>Unit A4</td>
<td>200</td>
<td>125</td>
<td>Lignite/Diesel</td>
<td>1971</td>
</tr>
<tr>
<td>Unit A5</td>
<td>210</td>
<td>110</td>
<td>Lignite/Diesel</td>
<td>1975</td>
</tr>
<tr>
<td>Total A</td>
<td>800</td>
<td>275</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Currently units of TPP A do not work continuously due principally coal supply. A1 unit is rarely put into operation, while A2 unit is out of service since 1998. During 2006-2007 the emergency reparation of boilers of A3 and A4 units was carried out. Unit A5 will be ready to operate from the beginning of April 2008;
The power generation efficiency as estimated in Carl Bro assessment is 16-25% at Kosovo A and 30% at Kosovo B, even if official data give higher efficiencies as follows:

- 27% for each unit of Kosovo A;
- 30 and 32% for the two units of Kosovo B.1

The site plant of TPP A is reported in the following Figure 2.3.2a.

The Kosovo A power plant is constituted by the following main units:

1) **Lignite coal storage area.** The transportation of lignite from the mines to the coal yard is performed by open belt conveyors. The capacity of TPP A is 700,000 m³.
2) **Fuel Oil above ground storage tank:** light fuel and heavy fuel oil are used for start-ups and some times heavy fuel oil for support firing of the boilers during low loads (KEK Environmental Report, 2006).
3) **Belt conveyor for lignite transport to boilers** at each unit for crunching; crushed coal is then injected into boilers mixed with air.
4) **Boilers, building machineries (turbines, generators, condenser, control room).** The boilers are designed for about 14% of ash content. In certain periods, depending on coal quality in the actual mining area, volume of ash in coal might be higher and this can causes reduced efficiency.
5) **Electrical precipitators (ESP's)** for collection of fly ash at each unit and temporary storage facilities (two fly ash silos). The electrostatic precipitators of units A3 and A4 were delivered during 1966 and 1967 respectively, by ELEX Switzerland and put into operation in 1970 and 1971. All electrostatic precipitators have identical design and size. No major revisions have been made since the delivery, except some maintenance activities during last emergency repairs of the units A3 and A4 in 2005 and 2006 respectively. Maintenance operations for A5 unit are foreseen in 2008. Maintenance and spare parts are a problem due to the age of the electrostatic precipitators. Electrostatic precipitators were designed to reach the concentration of about 540 mg/Nm³. Nevertheless installed precipitators are functioning with far lower efficiencies than designed due to bad boiler design. Sometimes they are not in operation.
6) **Five separate 100 meters high stack** for the five units.
7) **Ash transportation and disposal site for ashes:** bottom ash and fly ash from TPP A (unit 1 and 2) were transported to the disposal sites as slurry without re-circulation of the water. Ashes from the functioning units A3 A4 and A5 are transported dry by air to a temporary storage at the plants where is mixed with water and then transported by belt conveyers to the disposal site close to power plant. Bottom ash (slag) and fly ash are

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1 "Environmental Monitoring Report- First 6 months of 2006" issued by KEK (lignite combustion heat and electric power production) and KEK Environmental Report 2006
produced in the combustion process in the ratio of about 1:9. The transportation system for A1 and A2 has more than 40 years of operation (from 33 to 38 years for A3, A4 and A5) and lacking maintenance expenditure. Dust pollution occurs at all operation points, at the bunkers, along the belt conveyors, at coal discharge point, during the dumping process with the spreaders and during the levelling.

Figure 2.3.2a  TPP A Site Plan
8) *Plant for preparation of process water* (filtration, flocculation, and demineralization) manually operated. The solid residuals from water treatment are disposed together with ashes. The water necessary to the plant is taken from a pumping station installed in Llap River located at around 11 km distance from TPP A. When the river flow rate is too low (in summer season) water is taken from Iber Lepenc channel.

9) *Induced draft cooling towers* (based on aerations-ventilations systems) located in the vicinity of the plant. To provide cooling water to condenser. Make up water to cooling tower is taken from Llap River. At the moment cooling tower blow down is discharged to the Sitnica river without any treatment.

10) *Waste water treatment plant* TPP A is provided with waste water treatment plant to treat waste water before discharging into Sitnica River. The waste water treatment plant carries out a partly treatment of waste water through sedimentation and neutralisation processes. The installations are old and badly maintained.

11) *Electric Substation and electric transformers*

In TPP A site is also located a *Drying Plant* in which a minor part of lignite (1-2% from annual coal production) is transported and treated to be sold to industrial costumers.

2.3.3 *Thermal Power Plant Kosovo B*

Kosovo B consists of two units, B1 and B2, with thermal capacity of about 850 MWth each. TPP B units have been erected from 1983 to 1984.

Installed and available net capacity of TTP B units is reported in the following *Table 2.3.3a* jointly with used fuel and operation year.

<table>
<thead>
<tr>
<th>PP Kosovo B</th>
<th>Installed capacity</th>
<th>Available capacity net</th>
<th>Fuel Operated since</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit B1</td>
<td>339 MW</td>
<td>277 MW</td>
<td>Lignite/Heavy Fuel Oil 1983</td>
</tr>
<tr>
<td>Unit B2</td>
<td>339 MW</td>
<td>277 MW</td>
<td>Lignite/Heavy Fuel Oil 1984</td>
</tr>
<tr>
<td>Total B</td>
<td>678 MW</td>
<td>554 MW</td>
<td></td>
</tr>
</tbody>
</table>

Units of TPP B power plant work continuously with priority in coal supply. For units of TPP B there are no restrictions with the coal supply what is case with units of TPP A.

The power generation efficiency at TPP B as estimated in Carl Bro assessment is 30%; this figure corresponds to the official data (30% for B1 and 32% for B2)

The site plant of TPP B is reported in Figure 2.3.3a.

The Kosovo B power plant has the following main installations:

1) **Lignite coal storage area** with a capacity of approximately 620,000 m³. The transportation of lignite from the mines to the coal yard is performed by open belt conveyors.
2) **Fuel Oil above ground storage tank**: light fuel and heavy fuel oil are used for start-ups and some times heavy fuel oil is used to support firing of the boilers if the quality of lignite is low.
3) **Belt conveyor** for lignite transport to boilers.
4) **Boilers, building machineries (turbines, generators, condenser, control room).**
5) **Two electrical precipitators (ESP’s)** for collection of fly ash at each unit and temporary storage facilities (two fly ash silos) with the nominal performance designed capacity of 260 mg/Nm³. Although the recent rehabilitation of electrostatic precipitators of B2 unit (Elvo, 2003), they are functioning with lower efficiencies than designed.
6) **Plant for preparation of process water** (filtration, flocculation, and demineralization). The different phases of the treatment are currently operated manually, although the system is originally designed for automatic operation.
7) **One common 182 meters high stack** for both units, originally designed for 220 meters (KEK Environmental Report 2006).
8) **Collection, slurry transport systems for ash and final disposal**: Fly ash is hydraulically transported as a suspension of water and ash to the former Mirash-East mine where mechanical deposition of ash happens on "plateaus" equipped with only very narrow embankments. Bottom ash is transported to the landfill with trucks and conveyors.
9) **Natural draft cooling tower** located in the vicinity of the plant. To provide cooling water to condenser. Make up water to cooling tower is taken from the Iber Lepenc system. At the moment cooling tower blow down is discharged to a pond and used to prepare slurry for ashes transportation and then discharged to Sitnica River.
10) **Waste water treatment plant.** TPP B is provided with waste water treatment plant to treat waste water before discharging into the river Sitnica. The waste water treatment plant carries out a partly treatment of waste water through sedimentation and neutralisation processes. The installations are badly maintained.
11) **Electric Substation and electric transformers**
Figure 2.3.3a  TPP B Site Plan
All installations are relatively old and have been not completely maintained until recently. The situation has been improved in recent years due to the replacement of many equipments with new ones including control system and electrical equipments.

The daily lignite supply to TPP B is normally between 5,000 – 20,000 t/d. while daily consumption is max 20,000 t/d with full capacity of both boilers (Electrowatt-Ekono Oy, 2007). Average daily consumption as reported in KEK Environmental Report 2006 is around 11,000 t/d.

Transportation of oils, chemicals and equipment is done by trucks.

TPP B is not provided with any desulphurisation or denitrification process.

2.4 **ENVIRONMENTAL SETTING**

2.4.1 **Site Setting**

The mines, power plants and disposal sites are located in the municipality of Obiliq, about 3 km from the city limit of Pristina, Fushe Kosova and Vushtrri.

The average altitude is around 550 m above sea level. The power plants are located in a flat area.

A number of main and secondary settlements (cities of Obiliq, Bardh and Fushe Kosova and villages of Dardhishte, Plementin, Hade and Grabovc) are located close enough to the existing mines and power plants sites to be affected by environmental pollution due to mining and power generation activities.

Part of Hade village located on northern slope between Mirash and Bardh mining areas has been resettled in 2003/2004 due to potential land slide risk. The land in the mine surroundings is mainly used for agriculture, with only few small forests in the southern part of the basin.

Mining of lignite coal and power generation are the most important activities in this area from an environmental point of view are. Exploitation of the lignite is carried out since almost 100 years and large-scale operation as it is seen today with open cast mining and power generation has been going on for about 40 years without much concern for the impacts on the environment.

Adjacent to the TTP A is located an old and abandoned industrial area where a gasification and a fertiliser plants were operating until more than 10 years ago (see for more details Section 2.4.5).
The impact of the previous activities (gasification and fertilise plants included) is today seen as contaminated soil and infiltration of trace metals and salts in the soils resulting in contamination of groundwater and rivers.

Hence, the current contamination of rivers and groundwater is not only related to the current activities.

There is no other heavy polluting industry in the area and traffic is the only other source of pollution (the nearest industrial area is in Mitrovica about 30 km north-northwest of the site).

2.4.2 Hydrography

There are two main rivers in the mining area, Sitnica and Drenica. Sitnica River crosses the Kosovo Basin from south to north and drains about 80% of the accumulating surface water into northern direction. Sitnica River flows to the Iber River near Mitrovica.

An artificial canal (Iber Lepenc) was constructed connecting Ujman/Gazivode Lake (located at north-east Mitrovica) to the industrial area of north-eastern Kosovo. Canal was designed to transport about 20 m³/s but, due to the bad existing conditions is presently able to transport about 6.5 m³/s. A feasibility study for rehabilitation of this canal has been completed recently and works are expected to start in 2008.

Major tributary rivers in the vicinity of the site are the river Drenica in the west and the river Llap in the east. The Sitnica run-off varies between a minimum of 0.5 – 1.5 m³/s and a maximum of 50 – 120 m³/s with an average of 5 – 10 m³/s. In flooding periods, the course of the river reaches a width of up to 1.000 m in the flooding areas and may interact with the ash landfill of Kosovo B power plant. On 3 May 1958 a maximum run-off for the Sitnica River near to the mines was measured at 90.3 m³/s.

2.4.3 Geology

The basement of the Kosovo Basin and the exposed surrounding areas are built up by Palaeozoic to Mesozoic crystalline rocks. The basin fill consists of Upper Cretaceous strata which are uncomfortably overlain by Tertiary clays of Pliocene age in which lignite is interbedded. Towards the West the lignite deposition is tectonically bound by a series of predominantly NNW-SSE striking faults.

The central area, the “Coal Kosovo Basin”, spreads over a surface of approximately 300 km². Simplified, the succession can be subdivided as follows:

- Bottom Series (green Clay)
- Coal Series (Lignite Formation)
- Top Series (grey Clay)
2.4.4 **Hydrogeology**

A brief description of the hydrogeological situation of the area is given based on the report from STEAG 2006. Three main hydrogeological layers are present. The basis is given by an aquiclude formed by the “green clay” consisting of clay and silt with a general thickness of more than 100 m. The overlying lignite with a thickness up to 70 m has a low permeability. Due to fissures and cracks within the coal, groundwater can circulate and the coal layer has to be recognized as an aquifer.

Above the coal follows the overburden mainly consisting of silt and clay with partially appearance of sand and gravel layers. Embedded layers with masses of snail shells are characteristic. Near to the surface the “grey clay” can change its appearance to “yellow clay” due to weathering and oxidation of iron. The clay material generally presents an impermeable layer but because of fissures and cracks reaching depths of 10 m to 15 m from the surface water can penetrate the rock. Hence groundwater appears either when the fissures are dug up by excavation or where those fissures are connected to better permeable layers within the clay such as the snail shell layers or gravel layers.

The “yellow clay” horizon is frequently used to supply houses and smaller villages with water. e.g. in the village of Hade and in the valley west of Lajthishte.

2.4.5 **Soil, Surface Water and Groundwater Contamination**

Both ground water and soil are most likely contaminated around mines and power plants.

Underground mining of the lignite was performed in a period from approximately 1922 to 1966 (STEAG 2006). Remains of old underground mining are situated in the south-eastern part of the Sibovc field connected with the old mining structures which are currently exposed along the coal cuts in Mirash West and on the Mirash northern slope and underneath the ash dump of TPP A (STEAG 2006).

A special problem is the gasification and fertilizers plant that were in operation at the site of Kosovo A until about 20 years ago.
The occurrence of phenol deposits derived from the gasification plant have been described in several studies. Reportedly condensates as PAH (Polycyclic aromatic hydrocarbons) and Phenols of the gasification plant were dumped in the old underground mining galleries. The tar-like substance is hardened on the surface only, underneath the substance is viscous and degasses. The spatial distribution of this material is not sure up to now (as reported in VEM/DMT 2007).

Since the auditing visit of September 2007 was focused on existing KEK facilities, detailed information on facilities, environmental condition and level of contamination of the gasification and fertilizer sites are not available at present.

Presently no monitoring results are available, but the groundwater in the area is most likely contaminated with phenols from this plant and oil and other contaminants from fertilizer plant. The contamination of soil is visible all over the area and actions have to been taken for characterization and monitoring of the area.

At least two heavy oil waste ponds were identified in the ash dump site of TPP A and other ponds containing diluted phenols are located in the north eastern part of the Kosovo A ash dump.

Reportedly the heavy oil waste (tar) originating from the old oil gasification plant (about 1-2 m³/d) were daily discharged in the ash dump of Kosovo A. Recently a “Site Investigation, Technical Organisation, Planning and Determination of Environmental Impact” was initiated (July 2007) as part of the Clean up and Land Reclamation Project (CLRP) devoted to identify extent of contamination and improve the environmental situation in the surroundings of the KEK mines and power stations by a reduction of dust emission from the existing TPP A ash dump.
First drillings were performed but, up to now, the lab analyses are not yet available.

Final goal of the project is to reclaim the ash landfill area of Kosovo A power plant. Three alternatives have been examined: the first foresees the Ash relocation to exhausted existing mine, the second the relocation to an identified Sitnica field area and the third a redistribution of ash at the ash dump area. The third alternative seems at the moment the most probable.

Other sources of possible soil and water contaminations are the ash landfills of TPP B. In particular the disposal areas do not have any structural protection against pollution of surface or ground water producing, obviously, infiltration of harmful substances to groundwater and/or flow to Sitnica River.

INKOS has newly established monitoring points around the disposal sites. Some monitoring results are shown in the following paragraphs. According the monitoring results presented in “EAR Contract nr 04KOS01/03/009 Lot 2 Prefeasibility Study of pollution mitigation measures at Kosovo B Power Plant” Report (upstream and downstream sampling performed in October 2002) indicate heavy contamination of pH values rising from 7.4 to 9.2 and the content of suspended materials and sulphate rising from 1.435 mg/l to 2.590 mg/l and from 335 mg/l to 1.533 mg/l, respectively.

2.4.6 Air Quality

TPP A, TPP B and the mines are today the largest concentrated source of air pollution in Kosovo, but the current poor air quality is also caused by other industrial activities (i.e Feronikeli), civil construction and traffic.

Two air quality monitoring stations have been operating since 2006: the first in Obiliq city (Kastriot) and the second in INKOS Institute.

Results of the air monitoring of 2006 as reported in KEK Environmental Report 2006 are presented in the following Table 2.4.6a.
Table 2.4.6a  Air Quality Monitoring Results from KEK Environmental Report 2006

<table>
<thead>
<tr>
<th>Month</th>
<th>Average SO2 and soot (1) concentration in 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SO2 (µg/m³)</td>
</tr>
<tr>
<td></td>
<td>INKOS</td>
</tr>
<tr>
<td>1</td>
<td>9.20</td>
</tr>
<tr>
<td>2</td>
<td>9.34</td>
</tr>
<tr>
<td>3</td>
<td>9.21</td>
</tr>
<tr>
<td>4</td>
<td>42.00</td>
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<td>5</td>
<td>27.59</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
</tr>
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<td>-</td>
</tr>
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<tr>
<td>11</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Average</td>
<td>19.46</td>
</tr>
</tbody>
</table>

Air quality monitoring activity carried out in June 2007 in the sole Kastriot monitoring station, reported the following average concentrations:

- SO2: 24.36 µg/m³;
- Soot: 6.7 µg/m³.

KEK environmental report shows also the deposition rate taken in two locations: the first close to separation facility and the second at the Bardh mine.

Deposit are analysed pursuant to the German Standard VDI direction 2119 Blatt 2 (1972): samples are collected during a month, while results are presented in mg/(m²d). Sediment samples are used for determination of total dust and soluble and insoluble matters. Sediments are analysed in:

- total dust;
- general inorganic matter;
- general soluble matter;
- pH;
- soluble chloride content;
- soluble sulphate content.

At the first location (separation facility) deposition rate is exceeding always the limit set by Former Yugoslavian and WHO legislation (see below) of 300 mg/m²d, at Bardh the situation is little better but always critical. Also pH limits are exceeded.

(1) Small particulate measured according to Former Yugoslavia legislation.
Table 2.4.6b  Air Immission Monitoring Results (INKOS, 2001)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>SO₂, µg/m³</td>
<td>22.43</td>
<td>19.00</td>
<td>18.04</td>
<td>17.00</td>
<td>16.7</td>
<td>13.32</td>
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<td>13.14</td>
<td>23.00</td>
<td>12.00</td>
<td>19.00</td>
<td>20.00</td>
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<tr>
<td>Soot, µg/m³</td>
<td>-</td>
<td>11.43</td>
<td>7.23</td>
<td>10.11</td>
<td>10.5</td>
<td>7.27</td>
<td>12.25</td>
<td>8.30</td>
<td>15.00</td>
<td>19.1</td>
<td>29.12</td>
<td></td>
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<tr>
<td>Particles, µg/m³</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9.0</td>
<td>113.5</td>
<td>12.25</td>
<td>113.5</td>
<td>72.6</td>
<td>98.28</td>
<td>124.6</td>
<td>79.3</td>
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<tr>
<td>Sedimentation rate, mg/(m²d)</td>
<td>1137</td>
<td>1140</td>
<td>1722</td>
<td>3039</td>
<td>312</td>
<td>655</td>
<td>722</td>
<td>98.28</td>
<td>124.6</td>
<td>79.3</td>
<td>122.3</td>
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Table 2.4.6c  Particulate Monitoring Results from Carl Bro Study (2001)

<table>
<thead>
<tr>
<th>2001</th>
<th>January</th>
<th>February</th>
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<tbody>
<tr>
<td>Prishtina</td>
<td>148 µg/m³</td>
<td>138 µg/m³</td>
</tr>
<tr>
<td>Kodra e diellit</td>
<td>299 µg/m³</td>
<td>181 µg/m³</td>
</tr>
<tr>
<td>Sofalia</td>
<td>52 µg/m³</td>
<td>59 µg/m³</td>
</tr>
<tr>
<td>Tasligje</td>
<td>131 µg/m³</td>
<td>114 µg/m³</td>
</tr>
<tr>
<td>K e trimave</td>
<td>417 µg/m³</td>
<td>110 µg/m³</td>
</tr>
<tr>
<td>Qyteza Pejton</td>
<td>43 µg/m³</td>
<td>87 µg/m³</td>
</tr>
<tr>
<td>Obiliq (village next to Kosovo B)</td>
<td>148 µg/m³</td>
<td>376 µg/m³</td>
</tr>
</tbody>
</table>

The significant differences between the results are not easily explained because locations of the stations and details of measurements are not reported. However average concentrations exceed limits set by different legislation. The different

As reference the following Table 2.4.6d and 2.4.6e present a comparison of various ambient air quality guidelines/standards for selected parameters at regional and international (EU and WB) level.

Table 2.4.6d  Ambient Air Quality (µg/m³)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Former Yugoslavia</th>
<th>EU Legislation</th>
<th>WB (1)</th>
<th>WB (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate Matter - PM₁₀ - soot</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td>30/50 (13)</td>
<td>40 (5)</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Maximum 1-hour</td>
<td>-/150 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour Average 98 percentile</td>
<td>40/50 (13)</td>
<td>50 (4)</td>
<td>500</td>
<td>70</td>
</tr>
<tr>
<td>Total Suspended Particles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td>40/70 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour Average 98 percentile</td>
<td>70/120 (13)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen Oxides. as NO₂</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td>50/60 (12)</td>
<td>40 (5)</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Maximum 1-hour</td>
<td>85/150 (13)</td>
<td>200 (6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum 24-hour Average 98 percentile</td>
<td>70/85 (13)</td>
<td>200 (6)</td>
<td></td>
<td>150</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Average</td>
<td>30/50 (13)</td>
<td></td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Maximum 1-hour</td>
<td>150/350 (13)</td>
<td>350 (7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Former Yugoslavia</th>
<th>EU Legislation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum 24-hour Average</td>
<td>100/150 (13)</td>
<td>125 (8)</td>
</tr>
<tr>
<td>98 percentile</td>
<td>150/350 (13)</td>
<td></td>
</tr>
<tr>
<td>Lead - Annual average</td>
<td>1 (14)</td>
<td>0.5 (9)</td>
</tr>
<tr>
<td>Benzene - Annual average</td>
<td>800</td>
<td></td>
</tr>
<tr>
<td>Manganese - Annual average</td>
<td>1 (14)</td>
<td></td>
</tr>
<tr>
<td>Chromium - Annual average</td>
<td>0.2 ng/m³ (14)</td>
<td></td>
</tr>
<tr>
<td>Cadmium - Annual average</td>
<td>10 ng/m³ (14)</td>
<td>5 ng/m³ (12)</td>
</tr>
<tr>
<td>Arsenic - Annual average</td>
<td>2.5 ng/m³ (12)</td>
<td>6 ng/m³ (12)</td>
</tr>
<tr>
<td>Nickel - Annual average</td>
<td>2.5 ng/m³ (12)</td>
<td>20 ng/m³ (12)</td>
</tr>
<tr>
<td>Benzo(a)pyrene - Annual average</td>
<td>0.1 ng/m³ (12)</td>
<td>1 ng/m³ (12)</td>
</tr>
</tbody>
</table>

(3) WB General Environmental Guidelines.
(4) Directive 1999/30/EC. Not to be exceeded more than 35 times per calendar year.
(5) Directive 1999/30/EC: A limit of 60 µg/m³ (50%) must be met on the 19 July 1999, reducing on 1 January 2001 and every 12 months thereafter by equal annual percentages to reach 0% (40 µg/m³) by 1 January 2010.
(6) Directive 1999/30/EC: Not to be exceeded more than 18 times per calendar year. A limit of 300 µg/m³ (50%) must be met on the 19 July 1999, reducing on 1 January 2001 and every 12 months thereafter by equal annual percentages to reach 0% (200 µg/m³) by 1 January 2010.
(7) Directive 1999/30/EC. Not to be exceeded more than 24 times per calendar year.
(8) Directive 1999/30/EC. Not to be exceeded more than 3 times per calendar year.
(9) Directive 1999/30/EC: The limit is applicable since the 1st January 2005. The application can be postponed up to 2010 for areas in the vicinity of specific point sources.
(10) Directive 1999/30/EC.
(12) Directive 2004/107/EC sets “target values” for Arsenic. Cadmium. Nickel and benzo(a)pyrene. Target values are set on the total content in the PM10 fraction averaged over a calendar year. Target values shall be met by 31 December 2012.
(13) Regulation on ambient air quality. criteria for sampling points and recordkeeping (Official Gazette of the Republic of Serbia. No. 54/92): Rural and recreation areas/Urban areas.
(14) Limit immission values for heavy metals in suspended particles.

### Table 2.4.6e Maximum Particulate and Heavy Metals Deposition Values (According to Official Gazette of Serbia. N. 54/99)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Unit</th>
<th>Measuring time</th>
<th>Rural and recreational areas (average annual value)</th>
<th>Urban areas (average annual value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total suspended matter</td>
<td>mg/m²/day</td>
<td>1 month</td>
<td>300</td>
<td>450</td>
</tr>
<tr>
<td>Lead</td>
<td>µg/m²/day</td>
<td>1 year</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Cadmium</td>
<td>µg/m²/day</td>
<td>1 month</td>
<td>100</td>
<td>250</td>
</tr>
<tr>
<td>Zinc</td>
<td>µg/m²/day</td>
<td>1 month</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

Although data are not complete and further work is necessary to better quantify the air quality problems around the site it appears evident that dust pollution is the most relevant impact on air quality in the surrounding areas of mines and power plants.
3.1 ENVIRONMENTAL ISSUES

3.1.1 KEK Environmental Management Structure

The set-up of an Environmental Department has been recently been approved (cf. organigram below). The main point of contact at KEK, Dr. Behxhet Shala is heading the Department for Environment.

*Figure 3.1.1a Structure of KEK Environmental Department*

Lignite production and power generation are two separate divisions each with engineering departments and environmental units responsible for development and implementation of KEK’s environmental policy. The environmental monitoring activities are carried out by INKOS a KEK participated institute.

The Environmental Department of KEK provides KEK and the Ministry of the Environment and Spatial Planning with report on environmental monitoring on monthly basis.

3.1.2 KEK Environmental Policies

This Department has already proposed the Environmental Policy Frameworks, adopted by the Board of Directors. The Policies define actions to be undertaken by KEK in attaining environmental obligations and in improving environmental management.

KEK shall develop general Environmental Policies aimed at attaining the following objectives:

- Environmental Protection
- Environmental management
• Rational utilization of natural resources
• Sensitive work in utilization of natural resources
• Rational energy utilization
• Efforts towards optimum energy efficiency
• Environmental risks
• Identification of a solution for waste issue
• Minimization of waste production and proper waste management
• Environmental procurement (encouraging subcontractors to adopt good environmental practices)
• Raising environmental conscience
• Promotion of environmental conscience in all KEK premises
• Establishment of mechanisms for regular monitoring of all process activities
• Regular review of environmental policies and practices

In developing these policies KEK shall work in several directions simultaneously:

• Improvement of the environmental situation and monitoring
• Coordination of activities with competent environmental bodies
• Allocation of resources for establishment of operations and development of environmental management systems.

3.1.3 Fire Fighting in the Mines

Larger amounts of lignite can be affected by spontaneous combustion which occurs in the mine slopes and coal yards where coal is exposed to air. Self-ignition is the consequence of the oxidation of coal. In the Bardh-Mirash mine the areas affected by these fires are especially the structures of the old underground mines, slide areas, the central pillar in front of the face between the actual excavation areas, the north and south lateral slopes of the mine as well as parts of the mine which remain exposed to air for a longer period (slopes and dumps), fault and joints (VEM/DMT (2005). The surface area affected by fires is estimated to be in the range of 1 km² (KEK Environmental Report 2006).

Reportedly an operational plan exists including the designation of responsible person for each mine. Tools have been secured and training provided. A team was established to use the equipment and fight fires. A training program was carried out from management levels down and from the trainees a team was chosen for specialist training. A register exists of existing and treated fires and is kept within the engineering department. ERM was informed that the fires that were seen during the site visit had been treated. There is no written emergency plan.
3.1.4 Air Emissions

Mines

The main air emissions generated by the mine are particulate matter from the mining operation (cf. Figure 3.1.4a). Especially coal dust from the active mining area contributes to air pollution. Furthermore the unpaved roads in the mines are sources of air pollution. Other sources are emissions of excavators, trucks and the lignite smouldering fires. Measurements of air quality (total deposited dust) inside the Bardh mine are presented in the Environmental Report from KEK. The data show some exceedance of limit values for Total Dust (KEK 2006).

Figure 3.1.4a Ambient Air Pollution Caused by Mining Activities

Based on the field inspection it can be assumed that dust/particulate matter and exhaust gases from the fires are the major sources of air pollution inside the mines.

One complaint was reported which has been filed by the population of Grabovc, West of the Mines relating to noise and dust emissions by the operation of the mine.

Ambient Air Quality measurements including measurements of power plant emissions are conducted on a monthly basis by INKOS the results have been presented in the previous Section 2.4.6.

Kosovo A and Kosovo B Power Plant

The main air pollutants from combustion of lignite in TPP A and TPP B power plants are:

- Solid particles (particulate);
- Acid gases SO₂ and NOₓ;
- Products from incomplete combustion of the fuel (soot, CO and hydrocarbons);
• Greenhouse gas CO\textsubscript{2}, CH\textsubscript{2} and CH\textsubscript{4}.

Other air pollutants could be derived from combustion of oil and heavy oil that used during start up of operation and occasionally during operation in short periods.

Figure 3.1.4b  Flue Gases Emissions from TPP A

Emissions Monitoring
A monitoring plan for air emissions (including NO\textsubscript{x}, SO\textsubscript{x} and particulate) from both TPP A and TPP B is available but is not carried out due principally to limited budget availability.

In both the power plants most air emissions are calculated based on fuel characteristics and combustion process parameters (Stein methodology for SO\textsubscript{x} and particulate).

TPP B power plant is provided with equipment for online monitoring of particulate; nevertheless measuring equipment is neither calibrated nor properly maintained. Monitored values are compared with calculated values.

No emergency plan to be adopted in case of threshold limits exceeding is available.

The following Table 3.1.4a summarizes the historical available data on main air pollutants emissions as reported in Carl Bro EA Report. Particulate, SO\textsubscript{2} and NO\textsubscript{x} emissions were measured by INKOS in 1994.
Table 3.1.4a  Emissions of Main Air Pollutants from TPP A and TPP B Power Plants (Carl Bro EA Report. 2002)

<table>
<thead>
<tr>
<th>Polluters</th>
<th>Particulate(1)</th>
<th>SO2(1)</th>
<th>NOx(1)</th>
<th>CO</th>
<th>CO2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mg/Nm³</td>
<td>mg/Nm³</td>
<td>mg/Nm³</td>
<td>t/MWh</td>
<td>t⁰</td>
</tr>
<tr>
<td>TPP A</td>
<td>2-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 2</td>
<td>948</td>
<td>343</td>
<td>472</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 3</td>
<td>6.947</td>
<td>404</td>
<td>713</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 5</td>
<td>910</td>
<td>429</td>
<td>871</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPP B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.6</td>
</tr>
<tr>
<td>Unit 1</td>
<td>176</td>
<td>660</td>
<td>573</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 2</td>
<td>325</td>
<td>726</td>
<td>939</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) (Dry gases, standard conditions, 6% O2)

Elektrowatt-Ekono carried out emissions measurements on both lines of electrostatic precipitators of TPP B1 boiler in October 2005. The results are presented in the following Table 3.1.4b.

Table 3.1.4b  Emissions from line 1 and line 2 of TPP B1 Boiler performed by Elektrowatt-Ekono in 2005

<table>
<thead>
<tr>
<th></th>
<th>Particulates (1)</th>
<th>SO2(1)</th>
<th>NOx(1)</th>
<th>CO(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mg/Nm³</td>
<td>mg/Nm³</td>
<td>mg/Nm³</td>
<td>mg/Nm³</td>
</tr>
<tr>
<td>Line 1</td>
<td>577</td>
<td>142</td>
<td>661</td>
<td>73</td>
</tr>
<tr>
<td>Line 2</td>
<td>526</td>
<td>332</td>
<td>713</td>
<td>113</td>
</tr>
</tbody>
</table>

The results of the calculation performed by KEK Environmental Department on air emissions (t/year) from Kosovo A and Kosovo B power plants for the period 2003-2006, as reported in KEK Environment Report 2006, are presented in the following Tables.
### Table 3.1.4c  Air Emissions (t/year) from TPP A for 2003-2006

<table>
<thead>
<tr>
<th>Power plant</th>
<th>Emissions</th>
<th>Years</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SO₂</td>
<td>156.00</td>
<td>5.00</td>
<td>253.00</td>
<td>27.5620</td>
<td></td>
</tr>
<tr>
<td>A 1</td>
<td>NOₓ</td>
<td>460.00</td>
<td>25.00</td>
<td>313.00</td>
<td>53.94</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CO₂</td>
<td>167474.00</td>
<td>9190.00</td>
<td>118831.00</td>
<td>19795.12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Particulate</td>
<td>413.46</td>
<td>22.29</td>
<td>222.46</td>
<td>36.90</td>
<td></td>
</tr>
<tr>
<td>A 2</td>
<td>SO₂</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOₓ</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CO₂</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Particulate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>A 3</td>
<td>SO₂</td>
<td>678.00</td>
<td>263.00</td>
<td>-</td>
<td>832.33</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOₓ</td>
<td>2004.30</td>
<td>1290.00</td>
<td>-</td>
<td>1597.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CO₂</td>
<td>728375.00</td>
<td>466858.00</td>
<td>-</td>
<td>596727.32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Particulate</td>
<td>3174.14</td>
<td>2103.03</td>
<td>-</td>
<td>1612.74</td>
<td></td>
</tr>
<tr>
<td>A 4</td>
<td>SO₂</td>
<td>847.00</td>
<td>106.00</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOₓ</td>
<td>2504.00</td>
<td>523.00</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CO₂</td>
<td>909951.00</td>
<td>189381.00</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Particulate</td>
<td>4254.74</td>
<td>885.90</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>A 5</td>
<td>SO₂</td>
<td>576.00</td>
<td>425.00</td>
<td>2168.00</td>
<td>1310.30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOₓ</td>
<td>1701.00</td>
<td>2090.00</td>
<td>2687.00</td>
<td>2512.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CO₂</td>
<td>728375.00</td>
<td>466858.00</td>
<td>-</td>
<td>596727.32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Particulate</td>
<td>2658.56</td>
<td>3301.21</td>
<td>3497.71</td>
<td>3846.44</td>
<td></td>
</tr>
</tbody>
</table>

### Table 3.1.4d  Air Emissions (t/year) from TPP B for 2003-2006

<table>
<thead>
<tr>
<th>Power plant</th>
<th>Emissions</th>
<th>Years</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SO₂</td>
<td>-</td>
<td>1713.00</td>
<td>4875.00</td>
<td>-</td>
<td>2376.10</td>
</tr>
<tr>
<td>B1</td>
<td>NOₓ</td>
<td>-</td>
<td>5934.00</td>
<td>5474.00</td>
<td>5158.80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CO₂</td>
<td>-</td>
<td>1876681.00</td>
<td>1768446.00</td>
<td>-</td>
<td>1646275.18</td>
</tr>
<tr>
<td></td>
<td>Dust</td>
<td>-</td>
<td>2691.34</td>
<td>2340.57</td>
<td>3373.55</td>
<td></td>
</tr>
<tr>
<td>B2</td>
<td>SO₂</td>
<td>3972.00</td>
<td>1348.00</td>
<td>5942.00</td>
<td>2963.75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOₓ</td>
<td>8037.00</td>
<td>4672.00</td>
<td>6672.00</td>
<td>6097.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CO₂</td>
<td>2530897.00</td>
<td>1477701.00</td>
<td>2155334.00</td>
<td>1962599.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dust</td>
<td>3952.37</td>
<td>2119.17</td>
<td>2852.62</td>
<td>3934.90</td>
<td></td>
</tr>
</tbody>
</table>

Calculated data on recent concentrations of SO₂, NOₓ, particulate and CO₂ in the two power plants emissions have been provided during the site visit and are presented in the following Table.

### Table 3.1.4e  Average Air Emissions (mg/Nm³) estimated for TPP A and TPP B (June 2007)

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>SO₂</th>
<th>NOₓ</th>
<th>Particulate</th>
<th>CO₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPP A</td>
<td>162</td>
<td>687</td>
<td>1279(1)</td>
<td>263,442</td>
</tr>
<tr>
<td>TPP B</td>
<td>163.7</td>
<td>818.7</td>
<td>183</td>
<td>263,873</td>
</tr>
</tbody>
</table>

(1) as reported in the I Six-monthly Environmental Monitoring Report, 2007 from KEK
Data on particulate emissions monitoring in TPP B (May and June 2007) have been provided during the site visit and are presented in the following Table 3.14f.

**Table 3.1.4f**  
**Particulate Emissions (mg/Nm³) from Online Monitoring in TPP B (May-June 2007)**

<table>
<thead>
<tr>
<th>Particulate emissions (mg/Nm³)</th>
<th>May 2007</th>
<th>June 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>136</td>
<td>141.5</td>
</tr>
<tr>
<td>B2</td>
<td>204</td>
<td>153</td>
</tr>
</tbody>
</table>

The reported values are likely a little underestimated and in any case not reliable because calculated without any serious cross check with reliable measurements.

The report of the “EAR Contract nr 04KOS01/03/009 Lot 2 Prefeasibility Study of pollution mitigation measures at Kosovo B Power Plant” reported the following remarks about dust emissions:

*During the site visit the continuous measurements showed values of about 510 - 520 mg/m³ in the control room but the newly installed measuring equipment at Kosovo B unit B2 was said not to be calibrated and to be wrongly installed (vibrations). The results of the dust emission measurements of unit B1 in October 2005 were 526 - 577 mg/Nm³ (dry gasses, standard conditions, 6 %O₂). The dust emissions from unit B2 could not be measured as the unit was being repaired during the measuring period.*

As the electrostatic precipitators of unit B2 has been reconstructed recently it is likely that the dust emissions from this unit are at least somewhat lower.

With the calculated consumption of lignite and air the emissions of dust from Kosovo B in the year 2002 Carl Bro Group (2003) calculated the dust emissions as follows:

<table>
<thead>
<tr>
<th>Kosovo B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit B1</td>
</tr>
<tr>
<td>2 218 t</td>
</tr>
<tr>
<td>250 mg/m³</td>
</tr>
</tbody>
</table>

Much lower values were reported by KEK. As the dust emissions of unit B1 were measured to be more than double that of the estimated emissions in the table above it can be concluded that the total dust emissions of Kosovo B are currently most likely significantly higher than the amounts calculated by Carl Bro Group in 2003. The annual quantity particulate matter emissions from Kosovo B are significant and dust also forms a significant health problem for the workers at the plant.

Also sulphur dioxide emissions could be higher than those declared (see Carl Bro Group and in 2003 EAR Contract nr 04KOS01/03/009) but the presence of calcium oxide in the lignite may justify low SO₂ values.
The particulate matter (dust), sulphur dioxide and nitrogen oxides emissions are significant and represent one of the most important environmental concerns at the site.

As reference in the following Table 3.1.4g are reported the emission limits set for existing boilers over 500 MWth in the European Large Combustion Plants (2001/80/EC or LCPD). Emission limits for CO are not defined in the LCP-directive.

LCP Directive sets particulate limit values for boilers over 50 MWth but includes also differentiations for boilers below and over 500 MWth.
Table 3.1.4g  Emission Limits for Solid Fuel Fired Plants Set in the EU LCP-Directive (for boilers over 50 MWth capacity).

<table>
<thead>
<tr>
<th>POLLUTANT</th>
<th>Monthly average:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO₂</td>
<td>for solid fuels (0₂ content 6 %):</td>
</tr>
<tr>
<td></td>
<td>&gt;500 MWth: 400 mg/Nm³</td>
</tr>
<tr>
<td>NOₓ</td>
<td>for solid fuels (0₂ content 6 %):</td>
</tr>
<tr>
<td></td>
<td>&gt;500 MWth: 500 mg/Nm³</td>
</tr>
</tbody>
</table>

From 1 Jan 2016:
- >500 MWth: 200 mg/Nm³

Solid substances
- for solid fuels (0₂ content 6 %):
- ≥500 MWth: 50 mg/Nm³

1) Plants licensed before 1.7.1987 must either comply to these limit values by 1.1.2008. or they can be subject to a national emission reduction plan for existing plants.

2) Without prejudice to Directives 96/61/EC and 96/62/EC, existing plants may be exempted from compliance with the emission limit values referred to in Article 4(3) and from their inclusion in the national emission reduction plan on the following conditions:
   (a) the operator of an existing plant undertakes, in a written declaration [submitted by 30 June 2004 at the latest] to the competent authority, not to operate the plant for more than 20,000 operational hours starting from 1 January 2008 and ending no later than 31 December 2015;
   (b) the operator is required to submit each year to the competent authority a record of the used and unused time allowed for the plants’ remaining operational life.

3) Where the emission limit values above cannot be met due to the characteristics of the fuel, a rate of desulphurisation of at least 60 % shall be achieved in the case of plants with a rated thermal input of less than or equal to 100 MWth and less than or equal to 200 MWth and 90 % for plants greater than 300 MWth. For plants greater than 500 MWth, a desulphurisation rate of at least 94 % shall apply or of at least 92 % where a contract for the fitting of flue gas desulphurisation or lime injection equipment has been entered into and work on its installation has commenced before 1 January 2001.

4) Plants, of a rated thermal input equal to or greater than 400 MW, which do not operate more than the following numbers of hours a year (rolling average over a period of five years).
- until 31 December 2015: 2000 hours;
- from 1 January 2016: 1500 hours;
shall be subject to a limit value for sulphur dioxide emissions of 800 mg/Nm³.

5) Until 31 December 2015 plants of a rated thermal input greater than 500 MW which from 2008 onwards do not operate more than 2000 hours a year (rolling average over a period of five years), shall:
- In the case of plant licensed in accordance with Article 4(3)(a), be subject to a limit value for nitrogen oxide emissions (measured as NO₂) of 600 mg/Nm³;
- In the case of plant subject to a national plan under Article 4(6), have their contribution to the national plan assessed on the basis of a limit value of 600 mg/Nm³.

6) From 1 January 2016 such plants, which do not operate more than 1500 hours a year (rolling average over a period of five years), shall be subject to a limit value for nitrogen oxide emissions (measured as NO₂) of 450 mg/Nm³.

7) Until 1 January 2018 in the case of plants that in the 12 month period ending on 1 January 2001 operated on, and continue to operate on, solid fuels whose volatile content is less than 10 %. 1200 mg/Nm³ shall apply.

7) A limit value of 100 mg/Nm³ may be applied to plants licensed pursuant to Article 4(3) with a rated thermal input greater than or equal to 500 MWth burning solid fuel with a heat content of less than 5800 kJ/kg (net calorific value), a moisture content greater than 45 % by weight, a combined moisture and ash content greater than 60 % by weight and a calcium oxide content greater than 10 %. 

EU Council Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants (LCP-directive) - Limits for "pre-1987" plants to be applied from 1.1.2008 onwards:

<table>
<thead>
<tr>
<th>POLLUTANT</th>
<th>Monthly average:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO₂</td>
<td>for solid fuels (0₂ content 6 %):</td>
</tr>
<tr>
<td></td>
<td>&gt;500 MWth: 400 mg/Nm³</td>
</tr>
<tr>
<td>NOₓ</td>
<td>for solid fuels (0₂ content 6 %):</td>
</tr>
<tr>
<td></td>
<td>&gt;500 MWth: 500 mg/Nm³</td>
</tr>
</tbody>
</table>

From 1 Jan 2016:
- >500 MWth: 200 mg/Nm³
Plants which have been granted the original construction or operation license before 1 July 1987, like Kosovo A and B, have either to comply with the set limits by 1 January 2008 or:

- they can be subject to a so called "national emission reduction plan for existing plants", which every Member State can compile, or
- the operator of such a plant can submit a written declaration to the competent authority, confirming that the plant will not be operated for more than 20,000 operational hours starting from 1 January 2008 and ending no later than 31 December 2015.

The LCP Directive also sets requirements for the monitoring equipment and practices of emissions from large combustion plants with a thermal input of more than 100 MWth.

As a consequence emissions limit values for main air pollutants, referred to existing plants with a capacity of 100-500 MWh should be those reported in the following Table where particulate limit for Kosovo B could be 50 or 100 depending upon lignite characteristics (see note 7 of the previous Table 3.1.4g)

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>SO\textsubscript{2}</th>
<th>NO\textsubscript{x}</th>
<th>Particulate</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPP A</td>
<td>1,200</td>
<td>600</td>
<td>100</td>
</tr>
<tr>
<td>TPP B</td>
<td>400</td>
<td>500(1)</td>
<td>50/100</td>
</tr>
</tbody>
</table>

(1) After 1 January 2016 the limit is 200 mg/Nm\textsuperscript{3}

The Kosovo Administrative Instruction on “The Rules and Standards of the Discharges on Air by the Stationary Sources of Pollution” sets air emissions limit values by stationary sources, methods and frequencies of air monitoring. The Administrative Instruction is under approval at the Assembly of Kosovo.

The temporary threshold values (ELV) for large combustion plants using solid fuel are set in Article 90. Different emission limit values are fixed based on the following categories of heating power:

- from 50 MW to 100 MW;
- from 100 to 500 MW;
- more than 500 MW.

Emission limit values (mg/Nm\textsuperscript{3}) for air pollutants from TPP A and TPP B according to the Administrative Instructions on air emissions are presented in the following Table 3.1.4i.
Table 3.1.4i  Emission Limit Values (mg/Nm3) for Air Pollutants according to Administrative Instruction

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>SO2</th>
<th>NOx</th>
<th>Particulate</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPP A</td>
<td>400 - 2000</td>
<td>450-800</td>
<td>100</td>
</tr>
<tr>
<td>TPP B</td>
<td>650</td>
<td>300</td>
<td>50</td>
</tr>
</tbody>
</table>

1. The right values for TPP A is to be defined based on linear progression in the range 400 (500 MW) and 2000 (100 Mw).
2. The right values for TPP A is to be defined based on linear progression in the range 450 (500 MW) and 800 (50 Mw).

Based on the Administrative Instruction, TPP A and TPP B shall draw up appropriate programmes for the progressive reduction of air emissions (SO2, NOx and particulate) not later than 31 March 2008. Criteria of cooperation to prepare the “Program for efficient reduction” will set up by MESP.

Furthermore both the power plants, in relation to plans for pollution reduction, are obligated to fulfil EU air emission standards before 31 December 2007.

3.1.5  Water Supply and Waste Water

Mines

Water uses in the mines include the following:
- Washing of trucks etc;
- Sanitary uses in repair stations.

Water is supplied by public mains as detailed in the following statements and is transported by tank lorries to the repair stations. No water wells are reportedly operated by the mines.

Carl Bro reported an average water consumption amount for the year 2002 of about 350,000 m³/y.
Sanitary waters and water from washing are mixed with mines water and through an (mostly) open channel discharged into the Sitnica River without any treatment.

The repair stations are not equipped with oil separators.

Kosovo A and Kosovo B Power Plants

Water Supply

Main water uses in power plants include:
- Cooling water make up;
- Boiler make up;
- Sanitary use;
- Washing water;
- Water to added to ashes to prevent dust emission;
- Slurry preparation for ash transportation in TTP B (the ratio between ash and water is 1:1).

In TPP A water is supplied by Llapi River; in emergency condition (especially in dry season) water from TPP A is supplied by Iber Lepenc canal. In TPP B water is taken only from Iber Lepenc canal.

The water for boilers is subjected to the usual treatment procedures (filtration, flocculation, decarbonisation and demineralization). The different phases of the treatment are currently operated manually, although the system in TTP B was originally designed for automatic operation.

As stated in KEK Environmental Report 2006 water consumption is high; while TPP B uses around 2.7 m³/MWh, TPP A water demand may reach up to 5.3 m³/MWh.

Since the power plant does not have flow rate measurement system total water consumption is not determined and uncertainties remain in the determination of real water consumption.

Assuming valid the above stated data from KEK the average water consumptions for the 2004, 2005 and 2006 years, determined on the basis also of the electric domestic production (Table 3.1.5a) would have been as shown in the following table.

Table 3.1.5a  Estimated Water Consumptions at the Power Plants Based on KEK data

<table>
<thead>
<tr>
<th>Power plant</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>m³</td>
<td>m³</td>
<td>m³</td>
</tr>
<tr>
<td>TTPA</td>
<td>4,579,200</td>
<td>3,418,500</td>
<td>4,764,700</td>
</tr>
<tr>
<td>TTPB</td>
<td>6,814,800</td>
<td>8,758,800</td>
<td>8,046,000</td>
</tr>
<tr>
<td>Total</td>
<td>11,394,000</td>
<td>12,177,300</td>
<td>12,810,700</td>
</tr>
</tbody>
</table>

Based on data concerning average water consumption for same typology of plant and also the declared consumption for 2,000 MW of Kosovo C (5,600 m³/h), it’s the Consultant opinion that water consumption is higher than that reported in KEK Environmental Report.

Total water of Kosovo A and Kosovo B as declared by Iber Lepenc management is 0.7 m³/s in dry season.

The Final Report of the study Water supply from the Iber Lepenc hydro system for the proposed Kosovo C power plant - (February 2008) funded by EAR and developed by COWI consortium reports the same figure for the existing TPPs water consumptions, and in particular:
- 0.20 m³/s for TTPA in dry season (0.08 m³/s the average yearly consumption);
- 0.50 m³/s for TPPB (average monthly and yearly value).
The average annual water consumptions reported in the EAR Water Supply study calculated on the basis of these figures are the following:

- 2,630,000 m³;
- 15,770,000 m³.

The total water consumption for the existing TPPs as reported in the EAR Water Supply study is 18,400,000 m³ that is more than 40% the estimated water consumptions at the determined based on KEK data.

The specific water consumptions based on the data presented in Table 3.1.5a are shown in the following Table 3.1.5b.

### Table 3.1.5b Specific Water Consumptions at the Power Plants Based on KEK data (see Table 3.1.5a)

<table>
<thead>
<tr>
<th>Power plant</th>
<th>2004 m³/MWh</th>
<th>2005 m³/MWh</th>
<th>2006 m³/MWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTPA</td>
<td>5.3</td>
<td>5.3</td>
<td>5.3</td>
</tr>
<tr>
<td>TTPB</td>
<td>2.7</td>
<td>2.69</td>
<td>2.7</td>
</tr>
<tr>
<td>Total</td>
<td>8.0</td>
<td>7.99</td>
<td>8.0</td>
</tr>
</tbody>
</table>

For modern plants with evaporative cooling towers water consumption is typically below 2.0 m³/MWh and for older rehabilitated plants around 2.5 m³/MWh.

The estimation included in EAR Water Supply study will be considered reference values for water consumption in the existing power plants.

A project for the recirculation of water (89%) for TPP B power plant is under preparation to try to reduce water consumption. Waste water from blow down and water preparation process is sometimes used for the transportation of ash and slurry in TPP B.

Waste Water Discharge

The main sources of waste water discharge are:

- Rainwater collected in the drainage systems;
- Collected waste water from mines, coal yards and power plants;
- Cooling towers water and boilers blow down (drainage system);
- Discharge from the demineralisation plants;
- Sanitary water.

There are no settlement ponds for waste water from the mines but the water is pumped out and discharged into the nearest river.

In the Bardh mine, there are mine drainage channels to the river Drenica, which will need to be prolonged as mining advances. Frequently mine waters are used to extinguish fires in the mines.
In the power plants all the waste waters are gathered in a unique sewer system collecting all the rain and process waste water.

Water from demineralisation plants are sent to open sedimentation and neutralisation basins, but they are out of date, seem badly maintained and a part of the waste water, especially at Kosovo A, is conducted to Sinica River without treatment.

Apart from the quantity of evaporated water from the cooling tower process, all the wastewater generated in TPP A and TPP B plants, including industrial effluents, sanitary effluents and rainfall is discharged in Sitnica River without any treatment.

The discharging system includes 22 discharging points into the main sewage system and 3 main discharging points into Sitnica River.

The main pollutants in the wastewater are:

- fuel residuals;
- ash residuals;
- oil and chemical residuals;
- sanitary water.

These residuals contain salts and trace metals which can be harmful for humans and ecosystem.

Wastewater discharges from the power plants are monitored by INKOS through 17 surface water and 5 underground water monitoring points (5 piezometers, installed around the ash dump at TPP B to monitor groundwater quality). Results of wastewater monitoring are included in KEK monthly environmental report.

Permanent monitoring of upstream and downstream flows of Sitnica River is not routinely implemented. Furthermore monitoring program appears insufficient in terms of monitoring points, frequencies and investigated parameters (heavy and rare metals are not included).
The map of wastewater discharges monitoring points for KEK existing facilities, as reported in KEK Environmental Report 2006, is presented in the following Figure 3.5.1b.

Table 3.5.1b presents the results of the monitoring campaign carried out in the period January-June 2007, as reported in KEK report.

Beside surface water (discharge and rivers) Table 3.5.1b reports also chemical analysis of underground water (Pa,Pb,Pc and Pd points). The results show a particularly polluted ground water (concentration of some parameters is higher than Former Yugoslavian limits set for discharge water).

Table 3.5.1c contains also discharge limits established by Former Yugoslavia for the different classes of rivers\(^1\). Based on the analysis results Sitnica River is probably classified in IV Class. Some parameters of the river water quality exceed also the discharge limits (suspended solids, K\(\text{MnO}_4\), etc).

With reference to presence of heavy metals in Sitnica River, Poyry study (“Studies to Support the Development of New Generation Capacities and Related Transmission – Kosovo UNMIK – Task 4: Site Selection”, Poyry/CESI/Terna/Decon, of behalf of EAR, June 2007”) reports that: Really alarming are the findings on heavy metals, as they exceed for Pb the waste water

\(^1\) Class I: water that, in natural state or after disinfection, can be used for drinking water supply, food industry and fine fish (salmonidae) breeding. Class II: water appropriate for bathing, recreation, water sports, less fine fish (cyprinidae) breeding, including water that, after basic treatment methods (coagulation, filtration and disinfection), can be used for drinking water supply and food industry. Class II is then divided in two further subclasses: sub-class IIa and sub-class IIb; Class III: water that can be used for irrigation and industries except food industry; Class IV: water that can be used only after special treatment).
limits of World Bank up to 8-fold, and the EU limits up to 40-fold. The value for Cd exceeds the proposed EU limit at least 6-fold, supposing a high hardness of water (> 200 mg CaCO3/l) even 18-fold.

According to KEK report: From the analysis it results that the key parameters which exceed maximum allowed values\(^1\) are the pH values, suspended matters and use of KMnO4. The main sources of exceeding of these values are in effluents of the ash deposit, waters from the gasification area, and the technological waters of TPP A and B. Still, even in recipients there are often very high values, especially near the discharge of waste waters, such as Fushe-Kosova, Kastrioti, etc.

It seems that only limited measures to reduce the infiltration are taken and overall the problem seems of minor importance for the management of KEK.

\(^1\) As standards, the INKOS has used the maximum value parameters, allowed by water category, namely four categories. Exceeded values have been recorded when these values have exceeded the values for III category of waters.
Figure 3.1.5b  Map of Waste Water Discharges Monitoring Points for KEK Existing Facilities

Recipient Sitnica
Sample sites: 1-Lismir; 2-Mirash; 3-Palaj; 4-Plemitin; 5-Llap; 6-Lumëmadhi; 7-Shpresë

Effluents
Sample sites: TPP A - 2.1; ash deposit-2.2; TPP A ash deposit waters; 3.1 - technological waters TPP A; 3.2 - cooling tower water; 3.3-technological waters (main collector); 3.4-gasification, 3.5-Heating TPP B; 4.1-open channel right-eastern side of ash deposit; 4.2-discharged technological waters from units and sanitary waters; 4.3 water discharged from PKU, cooling towers, B1 draining; 4.4-collection of polluted waters into the open channel TPP B; 4.5-collection of all waters discharged by TPP B; P1, P2, Pa, Pb, Pc-underground samples at TPP B.
### Table 3.1.5c Monitoring Waste Waters Discharges from TPP A and B to the Recipient Sitnica, Average Values for period January-June 2007

<table>
<thead>
<tr>
<th>Subjekt</th>
<th>Dep. hrt. T.C.A</th>
<th>Dep. hrt. Nj. Tore</th>
<th>T.C.Kosova &quot;A&quot;</th>
<th>T.C.Kosova &quot;B&quot;</th>
<th>Ujjerat sipérfagor dhe ujjerat nentokessor</th>
<th>PML-Pèrcëndrimi max. i lejar</th>
<th>Klesat e ujít</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Aroma (cë nubart)</td>
<td>Pa</td>
<td>Pa</td>
<td>Pa</td>
<td>Pa</td>
<td>Pa</td>
<td>Pa</td>
<td>Pa</td>
</tr>
<tr>
<td>2. Njyra (cë vërëjt)</td>
<td>Pa</td>
<td>Pa</td>
<td>Pa</td>
<td>Pa</td>
<td>Pa</td>
<td>Pa</td>
<td>Pa</td>
</tr>
<tr>
<td>3. Temperratura (°C)</td>
<td>14.15</td>
<td>10.6</td>
<td>12.4</td>
<td>9.917</td>
<td>12.48</td>
<td>11.83</td>
<td>12.46</td>
</tr>
<tr>
<td>4. Përqi (S/cm)</td>
<td>1308</td>
<td>642</td>
<td>438</td>
<td>102</td>
<td>380</td>
<td>581.7</td>
<td>601.7</td>
</tr>
<tr>
<td>5. Vlera pH</td>
<td>8.4</td>
<td>7.7</td>
<td>8.1</td>
<td>7.9</td>
<td>8.9</td>
<td>7.5</td>
<td>7.7</td>
</tr>
<tr>
<td>6. Nitratat (mg/l)</td>
<td>5.2</td>
<td>2.4</td>
<td>2.6</td>
<td>4.8</td>
<td>5.5</td>
<td>8.2</td>
<td>8.1</td>
</tr>
<tr>
<td>7. Nitratat (mg/l)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.50</td>
</tr>
<tr>
<td>8. O2 i Tërtrr (mg/l)</td>
<td>8.16</td>
<td>9.11</td>
<td>9.13</td>
<td>9.08</td>
<td>9.11</td>
<td>7.40</td>
<td>7.64</td>
</tr>
<tr>
<td>9. Ngpp me O2 (mg/l)</td>
<td>81.1</td>
<td>84.9</td>
<td>88.1</td>
<td>82.51</td>
<td>87.95</td>
<td>69.9</td>
<td>73.9</td>
</tr>
<tr>
<td>10. SHBO5 (mg/l)</td>
<td>60.5</td>
<td>26</td>
<td>23</td>
<td>347.2</td>
<td>38.33</td>
<td>40.5</td>
<td>40.17</td>
</tr>
<tr>
<td>11. Mjete e t çë pol filtruar</td>
<td>945.3</td>
<td>715</td>
<td>695</td>
<td>1285</td>
<td>1909</td>
<td>627</td>
<td>702</td>
</tr>
<tr>
<td>12. Mjete e t çë pol filtruar</td>
<td>900</td>
<td>631</td>
<td>570</td>
<td>995.8</td>
<td>456.8</td>
<td>531.7</td>
<td>593.3</td>
</tr>
<tr>
<td>13. Mjete e t çë pol filtruar</td>
<td>900</td>
<td>631</td>
<td>570</td>
<td>995.8</td>
<td>456.8</td>
<td>531.7</td>
<td>593.3</td>
</tr>
<tr>
<td>14. Matë e suspend.</td>
<td>293.3</td>
<td>70.8</td>
<td>105</td>
<td>141.7</td>
<td>352.6</td>
<td>118.3</td>
<td>107.8</td>
</tr>
<tr>
<td>15. Sulfatat</td>
<td>401.6</td>
<td>50.6</td>
<td>77.6</td>
<td>64.88</td>
<td>44.4</td>
<td>65.75</td>
<td>116.1</td>
</tr>
<tr>
<td>16. Mjete e t çë pol filtruar</td>
<td>605.7</td>
<td>55.9</td>
<td>71.6</td>
<td>66.88</td>
<td>44.4</td>
<td>65.75</td>
<td>116.1</td>
</tr>
<tr>
<td>17. Mjete e t çë pol filtruar</td>
<td>605.7</td>
<td>55.9</td>
<td>71.6</td>
<td>66.88</td>
<td>44.4</td>
<td>65.75</td>
<td>116.1</td>
</tr>
<tr>
<td>18. Fenolë</td>
<td>0.05</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.05</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>19. Klorurat</td>
<td>1.612</td>
<td>3.42</td>
<td>2.47</td>
<td>1.3</td>
<td>1.83</td>
<td>4.293</td>
<td>6.062</td>
</tr>
<tr>
<td>20. Viera &quot;p&quot;</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>21. Redoksidot</td>
<td>2.33</td>
<td>4.80</td>
<td>5.4</td>
<td>3.0</td>
<td>4.02</td>
<td>5.43</td>
<td>5.42</td>
</tr>
<tr>
<td>22. Carbonatet</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>23. Bikarbonatet</td>
<td>132</td>
<td>293</td>
<td>325</td>
<td>181.0</td>
<td>230.8</td>
<td>331.4</td>
<td>333.7</td>
</tr>
</tbody>
</table>

**Legend**

1. Aroma (smell)
2. Color (view)
3. Temperature (°C)
4. Conductivity (S/cm)
5. pH
6. Nitrates (mg/l)
7. Nitrites (mg/l)
8. Dissolved O2 (mg/l)
9. O2 saturation (%)
10. BOD5 (mg/l)
11. Dry unfiltered residue
12. Dry filtered residue
13. Suspended matters
14. Sulphate
15. H.i KMnO4 (mg/l)
16. Phenols
17. Chloride (mg/l)
18. "p" medium val/l
19. "m" medium val/l
20. Hydroxides
21. Carbonates
22. Bicarbonates
3.1.6  

Mine and Ash Dump Water

The Bardh and Mirash mine waters have ground and surface water origin dominated by groundwater since lignite exploitation is made below the level of Drenica and Sitnica rivers. The drained waters of this mine are discharged into the Drenica River, while this water is often used for fighting local fires in mines.

Natural ponds are being used for collection of mine water and the water is pumped via channels to the water recipient (Drenica and Sitnica River). The mine water outfall into the Drenica River is presented in Figure 3.1.6a.

Water quality is monitored by INKOS and data is made available on a monthly basis. A few piezometers have been installed around the ash dump at TPP B to monitor groundwater quality (see Figure 3.1.5a and Table 3.1.5b). It was stated that data is available for the Sibovc area. During the site visit it was noted that surface water does not seem to be a significant issue in terms of runoff, although this might change in the winter months.

Figure 3.1.6a  
Mine Water Outfall into the Drenica River; Plastic Household Waste at the River Bank

The following data is taken from KEK 2006. The surface water quality in mines is characterized by high mineralization of sulphates due to gypsum dissolution and sulphate mineralization by pyrite oxidation. Due to the high concentration of carbonates, pH values remain at neutral levels. The following Table 3.1.6a shows parameters of mine waters and rivers, which receive mine draining waters.
Table 3.1.6a  Physical/chemical Characteristics of Mine Waters and Rivers

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Drenica River Before Bardh</th>
<th>Bardh Mine</th>
<th>Drenica River After Bardh</th>
<th>Mirash Mine</th>
<th>Sitnica After ash deposit</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>8.45</td>
<td>7.67</td>
<td>8.0</td>
<td>7.6</td>
<td>8.2</td>
</tr>
<tr>
<td>Dissolved oxygen</td>
<td>8.8</td>
<td>15</td>
<td>9.6</td>
<td>17.3</td>
<td>5.2</td>
</tr>
<tr>
<td>Suspended matters mg/l</td>
<td>15</td>
<td>420</td>
<td>100</td>
<td>400</td>
<td>137</td>
</tr>
<tr>
<td>Hardness mg/l</td>
<td>17.64</td>
<td>77</td>
<td>22.4</td>
<td>73.7</td>
<td>23</td>
</tr>
<tr>
<td>Ca mg/l</td>
<td>66</td>
<td>180</td>
<td>94</td>
<td>170</td>
<td>100</td>
</tr>
<tr>
<td>Mg mg/l</td>
<td>36</td>
<td>223</td>
<td>40</td>
<td>213</td>
<td>40</td>
</tr>
<tr>
<td>Cl mg/l</td>
<td>26</td>
<td>286</td>
<td>27</td>
<td>275</td>
<td>60</td>
</tr>
<tr>
<td>NO₃ mg/l</td>
<td>7</td>
<td>6.5</td>
<td>4.9</td>
<td>7.2</td>
<td>4.9</td>
</tr>
<tr>
<td>HCO₃ mg/l</td>
<td>366</td>
<td>604</td>
<td>354</td>
<td>600</td>
<td>299</td>
</tr>
<tr>
<td>SO₄ mg/l</td>
<td>118</td>
<td>1,925</td>
<td>76</td>
<td>1,912</td>
<td>168</td>
</tr>
</tbody>
</table>

The Drenica River shows a lower sulphate concentration after going through the Bardh mine. This might have been true in the cases of sample-taking, when there are no water discharges from the mine into the river. The high pH values of river waters show that there is pollution by organic waste waters.

The sulphate content in mine waters is around 2,000 mg/l. Sulphates may not be reduced by simple or cheap technical methods. Hence it is important for the mine water discharge extent to not exceed 10% of the individual water flow volume of the river itself. Suspended substances in the mine waters show high values of around 400 mg/l (according to EU guideline on fish water the allowed amount is up to 25 mg/l).

Data on mine drainage water from the Mirash mine is presented in STEAG 2006 (see also Figure 3.1.6b following). It has to be taken into consideration that the sampling point does not always represent the quality of pumped mine water since dilution by rainwater might have influenced the sample.

The concentrations indicate a potential need for mine water treatment depending on the quantity of mine water discharge and the quality and quantity of the receiving stream. Minimum standard would be to install settling ponds to reduce the load of suspended solids and coal particulate (STEAG 2006). Natural ponds are being used for this and a drainage system exists.

So far no limit values have been stipulated by the agencies for discharge of mine water into the rivers¹.

---

¹ World Bank Environment, Health and Safety Guidelines for Mining and Milling - Open Pit, contain threshold for mine water to be discharged into rivers, however the parameters are different (e.g heavy metals)
Waste Management

Mines

No inventory of waste generated exists.

Reported waste includes:
- Ash from power plants;
- Solid waste from offices and repair stations;
- Spent oil;
- Spent batteries;
- Urban waste.

Waste Streams
- **Solid waste** is collected by the Company cleaning staff and disposed off in waste containers which are being emptied by the municipal waste collection and disposal services.
- **Hazardous Waste**
  - Spent oil (motor, hydraulic, trafo) is stored mainly in barrels. Annual amounts are in the range of 22,000 l.
  - Spent batteries. Reportedly there are no spent batteries.

Kosovo A and Kosovo B Power Plants

Waste from both the power plants is managed by a special division within Central Maintenance Department.
The main sources of solid waste are:

- Combustion residuals (ashes);
- Worn out equipment and materials;
- Residuals from water treatment;
- Spent machineries oil.

Waste inventory included 32 waste typologies; ashes are far the biggest problem in terms of quantities.

**Bottom Ash and Fly Ash**

Residuals from combustion are bottom ash and fly ash from electrostatic precipitators.

As reported in KEK Environmental Report 2006 the current rate of non-combustible materials in lignite is around 30% of the combusted lignite.

TTP B fly ash is now hydraulically transported as a suspension of water and ash to the ash landfill where it is discharged in the residual hole of the former Mirash-East mine. Bottom ash is transported to the landfill with trucks and conveyors.

As described in the previous Section 2.3.2 TTP A ashes are transported to the existing ash landfill by means of belt conveyors after humidification.

Amounts of ash production from TPP A and TPP B in the period 2005-2006 are presented on the following Table 3.1.7a (from KEK report).

<table>
<thead>
<tr>
<th>Table 3.1.7a Ash Amounts Produced by TPP A and TPP B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Generation Division</strong></td>
</tr>
<tr>
<td>TPP A</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>TPP B</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Methods used to determine these quantities are not reported and exact quantity of ash is not really known.

A typical complete Chemical analysis of ash (slug and fly ashes) is reported in Table 39 of KEK Report. Leaching ability (amount leaching from the ash when in contact with water) of some trace elements and salts is reported in Poyry study. Salts are reaction products from metals with acids. The data are reported in Table 3.1.7b.
Table 3.1.7b  Leaching Ability of Heavy Metals and Salt

<table>
<thead>
<tr>
<th>Selected trace Elements</th>
<th>Total leaching ability % of content</th>
<th>Fast leaching ability % of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>As</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>Cr</td>
<td>2</td>
<td>90</td>
</tr>
<tr>
<td>Mo</td>
<td>50</td>
<td>90</td>
</tr>
<tr>
<td>Se</td>
<td>40</td>
<td>75</td>
</tr>
<tr>
<td>V</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Salt</td>
<td>95</td>
<td>90</td>
</tr>
</tbody>
</table>

In summary bottom and fly ash have until now been disposed off in the easiest and cheapest way without attention to environmental concerns. Only recently ashes from Kosovo B have been hydraulically transported to exhausted mine of Mirash-East.

As previously outlined two disposal sites for bottom and fly ash were used located just outside TTP B and TTP A sites where heaps formed by ash creates a visually very dominant element in the landscape.

The ash landfills exceeded the originally intended volume determining also problems of stability in both the landfills.

The originally designed maximum height of the landfill for TPP B was 15 meters, but today the height of the landfill is at least about 30 - 40 meters.

The areas occupied by ash landfill are approximately 240 ha for TTP A (including overburden) and 55 - 60 ha for TPP B.

Both the landfills were used to dispose of other solid and liquid waste. As outlined in the previous Section 2.4.5 in the TTP A landfill also exhausted oil pond and phenol ponds were identified.

In case the landfills will remain in the current location, intervention should be realised in the future to secure their physical stability.

Waste Metals
Waste metals are the only waste separately collected and sold to METALKOS; the total amount of scraps removed by the firm in 2006 was around 975,198 t.

Hazardous Waste or Potentially Hazardous Waste
Transformers oil, batteries, cables, insulation, chemicals and chemicals packaging are stored in special areas and disposed off without any formal procedure. The status of transformers at the Kosova A&B TPP’s are not yet being defined. Specific procedures for waste transportation and disposal are still under preparation.
Waste oil and chemical residuals are reported to be recycled according to the producer's instructions. Waste oils are stored outdoors in barrels in several places without formal procedures. Some of the barrels have no lid or cover thus enabling overflowing due to filling with rainwater. The barrels are mostly stored on bare soil with no water or oil containment structures.

Waste oils are sold but final addressee and purposes are not clear.

Solid waste (non metals similar to urban waste) is collected in containers and disposed off by the municipal waste services company.

Sludge from water treatment plant is highly contaminated with salts and trace elements. Currently the residuals are temporary stored in an underground tank and disposed in the ash disposal.

No detailed information is provided on waste management in the past, also because the environmental department has been recently established.

3.1.8 Oil, Fuel and Chemicals Management

Mines

Lubricants and Oils
Available data indicates a total volume of about 22,000 l of oil (motor, hydraulic, trafo) consumed annually.

Oil storage was seen at the main workshop facilities in approximately 10 drums (200 l).

Fuel
Diesel fuel is stored in three Underground Storage Tanks USTs which reportedly have a capacity of 2 x 50 tons each and 30 tons.

No integrity test was performed at the tanks in the past.

In direct vicinity to the Petrol station there is an abandoned installation with two USTs (approx 20 and 12 tons).

Kosovo A and Kosovo B Power Plants

Lubricants and Oils
No specific information on use of lubricants and oil is reported.
Oil storage area in TPP B site is reported but details are not provided.

Fuel
The main fuel for both Kosova A and B power plants is lignite. Lignite is processed in two different locations of TPP A and TPP B sites.
The total annual lignite capacity in both the power plants is presented in the following Table 3.1.8a.

Table 3.1.8a  Total lignite Consumption in TPP A and TPP B in 2000-2006

<table>
<thead>
<tr>
<th>Year</th>
<th>TPP A</th>
<th>TPP B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1123769</td>
<td>196002</td>
</tr>
<tr>
<td>2001</td>
<td>1978093</td>
<td>2207504</td>
</tr>
<tr>
<td>2002</td>
<td>2176964</td>
<td>3039854</td>
</tr>
<tr>
<td>2003</td>
<td>2115558</td>
<td>2976545</td>
</tr>
<tr>
<td>2004</td>
<td>1708209</td>
<td>3928103</td>
</tr>
<tr>
<td>2005</td>
<td>1304565</td>
<td>4469340</td>
</tr>
<tr>
<td>2006</td>
<td>1635864</td>
<td>4101824</td>
</tr>
</tbody>
</table>

Light oil (TPP A) and heavy fuel oil (TPP B) are used for start-up only. These fuels are stored in above soil tanks fitted with a containment basins whose condition s seemed very bad during the site visit.

Chemicals

Reportedly power plants use small amounts of chemicals potentially hazardous. They are mainly used for chemical treatment of water and its clean-up.

Ammonia hydroxide and hydrazine are used in water-steam systems to eliminate oxygen and regulate pH.

The yearly use of chemicals is presented in the following table.

Table 3.1.8b  Yearly Use of Chemicals in TPP A and TPP B

<table>
<thead>
<tr>
<th>Chemicals</th>
<th>TPP A</th>
<th>TPP B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005 2006</td>
<td>2005 2006</td>
</tr>
<tr>
<td>Decarbonized water (m3)</td>
<td>4127000 5042700</td>
<td>9354049 9146674</td>
</tr>
<tr>
<td>Demineralized (m3)</td>
<td>290297 479903</td>
<td>556119 477547</td>
</tr>
<tr>
<td>HCl (t)</td>
<td>336.5 469.49</td>
<td>392.66 355.07</td>
</tr>
<tr>
<td>NaOH (t)</td>
<td>265.44 383015</td>
<td>234.74 206.94</td>
</tr>
<tr>
<td>Ca(OH)2 (t)</td>
<td>847.02 1214.38</td>
<td>1587.9 1554.8</td>
</tr>
<tr>
<td>Ferrous sulphate (t)</td>
<td>12.866 20.18</td>
<td>23.94 23.79</td>
</tr>
<tr>
<td>Hydrazine (t)</td>
<td>4.19 7.34</td>
<td>19.55 19.5</td>
</tr>
<tr>
<td>Ammonia hydroxide (t)</td>
<td>- -</td>
<td>29.15 28.39</td>
</tr>
<tr>
<td>Aktifos (t)</td>
<td>9.7 22.09</td>
<td>52.6 30.16</td>
</tr>
<tr>
<td>Oil/petroleum (t)</td>
<td>3166138 4781514</td>
<td>7085.89 7433.29</td>
</tr>
</tbody>
</table>

As reported during the site visit chemicals are stored in dedicated areas.

3.1.9  PCBs

Mines

PCB is in principle not contained in equipment. In Mine (separation plant of Kosova B) there is just one transformer containing PCB (oil capacity 1.040 t).
Kosovo A and Kosovo B power plants

KEK Environmental Report mentions 5 PCBs containing transformers out of operation, and 14 PCBs containing transformers still function in TPP B site. These PCBs containing transformers should be removed and properly disposed off in near future.

Larger quantities of PCBs containing transformers were used in the past have been dismantled and were probably disposed in a not specified area of TPP B site.

Since there is no special care of waste oils discarded into drums without specific labels there is no labelling of oil, which may or may not contain PCB. Procedures or instructions for waste oil control do not exists or are not implemented.

3.1.10 Asbestos

Mines

Reportedly no asbestos is present in the mining area and none was identified during the site visit.

Kosovo A and Kosovo B power plants

Asbestos or asbestos containing materials are not used at TPP B. As reported in Carl Bro EA study at the time TPP A was erected it was common to use asbestos but a lot of this was replaced prior to the conflict.

Removed asbestos was reportedly disposed in ash disposal site under ash and slag level.

3.1.11 Noise

Mines

Noise sources in the mines are mainly vehicles and various working equipment.

One complaint was reported, which has been filed by the population of Grabovc for noise (most likely caused by conveyor belts) and dust emissions by the operation of the mine.

Reportedly measurements performed revealed exceedance of noise limit values by approx 10 dBA for night time. An earth dam is planned as mitigation measure to reduce noise levels.
Kosovo A and Kosovo B power plants

No complaint from inhabitants of power plants neighbouring villages has been reported in relation to noise.

Carl Bro study reported a light exceedence of noise level in night time in Obiliq city due to TPP B power plant operations (63 dBA against the international maximum level of 60 dBA).

3.1.12 Ozone Depleting Substances (ODS)

No information is available on this issue.

3.1.13 Radioactive Materials

Reportedly no radioactive materials are used in the mines and in the power plants as well as none were identified during the site visit. A bunker with radioactive material is reported in the gasification plant site.

3.1.14 Unexploded Ordinance

Reportedly there is no evidence for unexploded ordnance in the area of the two mines as well as no indications were identified during the site visit.

3.1.15 Housekeeping

Site visits indicated that there is an opportunity to improve housekeeping standards.

3.1.16 Municipal Landfill

The Municipal Landfill of Pristina is located in the north-eastern corner of Mirash East Mine. The landfill is equipped with a leachate pond. Reportedly the landfill needed no permit for construction and it is managed under the responsibility of KTA. The landfill is fenced and obviously it seems well managed.

3.1.17 Environmental Emergencies

No training is given to workers to manage potential environmental emergencies such as oil or chemical spills.
CONCLUSIONS AND RECOMMENDATIONS

Environmental situation in the area is very complex for a number of different reasons. First of all the environmental setting has been deeply influenced by historical mining activities with particular regard to geology, hydrogeology and hydrology modifications occurred. This aspect makes very complicated any identification of environmental impact with specific regard to soil and groundwater aspects. As a consequence further monitoring activity is necessary in this field.

4.1 HIGH PRIORITY ENVIRONMENTAL ISSUES

The existing environmental issues that in the Consultant’s opinion should be addressed with the highest priority are the ones related to the following:

- **Ashes landfill remediation.** A comprehensive monitoring campaign has to be set up and feasibility studies have to be completed in order to find solution to danger to underground and surface water posed by the existing ash landfills. The ashes contain salts and trace metals of which some quantities, when in contact with water, sooner or later will be released. Ash spreading from ash landfills due to winds is a significant environmental problem since sprinkler system is not installed at the ash landfill to prevent wind erosion. In situations with dry air and windy weather episodic air pollution with ash particles occurs. Stabilisation, covering with soil and vegetation are the alternatives to ashes relocation.

- **Contaminated sites with Phenol** and other organic contaminants have to be reclaimed after the conclusion of the ongoing monitoring activity through the implementation of a project for removal of phenols and water phenols from the gasification plant.

- **Air emission reduction.** Both the existing power plants are emitting dust, nitrogen oxide well above standard limits posing serious threat to population health. It is Consultant’s opinion that TPP A is too old and in bad conditions to be put in compliance with western standards at reasonable time and costs. Maybe an attempt could be performed to install new electrostatic precipitators. TPP B could be fitted with proper electrostatic separator and NOx abatement systems such as low nox burner or ammonia injection. A feasibility study has to be set up to identify cost and time to allow TPP B to be complaint with western air emissions standards. Of course both the power plants must be fitted with emission monitoring devices as soon as possible.

- **Water management.** Recycle of waste water is recommended. Sewage system has to be improved to separate process water from rain water. Rain water has to be collected and used to reduce consumption as process water (make up of cooling towers). A waste water treatment
plant has to be built to reduce environmental pressure over the Sitnica River.

- **Waste management**: A waste management plan must be prepared and implemented. Utilisation of fly ash and bottom ash (ex in Cementery or to construct roads) should be explored.

- **Measurement of workplace concentrations at mine with respect to particulate matter (coal dust) and emissions from lignite fires**
  - Provide adequate protective equipment for the mine workers based on the above mentioned measurements.
  - Provide septic tanks for the sanitary waters.

In the following table an attempt is given to summarise the high priority environmental issues and to provide a rough cost estimation of actions to be undertaken to remediate or clean-up the damages or to prevent them.

### Table 4.1a High Priority Environmental Issues

<table>
<thead>
<tr>
<th>Issue</th>
<th>Recommendation</th>
<th>Cost Estimate (Euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Emission</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air monitoring</td>
<td>An air emission monitoring system should be introduced and the capacities for air quality monitoring should be set up. The monitoring program includes two monitoring stations for the detection of the following substances: CO, NOx (NO + NO2), O3 and Particulate (PM10 and PM2.5). The monitoring program includes also meteorological station and hardware/software equipment for the registration/transmission of data.</td>
<td>300,000</td>
</tr>
<tr>
<td>Emissions from TPP A</td>
<td>Feasibility Study to install new electrostatic precipitators. Only minor intervention can be possible due to the state of the power plants. A feasibility study to reduce dust emission could provide answer.</td>
<td>50,000 feasibility precipitators</td>
</tr>
<tr>
<td>Power plant emissions</td>
<td>Need for installation of electro filters and de-NOx or low NOx burners –and possibly DeSOx.</td>
<td>50-100 millions</td>
</tr>
<tr>
<td>Dusts emissions from open dumps</td>
<td>Flattening side slopes and vegetation establishment on newly formed surfaces where deposition has been stopped.</td>
<td>See waste management</td>
</tr>
<tr>
<td>Pollution at work places</td>
<td>Monitoring campaign</td>
<td>Minor</td>
</tr>
<tr>
<td><strong>Waste water discharges</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effluents from TPPs</td>
<td>Waste water treatment plant at Kosovo A and B and sewer system revamping : water recycle system</td>
<td>0.7-1.5 million</td>
</tr>
<tr>
<td>Mines water</td>
<td>Installation of settling ponds to reduce the load of suspended solids and coal dust of mines water (STEAG 2006).</td>
<td>100,000</td>
</tr>
<tr>
<td>Issue</td>
<td>Recommendation</td>
<td>Cost Estimate (Euro)</td>
</tr>
<tr>
<td>-------</td>
<td>----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Waste management</td>
<td>Waste inventory in terms of types, amount and current location, including chemical characterisation by means of waste excavation, sampling and chemical characterisation (leachate monitoring) – (presently underway for Ash landfill TPP A)</td>
<td>400,000 Studies</td>
</tr>
<tr>
<td></td>
<td>Risk assessment of potential impacts deriving from the presence of waste with regard to release into air, surface water, groundwater and soil – preliminary cost estimate for this task is about 60,000 Euro; Based on risk assessment results, mitigation measures should be designed and implemented including: 1) waste capping: wastes should be adequately profiled in order to consent stormwater runoff discharge and then capped with geomembranes and backfill soils) – preliminary cost estimate for this task is about 300,000 Euro; 2) waste removal and transfer to the exhausted mines– additional data are necessary to give a preliminary cost estimate for this option.</td>
<td>About 20,000 Euro/a for capping</td>
</tr>
<tr>
<td></td>
<td>Preparation of a waste management plan</td>
<td>Relocation to be investigated</td>
</tr>
<tr>
<td>Noise Impact</td>
<td>A noise survey should be undertaken and proper comparison with applicable standards should be performed in order to ascertain potential non compliance and necessary mitigation measures.</td>
<td>Minor cost</td>
</tr>
<tr>
<td>Hazardous Substances</td>
<td>An inventory of chemicals stored and handled at the site should be prepared including details regarding age and status of maintenance of the tanks/drumms, environmental protection devices presence (secondary containment, leakage detection system, etc) and an environmental management plan including periodical visual inspection and integrity testing should be put in place.</td>
<td>Minor cost</td>
</tr>
<tr>
<td></td>
<td>A comprehensive ACMs inventory and mapping should be conducted to ascertain the presence, location and conservation status of the asbestos containing materials.</td>
<td>Minor cost</td>
</tr>
<tr>
<td></td>
<td>A comprehensive inventory of all PCB-oil containing equipment installed at each site is recommended based on sampling and monitoring of potentially containing PCBs oils.</td>
<td>Minor cost</td>
</tr>
<tr>
<td>Soil and Groundwater Impact</td>
<td>A superficial soil sampling is proposed in an area of 5 km radius from the Power plants to ascertain potential risks for human health deriving from direct exposure and/or food chain pathways.</td>
<td>30,000</td>
</tr>
<tr>
<td></td>
<td>The project should include sampling campaign, analysis for disposal options, geologic/hydrogeologic/hydrologic survey for the site, tanks empting and disposal of the hazardous waste^{1}.</td>
<td>Around 6.9 million</td>
</tr>
<tr>
<td></td>
<td>Sediment sampling should be undertaken every 250 m on the two banks of the Sitnica river (Sediment samples should be analyzed for pH and heavy metals (Pb, Cd, Zn, Cu, Cr, Ni, As, Hg) and phenols.</td>
<td>25,000</td>
</tr>
<tr>
<td>Issue</td>
<td>Recommendation</td>
<td>Cost Estimate (Euro)</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Work place Monitoring</td>
<td></td>
<td>minor</td>
</tr>
</tbody>
</table>

(1) As reported in the Final Report (May 2007) of Clean-up and Land Reclamation Project.

4.2 **ENVIRONMENTAL MANAGEMENT**

As described above an environmental management has been appointed and the structure has been recently set-up. It is now essential that this unit gets the support and resources needed to work efficiently.

4.3 **UNDERGROUND STORAGE TANKS**

The underground storage tanks used to store diesel should be surveyed as to their real age and properly tested for integrity. A replacement program with double layer tanks should be evaluated.

4.4 **AIR EMISSIONS**

An air emission monitoring and air quality program should be established to control ambient air quality in the mines and especially at the mine working places.

4.5 **LANDFILL**

It is recommended to compile information about the Municipal Landfill of Pristina located in the north-eastern corner of Mirash East Mine. Following topics should be clarified

- How and with which obligations was the landfill permitted;
- What kind of base sealing is existent;
- Which monitoring is conducted;
- Which kind of contract and obligations with the KEK are existing.

4.6 **HEALTH AND SAFETY AND FIRE PROTECTION ISSUES**

A budget should be set aside to allow for proper provision of personnel protective equipment to the workers engaged.

A thorough survey of all issues related to H&S should be made by the H&S Manager and a list of budgeted priorities should be made and presented to the Company’s Management so that implementation of criticalities may be included in the budget of the overhauling project.
Annex B

Draft Sibovc Development Plan
Draft Sibovc Development Plan

*Draft -26 May 2008*

[pieces still work in progress are marked with comments/colour]

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INTRODUCTION

Introductory note: This Draft SDP document was prepared by a consortium led by ERM (Italy) and supported by ELC Electroconsult and CSA Group Ltd under the World Bank funded project “Environmental and Social Safeguards Services for Private Sector Participation in the Development of new generation capacity, related transmission and the development of the Sibovc Lignite Field” which was commissioned by the Kosovo Lignite Power Technical Assistance Project (LPTAP) under the Ministry of Energy and Mining of Kosovo (MEM). The Draft SDP is interlinked with the Strategic Environmental & Social Assessment (SESA) for the power generation and mining development which was prepared in parallel by the above ERM consortium under the same World Bank funded project for LPTAP.

Sibovc Development Plan Context

Kosovo’s electricity production today depends on the aging Kosova A and the Kosovo B thermal power plants (TPP) which are fuelled by lignite from the Bardh and Mirash mines west of Pristina. These lignite mines will be exhausted by 2011.

The Kosovo Energy Strategy, set up by the Ministry of Energy and Mining (MEM) in 2005, is recognizing that in the long term, lignite will remain the principal fuel for electricity generation for Kosovo. The strategy demands that this indigenous resource should be utilized in an environmentally and economically responsible manner and further that land previously disturbed by mining and lignite based power generation should be reclaimed.

The key element of Kosovo’s future energy production is the further development of the present open cast lignite mining and energy production in the western periphery of Pristina through the construction of the new high efficiency Kosovo C lignite-fired TPP with up to 2100 MW installed capacity. The Kosovo B TPP is envisaged to be operated until 2030 and operation of Kosovo A TPP will be until 2017.

To feed the future power generation, an associated new 16 square kilometer sized lignite mine will be opened in the Sibovc mining field located adjacent to the north of the existing Bardh and Mirash mines. The new Sibovc mine will be developed over the next 4 – 5 decades.

The implementation of this power sector development will be undertaken with the participation of the private sector; i.e. the construction and operation of the new Kosovo C power plant and the development of the new Sibovc mining field will be undertaken by an international Investor (Project Company) based on long term concession agreements for mining and energy production which will be granted by the Government of Kosovo. These contracts are anticipated to be concluded by 2009. Before however, a number of decisions will need to be made by the Government of Kosovo though the
negotiations with the Investor. A key spatial planning relevant decision is the siting of the new Kosovo C TPP. The Strategic Environmental & Social Assessment (SESA), which was undertaken in parallel to the drafting of this SDP, investigated the environmental and social consequences of different scenarios for the development of Kosovo C TPP.

Further, the interfacing arrangements of the responsibilities of the private Project Company with the future operations of the Kosovo A and Kosovo B power plants and closure including closure and recultivation of the associated Bardh and Mirash lignite mines, which are presently all under the responsibility of the Kosovo Energy Corporation (KEK), are subject to further decision by the Government of Kosovo.

**Purpose of the Draft SDP**

The power generation and mining developments as outlined above will result in substantial changes and transformations of the spatial structure and land use in the affected area and communities.

While the new Kosovo C power plants will be built within few years time, the Sibovc mine development will be a long-term process which will gradually take place over the next 4 – 5 decades. Various activities changing the present land use and the landscape will happen in parallel. Besides the future activities in power generation and mining, also reclamation of lands disturbed from the previous activities will be carried out over the next decade which offers new opportunities for the use of land.

In this context the Draft SDP is a proposal developed under the LPTAP for a planning document which sets out the future spatial development under the above setting. The overall purpose of this Draft SDP is to:

- To describe the spatial implications of the development of Kosovo C and the new Sibovc mine;
- To set the spatial planning cornerstones and framework for the activities of the private sector Investor who will develop Kosovo C TPP and the Sibovc mine through a Project Company;
- To propose the spatial planning measures to handle the consequences in an environmentally and socially acceptable manner; and finally
- To provide guidance to the affected municipalities for their local spatial planning.
Limitations and Level of Planning Detail

This Draft SDP provides an overview of the ongoing and future activities which are likely to happen in the SDP area of interest based on the present stage of power and mining project preparations under the LPTAP.

It must be noted that at this stage, the description of the spatial development dimensions and delineation of future land use zones is limited to conceptual outline level, since important spatial determinants such as final location of the Kosovo C TPP, its technology, sizing installed capacity phasing concept (i.e. fast or staged), - which will determine lignite demand and thus the pace of mining advance in the Sibovc field and the resulting land claim, are not yet decided and subject to negotiations between the Government of Kosovo and the future private Investor. Further, there are ongoing studies under LPTAP about the feasible future land use of the outside overburden dumps and the ash dumps which all are under the ownership of KEK and decisions will need to be made how KEK proceeds with this land.

In general, the level of detail and spatial planning perspectives provided in this Draft SDP is more detailed for the near and mid-term future while limited to a conceptual outlook level for the long term where potential developments can only be sketched. With respect to the Sibovc mine development, a main mining plan was developed in 2005 by VEM/DMT (further referred to as MMP 2005). Even though the underlying assumptions about the Kosovo C TPP have changed and time scales of the claim of land for the mining have changed, this plan still provides a good picture of the mine development and is used as the presently best available source for this Draft SDP.

Moreover, large portions of land outside the present mines in the ownership of KEK are covered by overburden dumps and the Kosovo A and B ash dumps. Studies on future use of these areas are presently ongoing under the LPTAP activities.

Legal Framework and Status of the SDP

According to the Kosovo legal spatial planning framework, spatial transformations caused by lignite mining and energy generation projects shall be regulated in Spatial Plans for Special Areas.

As per Law on Spatial Planning of Kosovo (Law No. 2003/14), Article 12, Spatial Plans for Special Areas shall be set-up for zones identified in the Spatial Plan of Kosovo that require a particular regime for organisation, development, use and protection. The Spatial Plan of Kosovo defines area categories where a special development regime should be in place as Zones of Special Interest for Kosova - such as for lignite open mining and energy generation.

Article 12 of the Law on Spatial Planning further prescribes the process for such a plan to become binding. Spatial plans for special areas are formally set-up by the Ministry of Environment and Spatial Planning (MESP). Prior to
finalization of the plan, the MESP shall make the draft plan available to the public the other governmental institutions and the affected municipalities for review and comment at least for 60 days. Principles for public review and participation are set out in Article 19 of the Law on Spatial Planning. This is further specified in the Administrative Instruction 54/2005 (Protocol 15/05) Administrative Instruction for Implementing the Spatial Planning Law on the Procedure of Public Discussions for Spatial and Urban Plans. After the Draft is finalized, - which includes the results of the consultations, Spatial Plans for Special Areas are submitted by the MESP to the Government for preliminary approval and become legally binding by approval through the Assembly of Kosovo. Approved spatial plans for special areas are published in the Official Gazette of Kosovo.

Once approved, the spatial plan for a special area must be taken into account by spatial planning on municipal and local level and restrictions set-out in the in the superior plan apply to the local development. ¹

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Note: The present document does not constitute a formal spatial plan for a special area, but is the input and proposal of the MEM/Lignite Power Technical Assistance Project (LPTAP) for setting up such a plan as a formalized SDP through the MESP. This Draft SDP will be presented and coordinated with the MESP for further processing along the prescribed legal path of spatial planning given in the Law on Spatial Planning as described above.

Also under LPTAP’s Environmental and Social Safeguards Services assignment, this Draft SDP will be presented together with the Final SESA to the public in the villages affected by the future power and mining development.

**Interest Area of the Draft SDP**

Determining Elements and Factors for the study and interest zone of the SDP are the primary environmental impact of planned and existing activities:

- Footprint (land claim outline) of the new Sibovc mine (approximately 16 km²);
- Sites of the existing Kosovo A and B TPPs and the new Kosovo C power plant;
- Corridors for conveyor belts and infrastructure;
- Present mines;
- The outside overburden dumps from past and present mining activities;

¹ Cf. also to MESP Guidelines on Drafting Local Development Plans, ISP, p37 Section 8 “Energy and mines”
• The ash dumps of Kosovo A and Kosovo B power plants and the impact zones of dust resuspension to ambient air from these dumps, and

• A buffer around these spatial factors.

The SDP interest and planning area is enclosing the above impact factors as shown in Figure(i).

Within this area of interest, the instructions set forth in the later formal SDP will apply to the lands and spatial structures directly affected by the project development.

**Figure (i) SDP Interest zone**

![SDP Interest zone](image)

**Basis and Inputs used for the Draft SDP preparation**

Points of reference and main inputs for this Draft SDP are the following studies and documents which were prepared in the course of the power generation and mining project preparation activities coordinated under the LPTAP:

**1. Plans and Reports on Power Plant and Mining development**

- Main Mining Plan for the new Sibovc lignite mine (prepared by Vattenfall Europe Mining (VEM) and Deutsche Montan Technologie (DMT) in 2005) [MMP 2005]

- Complementary Mining Plan for the Sibovc South-West Lignite Mine (prepared by STEAG Consortium in 2006) [CMP-SW]
• Studies to support the development of new generation capacities and related transmission – Kosovo UNMIK – Task4 Site Selection (prepared by consortium of Pöyry, Cesi, Terna and Decon in 2007)

• Site Investigation Report for Clean-up and Land Reclamation Project (CLRDP) (prepared by DMT/VEM/INKOS in 2008)

• Strategic Environmental and Social Assessment (SESA) Report on Kosovo C power plant and mine development options (prepared by a consortium led by ERM and supported by ELC Electroconsult and CSA Group in 2008)


• Socioeconomic Survey of affected communities (Prepared by Prism Research May, 2008)

• Community Consultations: Establishment of Community Development Forums Reports (Prepared by Community Development Fund in May 2008)

(2) Spatial Plans and Documents

• Kosova Spatial Plan (prepared by the Institute for Spatial Planning (ISP) under the Ministry of Environment and Spatial Planning (MESP) in collaboration with other sectors in the Government of Kosova, April 2006)

• Municipal spatial planning related documents of the 3 affected municipalities (Obilic Strategy 2015; Spatial Analysis for Vushrii and Obiliq prepared by the ISP (as found on the website of the MPWS); Fushe Kosova Municipal and Urban Development Plan)
Contents and Structure of the Draft SDP

The “Administrative Instruction for Implementing the Spatial Planning Law on Essential Element Contents For Special Areas of Spatial Planning” No.43 issued by the MESP (Protocol 04/05) sets out the structure of a special area development plan. ²The document at hand follows this structure.

The SDP consists of a text and maps and graphics which show the present situation, the spatial consequences and changes and caused by the Kosovo C energy production and mining development and the envisaged status of lands after recultivation of the mines.

The remainder of this Draft SDP Report is structured as follows:

• **Section 1** presents a spatial profile of SDP interest zone and describes the existing situation;
• **Section 2** presents the suggested vision, principals and targets of the SDP;
• **Section 3** presents the proposed plan for spatial development of the planning area;
• **Section 4** presents the suggested strategy and activities for implementation of the SDP, and
• **Section 5** proposes instruction for implementing the SDP.

² Further, as per Article 8 of the Environmental Protection Law (Law No. 2002/8, which entered into force through Regulation No. 2003/9), Kosovo spatial plans, regional spatial plans, municipal spatial plans, plans for the management of natural resources, development plans and programs and other spatial planning and adjustment acts, as defined by law, which affect the environment, must include an assessment of planned activities and their impact on the environment and a detailed assessment of the potential positive economic impact of such planned activities. The assessment of planned activities shall include an analysis of the present state of potential impacts that the proposed activities and proposed mitigation activities have on the environment and economic development. Before they are adopted, Kosovo spatial plans, regional spatial plans, municipal spatial plans, plans for the management of natural resources, development plans and programs and other spatial planning and adjustment acts shall be presented for assessment to the Kosovo Environment Protection Agency (KEPA).
1  SPATIAL PROFILE OF INTEREST ZONE AND DESCRIPTION OF EXISTING SITUATION

[baseline information still to be carried over / will be added in from approved Draft Final SESA]

1.1  SPATIAL PROFILE OF INTEREST ZONE

The main land use and spatial elements of the interest zone are shown in the overview map provided in the Appendix.

1.1.1  Geographic Situation

General orientation

The SDP area of interest is located in the western periphery of Pristina, starting about 3 km from the Pristina city limit. Kastriot (Obilic) town is the present geographical centre of power generation with Kosovo A TPP to the south and Kosovo B TPP to the north of the town. The area of interest is bordered by the wooded Çiçavica mountain range and the Drenica River in the West and the Sitnica River and its floodplain in the East. The southern edge is marked by the disturbed lands of the Mirash and Bardh open mine pits and overburden dumps, whereas to the North agricultural lands extend.

On overview on the present mine pits and dumps in provided in Figure 1-1.

Figure 1-1  Layout plan of the mines and the surroundings

(source: VEM 2007)
Topography

The Kosovo A and B TPPs are located in a flat area of the Sitnica plain. Each TPP has a large ash dump, which are significant landscape features. While the Kosovo B ash dump is consolidated, the tip of the still feed Kosovo A ash dump is growing towards south and is source of visible dust blow off.

The future Sibovc mining field is predominantly used for agriculture. The present topography consists of a hilly terrain with elevation from typically 570 to 670 masl. Characteristic landmarks are the N-S stretched hill with the village of Hade in the south (elevation up to 656 masl.) and a series of hills extending between Lajthishtë and Shipitullë (elevation up to 666 masl.). Between the hills valleys are following N-S directions (in the east reaching down to 570 masl. and in the west down to 550 masl.) to the village of Hade. Sibovc stream in the north is flowing in SW-NE directions and the valley is at elevations of about +560 masl. The present mines pits are up to xxx metres deep.

Administrative setting

The present mine pits and outside overburden dumps to the south are partly located on the territory of Obiliq and partly on Fushe Kosova municipalities; the south-west most outside overburden dump Vasilev is located on the territory of Drenas municipality. Both, present Kosovo A and B TPPs, are located in Obiliq Municipality.

The development of the new Kosovo C power plant and the new Sibovc lignite mine will affect mainly Obiliq municipality; the new Sibovc Mine will cover approximately 13% of the territory of the Obiliq Municipality. The start area for the Sibovc mining field in the south-west is on Fushe Kosova municipality land near Grabovc. In the long term (i.e. after about 30 – 40 years), the Sibovc mine in its northern extend will also reach the territory of Vushrii municipality east of Zilivoda.

The new mine will completely transform the present topography. Sibovc village, located the centre of the future mining area, is lending the present working name for the new lignite mine.

1.1.2 Land use and Environment

1.1.2.1 Residential Land use / Settlements

Kastriot (Obilic), with a population 5,300, is the administrative centre of the Obiliq municipality (pop. 3xxxx) and the only town in the SDP area of interest. Kastriot is located between Kosovo A and Kosovo B power plants.
All other settlements in the area are mainly rural villages in character.

The settlements located in the new Sibovc mining field will be directly affected, since they have to be relocated; these are:

- Hade,
- Lajthishtë,
- Sibovc, a dispersed settlements composed of different Mahalas (mah.) \(^3\) and Shipitullë East mah. \([\text{name unclear, acc. old map it could be Laze ?}]\)

Depending on the location of the new Kosovo C TPP, Kastriot and different villages will be located in the direct vicinity of the new power plant:

- Kosovo C next to Kosovo A TPP would be located \(xx\) metres north of Dardhishte and \(yyy\) metres south of Kastriot. The present Kosovo A ashdump is located east of Dardhiste in close vicinity to houses.
- Kosovo C next to Kosovo A TPP would be located \(xxx\) metres to the northwest of Kastriot and \(xxx\) metres to the southeast of Plementin. The Kosovo B ashdump is located in the Sitniza plain between Plementin and Kastriot.

The above villages can be briefly characterized as follows:

**Hade** (pop. approx. 2,500) is located on top of the steep slope of the northern edge of the Bardh/ Mirash mine. The present day Hade is the remaining part after the part south of the Palaj – Grabovc road was subject to emergency evacuation in 2004 due to slope failure risks caused by the mining activities. A total of 158 families (664 individuals) from the village were resettled between 2004 and 2005. There are 495 families remaining to be resettled before the planned mining extension into the Sibovc field can start.

**Shipitullë (East) mahala** \([\text{name unclear? Laze mah. ? pop ?}]\) is small outside part Shipitulle village and located within the future mining field. The main village of Shipitulle is located outside the western mining boundary at the foot of the Çicavica Mountains.

\(^3\) neighborhood initially consisting of a group of houses, named after the extended families who live there
Lajthishtë (pop. approx. 600) is located in the eastern corner of the future mining area where the mining boundary turns towards north-east (as bounded by the Iber water channel). The village consists of approximately 85 houses.

Sibovc (pop. xxx) is a dispersed settlement which comprises 9 mahalas: Bregovinska, Barbatoska, Muhicku, Spasina, Midanska, Nicak, Kelmendi, Megjuani and Curilo. Bregovinska and Barbatoska form the village centre; Muhicku, Spasina and Michanska to the south are situated in the centre of the Sibovc mining field. The Nicak mah. is located outside the western mining boundary, at the foot of the Ciqavica Mountains.

Dardhistë

Dardhiste Village (pop. xx) is located downwind of the Kosovo A TPP and is exposed to heavy pollution (air, groundwater, noise) resulting from the power plant emissions and in particular dust flow of from the active tip of the Kosovo A ash dump. Further is close to the active mining area and the conveyor belt system.

Plementin

Plementin village (pop.) is located north-west of Kastriot on the Mitrovica road. […]

1.1.2.2 Use of land for agricultural production

Agriculture is the dominating land use in the future Sibovc mining area (primarily wheat, corn). The area is largely made of fertile land; the soil properties of the prevailing clay rich vertisols however sometimes become unfavourable since they tend to dry out and develop vertical cracking in summer. The present use of fertilizer and agrochemicals is low due to cost and many fields are left fallow.

Forests and woods are rare, covering only a few hectares in the northwest and the east of the future mining area.

1.1.2.3 Commercial and Industrial land/zones

The sites of Kosovo A and Kosovo B TPPs are the only significant industrial sites in the area.

4 Before the war, there was a mahala with Serbian population which does not exist any more.
The gasification and fertilizer plants next to Kosovo A TPP were abandoned more than a decade ago and today present an environmental legacy issue due to contamination with mainly phenols and other substances.

KEK has workshops and presently is building a new maintenance facility for large mining equipment at the edge of the Mirash mine near Dardhiste.

In the northwest of the Sibovc mining field (around Sibovc and Zhilivode) some artisanal lignite mining takes place.

1.1.2.4 Natural and environmental assets

In the future mining field only a few natural heritage objects of note are reported:

• A spring in the centre of Palaj village;
• A single linden tree (Tilia spec.), about 200 years old, in Nicak mah. (Sibovc), and
• A group of oak trees (3x Quercus spec., 1x Quercus cerris), up to 300 years old, in Megjuaneve mah. (Sibovc).

1.1.2.5 Cultural and historical assets

Except for the Mosque in Hade and the Monument of KLA Martyrs, there is no cultural heritage of note directly affected by the mining and power development.

1.1.3 Physical environment

1.1.3.1 Soils

The prevailing soils in the area of the Sibovc mining field are vertisols.

[will be added in from approved Draft Final SESA]

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5 MMP 2005, Part III (based on information from the Institute for Nature and Environmental Protection of Kosovo)
1.1.3.2 Water

The Sibovc mining field is bounded by the Iber water canal. The mining field itself covers six catchment areas of smaller watercourses; four of them flowing towards the Sitnica River in the east and two towards the Drenica River in the west.

Along the Sitnica river a floodplain extends in which the site of Kosovo B TPP is located.

[will be added in from approved Draft Final SESA]

1.1.3.3 Air

[will be added in from approved Draft Final SESA]

1.1.4 Socio-economic aspect

1.1.4.1 Economic activities

The SDP area is characterized by rural agricultural and forestry activities around the villages on one side and activities in the mining and power sector on the other side. Kastriot as the administrative centre of the Obiliq municipality is also the local centre for trade and services.

In the SDP area, agriculture was traditionally run by extended families and used to be the main economic activity outside of the mining and power sector. Approximately 60% of the population living in the region are farmers growing wheat and corn. Wheat harvesting and milling for Kosovo Albanian farmers is arranged on a co-operative basis, while Kosovo Serb farmers make individual arrangements. There are no significant livestock holdings, other than a small-to-medium scale sheep and pig farm in the Janjina Voda village. [according to OECD Obiliq municipality report]

Land ownership varies between settlements, but the majority of residents own the land they inhabit and a yard area used for subsistence farming. However, the economic importance of agriculture is decreasing. Today many agricultural fields are left fallow and food self supply is in the foreground.

Mining and power generation are the key industries in the area. Gasification and fertilizer plant next to Kosovo A were closed down more than a decade ago. At Kosovo A TPP also a coal drying facility is operated for selling lignite to third parties. The activities of KEK (about 3,000 employees) provide
employment and income for inhabitants of some of the villages in the area. Small scale artisanal lignite mining is undertaken by local villagers the northwest of the Sibovc mining field around Sibovc and Zhilivode.

1.1.4.2 Incomes

[will be added in from approved Draft Final SESA]

1.1.5 Socio-demography

1.1.5.1 Population,

The largest population concentration in the study area is in Kastriot (Obilić) town; the population is about 5700 [check]. Accurate figures on gender, ethnic structure and age of the population is not available since no population census has been made since 1981. The population in the area is generally very young with the average age being approximately 24. Information gathered from the ten settlements surveyed for the SESA shows that 32% of the population are aged between 26-45 and 14% are between 19-25 and 46-60 respectively. There is an even split between men and women and just under half the population (42.5%) is married.

Although the majority of the population in the area is Kosovo Albanian, villages such as Babin Most/Babimoc, Miloševo/Milloshevë, Plemetin/Plemetina and Caravodicë/Crkvena Vodica are mostly inhabited by Kosovo Serbs and other non-Albanian ethnic minorities. Obiliq town was also a multi-ethnic area, however after the March 2005 incidents, all remaining Kosovo Serbs and some Roma fled the town and sought refuge in Plemetin/Plemetina and other villages inhabited mostly by Kosovo Serbs.

Like in many parts of Kosovo, also in the area of interest the phenomenon of rural depopulation is prevalent. Economic and social circumstances have resulted in a population movement towards urban areas, transforming daily and weekly commuters into permanent migrants. The migration from the rural areas has impacted rural areas as the young and educated labour force move into towns abandoning agricultural land and causing a decline in the number of marriages and births. Urban areas have also been affected as immigration has increased property prices, raised the cost of living and lead to unplanned and uncontrolled expansion of towns and cities. In the area of interest, the phenomena that village population moves to town for better work opportunities is specifically accentuated in settlements at greater distances from Obiliq town.
1.1.6 Infrastructure and transport

1.1.6.1 Road network

Road transport to/from Kastriot is developed through the main road M2 Prishtina-Mitrovica, and along regional roads (asphalted) and local roads (mainly not asphalted).

The main regional road in relation to the future mining area is the Obiliq – Palaj – Sibovc road (length of 4.7 km) where asphalting was completed in 2004. The regional road from Obiliq via Palaj and Hade to Graboc is cut due to the mining activities on the northern rim of the Bardh mine.

The roads from Kastriot to Dardhiste, and from Kastriot to Palaj to Hade and Grabovc, and Graboc to Bardh i Madh are frequently used by KEK with trucks.

1.1.6.2 Railways.

Two railway lines are passing through the SDP Interest area. One is the Skopje-Fushe-Kosova-Mitrovica line with stops in Dardhishta, Obiliq and Plemetin, and the second is the Fushe-Kosova-Prizren line, with a railway stop in Graboc.

The Kosova A and Kosovo B power plants are connected to the rail network.

1.1.6.3 Public Transport

Public transport in Obiliq municipality is based on bus and mini-vans. However not all villages are serviced. The settlements with access to public transport are: Obiliq (New and Old Obiliq), Palaj, Hade, Lajthishtë, Sibovc, Hamidi, Muzakaj, Raskovë, Bakshi, Llazarevë, Breznicë, Kozaricë, Shkabaj. Settlements without access to public transport are: Mazgit I, Mazgit II, Dardhishtë, Shipitullë, Grabovc, Plemetin, Bajmoc. [SpA-Obilic]

1.1.7 Technical Infrastructure

1.1.7.1 Water Supply system

The Pristina Regional Water Company supplies water for the Municipality of Obiliq and other municipalities in the region. [SpA-Obilic]
However, in the western part of the area of interest, in several settlements water supply is from local ground water sources (wells). “Prishtina” Water Supply and municipal water supply systems provide water supply to 13 settlements, or 65% of settlements. Still, despite coverage of water supply network in 13 settlements, the population of these settlements is not fully supplied water by these systems. According to information from the municipality, 60% of the population is provided with water from these systems. The water quality is good in these settlements. The municipal water supply system has a capacity of 42 l/sec. the supply amount, despite restrictions, is at a satisfactory level. The most frequent reductions occur during the summer season. One of the concerns is the water supply network in the city, due to its age, and there is a permanent potential of potable water contamination.

Following settlements in the area of interest are supplied from the Prishtina regional public water supply system: Obiliq, Mazgit 1, Mazgit 2, Dardhishtë, Palaj, Hade, Lajthishtë, Plemetin, Muzakaj, Raskovë, Bashkë, Llazarevë, and Shkabaj.

The water supply by groundwater wells is used in 7 settlements, or 35% of municipal settlements. The ground water sources generally are of a good quality and minimal standards for drinking water, with the exception of the settlements close to KEK facilities, such as Hade, Lajthishtë and Hamidi.

Settlements using supply from ground water wells are: Shipitullë, Grabovc, Sibovc, Hamidi, Kozaricë, Bajmoc dhe Breznicë.

1.1.7.2 Sewage system / water treatment facilities

[will be added in from approved Draft Final SESA]

1.1.7.3 Electricity grid and supply situation

Electricity supply is provided by KEK distribution. Despite the fact that the location of electricity generation capacities is the Obiliq territory itself, there are shortages and deficiencies in electricity supply in the area due to outworn distribution infrastructure. [SpA-Obilic]

The settlements in the SDP area are connected to the grid by local supply lines. No power transmission lines of regional importance cross the designated Sibovc mining area.
1.1.7.4 Waste disposal and treatment

The Pristina Regional Waste Company (Regional Enterprise "Pastrimi") is organising the transport and storage of waste in the territory of Prishtina, Fushe Kosova, Obiliq and Lipjan Municipalities. A sanitary landfill (equipped with a leachate pond), run by Pastrimi, is located in the north-eastern corner of Mirash East Mine.

1.1.8 Public infrastructure

An overview on the spatial distribution of public social infrastructure is provided in Figure.

Figure 1-2 Public social infrastructure
1.1.8.1 Healthcare facilities

Ambulances and Hospitals

[will be added in from approved Draft Final SESA]

1.1.8.2 Schools (elementary, secondary, technical schools, etc)

[will be added in from approved Draft Final SESA]

1.1.8.3 Public security (police stations, etc)

[will be added in from approved Draft Final SESA]

1.1.8.4 Public administration (municipal authorities, …)

[will be added in from approved Draft Final SESA]

1.1.8.5 Recreational facilities and institutions (parks, sport grounds and green areas)

[will be added in from approved Draft Final SESA]

1.1.8.6 Religious and Cultural facilities

[will be added in from approved Draft Final SESA]
1.1.9 Spatial Planning Context of the SDP area

1.1.9.1 Kosovo Spatial Plan

In relation to the Kosovo Spatial Plan (2006) 6, the SDP area of interest is located with its largest part in the Blue Area, the so-called Harbour of Kosovo which includes Pristina in the centre and a belt of 1 – 2 municipalities around it, including Obiliq and Fushe Kosovo. The blue Area is characterized by a range of spatial functions and development targets focused on administrative, education, health care, service and trade, light industry, tourism, but also agriculture outside of the economic centres.

Within the Blue Area, the SDP area is located North of the Triangle of Economic Development of Kosovo (TED) is the Development Triangle which is in the centre of the Blue Area. The Triangle is bounded focused on the city of Prishtina, the International Airport the Prishtina–Peja–Montenegro and Prishtina–Ferizaj–Macedonia international roads. Besides motorway and air traffic connection there is also a major rail node at Fushe Kosova. Thus the TED is envisaged to be the so-called spine of economic development of a national interest, a source of income for Kosovar economy, and a potential location for multi-national company investors. There is no spatial interference of the SDP area with the TED.

The northern end of the new Sibovc mine is located on a part of Vushtii municipality and thus belongs to the Green Area, the so-called Treasury of Kosovo which represents the northern part of Kosovo, with Mitrovica at the centre with a focus on industrial, service and trade resources. In Vushtri municipality large areas of quality agricultural land represent a good basis for agricultural development.

Overall, the SDP area of interest is located in an area with agricultural development potential. There are no conflicting interests with targets set out in the Kosovo Spatial Plan or other spatially relevant planning.

Per definition of the spatial planning system of Kosovo, the SDP area will itself become a special area which will pose certain restrictions to the municipal planning.

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1.1.9.2 Municipal and local plans

The foreseen power and mining development will mainly affect the Municipality of Obiliq. It will strengthen the role of Obiliq municipality as being the electricity generation centre for Kosovo with respective economic and employment effects. However, at the same time the lands are further affected by mining over long time. This will have a significantly restricting impact on the land use and the municipal spatial options. Future development of a significant part of the Obiliq municipality will largely depend on the SDP settings.

Fushe Kosova municipality on the contrary will mainly have positive impacts on the spatial planning side in the mid-term, since land presently devastated mainly by Bardh mine will be recultivated and the large areas covered by overburden dumps located to the south of the present mining area have a potential to become agricultural or forest land.

Within the framework of spatial planning of Kosovo, as a target, every municipality should have a municipal spatial development plan. As part of the tasks designated to the Institute of Spatial Planning (ISP), which is an agency under the MESP, is supporting the municipalities in preparing Spatial...
Analysis reports\(^7\) which analyses the baseline conditions and points out spatial planning needs as basis for setting up municipal spatial development plans.

The Spatial Analysis of Obiliq points out the need of preparing a special area spatial plan to cover the Sibovc mining development in order to reduce impacts on the affected settlements and provide guidance to future spatial development as it would designate the land use and conditions for utilization of area.

For the affected communities only for Fushe Kosova a municipal spatial plan exists (no Spatial Analysis report was produced for Fushe Kosova) which however does not specifically refer to future developments in the mining and energy sector on the northern border of the municipality.

1.2 ANALYSIS OF SDP INTEREST ZONE

Based on the above baseline, following analyses of the SDP area can be made from spatial planning perspective:

Strengths of the SDP area

The SDP area is the power generation centre of Kosovo where in the future the domestic lignite resource will be used in an efficient way.

Weaknesses of the SDP area

- The area is heavily impacted from past and present power generation and mining activities. Villages close to the emission sources are exposed to air pollution and noise beyond acceptable limits and are a threat to public health and the environment.
- Large areas of land are devastated by previous and ongoing mining activities (mines, overburden dumps, ash dumps) and presently out of land use.

\(^7\) These reports are accessible on the webpage of the MESP. For Obiliq Municipality see http://www ks-gov-net/mmph/document/iph/shqip/Analizat%20hapësinore%20për%20komuna/Analiza_Hapësinore_Obiliq.pdf
Opportunities for the SDP area

- Recultivation of the exhausted Bardh and Mirash mines and associated overburden and ash dumps, and recultivation of the new mining area to international best practice standards.
- Remediation and clean-up of the legacies of the past critical environmental pollution (air, water, noise) around mines and power plants including ash dumps and environmental burdens from associated industry (gasification and fertilizer plant).

Threats for the SDP area

- The new Sibovc mine is a massive intervention into the spatial structure of the area. Land transformation and re-establishment of spatial structures is a long process which will take several decades. The mining will remove all villages in the mining field, which will leave a completely different spatial structure and settlement relation in the future. There is a risk that the area in the mining field is further loosing economic vigor and social fabric. It will be of essence to provide to the population in the area a clear on the timing of things to come and a perspective for their lives elsewhere.

1.3 RESOURCES AVAILABLE AND THEIR POTENTIAL FOR DEVELOPMENT

1.3.1 Agriculture

Agriculture is the most obvious land resource in the SDP area. However, agricultural activities are declining and people move to larger places. The agriculture sector will suffer most from the mining development. In the mid- and long term agriculture can be redeveloped since large portions of land will not only be lost by surface mining but will also be returned for use.

1.3.2 Lignite resources

[will be added in from approved Draft Final SESA]

1.3.3 Water resources

[will be added in from approved Draft Final SESA]
1.3.4 Other

Forestry and other resources are present in the area only to a very limited to negligible extend.

1.4 MAIN DEVELOPMENT CHALLENGES CONSIDERING GOVERNMENT PRIORITIES AND INTERNATIONAL PRINCIPLES

1.4.1 Resettlement, Infrastructure and Public Services

As a consequence of the development of the new Sibovc mining field in total 4 villages with at present about 750 households (XXX people) will need to be resettled over the next 30 – 40 years. In the near term, the remaining part of Hade village with approximately 600 households (= xxx people) constitutes the main resettlement challenge which has to be solved in near term.

The present legislation for expropriation and resettlement is not up to international standards. Therefore a Resettlement Policy Framework (RPF) and a Draft Law on Expropriation for the Public Interest was developed under the LPTAP (by Hunton & Williams with IPA, 2008) which both reflects best international practice and standards8 safeguarding the compensation and resettlement conditions of the project affected people and shall be implemented by the private Project Company and involved public agencies of Kosovo. (cf. below).

With respect to spatial planning the relevant RPF recommendation is to resettle village communities as a whole. This applies also in case of scattered settlements; even when individual village parts may be affected at different stages of mining advance. The RPF recommends that implementation resettlement activities should be started at least 5 years in advance to the actual physical land impact by mining activities.

The development of the Sibovc mining field will make a stepwise relocation and interim solutions of public services and infrastructure necessary. This has to be aligned with the pace resettlement and of mining impact on these infrastructures.


Comment [ERM-ab2]: Check figures: RPF say 1500 HHs total
1.4.2 Employment

Employment with KEK at present constitutes a substantial regional factor with a workforce of about 3000 people working in the mines and the power plants. It is a source of household income for some of the villages in the SDP area.

The present KEK employment situation will change since the Bardhuh and Mirash mines will be exploited in the near future and Kosovo A power plant will be closed down mid term by 2017 while Kosovo B continues to operate until 2023. It is intended that Kosovo C goes into operation by 2013. This will lead to various changes in the workforce presently employed in the sector, such as change of the employer since a private Project Company will be operating Kosovo C and the new Sibovc mine. While positions will be lost, others employment opportunities will be created. Staff for the new mine will likely be redundant staff from the old mine. However, overall there may be a retrenchment of the workforce of power plants and mines due to rationalization effects. KEK (or a successor company) and the private Project Company will need to address the issue of retrenchment and setup social plans to feather the effects of job loss (e.g., early retirement, training of employees who lose their jobs, job finding assistance).

The MMP 2005 estimates that up to 2500 people (peak) would be employed in the future Sibovc mine.

Environment

Reducing environmental pollution from power generation and mining, and priority for worst affected villages: Dardhiste Village is located downwind of the Kosovo A TPP is exposed to heavy pollution (air, groundwater, noise) from present mining operations to the West, the Kosovo A to the East ashdump and the pollution from the Kosovo A TPP to the North.

Reducing the environmental pollution and risks from present and past mining and power generation and associated industry (gasification and fertilizer plant) → Clean-Up and Land Reclamation Project (CLPR)
2 VISION, PRINCIPALS AND TARGETS

2.1 VISION OF SDP

The SDP is dealing with a large scale transformation of land for power generation from the non-renewable lignite resource. The exploitation of the new Sibovc mine will be a long term process where large scale transformation will gradually take place with the pace of mining progress and the new Kosovo C power station will be a fixed industrial installation with long term presence in the region of at least 40 years. In parallel with this development the environmental burdens from past mining and power generation activities will need to be taken care of. These developments should be undertaken in an environmentally and socially acceptable manner and result in an area where past pollutions are cleaned up or safely contained and no new unacceptable pollution occurs.

2.2 GENERAL DEVELOPMENT PRINCIPLES

In line with the Kosovo Energy Strategy, it shall be the aim to utilize the lignite, being the key domestic fuel resource of Kosovo,

Principles for the development of the SDP area can be defined as follows9:

• Unnecessary spoiling of land shall be avoided;
• Impacts on lands and population shall be limited to the extend and period necessary and be remediated as soon as feasible;
• Relocation of population shall be undertaken in a socially responsible manner;
• Already disturbed lands shall be returned to a usable status with favorable safe environmental conditions as soon as possible;
• Limitations and restrictions shall be in place to protect the environment and public health;
• Financial resources shall be secured in advance for implementation of mitigation measures;
• Best international practice, including stakeholder participation, shall be applied in all aspects. 10

9 Modified from Main Mining Plan 2005

10
2.3 **LONG-TERM DEVELOPMENT TARGETS**

Long term development targets for the SDP area are:

- Reclaiming of the lands devastated by past the mining and power generation activities, in particular backfill and recultivation of the present mine pits and recultivation, also reshaping and recultivation of the associated outside overburden and ash dumps;
- Reshaping and recultivation of mined lands:
  - By recultivation of mined areas, provide arable land which provides better productivity compared to today and at the same time habitats for flora and fauna;
  - Eventually, convert the remaining pit in the north of the mining area to a lake with future recreation function within near reach of Pristina;
- Risk containment and clean up and of the pollution burdens from present and past operations (pollution from ash dumps and hydrocarbons/phenol pollution stemming from the gasification and fertilizer plant located next to Kosovo A TPP), and
- Re-use brown field sites which become available from closing of Kosovo A and Kosovo B for other industrial purposes to create employment opportunities outside of the energy and mining sector.

2.4 **STRATEGIC SDP PRIORITIES**

**Resettlement**

The previous emergency resettlement of the southern part of Hade village in 2004 has shown the main challenge connected with the open cast lignite mining in the area. Therefore, the timely and well prepared implementation of resettlement under informed participation of the affected population is a strategic priority for the SDP.

A Resettlement Policy Framework (RPF) in line with international best practice standards has been prepared as one of the project development tasks of the LPTAP (see Section 3.2.5 below).

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30 Envisaged developments shall be in accordance with EU policies and directives, best practice standards, and guidelines and safeguards for environmentally and socially sustainable development of the World Bank Group (IFC Performance Standards).
Improvement of Environmental Situation

Past and present mining and energy generation have led to severe environmental pollution which is affecting the population and environment in the vicinity. Reduction of environmental pollution (dust, noise, traffic risks) is a short term priority.

One of the most exposed settlements in this respect is Dardhistë village which is located next to the active tip of Kosovo A ash dump, between the Mirash mine and Kosovo A power plant. This village requires priority attention for mitigation of public health and safety threatening situation and if such is not reasonably feasible, as a last resort resettlement should be considered.

Participatory approach

A key priority of the SDP is the adequate information disclosure and consultation of the population affected by the planned power and mining developments. The LPTAP in 2007 started public information activities and established as a preparatory measure community development forums (CDF) which are continuing in 2008. It will be important that the participatory approach is carried through all further development and implementation stages of the project, in particular for resettlement.

11 Also recommendation of RPF
3 FRAMEWORK FOR SPATIAL DEVELOPMENT

3.1 MAIN CONCEPTS OF SPATIAL DEVELOPMENT FOR THE INTEREST ZONE

As a general concept, the existing and future mines will be backfilled with overburden and the ash from power plant operations. There will be no additional outside overburden and ash dumps which would cause unnecessarily consumption of land.

The main land use category foreseen as follow up use of the lignite mining is basically the same as today, which is agriculture. This is in line with development concepts set out in the Kosovo Spatial Plan for this area (cf. Section 1.1.9.1 above).

The plan as developed by the 2005 MPP for the future topography and landscape in the Sibovc field and the existing mine pits is a large agricultural plain with a slight inclination from south towards north. This plain will be segmented by vegetation stripes which provide for wind erosion protection and habitats for flora and fauna. As a general spatial layout it is foreseen that the future agricultural plain is subdivided by a road network of several east-west roads, supplemented by north-south road interconnectors. The roads will connect to the existing outside road network. There will be no settlements re-established within the area of the mining since there is a potential for land subsidence in the backfilled area.

Due to the mass deficit which occurs from taking out the lignite, a large residual pit of about 5 km² will remain in the northern part of the Sibovc mining field. In the long term view (after 4 to 5 decades from now), this pit would be developed as a recreational lake, surrounded by a greenbelt along the slopes to the adjacent topography, which could be very attractive for Pristina inhabitants since it will be located within near reach.

In the existing mining pits some sections will be reserved and designated for Special Use, such as the present municipal waste dump in the northeastern edge of the Mirash mine. Possibly also a state of the art hazardous waste treatment and disposal facility will be needed to enable the safe treatment and
disposal of residuals from the clean-up of the contaminated former industrial facilities next to the Kosovo A TPP and similar wastes from elsewhere.

The possible future land use of the outside overburden dumps is presently investigated under the Clean-Up and Land Reclamation Project (CLRP) which is a LPTAP activity with World Bank funding. The general concept is to provide agricultural use where possible (if terrain, soil properties, suitability for foodstuff production permits) and to maintain and increase the flora and fauna habitat functions these areas already have developed. Also for the ash dumps concepts are presently developed.

3.2 SPATIAL STRUCTURE FOR DEVELOPMENT AND FUTURE LAND USE

3.2.1 Mine development

3.2.1.1 Land Requirements of the new Sibovc mine

The total future mining concession for the new Sibovc mine covers an area of 16 km². It extends about 5 km to the North from the rim of the present Bardh and Mirash mines. The widest East-West extension is about 3.8 km on a line between Shipitulë and Lajthishtë. The Sibovc South-West field, which will be developed first, covers an area of approximately 4.8 km² with a maximum mineable width (east-west extension) of 2.3 km and a length of about 2.5 km.

Based on indicative correlation of the future lignite demand as used in the SESA and the claim of land shown in the 2005 MMP, it is tentatively estimated that about half of the Sibovc field would be developed by the mid-2030s. By that time the centrally located mahalas of Sibovc and the southern part of Lajthishtë would be reached. As described in the introduction section, the pace of mining advance and the footprint of the claim of land will depend on various parameters including the development option chosen for Kosovo C and exact timelines for the mining advance will only be known after a new mining plan has been developed by the future Project Company.

As a requirement of the ICMM regulation No 2005/3, a 200 metres wide safety zone around the excavation line of the mine has to be maintained as buffer for

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12 The requirement for a hazardous waste disposal facility will be independent from the site selection decision for Kosovo C TPP, since the contaminations from the past constitute environmental risks for the future which must be contained and remediated.
the protection of villages outside of the mine. Villages within the safety line will be resettled (see Error! Reference source not found. below).

3.2.1.2 Mining Development Concept and Plans

Short term development

The present Bardh and Mirash mines which feed the Kosovo A and B TPPs will be exhausted by 2011. As a short term interim measure KEK will open the small Signitza mine for the supply of Kosovo A TPP between Palaj and the TPP A. To open this new mine, the Signitza River will be relocated to flow around the eastern side of the mining pit. River relocation works are in progress. As a conceptual plan it is foreseen that the pit, which will remain after exploitation with a depth of approximately 40 metres, would be used as cooling water buffer basin for the new Kosovo C power plant (also if the TPP C is located next to Kosovo B TPP).

Short to mid-term development

In the preparatory planning process for the future energy generation including Kosovo C TPP, a Main Mining Plan (MMP) for the new Sibovc lignite mine was prepared under the LPTAP in 2005 (by VEM and DMT). This mining plan foresees mining of the new Sibovc field as a direct extension from the northern rim of the Bardh and Mirash mines in northern direction.

Since however the timescales for decisions and the underlying assumption of the 2005 MMP changed (inter alia with regard to start of operation of Kosovo C TPP and its installed capacity size$^{13}$ and thus lignite consumption rate, and the time in which the resettlement of Hade could be accomplished), a complementary mining plan for the Sibovc South-West (SW) mining field (CMP-SW) was prepared in 2006 (by STEAG Consortium) to secure the timely lignite supply of Kosovo A and B TPPs. The Sibovc SW field is basically a northern extension of the Bardh mine and is sparing Hade settlement. This western bypassing of Hade provides for a time window of about 5 years in which Hade village should be resettled.

Based on this CMP-SW, KEK was granted a mining concession for the SW-Field by the Independent Commission for Minerals and Mines (ICMM) until

13 The Main Mining Plan (2005) had assumed a mining progress based on a coal demand of a 2x 500 MW Kosovo C developed and at the same time a continuation of the demand of Kosovo A and B plus 4x300 MW Kosovo B extension.
Activities to clear the SW mining field and to remove overburden which was earlier dumped from the Bardh mine at the south-western part of SW field north-east of Graboc have started and the local road towards Sibovc was already relocated in the course of the preparatory activities.

**Mid-term development**

Depending on the interfacing and responsibility handover arrangements for the activities of KEK (or a successor company) and the Project Company (which will need to be agreed between the Government of Kosovo and the private Investor), by 2017 or before (e.g. starting 2013/14 when the new Kosovo C TPP is planned to go into operation), but only after Hade is completely resettled, the SW-Field would be expanded eastward to exploit the lignite which is located under the present Hade settlement. For the time when the Project Company takes responsibility of the mining operations, a new mining plan will need to be set-up to plan the details of the northward advance in Sibovc mining field.

**Long term development**

After this eastern part is exploited, it is foreseen that the mining activities will advance northward in the complete width of the Sibovc field as given by the future concession outline.

A new main mining plan which reflects the foreseen staging and advance directions of the Sibovc mining field will need to be set-up by the Project Company. Only after this new mining plan is developed, reliable timelines for the claim of land will be available.

The claim of land is also determined by the pace of mining progress. This will depend on the development concept for the Kosova C power plant (to be decided by the agreement between Kosovo and the private Investor). Basically, a fast installed capacity built up implies higher lignite demand and thus faster mining progress which results in more rapid land take compared to a staged power plant development which results in a lower demand and thus slower mining pace. Based on the phasing scenarios and respective lignite consumption figures which are provided in the SESA and an indicative correlation with the land claim of the 2005 MMP, a staged concept could result in a delay of mining advance of about 3 years compared to a fast concept.

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14 For ICMM mining licenses see http://www.kosovo-mining.org/ko/servlet/content??os=false&contentid=1&objectid=124&start=0&cnt=20&tocid=112802.02.2008.pdf
On the same basis it can be estimated that the centre of the mining field will be reached in about 25 years and the northern end in about 40-50 years, i.e. at the end of Kosovo C TPP lifetime (Figure 3-1).

As mining advances, also backfilling and recultivation of lands will follow. The scheme of spatial evolution of mine development and follow-up land reclamation and recultivation over time is shown in Figure 3-2. It must be noted that this shows only the general scheme of evolution of the mine based on tentative estimates. Only after an updated main mining plan was prepared by the private Investor, mining advance lines and follow-up recultivation can be more accurately determined.

**Figure 3-1  Estimated Mining advance**

**Disclaimer:** this is graphical presentation is tentative and for illustration purpose of the mining advance process only. Actual developments are subject to updated mining plan.
[Legend to be provided]
3.2.1.3 Mining Activities

The mining activities are described in the 2005 MMP and the 2006 CMP-SW:

The mining activity and the technology employed for the new Sibovc mine will be basically the same as for the existing mines. The main mining equipment will consist of several bucket wheel excavators, connected belt conveyors, spreaders and auxiliary equipment like draglines, dozers and maintenance vehicles. Also shovel and truck technologies are foreseen for part of the excavation.

With the heavy open cast mining equipment, soil and overburden will be removed to reach the coal seam with a thickness of up to 80 metres which then is extracted and transported off to the power plants by a conveyor belt system. (The base of the lignite is up to 120 metres below surface level).

3.2.1.4 Mine closure, land reclamation and recultivation

General Concept

Recultivation of areas disturbed by lignite mining is aiming to create a follow-up landscape with various land use designations, typically with the main following categories:

- Agriculture
- Forestry
- Habitats for Flora and Fauna, and
- Recreation

After the Bardh and Mirash mines are exhausted, two large pits remain (due to the mass deficits resulting from the low overburden to coal ratio, the past outside dumping of overburden and only limited backfilling of ash). As a general concept, these pits will be backfilled with overburden from the new Sibovc mine (initially South-West field) and the ashes from Kosovo B TPP operation (transferring also ashes from Kosovo A TPP is under discussion between KEK and World Bank). By transferring masses from the Sibovc field into the pits, the mass deficits in the Bardh and Mirash mines can be balanced off and there is no need for outside dumping of overburden in the development of the Sibovc field.

After closure of the pits and contouring with overburden from the Sibovc mine operations, the area of the existing mine pits will be recultivated for agricultural land use.
Part of the residual pit of Mirash-Brand remains as reserved area for the disposal of municipal waste and potential hazardous waste in the future.

Taking the 2005 MMP as an indication, it can be estimated that the backfilling of the existing pits, landscaping and recultivation would take about 20 years.

An outlook on the future recultivated landscape of the mining area is provided in Figure 3-3. This is based on the Main Mining Plan 2005.

**Figure 3-3** Final Recultivation
3.2.2 Power plants

(Note: The existing power plants and the planned new power plant are described in detail in the SESA report and Annex A of SESA. The following provides a summary of key aspects for the purpose of SDP context.)

3.2.2.1 Existing power plants (Kosovo A&B)

The two existing thermal power plants Kosovo A and Kosovo B are under ownership and operation of KEK. Both plants are significantly different in age and technology. Both are non-compliant with present day environmental performance thresholds set by the EU Large Combustion Plant Directive (LCDP 2001/80/EC)\(^\text{15}\). In particular Kosovo A is a significant polluter of particulate matter which exceeding the limit values of the LCDP by 7 to 10 times.

TPP A has 5 units which were built in two phases (from 1962 to 1964 and from 1970 to 1975) totalling an installed capacity of 800 MW of which only 145 MW are presently available. TPP A has no emission controls in place; stacks are 100 metres high.

TPP B has 2 units of 339 MW each which were built from 1983 to 1984. Both units do not work continuously due to maintenance activities. Major overhauls were carried out in 2007 on both units. TPP B has electrostatic precipitators (ESP) in place for reducing particulate emissions, but no flue gas desulfurization (FGD) or denitrification. The stacks are 182 metres high.

Operation of Kosovo A&B (water supply, fuel supply)

Both power plants receive their lignite via belt conveyor from Bardh and Mirash Mines. The ashes of Kosovo B are disposed back to the Mirash East mine by wet transport (dumping to the Kosovo B ash dump was stopped in \([\text{year}]\)). The ashes of Kosovo A are still disposed off at its open ash dump. This causes significant environmental pollution and public health concerns in particular for nearby Dardhistë village.

Kosovo B has one common large hyperboloid shaped concrete natural draft cooling tower for both units, whereas Kosovo A uses several \([\text{name}]\)-type cooling towers. Cooling water for Kosovo A Kosovo supplied from a pumping station installed on Llap River located at around 11 km distance from TPP A.

During periods of water shortage in summer, water is abstracted from the Ibër-Lepenc canal. Cooling water for Kosovo B is supplied from the Iber Lepenc system.

Kosovo A TPP and B both have basic wastewater treatment system (sedimentation and neutralisation) which are in poor maintenance status. Water is discharged into Sitnica River from both power plants.

Remaining lifetime of existing power plants

Present anticipation is that though implementation of rehabilitation measures Kosovo A could continue to operate with a capacity of 280 MW. Since due to its age and state it will not be possible to achieve compliance with the LCPD, it will be running until 2017.

Mayor refurbishments of Kosovo B are anticipated for the 2010s which enables a total capacity of 610 MW and inter alia include the installation of FGDs to make the plant compliant with the LCPD. The gypsum from the FGD will likely be sent back to the mine (for options cf. Section 5.1.3). Present anticipation is that Kosovo B would reach the end of its lifetime by 2030.

While it is anticipated that Kosovo B will remain under KEK (or a successor company), depending on the arrangements with the Investor for Kosovo C, in particular siting decision, Kosovo A might be transferred to the private Project Company.

Decommissioning of existing power plants

After reaching the end of their designated operational lifetime, both power plants will be decommissioned and dismantled. Responsibilities for this will be in with the future owner; depending on the arrangement between the Government of Kosovo and the Investor for Kosovo C, this may be either KEK (or successor), or the private Project Company.

Future use of sites

Potential follow-up use after decommissioning and dismantling of the power stations and site cleanup will be up to the decision of the owner. Sites could be re-used as brownfield sites for future industrial development. Remediation of the soil and groundwater pollution would need to undertaken to the pertinent EU or best practice standard at the respective decommissioning time.16

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16 at present e.g. the Dutch List would be an appropriate remediation standard.
3.2.2.2 New power plant (Kosovo C)

The new Kosovo C lignite power plant will be built and operated by a private Project Company. It will have an installed capacity of 1800 up to 2100 MW. A number of key parameters for implementation are still to be decided during the negotiations between the Government of Kosovo and the private Investor, including final installed capacity, unit (block) size and number, staging of units, technology (inter alia combustion: pulverized coal/ fluidized bed), and most important from spatial planning perspective, the location of the new power plant. Independent from the location, the new power plant will have an environmental performance to the best available standards and will be compliant with the pertinent EU requirements.

Location of Kosovo C

At present stage of project development, the site for the new Kosovo C power plant is not yet decided.

The SESA compared the environmental and social aspects for 3 sites which were previously identified under LPTAP to provide input to a decision; these potential sites are:

- Kosovo A Site, at the location of the abandoned former gasification and fertilizer plant (KEK ownership);
- Kosovo B Site, at the location of the Kosovo B ash dump (KEK ownership), and
- Bivolac Site, which is on (private) agricultural land.

From a regional planning perspective, the siting of the new Kosovo C TPP results in significant differences for the 3 sites when looked at in the context of the remaining lifetimes of Kosovo A and Kosovo B TPPs:

- Kosovo C site next to Kosovo A would mean recycling a contaminated brownfield site (gasification and fertilizer plant) which needs to be cleaned up before construction of the new power plant. It would be a concentration of 2 power plants at one location, however with Kosovo A in full operation for a relatively short period (until 2017). This option for Kosovo C is the one located nearest to Pristina. In the long run the present setup in the region would be carried on which is power generation at 2 locations.
- Kosovo C site next to Kosovo B TPP would mean using a brownfield site (parts or all of the Kosovo B ash dump has to be removed). It would be a concentration of the future power production at just one location
(Kosovo B) over the longest period (2017 – 2050s); moreover it is closest to the centre of the new Sibovc mine.

- Kosovo C at Bivolac site would mean that power plants were running at 3 different locations from 2014 – 2017, and 2 locations (including one greenfield site) after closure of Kosovo A.

The comparison and site ranking undertaken in SESA under consideration of a large set of various criteria resulted in the recommendation that the new Kosovo C power plant should be located either next to Kosovo A or next to Kosovo B. In case of the Kosovo A site, the cleanup of the pollution from the old industrial facilities constitutes the main challenge, whereas for the Kosovo B site, the removal of the ash dump and its location of the site in the flooding zone of the Sitznica River will be important points for consideration in decision making.

Construction phase

Depending on the phasing and unit size decisions which will be made for the Kosovo C TPP, construction activities may be ongoing at site over a relatively short (few years) or an extended period of time (up to 10 – 15 years).

The construction of the new power plant will require that heavy and bulky pieces of equipments are transported to site. It will be up to the contractors of the operating company to determine the best ways and modes of construction transports. Preferably this would be done by the existing rail connections. Potential impacts on public infrastructure will need to be identified in the ESIA for the detailed planning. The ESIA will also need to cover all other construction related aspects and potential impacts, such as construction noise and vibration, traffic safety etc.

Typically, construction of a large requires a large temporary workforce (several hundred). The private Investor will need to show in his ESIA how potential social impacts are handled and how local employment effects can be secured for the region.

Operation of Kosovo C

The operation of Kosovo C will involve lignite to be transported to the plant by belt conveyor from the new Sibovc mine, and ash and residuals to be transported back to the mines for disposal. The gypsum from the FGD will also likely be sent back to the mine (for options cf. Section 5.1.3)

Cooling water will be supplied by the Iber-Lepec water canal. The mining pit which will remain after exploitation of the Signitza mine located east of the Mirash mine (cf. Section 3.2.1.2) will be used as a reserve buffer pond for
storage of 2 weeks of cooling water demand. According to the available studies evaluated for conducting the SESA, the water demand of the new Kosovo C power plant would not be conflicting with the future water demands of other sectors such as households and agriculture. However, a detailed confirmation would need to be provided by the future Investor e.g. as part of the ESIA for the power plant. The SESA recommends looking into water saving design.

The new power plant will need to have a state of the art waste water treatment system.

Electricity will be feed into the existing high voltage grid. If Kosovo A or B site is chosen only short transmission lines (less than 1 km/2km) to the existing high voltage switchyards are necessary. In both cases there would be no interference with residential land use [check].

Deconmissioning of Kosovo C

The lifetime of a new thermal power plant is typically given as at least 40 years. The Project Company will be required to decommission, dismantle the power plant and clean-up the site after end of lifetime.

3.2.3 Clean-up and Land Reclamation

From previous mining operations at least 7 overburden dumps of various size exists which are at different stages of natural vegetation succession and partially are informal used by villagers.

About 165 hectares of previously arable land is occupied by ash dumps which according to present estimates constitute main sources of pollutantion of air, soil and ground and surface waters at the regional level (MESP):

- Significant air pollution due to wind spreading the ash several kilometres in all directions and likely public health risk to nearby settlements17
- Pollution of Sitnica river, causing a regional problem

17 “Although no formal health studies to quantify the specific effects attributable to the ash tips have yet been undertaken, evidence suggest the problems are extremely widespread including recorded deaths of cancers of the respiratory system of individuals living in the immediate vicinity of the tip” (Pre-Feasibility Environmental Impact Assessment Kosovo Energy Sector Clean-Up And Land Reclamation Project, Final DRAFT May 2006, KEK; www-wds.worldbank.org/.../05/23/000160016_20060523160049/Original/E13950v10REVISImmary0E IA1Draft0Final.doc)
• Pollution of ground water, which is the main source of drinking water in the area

For the near term future the implementation of the *Clean-up and Remediation Project* (CLPR) is planned by KEK with the support of the World Bank. The feasibility of following project components is presently under study:

• Preparation of Mirash mine pit for ash and waste reception;
• Relocation of Kosovo A ash dump into Mirash mine pit (ca. 35 - 40 million m³);
• Mitigation of geotechnical instabilities of the associated overburden dump
• Adaption of ash disposal system of Kosovo A TPP for direct discharge into Mirash mine;
• Reshaping and grading of South and West Overburden dumps (circa 6.5 km²) and recultivation of reclaimed surface (circa 9 km² including both west and south dumps)
• Removal of hazardous materials from the former chemical separation facility (gasification and fertilizer plant) located next to Kosovo A power plant; in total approximately 17,500 tonnes, mainly toxic phenols and hydrocarbons.

3.2.4 *Infrastructure*

The mining activities will cut public infrastructure, most notably the roads, electricity supply lines and water mains and impact other public infrastructure and services. For the time being, this is under the responsibility of KEK in the course of initial development of the Sibovc-SW field. Further relocation of infrastructure and provision of temporary infrastructure will be developed as part of the mining plan to be set-up by the Project Company (*i.e.* private Investor).

The east - west connections from the Obiliq municipality centre (Kastriot) to the areas in the future mining field are of importance for regional transportation. Therefore temporary or permanent replacements need to be provided. The road to Grabov is already relocated in the course of present activities. It is tentatively estimated that the east west connection road via Palaj–Lajthistle–Sibovc–Shipitulle–Graboc would be cut by the mid-2020s and temporary connection to the villages in the north would need to be established. By that time the road from Caravodice to Graboc (along today’s northern mine rim) would be re-established as an important regional east - west connector.
While the new mine advances at the excavation front in the north, backfilling and land surface reclamation will follow from the south. As a general spatial layout it is foreseen that the future agricultural plain is subdivided by a road network of several east-west roads, supplemented by north-south road interconnectors. The roads will connect to the existing outside road network.

Since there will be no settlements re-established in the area of the mining field after reclamation of the land there is no requirement for re-establishing lost social infrastructure; this will need to be provided in the new resettlement locations instead (see below Section 3.2.5). However, care must be taken that settlement remaining on the outsides of the mining field (in particular the ones left on the western edge which are at largest distance to the municipality centre) will be connected and have access to the required facilities and services.

3.2.5 Population and Resettlement

The development of the Sibovc field will require resettlement of Hade Lajthishë and Sibovc villages and the settlement part of Shipitulë village which is inside the mining area. Eventually as many as 1500 families \([RPF]\) will need to be relocated.

As explained under Section 3.2.1, without an updated mining plan based on the final power plant scenario, it cannot be reliably determined when the mining advance would reach certain villages.

At present, only a tentative estimate can be given\(^{18}\) by when the settlements inside the mining area would likely need to be relocated as per schedule in

\(^{18}\) Based on: 2005 Main Mining Plan, and the lignite demand scenario used in the SESA and a rough correlation of the figures in both studies.
Table 3-1 below (see also Figure 2 above).
### Table 3-1 Estimated Settlement Relocation Timeline

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Timeframe</th>
<th>Year (period) of resettlement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hade</td>
<td>Between 2013 and 2017</td>
<td>2008 – 2013, however if mining advance does not turn east after 2013, resettlement period could be extended until 2017.</td>
</tr>
<tr>
<td>(remaining part North of Caravodice – Grabov road).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(inside mining area of SW field).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lajthishtë</td>
<td>Early– mid-2030s</td>
<td>2025 - 2030</td>
</tr>
<tr>
<td>Sibovc</td>
<td>Early – mid 2020s</td>
<td>By early 2020s for all Sibovc, if the RPF is stringently adopted. RPF recommends resettling villages completely once the first part is affected.</td>
</tr>
<tr>
<td>(Note: Sibovc has a dispersed village structure with mahalas covering large area in the centre of the Sibovc mining field).</td>
<td>Mid 2030s for central mahalas End of 2030s for main village (i.e. northern) mahalas</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Project Company will be required to develop and implement detailed resettlement plans (RAP) for each village to be resettled. The RAPs must be in line with the resettlement policy framework (RPF) which was developed under the LPTAP project. The RAPs should also foresee long term monitoring of the social, socio-economic development of the project affected people (PAPs) and provide for additional assistance for PAPs where required.

The first village to be resettled will be Hade which also constitutes the largest numbers of affected households. A plan for an urban type settlement place north-west of Pristina named “New Hade- Shkabai” is under preparation by MESHP. To present knowledge, the new settlement will have sufficient space for accommodating the housing demand of Hade population, but does not provide space for rural agriculture activities.

Other resettlement sites for affected rural communities need to be found. Since many of the affected households in the Sibovc mining field are engaged in agricultural activities, it is important to identify in particular sites which offer land and opportunities for agriculture. Land with such potential will become...
available only mid-term with the reclamation of the overburden dumps from the existing mine operations and the backfilling and reclamation of the present mine pits (cf. Section Error! Reference source not found. below).

4

STRATEGY AND ACTIVITIES FOR IMPLEMENTATION

4.1

IMPLEMENTING STRATEGIES AND ACTION PLANS

4.1.1

Implementing Strategies

Conditions and measures to guide the developments which are described in Section 3 above and as are suggested in Section 5 below as Instructions can only become effective if they are adopted as tasks by the respective responsible entities. A key role in this respect falls to the private Investor. It will be essential that the contractual arrangements include the relevant elements as laid out in this Draft SDP as commitments for the Investor / or other responsible parties.

4.1.2

Action Plans

Based on the present status of project preparation, no specific action plans can be set up.

4.2

LEGAL, INSTITUTIONAL REQUIREMENTS TO IMPLEMENT SDP

4.2.1

Legal Implementation Requirements

The Regulation No. 2005/3 on Mines and Minerals in Kosovo provides essential requirements for the mining. In section 30 the it prescribes that the application for the mining program (i.e. mining plan) shall inter alia include following studies

- Environmental Impact Assessment (EIA)
- Closure plan and rehabilitation program (i.e. backfilling, land reclamation, recultivation), and
- Study of Social consequences (in other words: SIA and RAP).

Comment [ERM-ab4]: Actually not clear about the requirement for setting up action plans, tbd.
Further the applicant (i.e. the Project Company) will need to provide a performance bond to secure that funds are allocated for activities under the closure plan and rehabilitation program.

To implement the foreseen mining in a socially acceptable manner and to present international good practice standards, following draft and legislation proposed under the LPTAP would need to be amended to the present legislation related to expropriation:

- Draft Law Expropriation for the Public Interest (Hunton & Williams / IPA 2008)

Further, the entities responsible for resettlement would need to adopt following policy for resettlement

- The Resettlement Policy Framework (RPF) (Hunton & Williams / IPA 2008)

### 4.2.2 Institutional Implementation Requirements

The Independent Commission on Mines and Minerals (ICMM), as per present legal mandate, acts as the regulatory body for application of the mining law and regulating exploration and exploitation of minerals in Kosovo. As per requirements of Regulation No.2005/3 the ICMM will oversee the mining operators (initially KEK and later the Investor).

### 4.3 TIME LINE, FINANCIAL IMPLICATIONS, INSTITUTIONAL FRAMEWORK

- **Time Line**

The timelines for the completion and implementation of the SDP are determined by the ongoing and scheduled activities. Major decisions on the scope of activities of the private Investor and the interface with are anticipated within 2008/2009 including site location and concept for Kosovo C power plant.

At present following outlook can be given:

- The general schedule for the new Sibovc mine will be determined by the mining advance. This will depend on the power plant scenario to be realized. An updated main mining plan which reflects the foreseen staging and advance directions of the Sibovc mining field will need to be set-up by the Project Company.
• It is assumed that the first unit of the new Kosovo C TPP will be operational by 2014 (SESA).

• Implementation of activities under KEK’s Cleanup and Land Reclamation Project will possibly start in 2008. It is at present not known by when lands would be made available by KEK for follow-up use such as agriculture on former overburden areas.

4.3.2 Financial Implications

At this stage of project preparation, following assumptions on the allocation of financial responsibilities can be made, subject to further decision by the government and outcome of the negotiations with interested Investors:

• The Project Company who will build and operate the Kosovo C and develop the new mine will be required to take up all costs related to:
  - relocation of infrastructure, compensation of affected people for losses and resettlement;
  - reclamation of the Sibovc mine and recultivation, and
  - environmental self monitoring of power plant and mining operations.

• Depending on interfacing arrangement incl. possibly asset transfers, the State of Kosovo, KEK (or a successor company) may also be responsible to taking up costs related to implementation.

• Municipalities would only be responsible for first time setting up their own municipal and local development plans under the guidance set out in the SDP. Since such plans do not yet exist, setting up such plans would fall under the regular budget activities of the municipalities.

4.3.3 Institutional Framework

Not clear, this seems redundant with 4.2.2 above

Maybe here aspect of Institutional strengthening of KEPA as being the environmental supervisory authority (already started under the LPTAP).

[xxx]
5  

IMPLEMENTING INSTRUCTIONS

5.1  

CONDITIONS AND MEASURES

5.1.1  

Proposed Implementing Instructions for Power Plant Development

The new power plant will likely be built land resource saving on a brownfield site, either next to Kosovo A or next to Kosovo B TPPs. In both cases environmental burdens of the past would be remediated at the same time.

On both potential sites, the new power plant will be situated in the vicinity of settlements. However, the environmental performance of the new TPP cannot be compared with the existing TPPs, in particular not with the aged Kosovo A TPP. The new TPP will have state of the art air emission reduction (such as desulfurization and electrostatic dust filters) and noise controls at source and will be compliant with EU standards.

Green belt and off-site greenery for visual screening shall be designed mitigate visual impacts. The private investor, who will build and operate the power, will have to prepare an environmental impact assessment to Kosovar and international standards where such mitigation and respective monitoring will be designed in detail.

It is recommended that the SDP should impose the restriction that local development plans will be required not to designate new residential land use areas within 500 metres of the TPP boundary and not to permit building of new residential houses within this zone.

5.1.2  

Proposed Implementing Instructions for Mining operations

The determination of the excavation boundary of the Sibovc mine in the 2005 MMP was done in such way that unnecessary settlement losses would be avoided, even at the cost of some lignite losses (was applied to Shipitulle on the western mining boundary and Palaj on the eastern mining boundary). The MMP 2005 had considered a 100 metres zone. The ICMM regulation No 2005/3 requires that a 200 metres wide safety zone around the excavation line of the mine has to be maintained as buffer for the protection of villages outside of the mine. Villages within the safety line will be resettled (see Reference source not found, below). The updated mining plan of the private project company will need to comply with the 200 metres zone.
A new main mining plan and the more detailed mid-term operational mining plans (10 – 15 years planning horizon) will need to be set-up the Project Company as part of the application to ICMM for his mining program (as per Regulation 2005/3 on Mines and Minerals in Kosovo) will need to specify the mining and recultivation activities location specific. General best practice as established in EU countries shall be followed with regard to the protection of the environment and the settlements in the vicinity of the mining area.

As per Regulation 2005/3, Part V, Section 30.1(j) the mining program proposed by the project proponent (i.e. the future Project Company) as part of the mining license application, are subject to an EIA. In the EIA detailed and location specific measures are to be designed, which need require approval of environmental protection measures by KEPA.

The following is an exemplary compilation of essential instructions and environmental protection measures inter alia as applicable e.g. in Germany and as recommended by World Bank Group standards which should be considered in the mining program. 19

A key issue for settlements in the vicinity of mining operations is the protection from dust and noise through the limitation of particulate matter and noise and vibrations emissions by operational planning and technical measures.

Ambient Air quality / Dust

As a best practice, at the settlements in the vicinity of the mines, following dust concentrations should not be exceeded:

- Suspended dust/ particulate matter (PM10) of 40 µg/m³ annual average and 50µg/m³ daily average (EU Directive 1999/30)
- Dust deposition of 0.35 g/m²/day (in annual average) to avoid significant nuisance from dust deposition (German TA Luft limit value in absence of respective EU value)

To achieve this following dust reduction measures should be implemented as applicable by local conditions:

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19 sourced from: Sibovc Main Mining Plan 2005 Part III; Administrative Guidelines issued by the Brandenburg State Mining Authority 2001 (applicable e.g. in Lausitz Mining Area/East Germany); and IFC EHS Standards for Mining 2007 (http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_EHSGuidelines2007_Mining/$FILE/Final+-+Mining.pdf)
• To reduce overall dust blow potential from the mining field, the operational mining plan should aim to reduce the active mining area to the extent possible needed from operational perspective;

• Backfilling and recultivation should follow the mining advance at a similar rate to limit the period that areas are bare and exposed and prone to wind erosion;

• Interim surface greening with suitable vegetation (e.g. by spraying of grass seeds-mud mix) should be foreseen in the mining plan if areas are left open over extended time;

• On the outer edge of the 200 safety zone which is buffering the excavation line, a vegetation screen shall be planted on the eastern and western mine rim (in order to have an effect, this should start years in advance of the mining. This can be done in conjunction with noise protection walls/earth berms/ (see below);

• dust emitting facilities (e.g. crushers/loading) should be sited offside from settlements;

• Technical dust suppression in the mining area, such as by water spraying of wind exposed slopes should be in place and be implemented when climatic conditions (dry weather, prevailing wind) indicate the requirement.

• Temporary surface sealing of main access roads should be considered

• Technical dust emission prevention measures such as installation of water spray units or housing at mining equipment where lignite or overburden is handled (e.g. transfer stations to/from /within conveyor belt system)

• Finally, unnecessary dust emissions can also be avoided by respective operational instructions (e.g. avoid unnecessary falling heights of moved materials) and respective awareness training for operational staff. At worst conditions (e.g. strong wind and dust blow to a downwind settlement), operations should be halted.
To monitor the effectiveness of the measures, monitoring shall be undertaken by the operator. For dust deposition a grid of stationary sampling devices (e.g. German-type “Bergerhoff” passive samplers) should be installed (KEK operates 2 sample stations in present operations). Duplicate samples shall be achieved as conservation of evidence.

For suspended dust / particulate matter in ambient air active sampling (motor driven suction device) should be undertaken by the operator with a mobile sampling station (e.g. sampling van/truck). The mobile station should change locations on regular basis and on weather (wind) conditions. The sampling plan has to be agreed with KEPA.

**Noise Reduction**

Good practice in the prevention and control of noise sources from mining activities should be established based on the prevailing land use and the proximity of sensitive noise receptors such as settlements and community used areas (cf. IFC Guidance). On EU levels at present no consistent noise limit values exist.

In general, noise impact on settlements shall be reduced in two ways:

- **Noise reduction at source**
  Noise emissions from operations shall be reduced at the source through the use of sonically optimised machinery and equipment drive assemblies, and conveyor belts (which at present account for substantial noise pollution), sound insulation / enclosure of driving units (preferred use of electric motors) and shielding/housing of conveyor belts in the vicinity of settlements. Since likely much of the equipment presently in use will also be used in the in the future mining activities including land reclamation / recultivation, respective retrofitting of equipments should be undertaken. The EU Directive 2000/14 on noise from equipment and machinery [check title] should be taken into consideration as applicable.

- **Noise protection barriers for settlements**
  In advance of mining, a vegetated protective earth dam shall be established within the 200 metres safety buffer zone on those sections of the eastern and western mine boundary where settlements are located. Alternatively, in case of space limitations a protective sound wall shall be installed between settlement and excavation boundary (also temporary earth dams when mining front advances to villages, until villages are resettled). In such situations also the uppermost excavation terrace could be lowered to gain additional shielding from the higher mining slope. The location and height of the noise screens/dams shall be determined by a noise study within the EIA for the mining plan to be established. The measures taken should ensure that limit values (day/night) are kept.
Vibrations Reduction and Low frequency noise

In present operations crushers and conveyor belts are the main sources of vibrations.

Low frequency noise can cause a significant nuisance to settlements in particular at night. Inter alia Conveyor belts are potential source for this. The German DIN 45680 (March 1997) provides a possible approach to analyse this effect. The nuisance can normally be reduced or eliminated by changes in the rotation speed of the equipment.

Mine Dewatering

Due to hydro-geological conditions of the area, there is no need for groundwater pumping. Dewatering needs are limited to surface water runoff. Under present operations, dewatering of the mines is done without water treatment before discharge to the receiving surface water bodies which are the Sitnica River in the East and Drenica River in the West. The MMP 2005 foresees that this practice will be changed and at as minimum settling ponds for soil and coal dust are installed and laboratory analysis and monitoring is undertaken to design counter measures in case of water quality problems (floculation, ph-buffering) or pollution is present. A special case in the latter respect will be the mining of the areas in the Eat of the Sibovs field located between Hade-Lajthishte –Palaj where phenol dumping on old underground mining shafts was done earlier. Adequate measures for isolating polluted soil and water and respective treatment and disposal to best practice will be necessary to prevent environmental risks.

Road safety

The operator shall develop a traffic management plan which aims to avoid or at least reduce the use of public roads. Unavoidable interference of operation traffic and transportation with public roads and in particular traffic sensitive locations (e.g. schools) shall be analysed and action plans for road safety shall be established.

5.1.3 Backfilling of Mines

Mines shall be backfilled with overburden from mining and the residuals of the power plant operation. The latter are typically:

- Ash (bottom ash from the burner and fly ash from the filters)
- Sludge from water processing and waste water treatment
• Gypsum which is generated in large quantities by the flue gas desulfurization

While overburden is not classified as waste, ash and sludge have a pollution potential and need to be treated as wastes (see ash disposal in Mirash East) according to the pertinent directives\(^20\) in particular \textit{Council Directive 99/31/EC on the Landfill of Waste} (applicability of Council Directive 1991/689/EEC on Hazardous Waste and \textit{Directive 2006/21/EC} on the Management of Waste from the Extractive Industries\(^21\) need to be evaluated (the later one seems to be less relevant for lignite mining).

However, fly ash can also be mixed with FDG gypsum to a stabilise before backfilling back to the mine. Further, there are also possibilities for re-use as secondary raw material. Fine milled fly ash also can be re-used as additive in the cement industry or

The FGD gypsum in principle is a secondary resource. During the last decade processing technology has evolved which also makes it possible to utilize FGD gypsum from lignite power stations\(^22\). The processed material can be can be used for manufacturing of wall-boards for building construction. Practical examples of this are found e.g. in the eastern Germany lignite region. In some cases FGD gypsum is stored aside in the mine pits as a secondary deposit for later use.

It will depend on the intentions of the future Operating Company and potential building industry partners if such reuse concept would be economically sustainable (costs for establishment of facilities, market demand etc.). The starting of a power generation by-product industry would certainly be a strong incentive for local economic development and diversification and could potentially be established on brownfield sites.

5.1.4 \textit{Instructions for Recultivation}

As per requirement of \textit{Regulation 2005/3 on Mines and Minerals in Kosovo}, Part V, Section 30.1(m) also a mine closure plan and rehabilitation program is to be prepared by the Project Company. An essential element of the closure plan will be the progressive rehabilitation of the mine area and successive recultivation.

\(^{20}\) \url{http://ec.europa.eu/environment/waste/index.htm}

\(^{21}\) \url{http://ec.europa.eu/environment/waste/mining/index.htm}

\(^{22}\) feasibility subject to properties such as heavy metal content etc.
Following instructions from the Main Mining Plan 2005 and further good mining practice in Europe should apply:

As part of the recultivation planning, the Operating Company shall undertake soil and agricultural / forestry studies to determine necessary measures to prepare fertile and workable agricultural land.

During clearing of the new mining surface, organic top soil and root bearing substrate layer shall be stripped and stored separately for future use in recultivation. Storage shall be undertaken in way to preserve soil fertility and soil organisms, i.e. max 2.5 metres high deposits which are kept vegetated with nitrogen accumulating species to prevent erosion and siltation and to preserve soil fertility. The top soil stripped off in the new mining operations shall be applied as a final surface layer for recultivation.

Conditioning requirements of re-applied soils and substrate shall, e.g. mixing with sand and/or clay substrate to provide for balanced drainage and water retention capacity. The texture of aggregates should to prevent siltation/crusting of soils, and erosion stability.

For agricultural use, the applied topsoil substance must be suitable for the production of foodstuff. In this respect no common standards On EU level presently exist. As a possible reference for soil standards for recultivation activities, the German standards may be used for guidance. In Germany, re-application of soil on land surfaces is regulated by the Federal Soil Protection Act and the specifications made of the respective Federal Ordinance on Soil and Contaminated Land (BBodSchV 1997, last amended 2004). Art. 12 of this ordinance inter alia sets requirements for re-application of soils for agricultural use or follow-up use including recultivation (Para. 4 to 6): For the preparation of a plant root bearing soil layer for agricultural use, the applied soil substrate shall be suitable for the purpose by it substrate properties, applied layer thickness and pollution concentration.

In view of future pollution which will inevitably be accumulated through agriculture or atmospheric deposition, pollution levels of the soils applied shall not exceed 70 % of the precautionary thresholds set in Appendix 2, No.4 of the BBodSchV. Para. 9 BBodSchV formulates requirements regarding the

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23 sourced inter alia from: Administrative Guidelines of the Brandenburg Mining Authority 2001 (Lausitz Mining Area/East Germany) http://www.landesrecht.brandenburg.de
technical aspects of soil application with reference to DIN 19731 Soil quality - Utilization of soil material.

Comprehensive instructions are given in the Guidance for Implementing § 12 BBodSchV. Re-application of soil requires laboratory testing and for agricultural purposes an agricultural and soil study. In areas designated for agricultural follow-up use, after landscape contouring a top soil layer of 1.5 to 2 metres thickness will usually be required, whereas forest or bushland for the future vegetation strips may be stocked on raw substrate (depending on outcome of soil study). Further soil melioration measures, such as green seeding with Lucerne in the first years, should be determined as part of the sail and agricultural study. This also applies to the question if irrigation should be provided.

The vegetation stripes which are foreseen to segment the landscape and to provide erosion protection shall be composed from region typical species. The stripes will typically have a cross section of several metres where rows of large trees are in the centre undergrown by smaller tree species and bushes on the sides. More specific details are given in Chapter 11.3 of the Main Mining Plan 2005.

5.1.5 Land use and Building restrictions

The SDP will set restrictions for further construction of buildings and structures in the new mining area. This will likely include a stop for building of new private houses, and a regulation that a municipalities will be allowed to construct buildings and structures in the public interest with special permission from MESP.

Use and building restrictions and a safety zone will also be determined for the areas with old underground mining works (such a near Kosovo A TPP ash dump) which pose a potential public safety risk.

26 Vollzugshilfe zu den Anforderungen an das Aufbringen und Einbringen von Materialien auf oder in den Boden (§ 12 Bundes-Bodenschutz- und Altlastenverordnung) Stand: 11.09.2002; Mit Ergänzungen des Ministeriums für Landwirtschaft, Umweltschutz und Raumordnung des Landes Brandenburg zum Einführungserlass vom Mai 2004 (http://www.brandenburg.de/cms/media.php/2318/vollzug.pdf), issued by the Länder working group for Soil (LABO) in cooperation with the working groups on Mining (LAB), Waste (LAGA) and Water (LAWA) (the working groups are technical expert bodies of the Conference of Environmental Ministers UMK).
5.1.6 Environmental Monitoring

Typically, emissions monitoring from the power and mining projects will be part of the Operator’s obligation. Monitoring results will be transferred to KEPA as being the competent authority.

For the new power project the Project Company should provide also ambient monitoring since the future monitoring network of KEPA is at conceptual stage only at present.

5.1.6.1 Ambient air Monitoring


The monitoring shall cover an area which is determined by 50 times the stack height of the new Kosovo C power plant (see recommendation Pyöry 2007, Vol.1 p35). The ambient air monitoring system shall be designed, installed and operated by the Project Company to best international practice (automated fixed and mobile stations and shall be compliant with the requirements given in the Annexes of 1999/30/EC) and specifications shall be set-up in coordination with MEM and MESP and the Kosovo Environment Protection Agency (KEPA). Monitoring results shall be transferred to KEPA and be made publicly available on are regular basis (webpage, monthly and annual reports).

5.1.6.2 Ambient noise protection and monitoring

-> conveyor belts

Noise protection for settlements in the vicinity of the active mining

5.1.6.3 Surface Water quality/quantity monitoring

- Installation of water flow gauges and quality monitoring program
- Installation of gauges / monitoring at mine dewatering channels

Target ?? - Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy” or, in short, the EU Water Framework Directive (WFD)

Water intake and discharge license

5.2 INSTRUCTIONS REGARDING CONSULTATION, COOPERATION AND PARTICIPATION

5.2.1 Stakeholder Consultations for SDP

The MESP, prior to finalization of the SDP, will make the official draft plan available to the other governmental institutions, the affected municipalities and the general public for review and comment at least for 2 months and public consultations on the plan will be held.

The MESP then finalizes the SDP considering the inputs received during the consultations with the public and the other involved stakeholders. The SDP is then submitted to the Government for preliminary approval in line with the procedure prescribed by the Spatial Planning Law. The SDP will become legally binding by approval through the Assembly of Kosovo, and it will then be published in the Official Gazette of Kosovo.

Once approved, the SDP and its instructions and restrictions must be taken into account by the spatial planning on municipal and local level. and restrictions set-out in the in the SDP being a superior plan apply to the local development.

5.2.2 Stakeholder consultation for Implementation of Projects

Under the LPTAP, as part of the SESA activities in 2007 and 2008, initial public consultation meetings were held and community forums were established in the villages directly or likely affected by the mining and power plant developments.
LPTAP will develop a schedule for continuation of these activities, aligned with the activities of the private Investor.

Both the Kosovo C power plant and the mining development will require ESIAs to be undertaken by the private Project Company. For these activities a public consultation and disclosure plan (PCDP) which sets out the means and schedule for stakeholder consultation on the details of project development should be set up by the future Project Company. The consultation program shall be in line with both the mandatory requirements of Kosovo and the IFC Performance Standards and the respective guidance notes and good practice documents. This includes provision of adequate public review periods and consultation meetings. The same applies to the resettlement action plans (RAPs) which will need to be set-up and implemented by the Project Company.

With regard to the activities under the Clean-up and Land Reclamation project, KEK will need to set a PCDP as well to communicate and present their plans to the public and coordinate with other statutory stakeholders once results of the ongoing studies and investigations permit to make more detailed plans for land reclamation and post use.

5.3 IMPLEMENTATION SCHEDULE

LPTAP will submit this Draft SDP, which reflects the present state of planning and decision making on the future developments in the area, as a concept to MESIP for discussion and coordination. As explained above, important decisions about the new developments are pending, such as on the location of Kosovo C TPP will be made through the negotiations of the Government with the potential Investors. These will likely have been made by early 2009. The private Investor will need to set up a detailed mining plan in line with the power plant concept to be agreed with the MEM. The new mining plan (likely an update of the previous main mining plan) would show the exact land requirements and timing of land claim outlines. Decision is necessary if the present level of detail in planning is sufficient to bring the SDP on the formal approval track, or if the SDP should be finalized when more details of the new power and mining development and of the cleanup and remediation project is available.

http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_StakeholderEngagement_Full/$FILE/IFC_StakeholderEngagement.pdf
Based on present timelines, it is estimated that the SDP could be formally binding in place by the end in 2009.

After about 10 years, the SDP would need to be revised by the MESP and adapted to account for developments in the meantime.

5.4 ELEMENTS AND GUIDANCE FOR FURTHER RESEARCH

While for the new Sibovc mine, the general proceeding has already been set out in the 2005 main mining plan, at this stage decisions for various issues with relevance for the SDP are pending:

- Location, size and phasing of the new Kosovo C TPP;
- Related to this: the pace of mining advance
- Future of Kosovo A (and B) ash dump;
- Responsibility for the resettlement of Hade;
- Concept for reshaping and use of the outside overburden dumps and decisions by KEK management on way forward;
- Model for future use/users of lands which will be in the ownership of KEK or the Project Company: e.g. land lease to agricultural cooperatives for farming (as suggested in RPF);
- Need for additional waste /hazardous waste treatment and disposal in Mirash mine and respective special land use designation
- Reordering of municipal boundaries after reclamation and recultivation of present mining area

Obviously, above issues have an influence of the land use specific settings which need to be made in SDP, such as land use target designation, special zones, restriction and condition setting.
Spatial Elements of the Study Zone

- Excavation Boundary
- Municipal Boundaries
  - Railway
  - Primary Roads
  - Secondary Roads
  - Tertiary Roads
  - Coal Belt Conveyors
- Municipal Waste Dump
- Existing Mines
- TPP Kosovo A
- TPP Kosovo B
- Industrial Area
- Iber Water Channel
- Rivers
- Streams
- Lakes
- Forest
- Old Underground Mines
- Settlement Area
- Artisanal Coal Mining
- Overburden Dumps
- Ash Dumps
- Potential Agricultural Land
Annex C

Consultation and Social Assessment workplan
Coordination and Consultation Plan (CCP)

A key element of the project will be the ongoing consultation with project stakeholders. The Consultation plan below outlines the methods and process for the stakeholder engagement. In accordance with the terms of reference we will conduct two formal public consultation meetings. However, the nature and history of the project merits an ongoing consultation process which will involve different types of consultation with different stakeholders as described in the following plan. According to The World Bank’s Operational Policy on Environmental Assessment (OP.4.01 updated March 2007):

“For all Category A and B projects proposed for IBRD or IDA financing, during the EA process, the borrower consults project-affected groups and local nongovernmental organizations (NGOs) about the project’s environmental aspects and takes their views into account. The borrower initiates such consultations as early as possible. For Category A projects, the borrower consults these groups at least twice… In addition, the borrower consults with such groups throughout project implementation as necessary to address EA-related issues that affect them. For meaningful consultations between the borrower and project-affected groups and local NGOs on all Category A and B projects proposed for IBRD or IDA financing, the borrower provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted. For a Category A project, the borrower provides for the initial consultation a summary of the proposed project’s objectives, description, and potential impacts; for consultation after the draft EA report is prepared, the borrower provides a summary of the EA’s conclusions. In addition, for a Category A project, the borrower makes the draft EA report available at a public place accessible to project-affected groups and local NGOs”.

Objectives and Process:

The objective of the public consultation process is to ensure good and clear communication between the project and all affected stakeholders as mentioned above. Additionally, regular consultation with certain groups should ensure that problems are identified early and solutions can be agreed with those affected and this in turn can develop trust between the project and local communities and be used as a type of ‘social capital’ if problems arise.
Stakeholder Identification

The definition of stakeholder that we used for identification purposes was taken from the Reinvest report – Community Consultation Guidelines for Mining in Kosovo. It states that: “Stakeholders refers to people who have an interest in mining activities. This includes people who can influence activities, as well as those affected by them. Local communities are themselves stakeholders. But stakeholders also include others from outside the local area, such as non-governmental organisations, businesses, national government, municipalities and employees from outside the community. These broader stakeholders need to be involved in the consultation because they may be responsible for delivering commitments made through consultation to ensure that the community has sufficient capacity to get involved, or verifying information to ensure that it’s credible.”

The first step in the consultation process is to identify who will be directly and indirectly affected both positively and negatively by the project. This process will also include an institutional mapping to help identify institutional capacity. An initial preliminary stakeholder identification was undertaken in July 2007 during the ‘kick-off mission’ to Pristina. Further stakeholder identification and consultation was carried out by the social assessment team 25-28 September 2007. Additional identification will be carried out from 22nd October to 1st November 2007, during the next mission visit of ERM. To date the following groups and individuals have been identified as key stakeholders:

- Local and national government:
  - Kosovo Ministry of Energy and Mines (MEM), (including The Ministry’s section for the development of mining communities)
  - Ministry of Labour and Social Welfare
  - Ministry of Environment
  - Mayor of Obliq, Deputy Mayor of Obliq, Obliq representative of non-Albanian communities in Obliq, Head of Roma communities in Obliq, Head of Serbian communities
  - KEK (environmental managers)

- Employees and managers of Kosovo A and B mine sites and plant

- NGOs, policy and research organisations:
  - Advocacy Training Centre
  - Millennium NGO
  - Peace with Nature
  - Riinvest
  - Aureola
  - Kosovo Women’s Initiative

- Residents of the following villages and communities affected by resettlement and/or other social and environmental impacts of the power project:
  - Hade (directly affected by resettlement in 2008)
  - Shiptule
  - Grabovc
  - Sibovc
  - Lajthiste
  - Dardhishte
Stakeholders’ Key Issues and Levels of Interest and Influence

The stakeholders in this project are quite diverse and have a range of issues that concern them. In order to deliver a more effective consultation programme it is important to disaggregate the stakeholders by the key issues and areas of influence. By doing this the appropriate methodology for each stakeholder can be applied it also ensures that key issues are addressed from the perspective of those who have raised them and are affected by them. Equally important is the inclusion of people from less powerful groups or those who have little influence. These definitions are not an exact science and are quite subjective. The represent perceptions of stakeholders’ importance by others and may change and fluctuate during the evolution of the process. The key principle, however, is that those who are regarded or regard themselves as of low influence but high importance, for example, should be consulted more fully. For this reason the stakeholder analysis has been refined to map the level of interest and influence that stakeholders have in relation to the project. These are defined as:

- **Influence** - the power a stakeholder has to help, stop or hinder the project
- **Importance** - the priority given to the stakeholder’s interests and needs by the project
- **Interest** - the level of interest the stakeholder has in the project

The following two matrices summarise the key issues of concern for each stakeholder and their levels of influence and interest in relation to the project respectively.
### Stakeholder Issues:

<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Level of Interest</th>
<th>Issue</th>
</tr>
</thead>
</table>
| **Government**   | Kosovo Ministry of Mining and Energy (MEM), (including The Ministry’s section for the development of mining communities) | High              | - Economic Development  
- Community development of mining communities  
- Resettlement of affected mining communities  
- Natural Resource use  
- Policies, procedures and laws in mining sector  
- Mine sector development |
| **Ministry of Labour and Social Welfare** |                                                                      | High              | - Social and economic impacts of retrenchment  
- Economic community development and economic diversity opportunities  
- Labour and social policies  
- Training opportunities |
| **Ministry of Environment** |                                                                      | High              | - Resettlement of affected mining communities  
- Community environmental issues |
<table>
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<tr>
<th>Category</th>
<th>Name</th>
<th>Level of Interest</th>
<th>Issue</th>
</tr>
</thead>
</table>
|          | Municipality of Obliq | High | • Economic Development  
• Community development of mining communities  
• Resettlement of affected mining communities  
• Natural Resource use  
• Consultation  
• Information dissemination  
• Community social cohesion |
|          | KEK (environmental managers) | High | • Retrenchment  
• Environmental impacts  
• Community development of mining communities |
|          | LPTAP Project Team | High | • Economic Development  
• Community development of mining communities  
• Resettlement of affected mining communities  
• Natural Resource use  
• Policies, procedures and laws in mining sector |
<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Level of Interest</th>
<th>Issue</th>
</tr>
</thead>
</table>
| Donors   | World Bank | High | • Mine sector development  
• Economic Development  
• Community development of mining communities  
• Resettlement of affected mining communities  
• Natural Resource use  
• Policies, procedures and laws in mining sector  
• Mine sector development  
• Poverty alleviation |
| NGOs     |  
  o Aureola |  
  •  | High | • Education  
• Human rights  
• Gender issues  
• Environmental protection  
• Public health  
• Transparency  
• Public participation |
|  
  Peace with Nature |  
  • Advocacy Training Centre | Medium | • Resettlement  
• Consultation  
• Community participation |
|          |      | High | • Civil society participation  
• Consultation |
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<tr>
<th>Category</th>
<th>Name</th>
<th>Level of Interest</th>
<th>Issue</th>
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<td></td>
<td></td>
<td>• Inter-ethnic dialogue</td>
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<tr>
<td></td>
<td>Millennium NGO</td>
<td>High</td>
<td>• Civil society participation</td>
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<td></td>
<td></td>
<td>• Consultation</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Inter-ethnic dialogue</td>
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<td></td>
<td>Riinvest</td>
<td>High</td>
<td>• Consultation</td>
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<td></td>
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<td></td>
<td>• Public consultation</td>
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<tr>
<td></td>
<td>Kosovo Women’s Initiative</td>
<td>Low/medium</td>
<td>• Gender issues</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>• Livelihoods restoration</td>
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<tr>
<td></td>
<td>Hade</td>
<td>High</td>
<td>• Resettlement</td>
</tr>
<tr>
<td></td>
<td>Sibovc</td>
<td></td>
<td>• Compensation</td>
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<tr>
<td></td>
<td>Lajthiste</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Grabovc</td>
<td>High</td>
<td>• Air pollution</td>
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<td></td>
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<td></td>
<td>• Dust</td>
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<td></td>
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<td></td>
<td>• Noise</td>
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<td></td>
<td>Shiptule</td>
<td>High</td>
<td>• Employment</td>
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<td></td>
<td>Dardhishte</td>
<td></td>
<td>• Retrenchment</td>
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<tr>
<td></td>
<td>Mazgit</td>
<td></td>
<td>• Enterprise development</td>
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<tr>
<td></td>
<td>Plemetin</td>
<td></td>
<td>• Resettlement</td>
</tr>
<tr>
<td></td>
<td>Obliq</td>
<td></td>
<td>• Infrastructure provision</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Mine closure planning</td>
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<td></td>
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<td>• Skills development</td>
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</table>
### Importance/Influence Matrix

<table>
<thead>
<tr>
<th>High importance/low influence</th>
<th>High importance/high influence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Affected Communities:</strong></td>
<td><strong>Affected Communities:</strong></td>
</tr>
<tr>
<td>Shiptule</td>
<td>Hade</td>
</tr>
<tr>
<td>Sibovc</td>
<td>Grabovc</td>
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<td>Lajthiste</td>
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<tr>
<td>Dardhishte</td>
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<td>Mazgit</td>
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<td>Plemetin</td>
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<td>Obliq</td>
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<tr>
<td><strong>NGOs</strong></td>
<td><strong>Government</strong></td>
</tr>
<tr>
<td>Kosovo Women’s Initiative</td>
<td>Kosovo Ministry of Mining and Energy (MEM),</td>
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<tr>
<td></td>
<td>Ministry of Environment</td>
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<td>Kek</td>
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<td></td>
<td>LPTAP Project Team</td>
</tr>
<tr>
<td><strong>Government</strong></td>
<td><strong>Donor(s)</strong></td>
</tr>
<tr>
<td>Ministry of Labour and Social Welfare</td>
<td>The World Bank</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>High importance/low influence</td>
<td>Low importance/high influence</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Municipality of Obliq</td>
<td>NGOs</td>
</tr>
<tr>
<td></td>
<td>Advocacy Training Centre</td>
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<tr>
<td></td>
<td>Reiinvest</td>
</tr>
<tr>
<td></td>
<td>NGOs</td>
</tr>
<tr>
<td>Low importance/low influence</td>
<td>Low importance/high influence</td>
</tr>
<tr>
<td>NGOs</td>
<td>NGOs</td>
</tr>
<tr>
<td>Peace with Nature</td>
<td>Aureola</td>
</tr>
</tbody>
</table>
Previous Public Consultation and Stakeholder Engagement Activities

During the preparation of the LPATAP there was considerable public consultation of key stakeholders in order to introduce the Environmental and Social Safeguards Framework, (see Annex I). The project has also undertaken some informal public consultation in the form of meetings with various stakeholders of the project including affected communities in Hade village, employees of the mine and the relevant municipal authorities and some non-Governmental Organisations (NGOs). Some of the issues that have emerged from these meetings have focused on employment after the decommissioning of the old mine and opportunities in the new mine, resettlement, compensation and noise and air and water pollution have also been raised. The following table details those who have been consulted to date both for consultation and data gathering purposes:

<table>
<thead>
<tr>
<th>Stakeholder(s)</th>
<th>Consultation Method</th>
<th>Key areas of discussion</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kosovo Ministry of Energy and Mines (MEM), (including The Ministry’s section for the development of mining communities)</td>
<td>Meeting/workshop</td>
<td>Establishment of project components and specific activities and tasks</td>
<td>31 July 2007</td>
</tr>
<tr>
<td>The World Bank</td>
<td>Meeting/workshop</td>
<td>Establishment of project components and specific activities and tasks</td>
<td>31 July 2007</td>
</tr>
<tr>
<td>The LPTAP Project Team</td>
<td>Meeting/workshop</td>
<td>Establishment of project components and specific activities and tasks</td>
<td>31 July 2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consultation process for</td>
<td>26 September 2007</td>
</tr>
</tbody>
</table>

(1) Details of the public consultation meeting of 21 September 2007 will be completed in October

(1) Additional meetings were carried out during week of 17 September, details to be supplied by the environment team of ERM

(2) Additional meetings were carried out during week of 17 September, details to be supplied by the environment team of ERM
<table>
<thead>
<tr>
<th>Stakeholder(s)</th>
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<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEK</td>
<td>Meeting</td>
<td>affected villages</td>
<td>31 July 2007</td>
</tr>
<tr>
<td>Mine manager of Mirash mine, Managers of Plant Sites A and B</td>
<td>Meeting</td>
<td>Project information data gathering for social and environmental baseline</td>
<td>1 August 2007</td>
</tr>
<tr>
<td>Reinvest and MEM (section for development of mining communities)</td>
<td>Meeting</td>
<td>Project description data gathering on social impacts and key issues for mining communities</td>
<td>2 August 2007</td>
</tr>
<tr>
<td>NGOs: Advocacy Training Centre Millennium NGO Peace with Nature Aureola</td>
<td>Meeting</td>
<td>Explanation of project and data gathering on key NGO issues</td>
<td>2 August 2007</td>
</tr>
<tr>
<td>Obliq municipality</td>
<td>Meeting</td>
<td>Project description and to gather baseline socio-economic information.</td>
<td>2 August 2007</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social and economic baseline data identification and planning for consultation with affected villages</td>
<td>25 September</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Logistical support and finalisation of affected villages' consultation</td>
<td>28 September 2007</td>
</tr>
<tr>
<td>Institute of Statistics</td>
<td>Meeting</td>
<td>Project description and identification of sources for social and economic baseline data</td>
<td>25 September 2007</td>
</tr>
<tr>
<td>Ministry of Labour and Social Welfare</td>
<td>Meeting</td>
<td>Project description and identification of sources for social and economic baseline data</td>
<td>26 September 2007</td>
</tr>
<tr>
<td>Stakeholder(s)</td>
<td>Consultation Method</td>
<td>Key areas of discussion</td>
<td>Timing</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------</td>
<td>--------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Institute of Social Policies</td>
<td>Meeting</td>
<td>Project description and identification of sources for social and economic baseline data</td>
<td>27 September 2007</td>
</tr>
</tbody>
</table>
Consultation Methods: Affected village meetings

Background and introduction

There are nine villages in the project area that have been and will continue to be affected by the mine development. As these communities are key stakeholders of the project and may incur some negative impacts, consultation of individual villages is a crucial part of the project’s consultation process. The village community meetings will be the first stage in the consultation process with affected communities. These meetings will provide an opportunity for the LPTAP team and the affected communities to exchange information and identify priorities. It is anticipated that these meetings will inform the methodology of subsequent consultations with village communities in the project area and will identify key issues to be further explored for the social assessment baseline.

Objectives:
Specifically the objectives of these initial meetings are to:

- To establish a two-way dialogue
- To identify key issues of concern of affected communities
- To identify the most appropriate methods for future consultations with these communities
- To identify the specific issues of different sectors of the community, especially those who may have been excluded from traditional consultation methods on the basis of ethnicity, age or gender
- To discuss the following key issues:
  - Employment
  - Skills needs
  - Environmental Impacts on communities
  - Resettlement concerns
  - Project timetable
  - Consultation process

Village meeting timetable and method

The village consultations will take place between 22-28 October 2007. In order to maximise inclusion of a good cross section of communities, individual invitations will be sent to key individuals in the villages, such as Imams and head teachers. However, the meetings will be open to all and public notices displayed in strategic areas within the communities will be issued. Approximately 25-30 people per meeting are expected to attend. In some of the more traditional villages, we have been advised by the Municipality to hold separate meetings with women.

Additionally, depending on the turnout it may be necessary to hold separate meetings with some non-Albanian ethnic minorities, such as Serbian and Roma communities. The meetings will be held in the villages in schools or other suitable public buildings. Two weeks prior to the meetings, information about the project will be made available in the Municipality office in Obliq and in schools in each village to be consulted. The social assessment team worked closely with the Obliq municipality to plan the method,
approach and logistics of this consultation. The following tables outline the process and content of these meetings.
Affected Villages’ Consultation Plan

1. Preparatory Process

<table>
<thead>
<tr>
<th>Date</th>
<th>1-5 October 07</th>
<th>8-12 October 07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task</td>
<td>Preparation of list of key participants for village meetings and initial community sensitisation</td>
<td>Preparation of invitation and public notice Distribution of invitations, public notices and supporting materials (for details see resources section)</td>
</tr>
<tr>
<td>Person responsible</td>
<td>Nazif Shala &amp; Safete Grajqevci (Obliq Municipality), Kreshnik Elezi (MEM), Rinol Nishevci (MEM)</td>
<td>Edda Ivan-Smith (ERM UK), Kreshnik Elezi (MEM), Rinol Nishevci (MEM)</td>
</tr>
</tbody>
</table>

2. Village meetings timetable

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Place/Village</td>
<td>Shiptule/Grabovc</td>
<td>Hade</td>
<td>Sibovc</td>
<td>Lajthishte</td>
<td>Plemetin</td>
<td>Monday</td>
<td>Monday</td>
</tr>
<tr>
<td>Time/Group</td>
<td>15.00-16.45 Women’s Group</td>
<td>15.00-16.45 Women’s Group</td>
<td>15.00-16.45 Women’s Group</td>
<td>15.00-16.45 Women’s Group</td>
<td>17.00-19.00 Mixed Group</td>
<td>17.00-19.00 Mixed Group</td>
<td>17.00-19.00 Mixed Group</td>
</tr>
<tr>
<td></td>
<td>17.00-19.00 Mixed Group</td>
<td>17.00-19.00 Mixed Group</td>
<td>17.00-19.00 Mixed Group</td>
<td>17.00-19.00 Mixed Group</td>
<td>17.00-19.00 Mixed Group</td>
<td>17.00-19.00 Mixed Group</td>
<td></td>
</tr>
</tbody>
</table>

Consultation with Obliq-based NGOs: It is hoped that meetings with local NGOs and other community-based groups can be scheduled during the mornings during the week of village meetings.

31 October/1 November: Post consultation evaluation meeting
This meeting will review the consultation process and identify any further consultation is needed. The meeting will be attended by members of the consultation team (see members below). Dates to be confirmed with attendees.
Results of public consultation to be incorporated into draft SESA and reported back to communities after submission of draft SESA in December 2007/January 2008

Consultation on completion of the second draft SESA in March 2008

3. Village Meetings Agenda:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome and Introduction</td>
<td>Nazif Shala &amp; Safete Grajqevci (Obliq Municipality),</td>
</tr>
<tr>
<td>Project introduction and description</td>
<td>Lorik Haxhiu or other LPTAP representative</td>
</tr>
<tr>
<td>Public consultation and social assessment process</td>
<td>Edda Ivan-Smith (ERM UK)</td>
</tr>
<tr>
<td>Question and Answer Session</td>
<td>Nazif Shala &amp; Safete Grajqevci (Obliq Municipality), - to chair and facilitate discussion For Answers – Edda Ivan Smith</td>
</tr>
</tbody>
</table>

4. Resources

<table>
<thead>
<tr>
<th>Resources/Materials</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-technical project summary</td>
<td>LPTAP/ERM</td>
</tr>
<tr>
<td>Project Area Map</td>
<td>LPTAP/ERM</td>
</tr>
<tr>
<td>Printing of project information materials</td>
<td>LPTAP</td>
</tr>
<tr>
<td>Transport for distribution of invitations and materials</td>
<td>LPTAP/ERM</td>
</tr>
<tr>
<td>List of key community members invited</td>
<td>LPTAP/ERM</td>
</tr>
<tr>
<td>Minute taking of meetings and translation into English</td>
<td>Municipality of Obliq</td>
</tr>
</tbody>
</table>

Consultation Team:
Edda Ivan-Smith, Social Specialist (ERM UK)
<table>
<thead>
<tr>
<th>Name</th>
<th>Position/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carla Corlatti</td>
<td>Project Co-ordinator (ERM Italia)</td>
</tr>
<tr>
<td>Mrika Maliqi</td>
<td>In-country environmental and social consultant (ERM)</td>
</tr>
<tr>
<td>Lorik Haxhiu</td>
<td>MEM LPTAP Project Manager</td>
</tr>
<tr>
<td>Ardiana Efendija Zhuri</td>
<td>Task Manager for Environment and Social Issues, MEM LPTAP</td>
</tr>
<tr>
<td>Nazif Shala</td>
<td>Chief, Environmental Issues (Municipality of Obliq)</td>
</tr>
<tr>
<td>Safete Grajçevci</td>
<td>Information Officer (Municipality of Obliq)</td>
</tr>
<tr>
<td>Kreshnik Elezi</td>
<td>Chief of sector – public consultation (MEM)</td>
</tr>
</tbody>
</table>
Stage Two village consultations in November/December

Following the meetings of 22 October there will be a one day review and evaluation of the process. Identification of key issues such as impacts raised by communities or lack of participation of certain sectors of the community will be discussed. Once this information has been analysed a second stage of discrete and more intense consultation will take place in November or early December. This second stage of consultation will probably consist of individual interviews and household interviews focusing on the direct and specific impacts of the project on different sectors of the community. The main objective of this subsequent consultation will be to gather more qualitative baseline information that will provide more detailed information for the aspirations chapter of the SESA.

It is anticipated that these interviews and smaller meetings will take between 10-12 days.

Information disclosed:

The type of information disclosed should be relevant and written in a non-technical language. It is envisaged that the methods of disseminating information will vary according to the needs of the public. Different stakeholder groups will have different requirements or preferences of language and format. These methods will include non-technical summary documents and reports including maps, oral and visual presentations.

Grievance Mechanism:

In addition to these planned consultations LPATAP needs to devise a mechanism whereby affected people can bring their grievances to the project for consideration and redress. A specific person or team for people needs to be named for this purpose.
Social Assessment Methodology

Objectives

- To assess the social and economic impacts of the project
- Identify positive and adverse impacts
- To provide mitigation measures for adverse impacts
- To establish a social management plan
- To establish a monitoring programme
- To identify additional specialist studies that maybe required

This is quite a complex project, with many components, in a post conflict country. Initial reviews of legislation and statistics have found that key statistics, such as census, are sometimes more than 10 years old or incomplete. Bearing this in mind a variety of methods will be used to provide as complete a picture as possible of the social baseline in the project area and the potential social and economic impacts.

Data Gathering:

- **Secondary Data** gathering will include collecting data from Kosovo government sources such as The Institute of Statistics, Ministry of Social Welfare and Labour, Ministry of Mines and Energy, Obliq Municipality, Country studies from the United Nations, The World Bank and other donor organisations will also be utilised to provide a social and economic baseline of the project area and Kosovo as a whole.
- **Primary Data:** Anticipated gaps in secondary data will necessitate supplementary information that will be drawn from primary data. The social assessment team will try to align data gathering methods with local information dissemination processes and decision-making approaches. The following methods have been used successfully in similar contexts to Kosovo:
  - With affected village communities focus group discussions, workshops and individual interviews can be used. Depending on the social mores of the communities it maybe necessary to hold groups separately with men, women, and young people. Particular attention will be given to ensure that there ethnic minorities including the Roma, Serbian and other non-Albanian communities in the project area, are part of the data gathering process. It is hoped that local municipalities can assist in providing suitable venues for the larger focus groups. Although the aim of above the methods is to gather baseline information for the social assessment they will also provide further opportunities to inform communities on the process of the project and to gain a better understanding of people’s concerns and attitudes about the project.
Potential Social and Economic Impacts:
- Based on initial discussions in July in Pristina the following potential impacts have been identified:
  - Jobs and employment
  - Retrenchment
  - Community water supplies
  - Resettlement and compensation
  - Social cohesion
  - Community services and infrastructure

Timeframe:
Edda Ivan-Smith and Carla Corlatti will be in Kosovo for the above activities from 22 October - 30 October. Secondary data gathering has commenced and is ongoing. Primary data gathering such as interviews and focus groups should be carried out during November and December.
INFORMATION CAMPAIGN FOR THE PROJECT KOSOVA C POWER PLANT

1. 10 January 2007, Wednesday – First meeting with intellectuals from Prishtina - Villa Gërmita
   Participant’s number: 20

2. 17 January 2007 Wednesday – Second meeting with intellectuals from Prishtina - Villa Gërmita
   Participant’s number: 25

3. 19 January 2007, Friday - Meeting with youth from Prishtina – Room Boom Boom
   Participant’s number: 200

4. 20 January 2007 Saturday – Meeting with Peja citizens - Hotel Rojall – Peje
   Participant’s number: 85

5. 24 January 2007 Wednesday - Meeting with kosovar businessmen’s -
   Villa Gërmita
   Participant’s number: 70

6. 26 January 2007, Friday - Meeting with Gjakova, Rahovec and Malisheva citizens - Qarshia e Jupave – Gjakovë
   Participant’s number: 85

7. 29 January 2007, Monday - Meeting with widen AAK leadership Prishtine – Hani I dy Robertëve
   Participant’s number: 80

8. 31 January 2007, Wednesday – Meeting with women’s from Prishtina -
9. 3 February 2007, Saturday – **meeting with citizens of Suhareka, Prizren and Dragash** - Restaurant Oferta – Prizren
Participant’s number: 100

10. 7 February 2007, Wednesday – **Meeting with Gjilan, Vitia and Kamenica citizens** – Restaurant Bujana, Gjilan
Participant’s number: 105

11. 9 February 2007, Friday – **meeting with citizens from Lipjan, Shtime, Ferizaj and Kaqanik** – Restaurant Redoni – Ferizaj
Participant’s number: 100

12. 15 February 2007, Thursday - **Meeting with Podujeva citizens**
Restaurant Besjana – Podujevë
Participant’s number: 95

13. 16. February 2007, Friday – **Meeting with leadership of Prishtina Municipal Assembly of Prishtina, Lipjan and F.Kosova.**
Hotel Grand – Prishtine
Participant’s number: 115

14. 22. February 2007, Thursday – **Meeting with citizens of Mitrovica, Vushtri, Drenasi and Skenderaj.**
Hotel Pallas – Mitrovice
Participant’s number: 187

15. 28 February 2007, Thursday – **Meeting with citizens from villages: Barileva, Drenovc, B.Most, Millosheve, Raskove, Prugovc, Besi, Mazgit, Breznice.**
Restaurant NIC – Millosheve
Participants number: 90
16. 6 Mars 2007, Tuesday – **Meeting with leaders of foreign liaison offices in Prishtina.**
Restaurant Gorenje – PRISHTINE
Participant’s number: un known
Annex D

LPTAP Survey
Consolidated Report (Prism Research)
PROTECTION OF RESPONDENT PERSONAL DATA CLAUSE

Prism Research, in accordance with ESOMAR and AAPOR rules and regulations is obliged to protect the anonymity of respondents. All questions / variables that contain any type of information about the identity of respondents are removed from the report and the final database. This means that the answers given by respondents are physically separate to data that relates to their identity. Any purposeful attempt to come by the identifying data of respondents, whether by the Client, Prism Research, or any third party will be considered a serious violation and will be treated as such.
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**Household income in project area**  
**Natural resource management and land use**  
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**Economic position of households**  
**Community attitudes and concerns about the project**  
**Knowledge about project**  
**Opinion about project**  
**Interest to participate in preparatory project activities**  
**Expectations from project**  
**Community infrastructure and social services**  
**Project area infrastructure**  
**Health**  
**Health status of the population**  
**Community organisation/social capital**
I. METHODOLOGY

For the purpose of the research, the following methodological approaches were used:

- Quantitative Survey Research
- Qualitative Survey Research

Presented below is a description of the main research components, and the order in which the various components were carried out:

*Quantitative research – Household survey*

Prior to initiation of the field work in each settlement included in the sample, Prism's staff were present at meetings organized with the general community in the respective settlements where the field work took place. Primary aim of these meetings was to inform them about the activities that were planned to commence in their settlement (implementation of a survey and establishing of Community Development Forums). The information pertaining to the survey included background on the methodology that was going to be used, description of the information research project is interested to obtain from local inhabitants and agree with them on the date when the field work can commence. These meetings were facilitated by other stakeholders in the project (primarily Community Development Foundation), and all meetings were generally well attended by local inhabitants.

On each such meeting opportunity was given to the participants to pose questions or provide comments they consider relevant for all stakeholders.
Basic Information

Table 1. Basic Information about household survey

<table>
<thead>
<tr>
<th>Time of the survey</th>
<th>January – March, 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data gathering method</td>
<td>Personal interviews within the head of the household¹</td>
</tr>
<tr>
<td>Instruments</td>
<td>Questionnaire had been developed by Prism Research with input from the LPTAP</td>
</tr>
<tr>
<td>Surveyed population</td>
<td>Inhabitants of target settlements in the municipality of Obiliq</td>
</tr>
<tr>
<td>Sample size</td>
<td>1580 household</td>
</tr>
<tr>
<td>Representation</td>
<td>All households/random walk technique²</td>
</tr>
</tbody>
</table>

Method of interviewing

The opinion poll was based on face-to-face interviews. The questionnaire contained both open-end and closed questions. Interviewers read aloud the closed questions and possible (coded) answers from the questionnaire or had given “show cards” to the respondents. In case of the open end questions, the interviewers only read the question. Throughout the interview, the interviewers held to a copy of questionnaire on which they recorded the answers.

Questionnaire structure and design

The questionnaire had been developed by Prism Research in close consultation with LPTAP.

¹ Whenever the head of the household was not present, the survey was carried out with a person who was appointed by the head of the household (partner, oldest son, etc.). This information (for the substitution of the information-provider) was explained to the general population in the General Community Meetings, where they were informed that they need to appoint a family member – in case they are absent – on the given period when interviewers visited each settlement to provide information about the household.

² Methodology utilized in four locations that are planned to be dislocated (Hade, Dardhishte, Lajthishte and Sibovc) consisted of surveying all households in these locations, whereas for others the approach of random selection was used.
Sampling methodology and procedure

Households in the settlements of immediate and high impact from the mining activities were surveyed all inclusively (disregarding the cases when the households were not inhabited or encountered refusals from members of the households), whereas for other settlements a random selection of the households was utilized.

Interviewers, interviewing procedure and quality control

The field team for this research included two team leaders, 15 interviewers, two field controllers and one telephone controller. They had been selected based on skill, previous experience, age, gender and regional origin. Coordinator and interviewers participated in a few-hours-long training session that covered the detailed sampling procedures, interviewing, question-by-question analyses and a role play exercise.

As mentioned, each interviewer had to conduct at least one interview with or without the attendance of a coordinator. The work of interviewers had been controlled in two ways: once the survey had been completed, controller started with field work to check on the basis of information provided in the contact and control sheets if the interviewer followed the rules of sampling, as well as his/her approach and behavior during the interview. Also, during the conducting of the field work team leaders checked each completed questionnaire upon submission to minimize the likelihood of incorrectly completed questionnaires or systematic interviewer errors going unchecked. Besides, the chief data gathering coordinator conducted some controls by phone from the Prism Research central office.

During the conduct of the opinion poll, interviewers did not encounter any major problems in terms of the willingness of the population to participate, especially after the participants had been previously briefed and received extensive explanation and information pertaining to the purpose of the poll. Thus, the response rate (the percentage of respondents who completed the survey in the total number of contacted potential or available respondents) stands at 80.24% making the sample highly representative.

Table 2 contains information from the contact sheets related to the outcome of contact achieved by the interviewers with the respondents.

<table>
<thead>
<tr>
<th>OUTCOME</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1580</td>
<td>88.2</td>
</tr>
<tr>
<td>2</td>
<td>92</td>
<td>5.1</td>
</tr>
<tr>
<td>3</td>
<td>27</td>
<td>1.5</td>
</tr>
<tr>
<td>4</td>
<td>34</td>
<td>1.9</td>
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<tr>
<td>5</td>
<td>16</td>
<td>0.9</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>0.4</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>0.3</td>
</tr>
<tr>
<td>8</td>
<td>29</td>
<td>1.6</td>
</tr>
<tr>
<td>Total</td>
<td>1791</td>
<td>100</td>
</tr>
</tbody>
</table>

1. – Interview completed;
2. – Household-level refusal, interview refused by the person who opened the door;
3. – Refusal by the household member selected for the interview;
4. – Nobody answers the doorbell or knocking;
5. – Interviewer makes two visits but fails to find at home the household member selected for the interview;
6. – Other reasons;
7. – Business facility, restaurant/bar, a government organization or agency;
8. – Nobody living at the address;
Data processing and analyses

The entire data entry and processing procedure has been conducted in Sarajevo. A special mask from the Survey System software program had been used for data entry.

After entry, the data had been transferred and analyzed with the SPSS program (Software Program for Social Sciences) – a professional software package for public opinion surveys. SPSS had also been used for data clearing and logical control, as well as for cross tabular presentation of results.

Cross tabular results were used to analyze data from the household survey. With consideration to the sample the results were produced by:

- Total
- Area
- Urban/rural variable
- Education
- Employment status
- Ethnic origin

Qualitative research – focus groups discussions

As has been planned, the research included eight group discussions, the details of which are provided in Table 3.

Table 3. Specifications for conducted focus group discussions

<table>
<thead>
<tr>
<th>TARGET GROUPS</th>
<th>LOCATION</th>
<th>Hade</th>
<th>Lajthishte</th>
<th>Dardhishte</th>
<th>Grabovc</th>
<th>Crkvena Vodica</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>General public</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Youth</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Women</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Minority communities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Each focus group included between 8 and 10 participants.

3 General public generally consisted of more participants that other groups.
Group discussions were moderated by a well trained and experienced Prism Research moderator who used Guidelines for Focus Discussions developed by Prism Research, and LPTAP. The groups have on average lasted for about 60 minutes.

All the groups had good dynamics and were highly productive. Participation in discussions was voluntary.

Discussions were audio recorded. The recordings were transcribed by professional typists. The transcripts and moderator’s observations and comments served as the basis for writing some parts of this report.
II. MAIN FINDINGS

An overview of socio-demographic profile of households in the Municipality of Obilic project area shows that most household members are married and are living under the same roof with their spouses. Little over a half of the population of Obilic municipality are men, most residents are in the age between 26 and 45 years and with completed four-year secondary education. Most residents are literate, in that, the ethnic Albanian residents are literate in Albanian and ethnic Serb residents in Serb language. As for their employment status, 21% of the population are employed of whom only 13% in KEK.

Residents of the Municipality of Obilic usually engage in agricultural activity in order to improve their financial situation in which way they secure an average 12.3% of the household budget. Most household members in this area receive regular salary for their work and it represents the most common source of income.

All residents of Obilic project area own land around their houses, that is, their yards whose average size is 1,256 m$^2$. Besides, some of them report owning arable land – fields, grassland, forests, pastures etc. Results show that rural household have more land registered to their name than what they really own. This is due to tradition of informal sales or giving of land by the means of oral/written agreements which are not registered with official institutions/cadastre. Households use their land for various purposes. Forests are most likely to be used for business, yards for housing etc. They do not rent the land they own. Outside the project area, they mostly own yards and significantly less forests and arable land.

Households in the project area mostly grow cereals and that mostly for own consumption and significantly less for commercial purposes.

Talking about financial situation in the municipality of Obilic, most households report having sufficient money for food, but facing difficulties to buy clothes. With consideration to their total household income and assets, most respondents place their household in “below average” category, while 16% believe they live on the existential edge. Most households report monthly income of between 101 and 250 euros.

As for development plans, most households in the project area do not intend to increase the total number of livestock nor commercial agricultural production. In line with that, a relatively low percentage of respondents intend to start their own business (11%) and they mostly live in urban areas. Most households have no plans for increasing their income.

Nearly all residents of the project area report being aware of the activities between local authorities and international community representatives aimed at upgrading the operation of the mine. Majority of these respondents learned about it from television while further one fifth of them were informed by informal sources – friends, relatives and neighbors. Respondents generally believe that they are well informed about these activities/plans with majority of them saying that they are somewhat well informed about it. Most residents believe that
meetings with municipal authority representatives would be the most effective way to inform population about planned activities to upgrade the operation of the mine.

Residents of the Obilic municipalities generally have a positive opinion about activities/plans for building of Kosova C, that is, they voice their support for these plans. However, rural population is more likely than urban to express support for these plans.

Over a half of residents of the project area express interest to participate in planning and making of important decisions related to the project. Regarding their expectations, most residents expect the building of Kosova C to have positive effects while only 9% of them believe that it will have no effect on their neighborhood/village. Talking about economic effects of the projects, over a half of respondents expect them to be positive and that the building of Kosova C will increase employment opportunities. On the other hand, most respondents expect the project to have a negative impact on the environment, but 21% of them expect projects’ environmental effects to be positive. Considering the chances that building of Kosova C would require them to move away, most respondents, including a greater number of those from rural areas, said it would represent a problem. Also, this would be more of a problem for permanently employed respondents and farmers. Probability that the building of Kosova C will lead to introduction of significant limitations on construction of new buildings or significant reconstruction of existing buildings was also seen as a problem.

Regarding infrastructure, most households in the project area have running water with rural households being more likely not to have a connection to the public water supply network. A half of all households also own another source of drinking water. Regarding other utility connections, most households have electricity connection, a somewhat lower percentage of them are connected to the public sewage system while only about 16% have telephone connection. Road network in the project area is relatively well developed, in that, little under a half of households are connected to other parts of their village/city by asphalt roads and another quarter of them by cement roads. Residents of the project area mostly use private vehicles and public transport; while only rare of them use private bus and minibus lines. Most households have access to public transport, but those which face difficulties in access are more likely to reside in rural parts of the project area. Latter households say that the greatest problems for them include absence of public transport or irregular lines.

A quarter of respondents (26%) report that they or other members of their households have had some “serious” health problem over the past five years. In the case of illness, most have visited a doctor in the nearest medical center while 39% of them were treated in a hospital. Residents generally mistrust local medical centers and describe the quality of their service as poor and related transportation costs as too high. Over the past 5 years, more than a tenth of respondents from the project area have had cases of death in their household. Also, little over a third of respondents are smokers.

Residents of the project area are closely connected and believe that the differences between the people who live in their neighborhood/village are generally small, very small or inexistent. This belief is supported by the finding that the respondents have shared meal with friends 9
times during the past month. Residents also share a high level of trust and majority of them support the statement that most people in their neighborhood/village would be willing to help them in the case of need.

With regards to important decisions about their neighborhood/village, most respondents trust Kosovo Government, followed by those who trust municipal government.

Socio-economic indicators for the project

A number of indicators can be used to measure success, quality and impact of the project. Project interventions are expected to result in a number of changes in different aspects of life of the project area’s current residents. Project impact can be measured by following indicators:

- Number of persons employed in the project area
- Place of employment
- Situation with household income
- Income structure
- Project area residents’ education
- Age structure of the population of the project area
- Number of residents in the project area
- Number of residents who moved away
- Structure of residents of the project area
- Structure of people who moved away from the project area
- Infrastructure development
- Health situation
III. RESULT ANALYSIS

POPULATION/DEMOGRAPHICS

One of the research objectives was to gain an insight into demographic characteristics of the households and inhabitants of the settlements in the municipality of Obiliq located within the area where the potential investments on developing lignite exploitation and expansion of electrical energy generation is planned to commence.

Survey results indicate that most inhabitants in the project area are married and live in the same household with their spouses (42.5%), while less than a quarter of them are single (24.1%).

As for the gender of surveyed household members, little over a half of them were men (51.5%) and 48.5% were women. Most household members belong to the age group from 26 to 45 years (31.9%), 14.2% of them are in the age from 19 to 25 years and another 14.3% in the age from 46 to 60 years.

Most surveyed household members in the project area completed four-year secondary school (38.9%) or some grades of primary education – 20.8% of them have completed between 5 and 8 grades of primary education while 12.5% have at most completed four grades of primary education. Only very rare surveyed household members belong to other education-based groups (without formal education or highly educated) (see Graph 1)
Most people in the project area report that they can read and write (98.0%), in that, the Serb inhabitants are literate in Serbian and Albanian inhabitants in Albanian language.

As for the employment status of the residents of the project area over the past year, most were permanently employed (20.9%), followed in frequency by housewives (19.4%) and unemployed (16.5%). Only 13.6% of the inhabitants were employed with KEK (see Graph 2).
Asked about private coal digging, all respondents said that no member of their household was involved in it (99.3%).

Focus group data show that there are variety of ways how these families financially support themselves. Whereas the main resource of the income is through regular payment the head of the households (or any other member) receives while being employed in KEK, they also have other supporting incomes that are not regular and seldom come as remittance or casual work of other household members.

“Usually families here have any member of the household working part-time. We also have family abroad, and they help occasionally.” Grabovc, Youth

“In our village there is huge unemployment. Families here are supported by other families that live in foreign countries. A remarkable percentage of people work in KEK as well, but all these that are employed are of older generations.” Hade, Youth

“Families here have any member working privately, on part-time basis. Very few work for public enterprises of institutions, predominantly in KEK.” Dardhishte, Women

**ECONOMIC ENVIRONMENT**

**HOUSEHOLD INCOME IN PROJECT AREA**

Talking about different economic activities which contribute to their overall household budget, most respondents mentioned agricultural production, followed by milk and dairy production and production of meat. Rural households were more likely to engage in the above activities. Respondents who engage in the above activities mostly generate income from the sale of agricultural products. It is important to mention that only 0.6% of respondents mentioned mining coal for heating in order to contribute to their household budget, while on the other hand one third of households gain financially from this activity. This can be explained by the fact that most respondents are mining coal for own consumption which is why only a small percentage of them mention that it contributes to their household budget. On the other hand, they sell surplus coal which is why a third of them report achieving financial gains from this activity despite not doing it for commercial purposes. On average, 10% of household income is achieved in this way. Almost the same number of households achieves income from the sale of milk and diary products and from cutting wood for heating.

Although only 4.5% of households reported generating income from the sale of smoked meat, they achieve 50% of their total income from that, which is directly related to the high commercial price of this product. Situation with fresh meat was similar as relevant households achieve nearly a third of their total income from its sale, which was again related to its market price (see Graphs 3, 4 and 5).
Result analysis by settlements in the municipality of Obiliq show that most residents of Grabovc and Hamidi (around 40.0%) increase their total household income through production of milk and diary products, while a somewhat smaller percentage of them involve in agricultural and meat production (20.0%). In other settlements in the project area most households engage in agricultural production and production of milk, while a smaller number of them produce diary product. The only exception to this was the settlement of Shipitulle, where production of milk was the residents’ only way for increasing household income.

Most residents in settlements of the municipality of Obiliq gain financially from the sale of agricultural products, milk and diary product. Exceptions to this are the settlements of Palaj and Shipitulle where residents do not involve in either of these activities with the goal of achieving profit. Also specific were the settlements of Lajthitshte, where most residents sell dairy products, and Grabovc where the sales of agricultural products, milk, diary and meet products were equally represented. In the settlement of Hamidi, residents achieve earnings exclusively from the sale of milk and diary products, while most residents of Sibovc achieve the greatest share of their household income from the sale of smoked (50%) and fresh (40%) meat. Residents of Hade achieve the equal share of their income from the sale of meet, but another 30% of their income is earned through the sale of dairy products and a somewhat smaller percentage from the sale of milk and agricultural products. Residents of other settlements achieve most of their income from the sale of agricultural product and milk and a somewhat smaller share from the sale of dairy products. In the settlement of Grabovc, residents also achieve about 10% of their earnings from the sale of fresh meat.

Graph 3. Is any member of your household involved in the following activities?

- Production of agriculture products: 34.3%
- Production of milk: 33.3%
- Production of dairy products: 26.1%
- Production of fresh meat: 25.0%
- Production of smoked meat: 19.1%
- Cutting wood for heating: 15.7%
- Mining coal for heating: 9.1%
- Selling coal: 0.3%

Graph 4. Do you achieve any income from the following activities?

- Production of agriculture products: 34.3%
- Production of milk: 26.1%
- Production of dairy products: 19.1%
- Production of fresh meat: 15.7%
- Production of smoked meat: 9.1%
- Cutting wood for heating: 7.5%
- Mining coal for heating: 3.3%
Talking about ways of income generation, most residents of the municipality of Obiliq report salary granted for their work as their main source of income, 17.4% of households survive on pensions while 6.3% receive social assistance and 4.4% earn from occasional work (see Graph 6). Results show that urban respondents, those with higher level of education (faculty education or higher) and who are employed are more likely to mention salaries as their main source of income. As could have been expected, unemployed respondents and housewives were more likely than others to receive social assistance while respondents without permanent employment were earning from part-time jobs.

Result analysis by different settlements in the project area show that salaries are the principal source of income in all settlements, while a smaller number of residents generate income in some other ways. Residents of the settlements of Obiliq, Sibovc and Shipitulle were more likely than other respondents to receive social assistance and child endowment.
**NATURAL RESOURCE MANAGEMENT AND LAND USE**

**LAND OWNERSHIP**

Talking about land they own in the municipality of Obiliq project area, all respondents said they owned land around their houses, that is, their yards (99.3%). Besides, some reported owning arable land and fields (38.7%), grassland (8.3%), forest (6.5%) and pastures (2.0%). Rural households were more likely to own and use the latter types of land (see Graph 7). All households in all settlements in the project area own land around their houses (yard) while some households in every settlement also own arable land or fields. A somewhat larger percentage of households that own arable land or fields were found in the settlements of Shipitulle (92.0%), Hamidi (71.4%), Lajthistle (65.9%), Sibovc (63.3%) and Palaj (53.8%). More residents of Shipitulle and Hamidi than of other settlements also own grassland and pastures. The percentage of residents who own forest was significantly higher in Shipitulle (84.0%) than in other settlements.
Graph 7. How much land does your household own in the area of Obiliq municipality?

As for the size of their land, households in the municipality of Obiliq own an average of 1,256 m$^2$ of yard, 8,401 m$^2$ of arable land, 5,547 m$^2$ of grassland and 10,265 m$^2$ of forest (see Graph 8). Compared to households in other settlements, households in Palaj own largest pastures (on average 22,500 m$^2$), grasslands (on average 16,583 m$^2$) and arable land or fields (on average 16,061 m$^2$). In the settlements of Dardhishte and Sibovc, most land owned by households is occupied by grassland and arable land, in the settlement of Hamidi by arable land, while forests, arable land and grasslands were almost equally represented in the settlement of Obiliq. In the settlements of Hade, Lajthishte and Shipitulle, most land owned by households was occupied by forests.
Results show that the households have more registered land than they really own. This is due to tradition of informal sales or giving of land by the means of oral/written agreements which are not registered with official institutions/cadastre. Because of that, an average household owns 3,285 m² of pastures, while they have registered ownership of 4,505 m² of this type of land (see Graph 9). The most frequently cited reason for not registering ownership of land with the cadastre is that it is still owned by previous owner who in most cases is respondents’ father or grandfather.
As for the use of land for different purposes, households in this area mostly use forests for business purposes, which is in line with the information that a quarter of households in the project area generate income by cutting wood for heating. Expectedly, yard area is mostly used for housing, while one third of households use the forest area they own for the same purpose. Grassland is used for livestock grazing, but also for commercial agricultural production. Pastures are also used for livestock grazing. Arable land – fields, but also pastures are used the most for subsistence farming (see Graph 10). Unemployed or self-employed household heads were more likely to utilize their arable land–fields for subsistence farming.

Result analysis by different settlements in the project area show that most households in all settlements use yard as part of their house (for residence), while in the settlements of Hade, Dardhisht and Lajthisht residents also use this land for subsistence agriculture. Forests in the settlements of Hade, Sibovc and Lajthisht were mostly used for subsistence agriculture, while in the settlement of Shipitulle they were most likely to be used for business. Households in the settlements of Obiliq and Dardhisht were more likely than others not to use the forests they own. Households in all settlements mostly used their agricultural land for subsistence farming, while the households from the settlements of Lajthisht and Shipitulle were also using it for residential purposes. Grassland in the settlements of Hade, Dardhisht and Shipitulle was mostly used for subsistence farming, while in the settlement of Obiliq it was equally likely to be used for farming and livestock grazing. Households in the settlements of Palaj and Sibovc mostly use this land for livestock grazing.

Graph 10. How do you use that land?
Regarding the rental of land, results show that the households in the project area generally do not rent their land. Only 0.7% of households rent their yards and 0.3% their arable land—fields. Further analyses of such a small number of households were not statistically justified.

Talking about the land they own outside the project area, most residents of the municipality of Obiliq said that they own yards (3.0%) and forests (0.9%) as well as arable land—fields (0.8%) (see Graph 11). On average, households own 629 m² of yards, 14,214 m² of forest and 13,210 m² of arable land outside of the municipality of Obiliq.

Graph 11. How much land does your household own outside this area, that is, outside the municipality of Obiliq?

AGRICULTURAL PRODUCTION

Households in the project area mostly grow cereals (20.3%) and fodder (5.8%), in that these households were expectedly more likely to be rural. The above cultures are mostly used for own consumption while a significantly lower percentage of households engage in commercial farming (see Graph 12).

With regards to agricultural production, most households in all settlements in the project area grow fruits while a somewhat smaller number of them also grow vegetables. The exceptions to this were the settlements of Shipitulle and Hamidi where fruit farming and vegetable farming were equally represented. In addition to fruit and vegetable production, households in the settlements of Sibovc, Lajthishte and Hamidi were somewhat more likely than others to also grow cereals, particularly in Sibovc where residents were also more likely than other respondents to produce fodder/animal feed. Most residents in all settlements grow fruits, vegetables and cereals for own consumption. The same was true in the case of industrial agricultural products except in the village of Hade where they are produced exclusively for commercial purposes. Most households in all settlements other than Obiliq produce
fodder/animal feed for own consumption. Households in Obiliq mostly produce it for commercial sales.

*Graph 12. Do you grow these cultures for own consumption, for commercial profit or both?*

Data from the focus group discussions show a similar picture. Most of the focus group participants replied that the agricultural activities are very low in this region. In addition, they mainly grow agricultural products for their home use and only a very few for any commercial profit. Among the major reasons why the agricultural activities are of low intensity in households whose members participated in the focus group discussion, is due to the lack of agricultural land (their land which was previously used for agricultural activities has been purchased by KEK in the last couple of years) and very low productivity of the land due to the environmental reasons (mainly due to pollution from the current power plants and poor productivity of the land they possess).

“*Land here is very rarely cultivated, and mainly it’s for home consumption.*” Grabovc, Youth

“In our village, almost nobody works the land. We don’t have any land left, as KEK has taken our land with a condition: that condition was that they will also purchase the land where our houses are built. This happened six months ago, but this condition was still not fulfilled.” Hade, Youth

“We have tried to cultivate our land, but we gave up as we were not successful. The land is too dry and all our attempts failed to show any success.” Hade, General Public
“Many families were very active in the agricultural activities in our village. This was possible until the year 2002. We even had two farms in our village, but both stopped working, and also the population stopped working the land and later all our land was purchased.” Hade, General Public

“We cultivate our land, and we barely have harvest that can satisfy our family needs. The land here belongs to the third category, and it is not at all convenient to use it for agricultural activities.” Grabovc, Youth

“Almost all families in our village have a cow, for family needs. We have come to a situation that we can not feed the cow, as we don’t have any land left. We will have to sell these cows very soon, as we don’t have where to let the cow graze as we have no more land.” Grabovc, Women

“Even if you get engaged to provide best conditions for the harvest, it’s worthless. The harvest are always way too dusty to eat them… they taste differently, as if the ash has entered into the harvest.” Hade, Women

“We used to be active in agriculture until 1999. The situation changed since then, and we do not work our land any more… A neighbor of mine used to have 360 plum trees, and all that area was destroyed as at some time it was decided the [coal] transportation tape to pass through his land.” Crkvena Vodica, General Public

“We have almost no agricultural activities. The best land that we had, all this land was bought from us… Some of the land that we still have, this land is not convenient for agricultural activities due to flooding that occur quite frequently. All land gets covered with water and it’s impossible to remove the water from the land.” Crkvena Vodica, General Public

**ECONOMIC POSITION OF HOUSEHOLDS**

Talking about their financial situation, most respondents report that their household can afford food but are finding it difficult to buy clothes (40.6%), 31.5% of households in the project area have sufficient money for food and clothes and can even make some savings, but cannot afford expensive things such as a refrigerator, while 22.7% of households do not even have sufficient money for food (see Graph 13). In conformity with expectations, households where the head of household is unemployed and has little education (uncompleted primary school or without primary school) were more likely to lack money even for food, while on the other hand, households where the head of household is permanently employed and has higher education were more likely to have sufficient money for food and clothes and can even make some savings, but are not in position to buy more expensive items.

Most households in the settlements of Hade, Lajthishte and Hamidi can afford food, but find it difficult to buy clothes. Most households in Palaj live on the verge of poverty (cannot even afford food) or have sufficient money for food, but are facing difficulties to buy clothes. The
The number of residents who can afford food but not clothes and those who can afford both food and clothes and even save some money, but are not in position to buy some more expensive items was almost equal in the settlements of Obiliq and Dardhishte. Most residents of Sibovc, Shipitulle and Grabovc belong to the latter category.

**Graph 13. Current financial situation of your household**

Judging by their household income and assets, most respondents describe their economic situation as somewhat below average (37%), followed in frequency by those who believe it is significantly below average (23%) or about average (19%). Further 16% of the respondents believe that they live on the existential edge. Respondents from urban areas (42%) were more likely than respondents from rural areas (36%) to report living somewhere below the average, while rural respondents were more likely to report living on the existential edge (or 17.6% of rural compared to 12.1% of urban respondents) (see Graph 14).
Graph 14. If all of the citizens that live in this region were to be divided into a few categories in terms of their total household income and household assets, in which category would you place your household? (N=1580, variable: type of settlement)

Differences had also been found between respondents with different levels of education – respondents who are living on the existential edge were more likely to be without any formal education (37%) or with completed four grades of primary school (35%). Respondents who placed their household in “significantly below average” (46%) or “somewhat below average” (54%) categories were more likely to have three-year (vocational) secondary school, while respondents with higher level of education, that is, with completed four-year secondary school (18%), uncompleted higher or faculty education (24%) and completed higher (19%) or faculty (42%) education were more likely to place their households in “about average” category.

Further analysis of the employment status variable have shown that the respondents who are living on the existential edge were significantly more likely to select “something else” answer (75%) compared to housewives (19%), pensioners (22%), unemployed – looking for a job (34%), permanently employed (2%), occasionally employed (25%) and self employed respondents (7%). Respondents who believe that they live somewhere about average were more likely to be permanently employed (28%) than students (4%), pensioners (13%), unemployed – looking for a job (9%) or occasionally employed (3%).

Analysis by settlements in the project area shows that each settlement has an almost equal number of residents who believe that their households has “somewhat above average” income and assets. Besides, the settlement of Palaj/Crkvena Vodica had the largest number of residents who believe that their household lives on the existential edge (33%), while residents of Shipitulle and Grabovc were more likely than others to believe that they have about average income and assets (Shipitulle 32% and Grabovc 27%). Hade and Lajthište had a higher percentage of residents who believe to have “significantly below average” income and assets (26% and 28% respectively).
Most households in the project area report monthly income of between 101 and 250 euros (33%), little over a quarter achieve total monthly income of between 251 and 500 euros (22%), 16% have monthly income of between 51 and 100 euros and little over a tent of households report income of under 30 euros. A smaller number of households have total monthly income of between 30 and 50 euros (8%), over 750 euros (6%) and between 501 and 750 euros (5%).

Besides, more households from rural than from urban areas report total monthly income of under 30 euros (12% and 5% respectively), while urban households were more likely than rural to achieve monthly income of between 101 and 250 euros (37% and 31% respectively). Respondents with monthly income of over 750 euros were more likely to live in rural parts of the project area (6% rural and 4% urban respondents) (see Graph 15).

**Graph 15.** We would like you to tell us to which category your household belongs when you take into account all salaries, child endowment payments, pensions, and all other earnings of household members. (N=1580, variables: total and type of settlement)

Further on, respondents who report total monthly income of less than 30 euros were more likely to be without completed secondary education (39%) than with eight-year primary education (9%), four-year secondary education (11%), higher (3%) or faculty (6%) education or incomplete primary or faculty education (12%). Respondents from the project area who report monthly income of between 30 and 50 euros were most likely to be without primary education (42%), while respondents with monthly income of over 750 euros were most likely not to have completed secondary school or faculty (12%) or to have completed higher two-year school (9%).
As for the correlation between respondents’ employment status and their total household monthly income, most respondents with incomes of less than 30 euros were students (47%) or have chosen “something else” answer (63%). Unemployed respondents and pensioners were more likely than others to achieve monthly income of between 30 and 50 euros (16% of unemployed and 18% of pensioners). Besides, respondents with monthly income of between 51 and 100 euros were more likely to be incapable for work or with limited working capacity (57%) than students (9%), permanently employed (5%) or self-employed (7%). Respondents who report total monthly income of between 101 and 250 euros were more likely to be self-employed (57%), to work occasionally (45%) or have full-time job (39%) than to be unemployed (16%), pensioners or inactive workers (21%) or students (19%). Further on, respondents who report monthly income of over 750 euros were more likely to be permanently employed or pensioners (8% of respondents in each group) than unemployed and actively searching for a job (2%).

With regards to monthly income, analysis by settlements show that the number of residents with monthly income of between 101 and 250 euros is the greatest in Obiliq (38%) and Dardhishte (37%) and lowest in Shipitulle (12%). Respondents who report total monthly income of less than 30 euros were the most numerous in Hade (21%).

Most residents of the project area (88%) do not intend to increase the total number of livestock in the near future. Respondents who do intend to do so were more likely to be from rural than from urban areas (12% and 2% respectively) (see Graph 16).

*Graph 16. In the near future, over the next two years, do you intend to: Increase total number of livestock or poultry? (N=1580, variables: total and type of settlement)*

Respondents who do intend to increase the total number of livestock were more likely to have completed secondary education (15%) than to have completed four grades of primary education (2%), be without completed secondary or faculty education (5%) or with two-year higher education (4%). No differences had been established between respondents who intend to increase total number of livestock with regards to their employment status.
Respondents who intend to increase their agricultural production in near future were the most numerous in the villages of Grabovc (33%), Sibovc (14%) and Hade (11%), while fewer than 8% of respondents from other settlements intend to increase the number of their livestock.

Also, most residents of the project area do not intend to increase commercial agricultural production (90%). Respondents who do intend to increase their commercial agricultural production were more likely to live in rural (9%) than in urban (2%) parts of the project area (see Graph 17).

Graph 17. In the near future, over the next two years, do you intend to: Increase your commercial agriculture activities? (N=1580, variables: total and type of settlement)

Further analysis have shown that the respondents who intend to increase their commercial agricultural production were more likely not to have completed secondary school or faculty (16%) than to have completed higher school (4%), eight grades of primary education (5%), four grades of primary education (4%) or to be without primary education (4%). Besides, they were more likely to be students than occasional workers. There were no other statistically significant differences between respondents of different employment status.

Residents of the project area were asked if they intended to start their own business in the near future and little over a tenth of them (11%) confirmed their intention to do so. These respondents were more likely to be living in urban parts of the project area (see Graph 18).
Analyses have also shown that the respondents who intend to start their own business were more likely to be without completed secondary school and faculty than to be without formal education (4.2%) or with completed primary school. Also, respondents who intend to start their own business were more likely to be self-employed (43%) than to be occasional workers (14%), full-time employees (12%), unemployed and looking for a job (9%), pensioners (12%) or students (11%) (see Graph 19).

Also, the analysis by settlements revealed that the number of respondents who plan to start their own business was the greatest in Grabovc (33%), while 15% of respondents in each Sibovc and Obiliq had the same intentions.

Graph 18. In the near future, over the next two years, do you intend to: Open your business? (N=1580, variables: total and type of settlement)
A smaller number of respondents intend to increase their household income in some other way (4%) and they were all living in rural parts of the project area. It is also important to say that these respondents were more likely to be pensioners (18%) than unemployed (1%), students (2%) or housewives (2%). There were no differences between these respondents in terms of their education.

As for the respondents who intend to increase their household income in some other way, they were the most numerous in Hamidi (29%) and less common in other settlements.

**COMMUNITY ATTITUDES AND CONCERNS ABOUT THE PROJECT**

**KNOWLEDGE ABOUT PROJECT**

Nearly all residents of the project area (96%) report being aware of the activities between local authorities and international community representatives aimed at upgrading the operation of the mine as one of Kosovo’s most important natural resources.

The percentage of respondents who are aware of the activities by local government and international community to upgrade the operation of the mine was equal in different
settlements across the project area (over 90%), with the exception of Hamidi where the percentage of such respondents was somewhat lower (86%).

Majority of these respondents learned about this from television (53%) while one fifth of them were informed by informal sources – friends, relatives and neighbors (20%). Following in frequency are the respondents who were informed by non-governmental organizations (CDF or others) (10%). Other sources of information about the plan for the mines were mentioned less frequently with radio being the least mentioned information sources (see Graph 20).

With regards to the sources of information on the activities related to upgrading the work of the mines in Kosovo, respondents whose primary information source was television were the most and the least numerous in Obiliq (79%) and Shipitulle (4%) respectively, while this information source was more or less equally used by residents of other settlements. On the other hand, respondents from Shipitulle were more likely than others to have heard about these plans from friends, relatives or neighbors (38%) while more respondents from Grabovc (43%) than from other settlements received relevant information from NGOs (CDF and other NGOs).

*Graph 20. How did you find out about this Plan? Please, specify your main sources of information! (N=1519, variable: total)*

Residents of the urban parts of the project area were most likely to have heard of mine-related activities from television (79%), while most rural respondents received relevant information from friends, relatives and neighbors (25%). Besides, rural respondents were more likely than urban to have received relevant information from non-governmental organizations (13% and 3% respectively).
Also, respondents without completed primary education (52%) were more likely to have received related information from friends, relatives or neighbors than were the respondents with primary education (26%), secondary education (18%), incomplete secondary school or faculty (21%) or with two-year higher school (14%).

Most respondents believe that they are somewhat informed about these activities/plans (68%), followed in frequency by those who believe that they are well informed (25%). Only a small percentage of respondents believe that they are somewhat uninformed (6%) or not informed at all (0.4%) (see Graph 21).

Graph 21. In general, how do you estimate your level of information about this Plan? (N=1519, variable total)

Further analysis have shown that the respondents who believe that they are well informed were significantly more likely to have completed faculty (31%) or higher school (35%) compared to respondents with completed four (9%) or eight grades (16%) of primary school. Besides, a significantly higher percentage of respondents with four grades of primary education (80%) than those with incomplete secondary education (59%) or completed higher school (60%) said they were somewhat well informed. On the other hand, more respondents with completed eight-year primary education (74%) than those without completed primary education (57%) said that they were somewhat informed, while somewhat uninformed respondents were more likely to be without primary education (26%) than with completed secondary school (5%), higher school (5%) or faculty (2%).

Analysis by the employment status variable have shown that the respondents who said they were well informed about activities related to the mine were much more likely to have chosen “something else” answer when asked about their employment status (50%) than to be housewives (8%) or self-employed (7%). On the other hand, housewives were more likely to
say that they are somewhat informed than were part-time workers (65%), unemployed who are looking for a job (71%), pensioners (66%) and respondents who chose “something else” answer when asked about their employment status (see Graph 22).

The analysis by settlements also found the greatest number of respondents who believe that they are well informed about the plans to upgrade the work of Kosovo mines in Shipitulle (50%), while respondents who believe they are somewhat informed about these plans mostly live in other settlements in the project area (from 60% to 92%).

Graph 22. In general, how do you estimate your level of information about this Plan? (N=1519, variable: employment status)

Majority of respondents believe that meetings with municipal authority representatives would be the most effective way to inform population of the project area about planned activities to upgrade the operation of the mine (31%), 22% of respondents opted for meetings with representatives of the mine, 16% for public meetings and gatherings and 13% for television while 12% said they did not know or have refused to answer when asked about the most effective way to disseminate relevant information. Brochures, leaflets, daily newspapers and radio were the least frequently mentioned information sources (see Graph 23).
Graph 23. In your opinion, what is the most effective way for you, that is residents of this region, to become more informed about the details of this project? (N=1580, variable: total)

Besides, respondents with completed higher school were more likely to have opted for public meetings and gatherings (23%) than were the respondents without formal education (8%). There were no other differences between respondents with different levels of education or different employment status (see Graph 24).

More residents of Lajthishte than of other settlements (46%) believed that meetings with municipal authority representatives were the best way to receive additional information about these plans. The number of respondents who believed that meetings with mine representatives were the best way to get information was the greatest in Grabovc (40%) while the number of those who preferred public meetings and gatherings was the greatest in Palaj/Crkvena Vodica (28%). Also, respondents from Palaj/Crkvena Vodica were more likely than respondents from other areas to identify television as the most effective source of information on these plans (27%), while respondents who preferred other sources of information were evenly distributed across different settlements in the project area.
Graph 24. In your opinion, what is the most effective way for you, that is residents of this region, to become more informed about the details of this project? (N=247, only answer „Public meetings and gatherings“, variable: level of education completed)

Focus group discussions show that the participants are somewhat well informed about the Plan, although only few of them reported to have detailed informed about this project. In general, participants reported that they know quite superficially the whole concept of the Plan and it was a universal request to keep them informed about more details of the Plan. Furthermore, whereas during focus groups with general public (which were mostly attended by head of the households – which are predominantly males) participants declared to have more information about the Plan, other focus groups (consequently, other social groups) were somewhat less informed about the details pertaining to the Plan. As a result, more activities were required to keep them informed about the status of the project. As expected, more eager to find out more information about this Plan were the participants coming from the settlements that are being planned to be dislocated. They were very insecure about their future concerning their dislocation and what solution will be achieved to compensate their property.

“We have been present in some of the meetings here…This project has been presented to us, details were shown.” Lajthishte, General Public

“We would like to know about this project as much as it is possible. We are informed only briefly, through different sources – mainly what we talk with our friends. We need intensive information and we need this as soon as possible.” Grabovc, Youth

“Information about the new power plant, about Kosova C… I have heard about this plan through media, television. If they would fulfill all the conditions, if they would implement..."
this project using western standards, we would very much be in favor of seeing this power
plant being built.” Grabovc, Youth

“We have heard about the Kosova C project very little. Our husbands have informed us
briefly. It is necessary for us to have more information, as we are not being informed
properly.” Grabovc, Women

“We would like to have more discussions and possibility to give our input about this
project. All we see or hear about this project is through television.” Grabovc, Women

“Information about Kosova C we received mainly from people, family members and
others, with whom we have discussed this issue. However, we need other forms of
information, we need written documents. We need to see exactly what is the schedule, how
will everything occur. We don’t want to listen to any more things we are told, we want
everything to be in written… We need to be informed what is going to happen to us.”
Hade, Women

As for the name of the new mine is concerned, there was no consensus how should the new
mine be named. Participants from each village had different opinions about the name of the
new mine, mainly favoring the idea that the new mine should take the name of the village
they come from, and only a few presented the idea for a more neutral name: Kosovo C Power
Plant/Mine.

“For us it is unacceptable this mine to be called ‘New Mine’. It would have to be
‘Grabovc’s Mine’, as the mines started from here.” Grabovc, General Public

“The name of the project… it was reached on political basis. It should be changed. The
place where we now it is called Hade, and that is how the new mine should be called.
The territory of Hade used to be even bigger, but it was taken from us by KEK.” Hade,
Youth

“As for the name of this project, I would most support the name: Thermo central Kosova
C.” Dardhishte, Youth

OPINION ABOUT PROJECT

Most residents of the project area have a generally positive opinion about the above
mentioned plan/activities, that is, voice their support for it (37% strongly and 35% generally
support the plan). Rural respondents were more likely to support (41% strongly and 35%
generally support) and urban respondents were more likely to oppose (13% strongly and 16%
generally oppose) the plan.

Grabovc (53%), Hade (48%) and Lajthishte (46%) had the greatest number of strong
supporters of these activities, while Dardhishte had the greatest number of respondents who
strongly oppose them (23%).
Graph 25. In general, what is your reaction to this Plan? (N=1580, variables: total and type of settlement)

Further analysis have shown that the respondents with completed higher or incomplete secondary education were more likely to strongly support the plan/activities (46% from each group), than were the respondents with university degree (30%). Respondents without completed secondary education were significantly more likely to support the plan than were the respondents without completed secondary or higher education (24%).

Regarding the differences between respondents of different employment status, unemployed respondents were more likely to somewhat support the plan (43%) than were respondents who are incapable of work or with limited working capacity (14%), students (26%), housewives (32%), pensioners (28%), occasional workers (35%) and respondents who chose “something else” answer when asked about their employment status (13%). Besides, students are significantly more likely to generally oppose the above plan (19%) than are pensioners (6%), unemployed (5%) and occasional workers (7%). Main reasons why residents of the project area support activities on upgrading the operation of the mine include opportunities for greater production of electric power for export (63.0%), increased employment opportunities (46.8%) and contribution to the overall economic development (30.3%). Residents of most settlements in the project area support the Kosova C project because they believe it will contribute to increased production of electric power for export, while those residing in the village of Hamidi believe that the main positive outcome of the project will be increased number of employment of opportunities. On the other hand, main reasons for opposing these activities include fear of pollution (61.4%) and related health problems and unbearable noise (10.6%).

Main reason for opposing the activities of Kosova C project cited by respondents in nearly all surveyed settlements are expected environmental problems, specifically pollution, while residents of Shipitulle were more likely than others to identify as a problem the possibility that they will have to move away.
Focus group discussions also reveal that most participants support the Kosova C project. For some of them this is a possibility for them to pursue dislocation (especially of the residents of Hade), whereas in other cases the new power plant was seen as a possibility to increase electrical energy production as well as economic impact of this area and the whole country. Few participants have presented their opinions that they support this project, as no matter what their attitude and stand will be, the project will be implemented. Of those who oppose the project, majority see the building of the new power plant as a further mitigation of the possibilities to continue living in their settlements, primarily due to pollution the new power plant will cause.

«We support this project, we would like to see it happening. We hope we will all see the benefit of this project... it a national interests, it does not influence only the communities living here.» Lajthishte, General Public

«I see this as a possibility to have more electrical energy, perhaps we will have a chance to have more electrical energy for all the households that live here.» Gragovc, Youth

«We live in very difficult conditions, as you can see. I don’t know how will we be able to continue living here with a new power plant... The current power plants are creating such problems that it is making our lives here unbearable. With the new power plant, the pollution will become higher and it will not be possible to continue living here.» Crvkena Vodica, General Public

«We know that Kosovo must be reconstructed, the industry must be renewed and factories must start working. However, the reconstruction of Kosovo must not damage and cause harm to the population.» Grabovc, Women

«We support the project Kosova C, with all consequences that this project might have. Whether we support it or not, it will happen.» Hade, Youth

«Kosova C will occur whether we like it or not, decisions have been made.» Hade, Women

Further down the line, there were few misconceptions mentioned about the current status of the Plan, as well as some of its main attributes. Whereas for few participants the whole implementation of the Plan was a completed mission (investor has been identified and all other issues were resolved – it is a matter of time when the ‘work’ will start), some were highly suspicious if the new power plant will meet the required conditions for environmental protection so they could pursue living in this area.

“Whether we like it or not, Kosova C will be built. I know everything is planed and all things were decided. This is just going to be another chance for further misuse of funds and investment.” Lajthishte, General Public
“I received some information about this… I have heard the new power plant will be very advanced, it is going to be build using international standards. We have had cases here that many other activities were started and technology used and level of quality of these activities was promised to be very rigorous. We ended up with having same quality of work, no matter who was the donor or who did implement it.” Hade, General Public

INTEREST TO PARTICIPATE IN PREPARATORY PROJECT ACTIVITIES

Over a half of respondents from the project area expressed interest to participate in planning and making of important decisions related to the project implementation, including 43% who were somewhat and 24% who were very interested to participate (see Graph 26). There were no differences in this regard between respondents from different parts of the project area.

Further analysis revealed that the participants with incomplete secondary or faculty education (82%) were much more likely than other respondents to be somewhat or very interested to take part in planning and making of important decisions related to the project implementation. Some differences were also identified between respondents of different employment status with self-employed respondents being significantly more interested to involve in the project (86%) than respondents who are incapable or work or have limited working capacity (29%), who are unemployed (65%), occasionally work (67%) or those who chose “something else” answer when asked about their working status (38%).

Analysis by settlements show that Hamidi and Grabovc have the greatest number of respondents who are interested to participate in planning and making of important decisions related to implementation of the project (50% and 53% respectively), while the greatest number of totally disinterested respondents were living in Palaj/Crkvena Vodica (49%).

Graph 26. To what measure are you, as one of the residents of the area that would be a part of the proposed project area, interested in participating in the planning and making of important decisions relating to the realization of this idea? (N=1580, variables: total)
EXPECTATIONS FROM PROJECT

Most respondents expect the building of Kosova C to have positive effects (32% somewhat and 36% very positive), little over a tenth of them (12%) expect it to have negative effects and 9% expect it not to have any economic effects on their household. Urban respondents are more likely not to expect building of Kosova C to have any economic effects on their households, while rural participants are more likely to expect negative effects from it (see Graph 27). Main reasons why respondents expect positive economic effects of the project include increased employment opportunities and increased quantities of electric power for export.

Graph 27. Do you think or expect that the building of the Kosova C would have a very negative economic effect, somewhat negative effect, somewhat positive effect, very positive effect, or no economic effect on your household? (N=1580, variable: type of settlement)

Respondents with completed higher school (19%) were more likely than respondents with completed four (4%) or eight (10%) grades of primary education to believe that the building of Kosova C will have a negative impact on their household. On the other hand, more respondents with vocational education (85%) than with completed higher school (60%) or faculty (48%) expected positive effects from building of Kosova C. Among respondents who do not expect building of Kosova C to have any impact on their household there was the greatest frequency of persons with university diploma (20%), followed by those who have not attended secondary school (5%) and those who completed four (4%) or eight (10%) grades of primary education.

More respondents who selected “something else” answer when asked about their employment status (75%) than self-employed respondents have negative expectations from building of Kosova C. Respondents who are looking for work (77%) were more likely than housewives
(44%), pensioners (66%) and currently employed respondents (64%) to have positive expectations from Kosova C.

The greatest number of respondents who expect Kosova C project to have very positive economic effect on their household was found in Hamidi (50%), Hade (46%) and Lajthishte (44%), while respondents who expect the project to have negative economic effects on them were evenly distributed across different settlements. Also, Hade and Lajthishte had the greatest number of respondents who expected the building of Kosova C to have very positive economic effects on their settlement/village (52% and 45% respectively), followed by Shipitulle where above opinion was shared by 44% of the respondents. Lajthishte (68%), Palaj/Crkvena Vodica (67%) and Sibovc (64%) had the greatest number of respondents who expected the project to have very positive impact on their municipality. On the other hand, Grabovc had the greatest number of respondents (27%) who expected the project to have very negative impact on their municipality.

Surveyed residents of the project area had also been asked about effects they expect from building of Kosova C on their neighborhood/village. Majority of them (72%) said that they expected it to have positive effects, in that, urban respondents were more likely to have positive expectations while rural respondents were more likely to expect building of Kosova C not to have any economic effects.

**Graph 28. Do you think or expect that the building of the Kosova C would have a very negative economic effect, somewhat negative effect, somewhat positive effect, very positive effect, or no economic effect in this village/place? (N=1580, variables: total and type of settlement)**

Further analysis revealed that the respondents with incomplete secondary or faculty education (28%) were more likely than respondents with completed secondary education (16%), vocational school (8%) and those without formal education (4%) to expect negative effects on
their area from building of Kosova C. There were no statistically significant differences between respondents of different employment status.

Regarding the economic effects of Kosova C on their municipality, little over a half of respondents (53.0%) expected them to be highly positive while 27.8% said they expected somewhat positive effects. Only 10.7% of respondents expected negative effects on their municipality from building of Kosova C (see Graph 29). Respondents who live in urban areas were more likely than respondents from rural areas to expect highly positive effects on their municipality from building of Kosova C. Employed respondents were more likely to expect negative and unemployed respondents to expect positive economic effects from Kosova C.

**Graph 29. Economic effects of Kosova C in your municipality?**

![Graph showing economic effects](image-url)

Majority of respondents (83.4%) believe that the building of Kosova C will create more employment opportunities for the residents of Obiliq municipality, while a significantly smaller number of them (4.3%) believe that it will have no impact on the employment situation (see Graph 30). Results show that this opinion is shared by majority of respondents regardless of their socio-demographic profile.

Majority of residents (between 70% and 90%) in all settlements in the project area believe that the building of Kosova C will create new employment opportunities, in that the percentage of such respondents was the lowest in Shipitulle (60%) which had the highest number of respondents (24%) who expected the project not to have any impact on the job market.
Participants in the focus groups also show that their expectations are that the job opportunities will increase. However, they are skeptical how the recruiting procedure will be organized, as they have mentioned many cases that workers in the power plant are being recruited without any criteria. Their hopes are that the foreign investor will have the possibility to organize recruitment procedures, as they see this to be as a condition that the employment will be provided to those who deserve it the most. In this regard, they all agree that they (in each group, all participants presented their village having the most negative impact from the mine activities) should be given priority on employment opportunities, as they are the ones who are suffering the most from the air pollution, or they were previously excluded from employment opportunities or municipal authorities did fail to provide conditions for normal living (poor infrastructure).

“There should be more job opportunities, if Kosova C starts to be constructed. However, I don’t know how will things be organized, who will take the responsibility to hire people and how will things go. We are all witnessing that people from other municipalities, even the most distant ones, are being recruited in the current power plant, whereas we are omitted. We live very close to the power plant, we breathe in the polluted air, live in extreme difficult conditions, and we don’t even get the same treatment as the others [coming from other municipalities] do.” Hade, General Public

“I truly hope that the foreign investors will organize recruitment, in that case only I would be sure that they value people who are had working and they would conduct the recruitment properly... Government should also be present in the process; they should seek for fair treatment of applicants is applied to all.” Dardhishte, Women
“For us it is important the issue of residence, what will happen to our houses and employment. Not just for our husbands, but for ourselves as well. We are all able to work, but we were never considered when people were recruited in the power plant.”

Hade, Women

“There isn’t any village that is more polluted than our village. Roads, air pollution, sewage… everything is very bad.” Dardhishte, Women

Talking about effect of Kosova C on the environment, majority of respondents expected it to be negative (58.3%), primarily because of the pollution which they fear will destroy the environment, while another 20.8% expected it to be positive. Only 5.8% of the respondents expect building of Kosova C not to have any impact on the environment (see Graph 31). Results show that rural respondents are more likely to expect building of Kosova C to have very positive impact on the environment, while urban respondents are more likely to expect it to have somewhat positive or somewhat negative effect on the environment. There were no differences by other socio-demographic variables.

In terms of the impact of Kosova C on the natural environment in their settlements, Hade had the greatest number of respondents (24%) who expected it to be very positive, while Hamidi had the greatest number of respondents who expected it to be very negative (77%).

*Graph 31. What kind of effect on the environment do you expect from building of Kosova C?*

Considering the chances that building of Kosova C would require them to move away, most respondents, including a greater number of those from rural areas, said it would represent a problem (66%) while 30% of respondents, including a greater number of those living in urban
areas, said they would not have a problem with moving (see Graph 32). Permanently employed and self-employed respondents – farmers were more likely to object to resettling due to the building of Kosova C, while unemployed respondents were more likely not to have problem with moving.

Focus group discussions support the data obtained from the household survey, where most of respondents claim that they are skeptical about environmental impact the new power plant will have. Since all participants complained about current conditions pertaining to the environmental issues in their settlements, the construction of a new power plant is expected to have further impact on the environment. Since it is a coal-based power plant, the belief of these participants is that it is not possible for the power plant to be environmental friendly.

«Pollution with the old power plants is enormous... Since the new power plant will also use coal to produce electricity, then it will not have any positive impact in the environment, and on the health of the people living here, that is for sure.» Crkvena Vodica, General Public

Graph 32. If your family had to move away, would that be a problem?

With regards to another aspect of building of Kosova C which would have an impact on the lives of the people in the project area - the likely introduction of significant limitations on construction of new buildings or significant reconstruction of existing buildings - little over a half of respondents (54%) said that it would represent a problem for them. Urban respondents, as well as respondents who are self-employed in farming or cattle breading or who have occasional jobs were more likely than others to see this as a problem. A somewhat lower percentage of respondents (41%), including a greater number of rural residents, said they did not expect this to be a problem (see Graph 33).
Graph 33. Another important effect would be the introduction of significant limitations in terms of the construction of new buildings, or significant reconstruction of existing buildings. Does this represent a problem for you?

Respondents who saw possible need to move away due to the project as a problem were the most numerous in Hamidi (43%) and Obiliq (39%) and least numerous in Dardhishte (16%). Also, Palaj/Crkvena Vodica and Hade had the greatest number of respondents who said that introduction of significant limitations on construction of new or reconstruction of old buildings related to the building of Kosova C would be a problem (54% and 49%). Shipitulle had the least number of respondents supporting the latter opinion (12%).

Most participants in the focus groups support the idea of dislocation, as all the villages included in the focus groups witness negative impact the current power plant has on their lives. In this regard, the explicit request coming from majority of focus group respondents in two settlements, village Hade and Serb community living in Crkvena Vodica, was the immediate dislocation of all households living in these two villages. Their desire comes as a result of current pollution, extensive noise coming from current activities of the power plant (including frequent movement of the KEK's transportation vehicles, which also represent a danger to children who have to walk down the same road as it is used by these transportation vehicles) and insecurity about the future progress of the new mine. Respondents from the village Grabovc also reveal great need for immediate intervention, as the KEK's excavator is operating very near their houses and the noise coming from operation of this enormous vehicle is continuous and causes frustration.

"The situation is serious, it needs immediate attention. We need to get dislocated from here. We can not live in suspense all our lives." Hade, General public

"We do not have sufficient place to live, all our family are situated in a single bedroom. We could not invest any money on our house, as we have been told that we
are going to be dislocated. We have been waiting for such a long time, and we still do not know what is going to happen to us.” Hade, Women

«The pollution here is very high, it makes living her impossible. The situation is becoming worse... There is a transportation tape used by the power plant that goes as close as 10 meters from our houses. Dislocation needs to be addressed as soon as possible.» Crkvena Vodica, General Public

«We did not use to have these problems before the war. Our situation used to be very good; we had a far better life before. We did not have any noise coming from nearby vehicles, the pollution wasn’t so bad. All these circumstances that were created with the expansion of the mine area represent our biggest problems we face now, we were find just about a year ago... We can not sleep at night, and neither can we dry our clothes outside... everything gets dirty as soon as we put our clothes to dry in the open air. Even if we clean the windows, in just a few minutes you can write your name in the windows as a layer of dust creates very quickly. Our home chores become so difficult to complete.” Grabovc, Women

On the other hand, some requests from participants were very clear as far as the dislocation is concerned: they want to start immediately the discussions about the dislocation, they want to receive cash for all their property that is situated in the territory where the mine will be situated and they do not want to have no limitations where to dislocate.

„We are interested to sell our land, there are no conditions here to continue living – it has become unbearable. We want to receive cash money, I don't want my land to be compensated with another land. I don't want to move within municipality of Obiliq, as everywhere you go in all this municipality, pollution is above normal.“ Crkvena Vodica, Youth

„If the municipality (authority) would compensate all our land with an equal value of the one that compensates our land that we use for housing, than this project would be acceptable for us.“ Dardhishte, Women

**COMMUNITY INFRASTRUCTURE AND SOCIAL SERVICES**

**PROJECT AREA INFRASTRUCTURE**

Most households in the project area (86.9%) have running water. Households without connection to the public water supply network are more common in rural than in urban parts of the project area (16% and 4.1% respectively) (see Graph 34). A half of all households (48.5%) also have another source of drinking water and these are equally the households with and without running water, but are more likely to be found in rural parts of the project area.

Result analysis by settlements show that the greatest problems with running water existed in Sibovc, where 36.7% of households reported not having running water, Shipitulle where
16.0% of households were without running water, as well as in Hade and Dardhishte where respective 14.4% and 11.0% of households were without running water. Water supply was the best in Palaj and Grabovc where all households had running water.

*Graph 34. Does your household have running water?*

Regarding other utility connections, most households or 97% have electricity connection, 46.5% are connected to the public sewage system while only 15.6% have a telephone connection. Rural households are more likely not to have utility connections (see Graph 35).

Majority of households in all surveyed settlements have electricity connection, but minor problems with electricity supply were reported in Hade, Sibovc and Lajthishte were respective 9%, 3.5% and 3.8% of households were without electricity connection. Telephone connection represents a significantly greater problem, especially in Hade, Dardhishte, Sibovc, Lajthishte, Shipitulle and Hamidi where over 90% of households were without a telephone line. Little over a half of households in the project area (52.9%) were not connected to public sewage/wastewater drainage system. The situation with sewage/wastewater drainage in all settlements was poor, with the exception of Obilic where 98.3% of households did not experience this problem. Worst situation was registered in Shipitulle, Grabovc and Hamidi where not a single surveyed household was connected to public sewage system.
Road network in the project area is relatively well developed. Little over a half of households (47%) are connected to other parts of their village/city by asphalt roads and another quarter of them (26%) by cement roads. Other households are still connected by macadam roads (25%). As could have been expected, asphalt roads exist in almost all urban parts of the project area; while asphalt, cement and macadam roads are equally represented in rural parts of the project area (see Graph 36).

Most households from Obilic, Palaj, Sibovc and Grabovc report being connected to other parts of their village/city by asphalt roads, while most households from Hade and Lajthishte report being connected by macadam roads. Dardhishte had an almost even number of households connected to other areas by asphalt roads and those connected by clay roads (about 40% each), while Shipitulle had an almost even number of households connected by macadam and those connected by clay roads. Most households in Hamidi were connected to other areas by clay roads.
Residents of the project area mostly use private vehicles and public transport. Private bus and minibus lines are less common and, in contrast to public transport, they are less used by rural population (see Graph 37). Employed respondents are more likely to use private vehicles while unemployed respondents and students are more likely to use public transport.

Private vehicles were used the most in Shipitulle and Grabovc were public transport was used the least. Private vehicles were least used in Hamidi, where public transport and buses/minibuses were used the most.
Most households (81.5%) report having access to public transport. Households which face difficulties in accessing public transport are more likely to live in rural parts of the project area (18.9% percent of rural compared to 6.7% of urban households). Absence or irregular lines are the most frequently reported problems with public transport. A quarter of all (rural and urban) households (23.5%) report having problem with distance of public transport stops.

Residents of Hamidi, Hade, Palaj and Dardhishte were the most likely to report experiencing problems with public transport. Talking about specific problems, residents of Hamidi and Dardhishte were the most likely to mention distance of public transport stops, while residents of Hade and Palaj were the most likely to mention absence of necessary public lines.

On average, public transport stops are located at 23 minutes walking distance from these respondents’ home compared to average 15 minutes walking distance for general population and 14 minutes walking distance for respondents who do not report problems with distance of public transport stops.

Residents of Shipitulle need most time to arrive at the nearest point stop of the public transportation. On average, they need 37 minutes of walk, whereas the residents of Lajthishte need least time, on average 4 minutes.

Focus group participants replied to have very poor community infrastructure. Most of them complain about poor roads, poor supply with electricity (either for long-lasting power cuts, or for week intensity – it is not possible to turn on household appliances due to low power intensity), as well as lack of running water.

Beside the poor condition of the roads, participants complained that the same roads are used for purposes of KEK’s transportation vehicles and these roads are not safe to travel through.
From other public utilities, tapping water is mostly present during winter months, whereas the water from the wells, as a water resource that was quite present among all focus group participants, wasn’t for consumption, and in some cases participants even reported such water should not be used for any purpose for the household use whatsoever.

“The road to our village is very bad. It has always been like this. Power supply is changeable, there is no time table based on what we could know when the power cuts are due... As far as the water is concerned, when it rains, the rain gets mixed with the running water, and we can not drink it at that time.” Hade, Youth

“Our roads are in a terrible condition... Beside, when children go out in the street, they get scared from all the big trucks that move here all day. They frequently move around until late at night, some times even seven o’clock in the evening.” Grabovc, Youth

“For us, as a young group, in this village we lack a playing field, tapping water, road that is safe to use... we almost need everything.” Grabovc, Youth

“Water in our village is of very poor quality, we shouldn’t drink it. However, we have no other options and are must use that water for all household purposes. My wife had to have a surgery, to remove stones from adrenal, which were caused by the water she drank.” Lajthishte, General Public

“Water is not drinkable, and we sometimes need to go to another source to fill in the canisters with water that we can use for drinking.” Dardhishte, Women

“We have the water-supply system, but there is not water in the tubs. We can not use the water from the wells as they are contaminated (with phenol). As for the electricity supply, we have similar problems just like all Kosovo has.” Dardhishte, Women

Public transportation was considered as a real problem in few settlements, although majority of them reported that they have good transportation for the city.

“Bus transportation is reliable; we have busses coming every half an hour.” Women, Grabovc

“There is only one private bus that goes to Obiliq. He doesn’t have a time table, and he sometimes does not work for couple of days. We must rely only on our own private vehicles to travel to other places.” Hade, General public

“We have the bus that goes to Gracanica twice a week, leaves at 8 o’clock in the morning. We use the school bus, which takes secondary school children to school every day... The train used to operate before, but it stopped couple of months ago. The train would take us all the way to north of Kosovo.” Crkvena Vodica, Youth
HEALTH

HEALTH STATUS OF THE POPULATION

A quarter of respondents (26%) report that they or other members of their households have had some “serious” health problems over the past five years with the most common illness being respiratory, heart and lung diseases, cancer, mental problems, diabetes etc. Another 60% of respondents report only “usual” illnesses in the same period (such as flue, cold, toothache etc.) while 14% says they had no health-related problems.

Over the past five years, the most common health problem in Hade, Palaj and Grabovc were respiratory diseases and in Dardhishte and Sibovc it was cancer.

Households in Shipitulle, Grabovc, Palaj, Dardhishte and Hamidi were the most and those in Hade the least likely to report health problems experienced by their members.

A half of respondents who had (any kind) of health problems over the past five years have visited doctors in the nearest medical office, 39.4% were treated in a public hospital while 21.2% of them received assistance from a private doctor, that is, a private clinic. Also, 44% of respondents visited pharmacies. These respondents were the most likely to have also visited the nearest medical office or hospital.

When experiencing health problems, most respondents visit the nearest medical office, which was particularly the case in Dardhishe, Shipitulle and Hamidi. Residents of Palaj were the most likely to visit hospitals while residents of Grabovc usually go directly to pharmacies.

Respondents who did not seek medical attention despite being ill mention various reasons for that. However, their responses clearly show that local medical offices, unlike other health institutions, enjoy very little trust. Most respondents report not having visited local medical office because they would have received poor service there, but also because related transportation costs were too high. Services of other health institutions were not used because there was no need for that (hospitals and pharmacies) or because they are too expensive (private doctors/private clinics) (see Graph 38).
Over the past 5 years, over a tenth of respondents from the project area (15%) have had cases of death in their household. In most cases it was the death of one person (range from 1 to 4) usually due to natural causes and cancer. In line with the information about the nature of health problems in Dardhishte and Sibovc, cancer was the most common cause of death in these settlements over the past five years.

Little over a third of respondents (35.7%) as well as a quarter of their household members are smokers. Households in which all (1.6%) or majority (2.7%) of members are smokers are rare and households in which some of the members smoke are the most common.

Data from the focus group show that the quite a large group of the participants coming from the villages included in the sample for focus groups have serious health problems. Almost in every focus group people could name either someone from their immediate family or extended family who has had serious problem in the recent years. Main reasons of complaint are problems with the aspiratory system and cancer.

“Cancer is quite common nowadays. Especially among the younger generations… lungs cancer, as well as cancer in the blood.” Hade, Women

“We mostly suffer from adrenals. Among children, bronchitis is quite common – it’s all due to the air [that is polluted].” Hade, Women
“Whenever we go to my brothers’ house, the air there is clean and my children always get sick. They can not cope with the clean air, as they are used to polluted air.” Grabovc, Women

“Children get sick very frequently, they get a cough which lasts for weeks.” Dardhishte, Women

“Mean age of the people living in this region was 75 years of age. However, the situation changed drastically, we have people retiring at the age of 40 or 50, due to poor health conditions.” Crkvena Vodica, General Public

“There is prevalence of asthma among the younger generations.” Crkvena Vodica, Youth

“My brother’s son when he was born, he got bronchitis… all because of dust.” Hade, Youth

COMMUNITY ORGANIZATION/SOCIAL CAPITAL

Differences between people in neighborhoods/villages

Neighborhoods/villages in the project area are homogenous and their residents are closely connected. Asked about differences between people (of any kind: in terms of their wealth, income, social status, ethnicity, language, religious or political beliefs, age, gender) in their neighborhood/village, respondents generally said that they were very small or inexistent (see Graph 39). A very small percentage of respondents (1.3%) reported that social and economic differences (including differences in land ownership and education) were causing problems.

Majority of respondents in all settlements agree that there are no differences between the people who live in the same village, while a significantly smaller number of them believe that there are some smaller differences. Residents of Palaj were somewhat more likely than other respondents to report presence of differences (in wealth, income, social status, ethnicity or language), but they did not believe that these differences created any problems.

A smaller number of them (23.8%, N=5) said that such problems have resulted in post-war cases of violence.  

4 These five people live in different neighborhoods/villages: two live in Hade, and one each in Dardhishte, Obiliq and Crkvena Vodica.
Focus group participants also show that the community members get along quite well. They have not replied to have had any misunderstanding or conflict with their cohabitants, and they present their fellow villagers in a positive light. In general, participants were mostly relying on the relations they have with the other households of the same neighborhoods, which in most cases come from the same family (tribe, all bearing the same surname).

“Relations between families in our neighborhood are very good.” Grabovc, Youth

“We have not had any conflict in our village, people respect one another and we can not complaint that we have faced any situation where families had bad relations.” Dardhishte, Women

“Relations between people in our village are very good; we don’t have any problems… Our relations with the Albanians are also quite good. Until the war we used to have better relations, our parents used to have more Albanian friends. Nowadays, we only greet one another when we meet on the street and we didn’t have any problems with one another for a long time.” Crkvena Vodica, Youth

“Even though our houses were burned during the war, when we came back we managed to rebuild them. We are all of one tribe in this village and we have very good relations.” Grabovc, Women
Socializing

Above results are supported by the finding that respondents have shared meal with friends 9 times during the past month (results range 0-80), either in their own or their friend’s home or in a public place (café, restaurant). Although there are no statistically significant differences between residents of rural and urban parts of the project area, urban respondents were more likely to have (also) socialized with members of other ethnic or religious groups, while rural respondent mainly socialized (only) with persons of different social or economic background (see Graph 40).

Result analyses by settlements also show that the residents of Palaj were the most and residents of Hamidi the least likely to have shared meal with a friend over the past 30 days. Residents of Obilic and Palaj were more likely than other respondents to have shared meal with friends of different ethnicity or religion over the past month.

Graph 40. Were any of these people…?

A high degree of trust and mutual helpfulness in neighborhoods/villages in the project area was confirmed by the fact that most respondents fully (42.2%) or somewhat (36.6%) agreed with the statement that most people in their neighborhood/village were willing to help them in the case of need. Also, a small number of respondents fully (4.1%) or somewhat (15%) agreed with the statement that they had to be alert in their neighborhood/village to avoid being taken advantage of. Trust in neighbors was somewhat lower in rural areas (see Graph 41).

5 For the purpose of graphic presentation of results, levels of agreement with the above statements had been numerically coded: “fully agree” was assigned value 5, “somewhat agree” value 4, “neither agree nor disagree” value 3, “somewhat agree” value 2, “disagree” value 1. After coding, arithmetic mean value was calculated and presented on the graph.
Results show that the above opinion is shared by respondents from all settlements in the project area, as well as that there are no significant variations between respondents from different settlements.

*Graph 41. In general, do you agree or disagree with the following statements?*

![Graph showing responses to statements about neighborhood/village]

When it comes to making important decisions about their neighborhood/village, most respondents trust Kosovo Government (59.6%), followed by those who trust municipal government (23.2%) (see Graph 42). Some of the respondents, who chose “something else” answer, stated that they do not trust anyone in this.

In relation to making important decisions about their village/town, residents of all settlements in the project are have the most trust in Kosovo Government, but the residents of Sibovc and Lajthishte are a bit more likely than others to also trust local administration, that is, municipal authorities.
Participants in the focus group discussions show that they trust Kosovo government more to reach decisions about the settlement they live as well. However, the focus group participants also show that they have stronger trust for the local village officials who are elected or would be elected to defend their interest in the future, pertaining to any discussions or need to make important decisions about their settlement.

“We have good relations with the municipal authorities, but we would trust the Kosovo government more.” Grabovc, Youth

“Our relations with the municipal authorities are not so good. We would not trust municipal authorities to bring any important decision that pertains to our village. We were tricked many times in the past, and municipal authorities were not defending our interests. We would trust more someone who is elected from our community.” Hade, Youth

“Relations between the people of our village are very good, but we don’t have good relations with the municipal authorities. We have not received any help from them, they never came to meet ask about our needs and to address them.” Dardhishte, Women

“We have received support from municipal authorities; they tried couple of times to assist us when we were complaining about the problems we are facing. However, we
are having the problem with KEK, and municipal authorities can not do much about these problems that KEK is causing.” Grabovc, Women

“We mostly have trust on our local representatives. However, the old establishment [that is still acting as representatives of the village] does not enjoy much trust among us. They are nostalgic; they would like to stay here forever, no matter what we think... Apart from local representatives, we trust also non-governmental organizations – we believe they can do a good job in our community.” Crkvena Vodica, Youth

Over the past year, rural respondents have taken some action to improve the situation of residents of their neighborhood/village. In that period, one tenth of them petitioned government officials or political leaders five times and another 29.7% did so less than five times. Besides, 12.1% of rural respondents reported that during the past year residents of their neighborhood/village have organized over five protests (demonstrations, blocking of roads etc.) and further 34.1% reported that being done less than five times. Both above kinds of public action were rare in urban parts of the project area (see Graph 43). Any other kind of action to improve position of residents of a neighborhood/village was very rarely taken.

Residents of most surveyed settlements report not having taken any action (protests, petitions etc) over the past year in order to improve the situation of the people in their neighborhood/village. The only exception to this were the residents of Hade who mostly claimed to have taken a few such actions over the past year (less than 5 times) and the residents of Grabovc who mostly claimed to have taken one such action.

Graph 43. In the past year, how often have people in this neighborhood/village got together to jointly petition government officials or political leaders or have attended a protest or taken some other action for something benefiting the community?
ANNEX I – TERMS OF REFERENCE
IToR

RFP # [PSC/PM/RFP/2006/003]

UNITED NATIONS INTERIM ADMINISTRATION MISSION IN KOSOVO (UNMIK)

LIGNITE POWER TECHNICAL ASSISTANCE PROJECT

LOAN GRANT # [H2540]

ENVIRONMENTAL AND SOCIAL SAFEGUARD ADVISORY SERVICES

FOR

PRIVATE SECTOR PARTICIPATION IN THE DEVELOPMENT OF NEW GENERATION CAPACITY, RELATED TRANSMISSION AND THE DEVELOPMENT OF THE SIBOVC LIGNITE FIELD

Issued 27th January, 2007
1. The purpose of this assignment is to provide environmental and social safeguards advisory services to the Project Steering Committee of the Kosovo Lignite Power Technical Assistance Project (the Project Steering Committee or PSC), established jointly by the United Nations Interim Administration Mission in Kosovo (UNMIK) and the Ministry of Energy and Mines (MEM) of the Kosovo Provisional Institutions of Self-Government (PISG). The work to be undertaken by the advisors (the Consultant) will focus on providing environmental and social safeguard support to facilitate the successful development and investments within the Sibovc Lignite Field near Pristina, Kosovo including the development of a new lignite mine and power station, in a manner consistent with international best practices in regard to the management of the social, economic, and environmental impacts of such developments.

2. The work of the Consultant will be divided into two related activities, namely the conduct of a ‘Strategic Environmental and Social Assessment’ (SESA) and the provision of ‘Environmental Assessment Procedures and Training.’ As part of the process to prepare the Sibovc Development Plan, a regional energy sector development plan, the Consultant will provide assistance in the conduct of SESA for this plan. Under the Environmental Assessment Procedures and Training activity, the Consultant will provide support to the development of environmental assessment procedures for Kosovo in general and specifically for the lignite mining and power generation sector.

I. BACKGROUND

3. Kosovo is presently administered by UNMIK pursuant to a resolution of the Security Council of the United Nations. At its current stage of transition, Kosovo has an elected Assembly and Provisional Institutions of Self-Government responsible for certain policy areas, including energy and mining sectors which are under the responsibility of the MEM. Other powers are reserved by UNMIK and managed through institutions such the Kosovo Trust Authority (KTA), whose responsibilities in the energy sector include the oversight of the publicly owned electric utility enterprise, Korporata Energjetike e Kosovës Sh.a. (KEK).

4. With the assistance of the International Development Association of the World Bank Group (hereinafter “Bank” or “World Bank”) and other international donors, UNMIK and PISG are working on the completion of the legal and regulatory frameworks in all sectors of the economy. One of the guiding principles for this work is the policy of PISG to seek the harmonization of Kosovo’s laws with those elsewhere in the European Union (EU), with a view to eventual membership in the EU.

5. In the area of energy and mining, the MEM has recently published the Energy Strategy and Policy of Kosovo (White Paper). The White Paper sets expectations for the energy sector and identifies important development directions. In addition to the White Paper, UNMIK and PISG have signed a Letter of Energy Sector Development Policy (LSDP), setting out a program of commitments for the development of the sector. Kosovo has one of the most favorable and large lignite deposits in Europe, and PISG has a strong desire to exploit this major natural resource for economic development. However, such development should
conform to high standards of environmental and social sustainability in order to obtain and sustain community support.

6. With respect to the social and environmental aspects related to investments in the lignite mining and power sectors, progress has been made, but certain issues remain to be addressed. Recent efforts to develop an effective institutional structure for environmental regulation have defined the most important actors, their roles and supporting legislation, but the structure is still very weak. Environmental legislation and standards are partially in place, but need further development to deal with the challenges of new initiatives. The environmental framework law is inadequate to address proper development of mining and power generation projects, and regulation of existing polluting sources and new projects is not effective. With respect to social issues, further development of lignite reserves will require resettlement. There is presently no existing adequate legal and institutional framework (policies, institutions, and legislation and regulation) to handle resettlement, either in the proposed lignite extraction area or more generally. The applicable laws on expropriation date to the Yugoslav era (1987) and have not been updated; UN executive decisions have provided the legal basis for the process of resettlement in the proposed lignite extraction area.

As part of the Lignite Power Technical Assistance Project’s (LP-TAP) proposed work on developing legal and institutional frameworks to address environmental and social issues in lignite development, the project will provide various types of technical assistance to the Kosovo government. Key areas of technical assistance include:

(a) assistance in the preparation of a Strategic Environmental and Social Assessment (SESA) that will identify key strategic issues associated with lignite development in accordance with the proposed Sibovc Development Plan (SDP) that would be developed as a part of the TA project;

(b) identification of gaps, if any, in the existing legislation and institutional framework to address environmental and social issues in the energy and mining sector, and propose necessary policy and institutional changes to address these gaps. This will also include development of a Resettlement Framework to guide land expropriation and resettlement required for Independent Power Producer [IPP] investments in the lignite sector in the short run, since the new land expropriation legislation currently under preparation may not be ready by the time these investments are anticipated;

(c) development of terms of reference for environmental impact assessment, social assessment and resettlement action plan that would need to be carried out/prepared for specific investments; and capacity building among relevant government agencies to manage environmental and social aspects of lignite development and associated power generation.

The above mentioned technical assistance and associated assessments are necessary to help develop an adequate policy and institutional framework to identify and address environmental and social issues in lignite development and power generation. Close involvement of relevant
Kosovo government agencies in the technical assistance process will be an important element of building their capacity to manage the development of the lignite sector in an environmentally and socially sustainable manner.

The following paragraphs briefly describe the work that will be carried out under the various types of technical assistance mentioned above.

(a) A Strategic Environmental and Social Assessment (SESA) will be carried out in response to and parallel with, the Sibovc Development Plan, a regional energy sector development plan, and in accordance with a new regulation for the conduct of SESA which will be promulgated by the Kosovar Government. The SESA will identify and discuss the broad range of environmental and social issues associated with the development of lignite mining and power generation in the Sibovc-Obiliq area. The SESA report and the SDP will be presented jointly to stakeholders to provide them an early opportunity to express their views and provide comments prior to the adoption of the SDP. The SESA would be the first-stage overarching environmental and social assessment of lignite sector development, prior to further, more detailed analyses such as the Environmental Assessments and Social Assessments that will be prepared by investors for individual investments (discussed in (c) below). The EU SEA Directive (2001/42/EC) will serve as the point of reference for scoping and conducting the SESA. The SESA will also outline the need for policy, institutional and capacity building requirements to identify, assess, mitigate and monitor environmental and social impacts of mining development and power generation.

(b) Based on key environmental and social issues identified in the early stages of the SESA, a diagnostic survey of the legal, policy and institutional issues relating to the management of environmental and social issues associated with the proposed transaction will be conducted. The diagnostic survey, to be conducted concurrently with the SESA, will assess gaps in existing legislation, policies and institutional arrangements. Since the current law on land expropriation dates back to 1978, and is widely acknowledged as inadequate, a Resettlement Framework that would apply to land acquisition and resettlement required for investments in the lignite and power sectors will be prepared, consistent with the World Bank’s Operational Policy (OP 4.12) on Involuntary Resettlement. A new draft legislation dealing with expropriation and resettlement issues will also be prepared to assure that future resettlement programs meet international standards. Similarly, an analysis of possible gaps between international good practice and existing legislation and institutional framework related to environmental assessment and compliance will be carried out, complementing the ongoing technical assistance being provided by the European Agency for Reconstruction (EAR) to the Ministry of Environment and Spatial Planning (MESP). The LP-TAP will help prepare draft legislation for sector specific regulations such as the implementation of the EU Directive for Large Combustion Plants.
Based on the findings and the recommendations of the SESA, the gap analysis that will be conducted under (b) above, and the Resettlement Framework, the mine-site assessment and power plant study carried out under the LP-TAP, terms of reference (ToR) for investment-specific Environmental Assessment, Social Assessment and Resettlement Action Plan will be prepared. The ToR will also be informed by the feasibility studies financed by EAR on mine development and power generation.

To build the capacity of MESP and other national agencies to design and implement activities related to environmental management and social development/mitigation, capacity building and institutional strengthening activities in the field of environmental assessment and involuntary resettlement will be undertaken as part of the LP-TAP. The project will assist MESP and subordinate institutes such as Kosovo Environmental Protection Agency and the Environmental Protection Inspectorate in the development and implementation of EA procedures and the preparation of a sector specific EIA handbook. The LP-TAP will support collection of baseline environmental data related to lignite mining and power generation and implementation of an environmental monitoring data registration and reporting system. The capacity building component will also support inter-ministerial co-ordination between the Ministry of Environment and Spatial Planning, the Ministry of Energy and Mining and other relevant agencies. Since a new agency/function for land expropriation and resettlement is likely to be established as part of the formulation of the new expropriation law, this component will also provide support to the institutional unit responsible for coordinating land expropriation and resettlement, in addition to supporting existing units that play a role in resettlement planning, implementation and monitoring.

Consultations with directly affected communities and other stakeholders are built into the various assessments and reports that will be prepared to identify and address environmental and social issues. Consultations are scheduled to be conducted in accordance with the EU Directive and the World Bank’s Operational Policy (OP 4.01 Environmental Assessment) during the scoping of the SESA and for the presentation and discussion of the SESA results and the draft Sibovc Development Plan. Another World Bank funded program ESTAP III (Energy Sector Technical Assistance Project), currently under implementation, is also providing technical assistance to the government to develop a framework for consultation and participation with local communities and other stakeholders in the energy and mining sector. Requirements related to consultations will also be included in the terms of reference for EA, SA and RAP of specific investments subsequent to the LP-TAP.

**II. OBJECTIVES OF THE ASSIGNMENT**

7. A key objective of the assignment is to provide the Project Steering Committee with environmental and social safeguard advisory services necessary to develop the sector in an environmentally and socially sustainable manner. As an additional objective, the assignment is also designed to facilitate similar infrastructure transactions in the future, primarily by
strengthening the Kosovo safeguard regulatory capabilities and, secondarily, by improving the capacity of both the relevant Kosovo authorities and the local members of the Consultant’s team in carrying out Strategic Environmental and Social Assessments and Environmental Assessments. As indicated above, the work will be divided into two related activities, with the following respective objectives.

Activity I: Strategic Environmental and Social Assessment

8. The objectives of the Strategic Environmental and Social Assessment aspect of the assignment are to:

(a) Provide the means to identify and consider the social and environmental impacts of projected development of lignite mining and power generation and development alternatives in the Sibovc field;

(b) Facilitate the process through which public consultation can occur on these impacts; and

(c) Design measures for the regional energy sector development plan that will minimize these impacts.

Activity II: Environmental Assessment Procedures and Training

9. The objectives of the Environmental Assessment Procedures and Training activity are to:

(a) Prepare procedures for environmental assessment and an EIA handbook for projects and new developments in the lignite power sector in Kosovo;

(b) Design and conduct a training program for staff from regulatory institutions in Kosovo to familiarize them with the developed environmental assessment procedures and the EIA instrument in general.

III. DETAILED DESCRIPTION OF THE SCOPE OF WORK

10. The Consultant will be expected to undertake certain key tasks, described below, in order to meet the objectives outlined above in Part III of these Terms of Reference. The Consultant will be expected to draw on all relevant primary and secondary documentation (reports, policy documents, laws, regulations, licenses, etc.), and to conduct discussions with relevant stakeholders. The Consultant will be expected to propose, in their Technical Proposal, a methodology for providing the advisory services and, specifically, for undertaking the tasks described below.
Activity I. Strategic Environmental and Social Assessment

11. Study area and Area of Influence. The SESA will focus on all current and projected activities related to lignite mining and lignite power generation in the Sibovc Field near the municipality of Obiliq / Obilic and areas affected by these activities. The emphasis of the SESA will be on the development of new mining and power generation activities in this area but for baseline assessment purposes and to consider developments in the existing operations and production facilities of KEK, current activities need consideration as well. KEK operates two lignite mines, Bardh and Mirash, and two lignite power stations, Kosovo A and B.

Task 3/AI. Description of the Baseline Social and Environmental Conditions and Environmental Assessment of Existing KEK Operations.

(iii) Socio-cultural environment (include both present and projected where appropriate):
population; land use; planned development activities; community structure; employment;
distribution of income, goods and services; recreation; public health; cultural properties;
ethnicity and customs; aspirations and attitudes.

Task 5/AI. Determination of the Potential Environmental Impacts of the Projected Sector Developments. The evaluations of impacts of lignite power sector developments made in previous studies should be reviewed by the Consultant, and additional analysis undertaken, as necessary. The impact risks should be described quantitatively in technical terms, and the risks should also be described by assigning economic values. The extent and quality of available data, any significant information deficiencies and any uncertainties associated with predictions of impacts should be well explained.

The Consultant will make a clear distinction between (i) impacts to be expected with the implementation of the new mine/plant program, (ii) impacts of past, current and future activities of KEK's facilities including the power stations Kosovo A and B and (iii) other long-term developments in the lignite power sector. The analysis will be made in view of sector development alternatives and regional land use projections identified in Task 2. Although the program components have been indicated, the analysis of environmental impacts in the lignite power sector will at the same time further define and detail components such as the incorporation of environmental control and mitigating measures and may set certain conditions to other (land-use) developments in the area.
Task 6/AI Regional Social Assessment. Undertake and prepare a regional social assessment on settlements in Sibovc field. The regional social assessment will address the following points:

- Review existing social data, update and expand as necessary
- Assess and outline the expected resettlement and socioeconomic impacts for displaced communities and those communities who will be socially impacted by proposed developments.
- Undertake a preliminary social screening to identify issues to be addressed under the Terms of Reference for the follow-on Social Assessment and Resettlement Action Plan.

In undertaking the regional social assessment and the development of the TORS for Resettlement Action Plan, the Consultant shall work closely with the consultant working on LP-TAP component in regard to the legal and policy framework for land acquisition and resettlement, including sharing draft documents and working materials. The Consultant shall also review the reports of the Hade Resettlement Working Group.

Special attention is required for the informal (illegal) mining activities in the area.

Task 7/AI Sustainability Appraisal and Options for Resettlement and Environmental Management. For the development scenarios identified in Task 2/AI and with the environmental and social impact identified under Tasks 5/AI and 6/AI The Consultant will execute a Sustainability Appraisal in view of the topics presented in the EU SEA Directive Annex 1 (Biodiversity Population, Human Health, Fauna, Flora, Soil, Water, Air, Climate, Material Assets, Cultural Heritage and Landscape). In line with these topics, in this appraisal key sustainability objectives are to (i) protect health, (ii) support communities; (iii) develop the economy to meet people’s needs, (iv) provide access to meet people’s needs with least damage to communities, (v) maintain/improve environmental quality and assets and (vi) minimize (optimize) use of natural resources of contents for an EIA report of a typical power project and a typical mining project.
1. **BACKGROUND**

The Strategic Environmental and Social Assessment (SESA) will be an important component of the tender documents that will be sent to potential foreign investors to develop the Sibovc mine development area and construct Kosovo C. The baseline information on mine development area communities and the evaluation of potential social and environmental impacts on these communities are crucial elements of the SESA. The SESA and the baseline will be important tools for decisions made about the future of not only the Sibovc mine development but also for the development of Kosovo’s energy sector.

2. **ASSIGNMENT PURPOSE:**

The purpose of this assignment is to provide accurate and up to date primary social and economic information about communities in the Sibovc mine development area in order to evaluate the present and future impacts. Some baseline information and data have already been collected from government, donor and NGO reports. However, much of it is general to Kosovo or out of date and predominantly quantative. Information from the household will be used to supplement the secondary data and to provide qualitative information on people’s attitudes, perceptions and concerns about current and future mine and plant development.

**Objectives:**

- To provide accurate quantitative and qualitative data on the social and economic baseline of communities in the Sibovc mine development area.
- To provide information that will be used for the evaluation of the impacts

3. **SPECIFIC TASKS: SURVEY**

- To carry out a baseline socio-economic household survey on approximately 1500 households in the Obliq and Fushe –Kosovo municipalities.
- To design a questionnaire and other appropriate survey methods for collecting both quantative and qualitative
- The baseline information should include but not be limited to the following issues in Table 1:

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(1) The exact number of households will be confirmed prior to contract signature
<table>
<thead>
<tr>
<th>Key Issue</th>
<th>Questions/analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population/Demographics</td>
<td>Change in make-up of population. Will project impacts result in a change in the size or composition of the population in project area? Which communities are going to be resettled and why? Relocated populations influence? Will the project bring changes to the existing social infrastructure? Key characteristics, including gender, ethnicity and age, as well as any cultural, spatial, economic, historical, or other characteristics that may cause the project to affect social groups differentially. Conditions that encourage or impede the participation of groups in the project, as well as their potential contributions to the project’s objectives. Special attention should be given to the situation of minority communities including Roma and Serbian.</td>
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<tr>
<td>Economic Environment</td>
<td>Planned development activities</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td></td>
<td>Skills of communities</td>
</tr>
<tr>
<td></td>
<td>Employment creation: direct, indirect, temporary</td>
</tr>
<tr>
<td></td>
<td>Distribution of income</td>
</tr>
<tr>
<td></td>
<td>Unemployment (post construction or closure)</td>
</tr>
<tr>
<td></td>
<td>Wage, income levels</td>
</tr>
<tr>
<td></td>
<td>Sources of income – e.g. formal job, subsistence farming, remittances from family members resident abroad or in other parts of Kosovo, pension, social assistance</td>
</tr>
<tr>
<td></td>
<td>Informal mining activities</td>
</tr>
<tr>
<td></td>
<td>Informal economic activities such as street selling work in the home</td>
</tr>
<tr>
<td></td>
<td>Economic vulnerability</td>
</tr>
<tr>
<td></td>
<td>Opportunities for local sourcing of goods and services</td>
</tr>
<tr>
<td></td>
<td>local businesses</td>
</tr>
</tbody>
</table>

| Natural Resource Management and Land Use                   | How is land used? For businesses, homes, livestock grazing, commercial agriculture (for profit), subsistence agriculture (for family consumption). Common property resources, such as water |
| Community Organisation/Social Capital | Community-decision-making structures, community organisation, traditions and customs  
Conflict between different ethnic communities  
Group membership, levels of trust in local and national government and municipalities, among of interaction with these authorities  
Issues regarding the 90s reconciliation movement |
| Community Infrastructure and social services | Local goods and services such as hospitals, health facilities, power supply, transport facilities, roads, communication |
| Cultural properties | schools, libraries, recreational facilities, places of worship, mosques, churches e.g. |
| Health | nutritional status  
Mortality and morbidity levels  
Respiratory diseases, cancer |
| Community Attitudes and concerns about the project | Cadastre issues  
Name of Sibovc mine development plan  
Conflict issues  
Issues of refugees from the war  
How long have people lived in the village |
4. **Methodology**

It is envisaged that data will be gathered by using a questionnaire and guided question sheets for focus group discussions to capture qualitative information. Activities would include:

- The design of a questionnaire in consultation with project management
- Field test questionnaire and make revisions as necessary
- The questionnaire must be designed to capture the issues mentioned in table 1 and to inform the evaluation of the impacts of existing mine and power plant facilities and potential impacts of future developments such as the siting of Kosovo C.
- The questionnaire will be in Serbian and Albanian for the field work
- All reports and analysis will be in English
- Design guided questions for small focus group interviews to gather qualitative information from ‘hard to reach groups’ such as women, young people and Roma communities.
- The design of the database should include tabular responses that can be disaggregated by age, gender and ethnicity and village.
- There should be a breakdown of all questions with both number and percentage
- Working closely with project management during data analysis

5. **Specific Reporting and Analysis Tasks:**

- Raw data from the household survey should be entered into an appropriate database, such as Access analysed using software such as SPSS.
- There should be a rolling data entry process whereby data cleaning and entry is done after collection of data from each village or community.
- Summary reports should be written on the specific social and economic issues and findings (see details under deliverables).
- A final report using the SESA template provided should be drafted, in English, describing the findings.

6. **Deliverables:**

All deliverables should be in English

- A week after the signing of the contract an inception report describing proposed methodology; work plan, including timing of tasks and deliverables; draft questionnaire; survey team composition; and survey coordination.
• One week after field activities have commenced weekly 1 page progress reports on field activities should be drafted and emailed to project management.
• By 10th December draft a brief interim report on key findings
• 11th January draft baseline report to be submitted
• 18th January final baseline report to be submitted
• All databases, photographs, completed questionnaires, summary tables and reports should be given to LPTAP and remain the property of LPTAP.

7. **PROJECT CO-ORDINATION**

The survey team will work closely with the consultation team project management team and the Obliq municipality. Joint planning with the consultation team on focus group discussions and timing of village visits should be done in order to avoid information duplication and ‘consultation fatigue’. After signing of the contract an inception meeting will be held with the project team, consultation team and Obliq municipality representatives to facilitate this process.

The team should have a team leader who will report directly to the project management. The team leader will provide weekly progress reports and will assist LPTAP in the public consultation meetings for the disclosure of the SESA report in December and February.

8. **DURATION OF ASSIGNMENT**

It is expected that the assignment will last for the duration of 4 months

9. **SURVEY TEAM REQUIREMENTS**

• Team personnel should have experience of conducting household surveys, survey analysis and gathering quantitative and qualitative information.
• At least two field workers should be fluent in Serbian and able to conduct surveys in Serb settlements
• The nominated team leader should be fluent in written and spoken English

10. **CONFIDENTIALITY**

The Consultant agrees to keep confidential all information that they receive, directly or indirectly, from the Project Steering Committee, the Transaction Advisor, other consultants working on associated consulting assignments outlined above, or any other stakeholder, as well as all copies or analyses that they make, or have been made by third parties, on the basis of such information (collectively, the Material). The Consultant shall use the Material exclusively for the purpose of preparing deliverables relevant to this assignment. The confidentiality obligations shall not apply to information in the public domain. The Consultant shall only permit access to the Material to persons within their organizations on
a need-to-know basis. The Consultant shall explicitly inform such persons of the confidential nature of the Material and, prior to providing them the Material, subject them to the confidential obligations contained in this Terms of Reference.

11. INSTRUCTIONS FOR TECHNICAL AND FINANCIAL PROPOSAL

- **Technical Approach and Methodology:**
  You should explain your understanding of the objectives of the assignment, approach to the services, methodology for carrying out the activities and obtaining the expected output, and the degree of detail of such output. You should also explain the methodologies you propose to adopt and highlight the compatibility of those methodologies with the proposed approach.

- **Work Plan:**
  You should propose the main activities of the assignment, their content and duration, phasing and interrelations, milestones (including interim approvals by the Client), and delivery dates of the reports. The proposed work plan should be consistent with the technical approach and methodology, showing understanding of the TOR and ability to translate them into a feasible working plan. A list of the final documents, including reports, drawings, and tables to be delivered as final output, should be included here.

- **Organization and Staffing:**
  You should propose the structure and composition of your team. The key expert/ team leader responsible

- **Financial Proposal:**
  You should detail the cost for the overall assignment and include a breakdown of expense and specific activities.
ANNEX II – HOUSEHOLD QUESTIONNAIRE
DATE OF INTERVIEW
CODE OF INTERVIEW
CODE OF COORDINATOR
REGION CODE
SETTLEMENT TYPE (1-URBAN; 2-RURAL/VILLAGE)
RESPONDENT SEX (1-MALE; 2-FEMALE)
SAMPLING POINT CODE
CONTACT LIST CODE
CONTROL LIST CODE
MUNICIPALITY
STREET
NUMBER
FLOOR
APARTMENT NAME
DESCRIPTIVE ADDRESS

I, coordinator for this project confirm that this questionnaire is checked and controlled in accordance with all instructions!

Date and signature: ________________________________

Is this question controlled in the field and who controlled it?

Is this question checked for logical control and who checked it?

Who coded responses if there was any coding?

Who made data entry of this questionnaire?

The code of the questionnaire in the data entry system

Is this question controlled for data entry and who controlled it?

Type of error Logical control Data entry
I – number of questions without answers written where they were supposed to be written
II – number of incorrectly skipped or asked questions (where they were asked, but supposed to be skipped)
III – number of questions where answers are not written in correct way
IV – number of questions where under „Something else” is not written anything but this answer was marked as an answer

INTERVIEW START TIME!

INTERVIEWER: READ ALOUD TO RESPONDENT

Good day / evening. My name is _____________ (state your full name) and I am working as an interviewer for Prism Research, a professional research agency. We are currently conducting a survey about the living situation of people living in this region. You are one of randomly selected households in the sample for this survey. Would I be able to speak with the person who is the head of the household?

We are carrying a detailed household survey, which consist of collection of different information about the composition of the household, business related family activities, perspectives about the future and impact the new mine will have on your household and your community.

The survey is carried out in a very simple manner. I read you a question from the questionnaire and optional answers. You chose the answer which best describes your attitude, that is your opinion. Than I write your answers down into questionnaire. You do not have to write anything. In most cases you will select one of the suggested answers that I read to you. In some cases you will answer in your own words.

Participation in this survey is completely anonymous and voluntary. Please don’t be scared or worried everything you say will be kept quietly (confidential). We won’t let anybody know what you say. I will not write down your name and you will never be connected to the information you give me. You can refuse to answer any question that you don’t want to answer or you can end the interview at any time. However your honest answers to the questions will help us to better understand what people think, say and do about certain kinds of behaviors. We would greatly appreciate your time in responding to this survey. I believe this interview will only take 25 minutes. Are you willing to participate?

Do you have any questions for me? Can I start asking the questions now?

READ: We will start with some questions that relate to your household.

A1. Please list by name, pseudonym or in any other manner all of the members of your household, including children that live with you and all those who may be temporarily absent through travel, education, or work in another place/town. We are not interested in the identity of household members but only to be able to distinguish them. When listing the household members we always start with you as the respondent. Thus, besides yourself, who are the other members of your household? Write in household members in table A in the order mentioned by respondent, in column (2) “Name or pseudonym of household member”?

AFTER RESPONDENT HAS LISTED ALL HOUSEHOLD MEMBERS, THEN FOR EACH MEMBER INDIVIDUALLY POSE QUESTION 3-10a!

ALWAYS START WITH HEAD OF HOUSEHOLD!

A3. Marital status of household member? (Read aloud all responses to respondent! Write in one response code in table A1-A10a!)

1. Single / unmarried
2. Married with a marital partner that lives in household permanently
3. Married with a marital partner that lives and works in another place / town or country
4. Widowed
5. Divorced or separated from marital partner
6. Does not apply to household member/Younger than 15 years of age

A4. Relationship of household member to respondent? (Read aloud all responses to respondent! Write in one response code in table A1-A10a!)

1. Husband
2. Son/daughter
3. Parent
4. Grandchild
5. Grandparent
6. Parent-in-law (from husband)
7. Parent-in-law (from wife)
8. Daughter/son-in-law
9. Other relative
10. Other – not in familial relationship

A5. Sex of household member? (Write in one response code in table A1-A10!)

1. Male
2. Female

CHECK THAT YOU HAVE MARKED IN RESPONSES TO ALL QUESTIONS!

78/87
A6. Age in years of household member? (Write in age in years in table A1-A10)

A7. Highest level of education completed? (Read aloud all responses to respondent! Write in one response code in table A1-A10a!)
1. No formal education
2. Primary school (up to 4 grades)
3. Primary school (from 5 to 8 grades)
4. Incomplete secondary school
5. Completed secondary school – 3 grades - trade
6. Completed secondary school - 4 grades
7. Incomplete tertiary education or university degree
8. Completed tertiary education - 2 years
9. Completed university degree – 4-6 years
10. Completed masters/PhD
11. Does not apply to household member/Younger then 7 years of age, still in school/university

A8. Literacy of household member – is the household member able to read and write? (Write in one response code in table A1-A10a!)
1. Yes
2. No
3. Does not apply to household member

A8a. In which language household member is literate? (Write in one response code in table A1-A10a!)
1. Albanian
2. Serbian
3. Else

A9. Predominant employment status of household member in the past year? (Read aloud all responses to respondent! Write in one response code in table A1-A10a!)
1. Self employed in farming – engaged mainly in livestock
2. Self employed in farming – engaged mainly in agriculture
3. Self employed in own business or professional activity unrelated to farming
4. Intermittently employed or works from time to time
5. Permanently employed
6. Unemployed
7. Pensioner or not work active
8. School
9. Unfit or of limited fitness for work
10. Housewife
11. Other

A10. Is the household member employed in Power plant/KEK? (Write in response code in table A1-A10a!)
1. Yes
2. No
3. Does not apply to household member/ Younger than 16

A10a. Is the household member doing some (individual) small scale mining/private mining? (Write in response code in table A1-A10a!)
1. Yes
2. No

<table>
<thead>
<tr>
<th>No.</th>
<th>Name or pseudonym of household member</th>
<th>Marital status of household member</th>
<th>Relationship of household member to the respondent</th>
<th>Sex</th>
<th>Age in years</th>
<th>Education of household member</th>
<th>Literacy of household member</th>
<th>Literacy language</th>
<th>Predominant employment status of household member</th>
<th>Is the household member employed in KEK?</th>
<th>Is the household member doing some private mining?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>RESPONDENT – HEAD OF HOUSEHOLD</td>
<td>1 - Male</td>
<td>1 - Male</td>
<td>1</td>
<td>Male</td>
<td>1 - Male</td>
<td>1 - Male</td>
<td>1 - Male</td>
<td>1 - Male</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>2 - Female</td>
<td>2 - Female</td>
<td>2</td>
<td>Female</td>
<td>2 - Female</td>
<td>2 - Female</td>
<td>2 - Female</td>
<td>2 - Female</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td>1 - Male</td>
<td>2 - Female</td>
<td>3</td>
<td>Male</td>
<td>3 - Male</td>
<td>3 - Male</td>
<td>3 - Male</td>
<td>3 - Male</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>2 - Female</td>
<td>2 - Female</td>
<td>4</td>
<td>Female</td>
<td>4 - Female</td>
<td>4 - Female</td>
<td>4 - Female</td>
<td>4 - Female</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>1 - Male</td>
<td>2 - Female</td>
<td>5</td>
<td>Male</td>
<td>5 - Male</td>
<td>5 - Male</td>
<td>5 - Male</td>
<td>5 - Male</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td>2 - Female</td>
<td>2 - Female</td>
<td>6</td>
<td>Female</td>
<td>6 - Female</td>
<td>6 - Female</td>
<td>6 - Female</td>
<td>6 - Female</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td>1 - Male</td>
<td>2 - Female</td>
<td>7</td>
<td>Male</td>
<td>7 - Male</td>
<td>7 - Male</td>
<td>7 - Male</td>
<td>7 - Male</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td>2 - Female</td>
<td>2 - Female</td>
<td>8</td>
<td>Female</td>
<td>8 - Female</td>
<td>8 - Female</td>
<td>8 - Female</td>
<td>8 - Female</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td>1 - Male</td>
<td>2 - Female</td>
<td>9</td>
<td>Male</td>
<td>9 - Male</td>
<td>9 - Male</td>
<td>9 - Male</td>
<td>9 - Male</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td>2 - Female</td>
<td>2 - Female</td>
<td>10</td>
<td>Female</td>
<td>10 - Female</td>
<td>10 - Female</td>
<td>10 - Female</td>
<td>10 - Female</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td>1 - Male</td>
<td>2 - Female</td>
<td>11</td>
<td>Male</td>
<td>11 - Male</td>
<td>11 - Male</td>
<td>11 - Male</td>
<td>11 - Male</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>12.</td>
<td></td>
<td>2 - Female</td>
<td>2 - Female</td>
<td>12</td>
<td>Female</td>
<td>12 - Female</td>
<td>12 - Female</td>
<td>12 - Female</td>
<td>12 - Female</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>14.</td>
<td></td>
<td>2 - Female</td>
<td>2 - Female</td>
<td>14</td>
<td>Female</td>
<td>14 - Female</td>
<td>14 - Female</td>
<td>14 - Female</td>
<td>14 - Female</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>15.</td>
<td></td>
<td>1 - Male</td>
<td>2 - Female</td>
<td>15</td>
<td>Male</td>
<td>15 - Male</td>
<td>15 - Male</td>
<td>15 - Male</td>
<td>15 - Male</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

1. Albanian

CHECK THAT YOU HAVE MARKED IN RESPONSES TO ALL QUESTIONS!

79/87
**B1a.** Does any member of your household pursue any of the following activities that I will read, as a means to generate income? (Ask for each activity individually and write responses in table B1a-B1c!)

1. Yes
2. No

**B1b.** Does your household obtain any monetary income from these activities or the sale of produce resulting from engagement in these activities? (Ask for each activity individually and write responses in table B1a-B1c!)

1. Yes
2. No

**B1c.** Approximately what percentage of your total income (total income of your household) is made up of income resulting from these activities? (Ask for each activity that respondent answered ‘1-YES’ to in question B1b and write in response in table B1a-B1c!)

<table>
<thead>
<tr>
<th>Code</th>
<th>Activity</th>
<th>B1a</th>
<th>B1b</th>
<th>B1c</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Production of agriculture products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Production of milk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Production of dairy products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Production of fresh meat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Production of smoked meat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Cutting wood for heating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Mining coal for heating</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**B2a.** Allow me to now ask you whether and if so, how much land your household owns in Obiliq municipality/this area? Do you own...

1. Yes
2. No
3. Does not know/Does not wish to answer

**B2b.** How many square meters? (Write in number in table B2a-B2f! Ask for each type separately!)

1. For business
2. For homes
3. For livestock grazing
4. For commercial agriculture
5. For subsistence agriculture
6. Something else
7. Does not use it at all
8. Does not know/Does not wish to answer

**B2c.** Why this land is not registered as your property/you have not legal title? (Write in number in table B2a-B2f! Ask for each type separately!)

<table>
<thead>
<tr>
<th>Code</th>
<th>Land type</th>
<th>B2a</th>
<th>B2b</th>
<th>B2c</th>
<th>B2d</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Yard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Forest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Arable land, fields</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Grassland</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Pastures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**B2e.** And how much land your household rents in Obiliq municipality this area? Do you rent...

1. Yes
2. No
3. Does not know/Does not wish to answer

**B2g.** How do you use this land? (Ask for each item individually and write in code that represents the response given in table B2g!)

1. For business
2. For homes
3. For livestock grazing
4. For commercial agriculture
5. For subsistence agriculture
6. Something else
7. Does not use it at all
8. Does not know/Does not wish to answer

**B2h.** Please, tell me now whether and if so, how much land your household owns elsewhere (out of Obiliq municipality/this area)? Do you own...

1. Yes
2. No
3. Does not know/Does not wish to answer

**B2j.** And how much land your household rents elsewhere (out of Obiliq municipality/this area)? Do you rent...

1. Yes
2. No
3. Does not know/Does not wish to answer
Do not read!

9. Does not know/Does not wish to answer

B2k. How many square meters? (Write in number in table B3h-B2k! Ask for each type separately!)

B2m. What of following do you grow on our agricultural land? (Ask for each item individually and write in code that represents the response given in table B2e!)

1. Yes
2. No

Do not read

9. Does not know/Does not wish to answer

B2n. Do you grow this culture (INSERT NAME OF THE CULTURE) for own consumption, for commercial profit or both? (Ask for each item individually and write in code that represents the response given in table B2e!)

1. Own consumption
2. Commercial profit
3. Both

Do not read

9. Does not know/Does not wish to answer

B3a. I will now read to you various sources of monetary income that may exist in a household. I would ask you to tell me for each source of income that I read out whether your household has this, and if so, how regularly you receive it! (Ask for each item individually and write in code that represents the response given! Must ask at the end -Something else?!)  

1. Yes, regularly
2. Yes, irregularly
3. No, do not receive at all

Do not read

9. Does not know/Does not wish to answer

B3b. Hand respondent show card K1! Read aloud contents of show cards to respondents who are unable to read!
Pleas look at this card and tell me which response bet describes the current financial position of your family / household! (Circle only one response!)

1. On the existential edge
2. Significantly below average
3. Somewhat below average
4. About average
5. Somewhat above average
6. Significantly above average

Do not read!

9. Does not know/Does not wish to answer

B4a. If all of the citizens that live in this region were to be divided into a few categories in terms of their total household income and household assets, in which category would you place your household? (Circle only one response!)

1. Less than 30 euro
2. 30 – 50 euro
3. 51 – 100 euro
4. 101 – 250 euro
5. 251 – 500 euro
6. 501 – 750 euro
7. More than 750 euro

Do not read!

9. Does not know/Does not wish to answer

B4b. Hand respondent show card K2! Read aloud contents of show cards to respondents who are unable to read!
Before you there is a list of categories of total monthly monetary income for any household. We would like you to tell us to which category your household belongs when you take into account all salaries, child endowment payments, pensions, and all other earnings of household members. Please state only the letter in front of the category that is closest to the total average monthly income of your household. (Circle only one response!)

A. Salaries of employed
B. Intermittent earnings from casual work
H. Private business of household member/s
I. Production/sale of agricultural produce
J. Trade / retail sales – not in a store!
K. Pension
L. Social assistance payments for the socially needy
M. Invalidity payment
N. Assistance to families of fallen soldiers
O. Assistance to military/civilian victims of war
P. Child endowment
Q. Scholarship
R. Rent
S. Remittances from family member abroad
T. Humanitarian aid in food, clothing etc.

U. Seasonal work
V. Something else? (Write in!)

B5. In the near future, over the next two years, do you intend to: (Write in response code in table B3a-B3c! Ask for each item separately!)

1. Yes
2. No

Do not read!

9. Does not know/Do not wish to answer

TABLE «B5»

<table>
<thead>
<tr>
<th>Code</th>
<th>Item</th>
<th>B5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Increase total number of livestock or poultry</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Increase your commercial agriculture activities</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Open your business</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Increase your family income in some other way? (Specify)</td>
<td></td>
</tr>
</tbody>
</table>
READ: Currently there are activities being conducted between representatives of domestic authorities and the international community about how to improve the management of mines, as one of the most important natural resources in Kosovo. Some measures have already been undertaken in this regard. (INSERT DESCRIPTION OF PROJECT!)

B6. Are you familiar with this plan? (Circle one response!)
1. Yes  ➤ B7
2. No  ➤ B8

Do not read!
9. Does not know/Does not wish to answer  ➤ B8

B7a. How did you find out about this Plan? Please, specify your main sources of information! (Circle only one response!)
1. From friends, relatives, neighbors 1
2. From work colleagues 2
3. On the radio 3
4. On television 4
5. In weekly newspapers 5
6. Municipality 6
7. NGO (CDF, or others) 7
8. Somewhere else (Write in!) 8

Do not read!
9. Does not know/Does not wish to answer 9

B7b. In general, how do you estimate your level of information about this Plan? Are you well informed, somewhat informed, somewhat not informed, or not at all informed? (Circle only one response!)
1. Well informed 1
2. Somewhat informed 2
3. Somewhat not informed 3
4. Not at all informed 4

Do not read!
9. Does not know/Does not wish to answer 9

B8. In general, what is your reaction to this Plan? Do you strongly support, generally support, generally oppose, or strongly oppose this idea? (Circle one response!)
1. Strongly support  ➤ B9 1
2. Generally support  ➤ B9 2
3. Generally oppose  ➤ B10 3
4. Strongly oppose  ➤ B10 4

Do not read!
9. Does not know/Does not wish to answer ➤ B11

B9. What are the main three reasons that you support this idea? (Write in the reasons in the order mentioned by respondent!)
1.
2.
3.

B10. What are the main three reasons that you oppose this idea? (Write in the reasons in the order mentioned by respondent!)
1.
2.
3.

➤ B11
Do not read!
9. Does not know/Does not wish to answer ➤ B11

B12. In your opinion, what is the most effective way for you, that is residents of this region, to become more informed about the details of this project? Meetings with municipal authority representatives, meetings with mine representatives, through public meetings and gatherings, through brochures and leaflets, daily newspapers, radio, television, or some other way? (Circle one response!)
1. Meetings with municipal authority representatives 1
2. Meetings with mine representatives 2
3. Public meetings and gatherings 3
4. Brochures and leaflets 4
5. Daily newspapers 5
6. Radio 6
7. Television 7
8. Some other way? (Write in!) 8

Do not read!
9. Does not know/Does not wish to answer 9

B13. To what measure are you, as one of the residents of the area that would be a part of the proposed project area, interested in participating in the planning and making of important decisions relating to the realization of this idea? (Circle one response!)
1. Very interested 1
2. Somewhat interested 2
3. Somewhat disinterested 3
4. Not at all interested 4

Do not read!
9. Does not know/Does not wish to answer 9

B14. Do you think or expect that the building of the Kosova C would have a very negative economic effect, somewhat negative effect, somewhat positive effect, very positive effect, or no economic effect on your household? (Circle one response!)
1. Very negative effect 1
2. Somewhat negative effect 2
3. Somewhat positive effect 3
4. Very positive effect 4
5. Would not have any effect 5

Do not read!
9. Does not know/Does not wish to answer 9

B14a. Why? (Write in the order mentioned by respondent!)
1.
2.
3.
B15. Do you think or expect that the building of the Kosova C would have a very negative economic effect, somewhat negative effect, somewhat positive effect, very positive effect, or no economic effect in this village/place? (Circle only one response!)

1. Very negative effect 1
2. Somewhat negative effect 2
3. Somewhat positive effect 3
4. Very positive effect 4
5. Would not have any effect 5

Do not read!
9. Does not know/Does not wish to answer 9

B16. And in this municipality? (Circle only one response!)

1. Very negative effect 1
2. Somewhat negative effect 2
3. Somewhat positive effect 3
4. Very positive effect 4
5. Would not have any effect 5

Do not read!
9. Does not know/Does not wish to answer 9

B17. Do you think that in this case there would be more or less opportunity for employment than now, or do you think that the building of the Kosova C would not have any effect on employment in this region? (Circle only one response!)

1. More opportunities for employment 1
2. Fewer opportunities for employment 2
3. Without effect on employment 3

Do not read!
9. Does not know/Does not wish to answer 9

B18. Do you think or expect that the building of the Kosova C would have a very negative effect, somewhat negative effect, somewhat positive effect, very positive effect, or no effect on natural environment in this village/place? (Circle only one response!)

1. Very negative effect 1
2. Somewhat negative effect 2
3. Somewhat positive effect 3
4. Very positive effect 4
5. Would not have any effect 5

Do not read!
9. Does not know/Does not wish to answer 9

B19. Why? (Write in the order mentioned by respondent!)

1. 
2. 
3. 

Do not read!
9. Does not know/Does not wish to answer 9

B23. In the case that plans for resettlement were to be applied to you, does it represent a problem in your opinion? (Circle one response!)

1. Yes 1
2. No 2

Do not read!
9. Does not know/Does not wish to answer 9

B24. Another important effect would be the introduction of significant limitations in terms of the construction of new buildings, or significant reconstruction of existing buildings. Does this represent a problem for you? (Circle one response!)

1. Yes 1
2. No 2

Do not read!
9. Does not know/Does not wish to answer 9

B25. Why? (Write in the order mentioned by respondent!)

1. 
2. 
3. 

Do not read!
9. Does not know/Does not wish to answer 9

---

**READ:** Now, I will ask you some question about infrastructure ...

C1. Does your household have running water? (Circle only one response!)

1. Yes 1
2. No 2

Do not read!
9. Does not know/Do not wish to answer 9

C2. Do you have any other source of drinking water – well, natural spring etc? (Circle only one response!)

1. Yes - What is the source? 1

Write in!

2. No 2

Do not read!
9. Do not know/Do not wish to answer 9

C3. Does your household have the following utility connections …? (Ask for each utility separately and circle the code for the response given!)

<table>
<thead>
<tr>
<th>No.</th>
<th>Utility</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>A.</td>
<td>Electricity</td>
<td>1</td>
</tr>
<tr>
<td>B.</td>
<td>Telephone</td>
<td>1</td>
</tr>
<tr>
<td>C.</td>
<td>Sewage / treatment of wastewater</td>
<td>1</td>
</tr>
</tbody>
</table>

C4. What is the type of the road that connects your household with other parts of the village/city? (Circle only one response!)

1. Asphaltered 1
2. Brick 2
3. Cemented 3
4. Stone / Slab 4
5. Clay 5

Do not read!
9. Do not know/Do not wish to answer 9

C5. What means of transport do you or your family members use at least once a week? (You can mark more than one answer!)

1. Private vehicle 1
2. Public transport (e.g. bus, minibus) 1
3. Bus / Minibus (privately organized) 1
4. Other 1

Do not read!
9. Do not know/Do not wish to answer 1

C6. Are there any obstacles to using public transport for you or your household members? (Circle only one response!)

1. Yes 1

Do not read!
9. Do not know/Do not wish to answer 9

C7. What type of problems do you incur? (You can mark more than one answer!)

1. Service not provided 1
2. Distance to stop 2
3. Cost / Not affordable 3
4. Infrequent service 4
5. Route does not go where we need to go 5
6. Other? (Write in!) 6
C7. How long does it take you to reach the nearest public transport? (Write in number of minutes!)

Write in number of minutes! ▶

Do not read!

9. Does not know/Does not wish to answer 9

C8. Have you or your household members had any health problems in the last 5 years? (Circle one response and write in where appropriate!)

1. Yes - What kind? 1

2.

3. ▶ C9

2. No ▶ C12 2

Do not read!

9. Does not know/Does not wish to answer 9

C9. Do you or your household members then use the following health facilities? (Write in response code in table C8-C10! Ask for each item separately!)

1. Yes ▶ C11

2. No ▶ C10

Do not read!

9. Does not know/Does not wish to answer ▶ C11

C10. Why not? (Write in response code in table C8-C10! Ask for each item separately!)

1. Cost of service

2. Too far for home

3. High cost of transport

4. Poor quality of service

5. Wait is too long

6. Does not need

7. Other

Do not read!

9. Does not know/Does not wish to answer 9

C13. From what reason (disease) his/her/they died?

1. ▶

2. ▶

3. ▶

Do not read!

9. Does not know/Does not wish to answer 9

C14. Do you smoke? (Circle only one response!)

1. Yes 1

2. No 2

Do not read!

9. Does not know/Does not wish to answer 9

C14. And, what about other adult household members – do they smoke? (Circle only one response!)

1. Yes, all of them 1

2. Yes, most of them 2

3. Yes, some of them 3

4. No 4

Do not read!

9. Does not know/Does not wish to answer 9

SC1. There are often differences in characteristics between people living in the same neighborhood/village such as differences in wealth, income, social status, ethnic or linguistic background. There can also be differences in religious or political beliefs, or due to age or sex. To what extent do any such differences divide your neighborhood/village? (Circle only one response!)

1. To a great extent 1

2. To some extent 2

3. Neither trust nor distrust 3

4. To a small extent 4

5. To a very small extent or not at all 5

Do not read!

9. Does not know/Does not wish to answer 9

SC2. Do any of these differences cause problems? (Circle only one response!)

1. Yes ▶ SC3 1

2. No ▶ SC5 2

Do not read!

9. Does not know/Does not wish to answer ▶ SC5 9

SC3. Which difference most often causes problems? And which after that? (Circle or write in first response in the ‘First’ column, the second response circle or write in the ‘Second’ column! In each column mark only one response!)

<table>
<thead>
<tr>
<th>First</th>
<th>Second</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Differences in education 1</td>
<td>1</td>
</tr>
<tr>
<td>2. Differences in landholding 2</td>
<td>2</td>
</tr>
<tr>
<td>3. Differences in wealth/material possessions 3</td>
<td>3</td>
</tr>
<tr>
<td>4. Differences in social status 4</td>
<td>4</td>
</tr>
<tr>
<td>5. Differences between men and women 5</td>
<td>5</td>
</tr>
<tr>
<td>6. Differences between younger and older generations 6</td>
<td>6</td>
</tr>
<tr>
<td>7. Differences between long-term and recent residents 7</td>
<td>7</td>
</tr>
<tr>
<td>8. Differences in political party affiliations 8</td>
<td>8</td>
</tr>
<tr>
<td>9. Differences in religious beliefs 9</td>
<td>9</td>
</tr>
<tr>
<td>10. Differences in ethnic background 10</td>
<td>10</td>
</tr>
<tr>
<td>11. Other 1 11</td>
<td>11</td>
</tr>
<tr>
<td>Other 1? (Write in!) 12</td>
<td>12</td>
</tr>
<tr>
<td>Other 2? (Write in!) 12</td>
<td>12</td>
</tr>
</tbody>
</table>

C11. Have in your household in the last 5 year had any deaths? (Circle one response and write in where appropriate!)

1. Yes ▶ C12 1

2. No ▶ SC1 2

Do not read!

9. Does not know/Does not wish to answer ▶ SC1 9

C12. How many of your household members died in the last 5 year? (Circle one response and write in where appropriate!)

Write in number! ▶

Do not read!

9. Does not know/Does not wish to answer 9

SC1. There are often differences in characteristics between people living in the same neighborhood/village such as differences in wealth, income, social status, ethnic or linguistic background. There can also be differences in religious or political beliefs, or due to age or sex. To what extent do any such differences divide your neighborhood/village? (Circle only one response!)

1. To a great extent 1

2. To some extent 2

3. Neither trust nor distrust 3

4. To a small extent 4

5. To a very small extent or not at all 5

Do not read!

9. Does not know/Does not wish to answer 9

SC2. Do any of these differences cause problems? (Circle only one response!)

1. Yes ▶ SC3 1

2. No ▶ SC5 2

Do not read!

9. Does not know/Does not wish to answer ▶ SC5 9

SC3. Which difference most often causes problems? And which after that? (Circle or write in first response in the ‘First’ column, the second response circle or write in the ‘Second’ column! In each column mark only one response!)

<table>
<thead>
<tr>
<th>First</th>
<th>Second</th>
</tr>
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<tbody>
<tr>
<td>1. Differences in education 1</td>
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<td>8</td>
</tr>
<tr>
<td>9. Differences in religious beliefs 9</td>
<td>9</td>
</tr>
<tr>
<td>10. Differences in ethnic background 10</td>
<td>10</td>
</tr>
<tr>
<td>11. Other 1 11</td>
<td>11</td>
</tr>
<tr>
<td>Other 1? (Write in!) 12</td>
<td>12</td>
</tr>
<tr>
<td>Other 2? (Write in!) 12</td>
<td>12</td>
</tr>
</tbody>
</table>
Do not read:

99. Do not know/Do not wish to answer     99

SC4. Have these problems ever led to violence (since the end of the war)? (Circle one response!)

1. Yes     1
2. No     2
Do not read:

9. Do not know/Do not wish to answer     9

SC5. How many times in the past month have you got together with people to have food or drinks, either in their home or in a public place? (Write in number!)

Write in number!

SC6. [IF SC5. NOT ZERO] Were any of these people…? (Ask about each item individually; fill in one of the listed numbers indicating coded responses! Write in responses in column of table SC22!)

<table>
<thead>
<tr>
<th>Item</th>
<th>SC6</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Of a different ethnic background</td>
<td>Yes</td>
</tr>
<tr>
<td>b. Of a different economic status</td>
<td>Yes</td>
</tr>
<tr>
<td>c. Of a different social status</td>
<td>Yes</td>
</tr>
<tr>
<td>d. Of a different religious group</td>
<td>Yes</td>
</tr>
</tbody>
</table>

SC7. In general, do you agree or disagree with the following statements? (Ask about each item individually; fill in one of the listed numbers indicating coded responses!)

<table>
<thead>
<tr>
<th>Item</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Strongly agree</td>
<td></td>
</tr>
<tr>
<td>2. Somewhat agree</td>
<td></td>
</tr>
<tr>
<td>3. Neither agree nor disagree</td>
<td></td>
</tr>
<tr>
<td>4. Somewhat disagree</td>
<td></td>
</tr>
<tr>
<td>5. Strongly disagree</td>
<td></td>
</tr>
<tr>
<td>Do not read:</td>
<td></td>
</tr>
</tbody>
</table>

9. Do not know/Do not wish to answer     9

SC8. In which of the following do you have the most trust in relation to making decisions about your village/community where you live? (Circle only one response!)

<table>
<thead>
<tr>
<th>Item</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Municipal government</td>
<td>1</td>
</tr>
<tr>
<td>2. Kosovo government</td>
<td>2</td>
</tr>
<tr>
<td>3. Local religious community (congregation…)</td>
<td>3</td>
</tr>
<tr>
<td>4. Elder members of community</td>
<td>4</td>
</tr>
<tr>
<td>5. Prominent individuals</td>
<td>5</td>
</tr>
<tr>
<td>6. Other?</td>
<td>6</td>
</tr>
</tbody>
</table>

Do not read:

9. Do not know/Do not wish to answer     9

SC9. In the past year, how often have people in this neighborhood/village got together to jointly petition government officials or political leaders for something benefiting the community? (Circle only one response!)

1. Never     1
2. Once     2
3. A few time (less than 5)     3
4. Many times (more than 5)     4
Do not read:

9. Do not know/Do not wish to answer     9

READ: Finally there are some questions that relate to your current status in terms of employment and some other socio-demographic variables.

NOTE FOR INTERVIVER: Questions D2. ask only respondents who are currently unemployed – answer 7, 9, 11 or 12 at A10.

D1. Are you looking for work? (Circle only one response!)

1. Yes     1
2. No     2
Do not read:

9. Does not know/Does not wish to answer     9

NOTE FOR INTERVIVER: Questions D2. ask only respondents who are currently unemployed – answer 4 or 5 at A10.

D2. Has your employer registered you as employed so that you have contribution to pension fund? (Circle one response!)

1. Yes     1
2. No     2
Do not read:

9. Does not know/Does not wish to answer     9

D3. Do you think that you may be left without work in the coming three months? (Circle one response!)

1. Yes     1
2. No     2
Do not read:

9. Does not know/Does not wish to answer     9

D4. To which of the following ethnic groups do you consider yourself you belong to? (Mark only one answer!)

1. Albanian     1
2. Serb     2
3. Croatian     3
4. Bosnian     4
5. Roma     5
6. Macedonian     6
7. Montenegrin     7
8. Yugoslav     8
9. Ashkahli     9
10. Egyptian     10
11. Slovenian     11
12. Something else     12
Do not read:

9. Does not know/Does not wish to answer     9

D5. Hand respondent showcard K2! For respondents who are unable to read, read aloud the contents! To which of the following categories of the population does your household belong? (Circle one response!)

1. Lived at this address before the war - domicile population     1
2. Displaced person/refugee – did not live at this address before the war     2
3. Returnee – member of the ethnic majority population - returned to your home after the war     3
4. Returnee – member of the ethnic minority population - returned to your home after the war     4
5. Returnee – member of the ethnic minority population – have not yet returned to

CHECK THAT YOU HAVE MARKED IN RESPONSES TO ALL QUESTIONS! 85
your home ▶D7 5

6. Did not live at this address before the war –
\begin{enumerate}
\item Moved voluntarily in the mean time ▶D7 6
\item Refugee from another country ▶D6 7
\item Other? (Write in!) ▶D6 8
\end{enumerate}

7. Refugee from another country ▶D6 7

8. Other? (Write in!) ▶D6 8

9. Do not know/Do not wish to answer ▶D7 9

10. Do not read!

11. Number of contacts: (How many times interviewer have contacted/visited respondent before finding him/her at home or before respondent agreed to participate in interview?)

12. Does respondents lives in...? (Circle only one response!)
\begin{enumerate}
\item Apartment 1
\item Private house 2
\end{enumerate}

13. Place of interview? (Circle only one response!)
\begin{enumerate}
\item At respondents’ home 1
\item Other place – Specify where! 2
\end{enumerate}

14. Were other persons present during the interview? (Circle only one response!)
\begin{enumerate}
\item No 1
\item Yes 2
\end{enumerate}

15. Who? (Write down!)

16. Respondents’ cooperation at the beginning of the interview on scale 1 to 5? (Circle only one response!)
\begin{enumerate}
\item Insecure, nervous 1
\item 2
\item 3
\item 4
\item Assured, relaxed 5
\end{enumerate}

17. Respondents’ level of interest at the beginning of the interview on scale 1 to 5? (Circle only one response!)
\begin{enumerate}
\item Very interested in 1
\item 2
\item 3
\item 4
\item Not interested at all 5
\end{enumerate}

18. Respondents’ cooperation in general? (Evaluate based on overall impression during the interview!)
\begin{enumerate}
\item Very non-cooperative, refused to answer a lot of Questions 1
\item Non cooperative, barely finished interview 2
\item Cooperative, but without detailed responses 3
\item Cooperative, and detailed on some responses 4
\item Very cooperative, gave additional answers and explanations 5
\end{enumerate}

19. During the interview, did you experience some difficulties regarding words and terms used in questions and answers? (Circle only one response!)
\begin{enumerate}
\item No 1
\item Yes 2
\end{enumerate}

→ PLEASE SPECIFY QUESTIONS OR ANSWERS WHERE YOU HAD DIFFICULTIES AND WHAT ARE REASONS FOR THAT

20. Did you have any other difficulties during the interview? (Circle only one response!)
\begin{enumerate}
\item No 1
\item Yes 2
\end{enumerate}

→ PLEASE SPECIFY DIFFICULTIES AND WHAT ARE REASONS FOR THAT

Interviewer’s gender? (Circle only one response!)
\begin{enumerate}
\item Male 1
\item Female 2
\end{enumerate}

Interviewer’s age? (Write number!)

Interviews nationality? (Circle only one response!)
\begin{enumerate}
\item Albanian 1
\item Serb 2
\item Other? (Specify!) 3
\end{enumerate}
CHECK THAT YOU HAVE MARKED IN RESPONSES TO ALL QUESTIONS!

CHECK THAT YOU HAVE MARKED IN RESPONSES TO ALL QUESTIONS!

I declare that this interview were conducted in accordance with all instructions for face-to-face interviews, and with respondent selected in accordance with instruction for respondents' selections!

Date and signature:________________________________________

VERY IMPORTANT! CHECK WHETHER YOU HAVE WRITTEN THE RIGHT (PRECISE) ADDRESS IN THE CONTACT LIST AND QUESTIONNAIRE! IF THE CORRECT (PRECISE) (STREET, NUMBER, FLOOR, APARTMENT OR PRECISE DESCRIPTIVE ADDRESS) IS NOT WRITTEN - THIS QUESTIONNAIRE, NOR THE CONTACT LIST, WILL BE ACCEPTED AS VALID!

THANK YOU VERY MUCH!
Annex E

Revised Resettlement Policy Framework (Hunton &Williams, IPA Energy + Water Consulting)
REVISED RESETTLEMENT POLICY FRAMEWORK

LIGNITE POWER TECHNICAL ASSISTANCE PROJECT
LEGAL AND REGULATORY ADVISORY SERVICES

SUBMITTED TO:
LPTAP PROJECT OFFICE
PRISHTINA, KOSOVA

SUBMITTED BY:
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WITH:
IPA ENERGY + WATER CONSULTING

APRIL 2008
### LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDF</td>
<td>Community Development Fund (local NGO)</td>
</tr>
<tr>
<td>EBRD</td>
<td>European Bank for Reconstruction and Development</td>
</tr>
<tr>
<td>EIB</td>
<td>European Investment Bank</td>
</tr>
<tr>
<td>ESBI</td>
<td>Electricity Supply Board of Ireland</td>
</tr>
<tr>
<td>ERM</td>
<td>Environmental Resources Management Ltd</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>EUR</td>
<td>Euros</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation (World Bank)</td>
</tr>
<tr>
<td>IFC PS-5</td>
<td>IFC Performance Standard 5 (Land Acquisition and Involuntary Resettlement)</td>
</tr>
<tr>
<td>KCA</td>
<td>Kosovo Cadastral Agency</td>
</tr>
<tr>
<td>KEK</td>
<td>Kosovo Electricity Company</td>
</tr>
<tr>
<td>KFOR</td>
<td>Kosovo Force</td>
</tr>
<tr>
<td>KPA</td>
<td>Kosovo Property Agency</td>
</tr>
<tr>
<td>LPTAP</td>
<td>Lignite Power Technical Assistance Project</td>
</tr>
<tr>
<td>M&amp;E</td>
<td>Monitoring and Evaluation</td>
</tr>
<tr>
<td>MEM</td>
<td>Ministry of Energy and Mines</td>
</tr>
<tr>
<td>MESP</td>
<td>Ministry of Environment and Spatial Planning</td>
</tr>
<tr>
<td>MW</td>
<td>Megawatt</td>
</tr>
<tr>
<td>PISG</td>
<td>Provisional Institutions of Self Government</td>
</tr>
<tr>
<td>RAP</td>
<td>Resettlement Action Plan</td>
</tr>
<tr>
<td>RFP</td>
<td>Request for Proposals</td>
</tr>
<tr>
<td>RPF</td>
<td>Resettlement Policy Framework</td>
</tr>
<tr>
<td>SESA</td>
<td>Strategic Environmental and Social Assessment</td>
</tr>
<tr>
<td>UNMIK</td>
<td>United Nations Mission in Kosovo</td>
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3
1 Introduction

This report contains the Resettlement Policy Framework, which is a deliverable under the Contract for Consulting Services between Hunton & Williams LLP and the Lignite Power Technical Assistance Project Office ("LPTAP Project Office") acting by and through the Ministry of Energy and Mines ("MEM") of the Provisional Institutions of Self-Government ("PISG").

This report is one of the outputs of Task (c) of the Framework Development Activity defined in the Consultant’s Terms of Reference.

1.1 Work carried out to date

A Draft Resettlement Policy Framework was submitted in October 2007. Since then the Consultant has received important additional documentation and was able to meet with the Transaction Advisors from PWC and the Social Sector Specialist from ERM who is working on the Strategic Social and Environmental Assessment (SESA). From 2-7 March 2008 the Consultant visited Kosovo. During the mission the Consultant visited the project area and met with the Project Manager and Environmental Specialist from LPTAP, the Legal Council for Hunton & Williams in Pristina, the Land Acquisition and Environmental Managers from KEK, the Executive Director and Deputy Director of the Kosovo Property Agency (KPA), the Information Officer, the Director of the Land Cadastre and the Director of the Health Department of the Municipality of Obiliq, the Manager of Project Hade in the Ministry of Environment and Spatial Planning (MESD), Legal Advisors from Bearing Point, working under contract to USAID/PISG and the Chief Executive Officer of the Kosovo Cadastral Agency (KCA). The Consultant would like to thank everyone involved in the mission, especially the Project Manager and Environmental Specialist from LPTAP, who arranged the site visit and the meetings.

During the mission the Consultant acquired the latest version of the Law on Expropriation, O2/L-97, which was approved by the Assembly on 8 February 2007, but which was not promulgated since at the time the Special Representative responded (29 January 2008) it fell outside the competence of the Assembly and the PISG. The Consultant has reviewed the law and has recommended modifications to bring it into line with international standards such as the World Bank’s OP 4.12 and the International Finance Corporation’s Performance Standard PS-5. The Consultant is awaiting comments on the draft of the review before finalizing the deliverable.
2 Background to the Project

The Lignite Power Project is intended to make Kosovo self-sufficient in electricity and could provide additional capacity that would allow electricity to be exported. Kosovo has large, relatively shallow deposits of lignite that can be easily mined using open cast mining techniques. At present power is generated by two lignite burning thermal power plants, known as Kosovo A and Kosovo B, located about 10 kilometers to the west of Pristina, which burn lignite mined in the adjacent Bardh and Mirash mines. The power plants and mines are operated by the State owned Kosovo Electricity Company (KEK). KEK was incorporated as a publicly owned enterprise in December 2005. From 2004 to 2006 the company was managed by ESBI, the International arm of the Irish Electricity Supply Board (ESB), and in October 2006 responsibility was handed to local management. KEK is supervised by a Board of Directors that includes international and local members and is chaired by an independent international expert.

According to UNMIK, the Kosovo A plant presently has an installed capacity of 420MW; the plant started production started in 1962 and additional capacity was added in the early 1970s. The same source states that the Kosovo B plant has a total installed capacity of 580MW: the first unit started production in 1983 and the second in 1984. At present these plants are operating below capacity and cannot meet the demand for electricity in Kosovo. The Ministry of Energy and Mines (MEM) is proposing to build a new plant, Kosovo C. The details of the project are being developed by the Lignite Power Technical Assistance Project (LPTAP) with support from a transaction adviser and other consultants. The initial proposals described on the UNMIK website refer to the construction of a new plant, Kosovo C, which would be built in two phases eventually reaching an installed capacity of between 1800 and 2100MW. It is envisaged that the first phase, with a capacity of 900-1000MW, could become operational between 2012 and 2014, with the second phase becoming operational between 2018 and 2020. The same source also notes that MEM is proposing to rehabilitate the Kosovo A plant, bringing its capacity up to 800MW.¹

The Bardh and Mirash mines that supply Kosovo A and B presently have reserves of less than 30M tons and are extracting lignite from the pillar that divides the two pits. This reserve will last until 2009. After this date lignite will have to be mined from the Sibovc D field, which is effectively a northern extension of the existing Bardh mine. KEK has acquired the first areas that will be needed for the D field; a bucket wheel and belt conveyor system is removing overburden in this area and an additional bucket wheel system from Bardh has to be rehabilitated to extract the lignite coal from the field. A much larger area would have to be opened up to supply the needs of Kosovo C. This field, known as the Sibovc field, covers about 16km² and has a maximum east-west width of 3.8km and a length of 6km. It is essentially a northerly extension of the Bardh and Mirash mines. Until 2038 about 11.6 km² would be needed to supply about 553M tons of lignite coal from a seam with a thickness of up to 80m (Vattenfall 2005).

The opening of the Sibovc field will require significant land acquisition and resettlement that may eventually affect as many as 1500 families. Since most of the population in the

area lives in nucleated or semi-nucleated villages, this means the resettlement will not be gradually phased but will involve the acquisition and relocation of some quite densely populated areas, followed by periods where expansion of the mine will essentially require the acquisition of farmland.

The immediate priority, which has to be completed before the Sibovc field can be opened, is to complete the relocation of the village of Hade. This is already a priority for Government, since part of the village was collapsing into the Mirash mine as a result of earlier mismanagement of the mining operation. In order to increase the short-term output from the mine, the benches had been shortened until lignite coal was being extracted from almost underneath the edge of the mine. In 2004 – when houses in Hade started to slip into the Mirash mine, an emergency was declared and a project unit (Project Hade) set up in the Ministry of Environment and Spatial Planning (MESP) to manage the resettlement under emergency procedures (i.e. without applying the existing 1978 Law on Expropriation or the standard procedures used by KEK). In June 2005 Project Hade had to call on the police and KFOR to forcibly relocate 22 families that were living in part of the village that was at the point of collapsing into the mine. So far, 158 families (664 people) of the 653 families (1448 persons) that were enumerated in Hade in 2004 have been resettled; 85 families (436 people) are living in temporary accommodation in two apartment blocks in the town of Obiliq; the others, mainly non-resident landowners, have been paid cash compensation.

The construction of the Kosovo C power plant and ancillary facilities may require further resettlement. At present there are three possible sites for the plant. Two are brown field sites, within the boundaries of the existing Kosovo A and B plants, and the third is a green field site, which, if it were chosen would require further land acquisition and involuntary resettlement, but less environmental remediation.

The construction of Kosovo C and the rehabilitation of Kosovo A will require the participation of outside investors since KEK does not have sufficient resources to complete the project. According to the UNMIK website, the cost of rehabilitating Kosovo A is estimated at EUR 154M and the cost of constructing Kosovo C at between EUR 2300M and EUR 2700M. A transaction adviser has been contracted by the World Bank/IDA financed Lignite Power Technical Assistance Program (LPTAP) to identify the options for attracting outside investment, but a final decision has not yet been taken on the form that the investment will take. The options include concessions for mining and for the construction and operation of Kosovo C, along with variants that include the concession of Kosovo A and/or Kosovo B, or the wholesale privatization of KEK’s generating capacity. At present LPTAP/MEM is negotiating with four consortia of power companies that are potentially interested in investing in the mining and power sector. Whichever option is chosen, it is likely that the outside investor will be responsible for the mining operation and the construction and operation of the Kosovo C power plant.
3 Scope of the Policy Framework

The policy framework has been developed according to internationally accepted standards including the World Bank’s Operational Policy OP 4.12 and the International Finance Corporation and Equator Banks’ Performance Standard PS-5. Since many key issues are still undecided, the policy framework is intended to provide a basis for further discussion. The present document seeks to identify the issues that need to be resolved and to make recommendations that can be followed up by LPTAP. It is important to emphasize that the development of the resettlement framework should be a participatory process, led by LPTAP, which would involve key institutions in Government: especially MEM and MESP, KEK, local government – i.e. the Municipality of Obiliq, potential investors and above all the families that will be affected by the project. As in any resettlement program, it is also important to insist on the need for clear criteria and definitions of responsibility.

Key issues that need to be addressed before the framework can be finalized include:

- The definition of who will be responsible for developing the definitive Resettlement Action Plan or Plans (RAP) for the project and who will be responsible for approving them. The first RAP will incorporate all the definitions, eligibility criteria, benefits and procedures to be applied in the project. It may be best to prepare a separate RAP for each phase of the mine’s expansion – since land acquisition will have to take place over a period of 30 years – and another for the Kosovo C plant if a green field site is chosen. However, the criteria, benefits and procedures should be the same in each RAP.

- The definition of the institutional responsibilities for financing and implementation of the RAP

- The scope of the RAP. In particular whether or not it should cover existing social liabilities, including the resettlement of the families from Hade that are presently living in temporary accommodation in Obiliq and the resettlement of the remaining households in Dardhiste Village that should be moved on health and safety grounds but do not have to be moved to open the Sibovc field

- The selection of the site for Kosovo C and its ancillary facilities

The draft resettlement policy framework is intended to apply to all aspects of the lignite mining and power project. This would include land acquisition for mining operations and ancillary facilities, including any land that would be required for offices, workshops and fuel depots, overburden dumps and access roads. It would also apply to land acquisition for the Kosovo C power plant if the green field site is selected.
4 Principles and Objectives

A primary objective of international standards such as the World Bank’s Operational Policy OP 4.12 and the IFC’s Performance Standard PS-5 is to minimize land acquisition and above all physical and economic displacement. Where displacement or the loss of economic assets and means of livelihood are unavoidable, the objective of the policies is to ensure that affected people can improve or at the very least recover their standard of living and livelihoods in the shortest possible time.

It is important to emphasize that the objective of avoiding or minimizing land acquisition and displacement should never be allowed to compromise public health and safety. In practice, this means ensuring that housing and work places are always located at an acceptable distance from facilities such as mines, power plants, roads and transmission lines. At a minimum this requires full compliance with the existing industry standards: in the case of open cast mines the standards applied by KEK require a minimum distance of 200m between the mine excavations and any buildings or workplaces, including farm land. In areas with steep slopes and/or unstable geology the distance has to be increased. In practice the zone of impact may be greater, since mining takes place 24 hours a day, and causes vibrations, noise, dust and light pollution. Mining operations can also affect water quality. Similarly, the existing Kosovo A and B thermal power stations have lead to serious environmental impacts on the villages situated in the immediate vicinity of the plants: this includes high levels of air pollution due to emissions from the power stations and dust from the fly ash dumps, and the contamination of groundwater and soils. In some cases these impacts could be alleviated through remedial action; however, in the case of Dardhiste Village the impacts are so severe that it may be better on grounds of health and safety to resettle the remaining inhabitants of the village.

The objective of minimizing displacement requires coordination between the social and environmental sector specialists and the engineering design teams. In the mining sector the design issues typically include the location of overburden dumps and the selection of the means and routes to transport lignite from the mine face to the power plant. The aim should be to avoid the construction of unnecessary additional access roads around the mining area and to site the mine offices, workshops and stores away from existing centers of population. In fact, in case of the proposed Sibovc and Sibovc D fields the mining operations are essentially an extension of the existing operations: this means the overburden can be used to backfill exhausted areas of the Mirash and Bardh mines. The overburden will be transported by a conveyor belt from the mine face to the worked out sections of the existing pits. At present the mine offices and workshops are located within worked out areas of the Mirash and Bardh mines.

One of the most difficult issues with opencast mining is to determine how far in advance of actual mining land should be acquired. Long term plans to develop areas for open-cast mining tend to blight the affected areas since no-one is willing to make any investments as the land that will eventually have to be cleared. However there is no need to acquire all the land that may be used over the 30 or 40 year life of a mine at one time. In fact the ownership of large tracts of unused land can represent a liability for the owners of a mine since it may be at risk from occupation by squatters and would have to be fenced and
regularly patrolled. KEK has been applying the principle of trying to acquire the land needed for mining three years in advance of actual mining operations. According to the Manager of the Property Office of KEK, which is responsible for land acquisition, this has not presented any obstacles to mining operations; however, it is clear that the short term plan for the development of the Sibovec D field has been designed precisely to avoid the complex and costly acquisition of the village of Hade.

Another factor that ought to be taken into account in the case of the Sibovec field is the settlement pattern in the area, which is characterized by fairly large nucleated or semi-nucleated villages. This means that displacement will not be a gradual process as the mine face advances, but will actually involve the acquisition of whole villages, followed by long periods with little need for the physical displacement of population. Given this reality, the most sensible strategy would be to adapt the land acquisition program to the settlement pattern rather than applying a rigid procedure based on the expected advance of the mine face. In practical terms this would mean acquiring the land village by village, according to a timetable that would have to allow sufficient time for the acquisition and relocation of whole villages. Since the recommended entitlements include options for collective resettlement in new villages, land-for-land and letters of credit (described below), it would probably be advisable to start the land acquisition process at least five or six years before the land is actually needed for mining.

In the Consultant’s opinion, there is little benefit in acquiring land much more than five or six years before it is needed. It is sometimes argued that this would prevent people putting up additional buildings and would reduce the cost of compensation; however, the opportunity cost is high since it ties up capital that could be put to better use elsewhere. It is also argued that the affected families want to be resettled as soon as possible because of the high levels of pollution and the blight on investment in their villages. However, it is envisaged that levels of pollution will be reduced once the Kosovo A plant has been rehabilitated. The new Kosovo C plant will be required to comply with standards equivalent to the present EU standards for emissions. The economic blight can be reduced somewhat by ensuring that government and local government agencies are fully compensated for any public infrastructure that is affected by mining; this will reduce the disincentive effect on public investment in villages in the mining area (see below).

In the case of the power sector the key land acquisition and resettlement issue is the location of the Kosovo C plant. As already noted, there are three options, two of which are brown field sites within the existing boundaries of the Kosovo A and B sites. The third is a green field site, the acquisition of which would require further displacement of population. Again, as in the case of mining operations, the area required should satisfy Kosovo, European and international standards for safety, air quality and noise control. In Kosovo A and B, large areas were acquired for ash dumps. The land take – especially for Kosovo A appears to have been excessive and the disposal of fly ash has been badly managed and is a major cause of air pollution in the villages located nearest to the plants. In the case of Kosovo C – and perhaps in the case of the other plants, this issue would be better resolved by disposing of fly ash in abandoned areas of the mines. The location of any new sub-stations and the routing of transmission lines can be planned to avoid any physical displacement of population.
The impacts on surface and ground water also need to be considered. The water for cooling the Kosovo B plant is brought by canal and apparently this source should be sufficient for cooling the proposed Kosovo C plant. The impacts of the mining operations have been more significant and have led to serious contamination of surface water and groundwater in the immediate area of the mines. The Sitnica River is heavily contaminated, as is groundwater in the vicinity of the Mirash and Bardh mines. This is one of the main reasons that would justify the resettlement of Dardhiste Village.

The principle of ensuring that affected people can improve or at least recover their previous standard of living in the shortest possible time is discussed in more detail in the next section, which considers the relationship between existing legal standards and procedures and internationally accepted standards such as OP 4.12 and IFC PS-5.
5 Local Legislation and International Standards

The legal framework for expropriation in Kosovo is presently under review. In February 2007 the National Assembly approved a new law on expropriation (No. 02/L-97); however in a letter addressed to the President of the Assembly on 29 January 2008 the UN Special Representative stated that the law could not be promulgated in view of the constitutional constraints that applied in Kosovo at the time. Since Kosovo declared independence on 17 February 2008 the situation has changed and it is understood that a revised version of the law will be presented to the Assembly in the coming months. One of the Consultant’s tasks is to review the draft law and propose amendments to bring it into line with international standards for expropriation and resettlement such as the World Bank’s OP 4.12 and the IFC/Equator Banks PS-5.

Up to now KEK has based its land acquisition procedures on the 1978 law on expropriation (21/78) and amendment 46 of 1986 (46/86), which was promulgated by the Assembly of the then Autonomous Province of Kosova. MESP/Project Hade has been applying similar procedures, although the legal basis is quite different because the relocation of Hade is carried out under emergency powers rather than as expropriation, since the primary objective is to prevent people being killed or injured by the collapse of their houses rather than to acquire the area for mining as strictly speaking, the area is not required for opening the Sibovc D field.

In practical terms, there are two main differences between the procedures applied by KEK and Project Hade and international standards.

- The existing procedures only envisage payment of compensation to property owners with full legal title to their land and do not incorporate measures to compensate or restore the livelihoods of non-owners. WB OP 4.12 and IFC PS-5 explicitly require measures to restore the housing and livelihoods of all affected people regardless of whether or not they have recognizable legal rights to the land they are occupying, the only exceptions being opportunistic squatters that encroach on the affected area after the cut-off date for eligibility has been declared. It must be recognized that OP 4.12 and IFC PS-5 were developed on the basis of experiences in Asia, Latin America and Africa, where rights to land in rural areas are often not clearly defined and where large numbers of people live in informal urban squatter settlements. In the area potentially affected by the proposed mine and power complex it is not clear what kinds of non-owners would be eligible for resettlement benefits if the international standards were applied. This should be clarified by the surveys that are presently being carried out for LTAP by Prism and CDF (Community Development Fund). Apparently there are no longer any state or collectively-owned farming units in the area; however there are some cases where land has exchanged hands without being formally registered in the land cadastre. This issue is discussed in more detail in the section on eligibility criteria and entitlements.

- The 1978 law states that “compensation for expropriated agrarian land will be determined in compliance with the market prices for agrarian land” (Article 28). In practice, the value of agricultural land is determined by the municipal cadastre office in accordance with the category of the land, but without taking the real
value of market transactions into account. OP 4.12 and PS-5 both require compensation levels to be at replacement value. In fact, the evidence suggests that the compensation paid by KEK and MESP/Project Hade is usually insufficient to fully replace lost assets and cover all transitional costs – although some sources dispute this. The issue is discussed in more detail in the section on eligibility criteria and entitlements.

Another issue that is pertinent to the project but which is not envisaged in WB OP 4.12 or IFC PS-5 is compensation for land and other assets that were abandoned during the conflict of 1999 and subsequent periods of unrest. The issue is covered by Administrative Directive No. 2007/5 “Implementing UNMIK regulation No.2006/50 on the resolution of claims relative to private immovable property, including agricultural and commercial property”, which requires land and other assets to be returned to the original owners providing they can establish a legitimate claim to the property. The Kosovo Property Agency (KPA) is responsible for reviewing claims and adjudicating disputes over private property affected by the conflict, but is not responsible for paying compensation. Between 2006, when the agency was established, and March 2008 the KPA has adjudicated about 5,700 of an estimated total of 40,000 cases. 90% of the cases refer to agricultural land, less than 4% to shops and factories, and the remaining 6% to residential properties. This issue is considered in the section on eligibility criteria and entitlements.
6 Institutional Responsibilities

The definition of the institutional responsibilities for land acquisition and resettlement is one of the most critical issues that have to be defined. It is important to emphasize that land acquisition and resettlement is an integral part of the mining operation. It represents a significant cost and is one of the more complex and challenging issues that have to be addressed. In the immediate future the opening of the Sibovc D field to the west of Hade is relatively simple and requires little or no additional land acquisition. However, the development of Kosovo C will be dependent on opening the wider Sibovc field, and this can only take place if all the village of Hade is relocated. The long term development of this lignite coalfield will require the relocation of around 1500 households. At a rough estimate this will require an investment in the order of EUR 180-200M, of which about EUR 80M would be needed just to complete the resettlement of Hade.

Given the cost and complexity of the resettlement, the most sensible option would be for the Project Company (the Investor) to take over full technical and financial responsibility for the land acquisition and resettlement components of the project. The resettlement of Hade is critical to the development of the proposed mining and power generation complex and failure to acquire the land could jeopardize the success of the whole project. From the Investor’s point of view, although it represents a significant cost, it would be advantageous since it reduces the level of risk associated with land acquisition. It is envisaged that under a concession or privatization agreement the Investor would take over the existing Property Office in KEK and would strengthen the capacity of the office, bringing in international experts as well as additional local expertise. Some of the activities could be subcontracted to an international or local consultancy company or consortium, but it would be essential for the Investor to have a manager for social issues, or perhaps for social and environmental issues, located at a high level in the management structure of the Project Company that would be set up to run the mining and power complex. The request for proposals (RFP) should explicitly require the consortia that are competing for the project to demonstrate their capacity in the field of land acquisition and resettlement and should ask for a specific proposal to address these issues. This aspect of the project should receive an appropriate weighting in the methodology to compare and evaluate the proposals.

The recommended division of responsibilities between the Investor, Government, local Government and other agencies would be as follows:

- **Preparation and approval of the definitive Resettlement Action Plans (RAP).** The Project Company should be responsible for preparing the definitive RAP/s. It would be based on the Strategic Environmental and Social Assessment (SESA), the surveys carried out by Prism and CDF, the Resettlement Policy Framework (RPF) and any other studies or proposals that have been carried out for LPTAP, MEM or MESP. It is envisaged that the RAP/s would be prepared to IFC/Equator

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2 The preliminary comments from the World Bank on the Draft Phase 1 Report of the Transaction Advisor support this position. In commenting on p. 26 of the report the comments note: “Whereas Kosovo may retain responsibility for expropriation (determining the process, compensation methodology and providing arbitration when needed), it is international good policy that resettlement itself be the responsibility of ProjectCo...”.
Group PS-5 standards, given that the Investor may wish to apply for financing from the IFC and/or one or more of the Equator Group banks. The RAP would include a detailed budget and timetable and would be subject to public consultation. It would probably be best for MESP to be responsible for the approval of the RAP (as recommended in the review of the draft law on expropriation) and should receive comments from MEM/LPTAP and the affected municipalities. The key criteria, entitlements and agreements with the affected families could be incorporated into secondary legislation for approval by the National Assembly and/or could take the form of a civil contract or formal agreement between the Investor and the representatives of the affected families.

- Definition of eligibility, assessment of benefits and review of claims of eligibility for resettlement benefits. The Investor – i.e. the Land Acquisition and Resettlement Department of the Project Company would be responsible for determining eligibility and the levels of compensation or other benefits that will be offered to affected individuals and households. Where eligibility for benefits or the type or level of benefits is challenged, it could be subject to an independent review before resorting to the courts. The independent review could be carried out by a committee that would include representatives from the affected municipalities, from the affected people and from MESP.

- Definition of entitlements for owners displaced by conflict. The Kosovo Property Agency (KPA) would be responsible for identifying and contacting any property owners that fled during the conflict of 1999 and subsequent periods of unrest. The mandate of the KPA would be limited to its present function of determining ownership of assets. The Investor will be responsible for negotiating with the affected property owners. The options offered to affected property owners that have been displaced as the result of the conflict will be exactly the same as those offered to other affected owners.

- Implementation of the Resettlement Action Plan (RAP). The Investor would be responsible for the provision of land-for-land options, the development of new resettlement sites, for providing letters of credit and/or for payment of compensation to the affected families. The Investor would be responsible for the day to day monitoring of implementation of the RAP. However, an independent grievance mechanism should be established to cover all aspects of the power and mining complex. This is considered in more detail below.

One of the more difficult issues is to determine how far the Project Company should take over responsibility for the existing social liabilities of KEK. If KEK were privatized it would be appropriate for the Investor to take over the full responsibility for these liabilities; however, if the mining and power project were awarded as a concession, it might be more appropriate for the remedial resettlement plan to remain as the responsibility of Government. The most significant liabilities identified are first, the households from Hade that have been temporarily resettled by MESP/Project Hade, and second the households in Dardhiste Village that do not need to be resettled to open up the

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3 At present if the Investor were to apply to the EBRD or EIB, the old WB OD 4.30 would apply. However, this is presently under review in EBRD.
Sibovc field, but which ought to be resettled on grounds of health and safety. At present the resettlement program for Hade is the responsibility of MESP/Project Hade. If the Government retains responsibility for completing the resettlement of the villagers that were moved from Hade into temporary accommodation in the town of Obiliq it would be advisable for the Government to apply the same criteria and offer the same entitlements as those that will be provided by the Project Company for the families that will be affected by the mining and power complex. So far, no decision has been taken to move the remaining families from Dardhiste.
7 Resettlement Action Plans

This resettlement policy framework (RPF) outlines the general principles and procedures for land acquisition and resettlement for the overall power and mining complex. However, a more detailed Resettlement Action Plan (RAP) will have to be prepared for each project that requires the physical displacement of population and/or leads to loss of livelihood or sources of income. In practice this will mean one or more Resettlement Plans for the Sibovc mining complex – perhaps one for each stage of the mining project – and another for the Kosovo C thermal power plant and associated facilities if the green field site is chosen for the power plant. Each Resettlement Plan should comply with internationally accepted standards such as the World Bank’s OP 4.12 and the IFC/Equator Banks’ PS-5. The plans have to be based on reliable, up-to-date information and should include basic information about the respective projects and an analysis of the alternative options for the proposed project as well as any legal issues relating to the resettlement or any gaps between the laws of Kosovo and international standards.

The RAP for the Sibovc field should be prepared in stages; each stage would correspond to a particular phase of the development of the field, and ideally would cover one or more villages. The first stage RAP would include a detailed description of the key criteria and resettlement options and these same criteria and options would be applied in the subsequent phases. A generic outline for the RAP is presented in Annex A.

Under OP 4.12 an Abbreviated Resettlement Plan may be acceptable for the Kosovo C thermal power plant, since even the green field site is unlikely to affect more than 200 people (OP 4.12: 25). However, this must at the very least include the following:

(a) A comprehensive census or survey of the affected persons and their assets;
(b) A description of the resettlement benefits, compensation and/or other assistance that will be provided;
(c) A definition of the criteria that will be applied (cut-off dates, viability of remaining areas, the household, etc.);
(d) A description of the institutional responsibilities for implementation;
(e) A description of the consultations that have been carried out in relation to the proposed options and a consultation plan for developing and executing the resettlement plan;
(f) The procedures for registration and redress of grievances;
(g) The procedures for monitoring and evaluation; and
(h) The timetable and budget for the resettlement plan.
8 Social and Economic Impacts of the Mining and Power Project

A detailed survey of the area of the proposed Sibovc field is presently being carried out by the NGOs Prism and CDF (Community Development Fund) as part of the preparatory work for the Strategic Environmental and Social Assessment (SESA). The main work on the SESA has been carried out by a consortium led by ERM Italia. The draft SESA incorporates the results of a series of public consultations that have been held in most of the villages in the mining area. Through the consultations a number of issues have been identified, some of which are particularly pertinent to the RPF. One of the main concerns expressed by people in the affected area is the impact of air and water pollution from the power plants and mines, which they claim has affected their health and reduced the agricultural productivity of the area. Another concern is that people do not want to repeat the experience of Hade, where people were moved when their houses started to slip into the Mirash mine and many families have still not been permanently resettled.

As described above, the lignite mining and power project may include the rehabilitation of the existing Kosovo A thermal power plant and construction of a new Kosovo C power plant, which is likely to be developed in two stages. The Kosovo A and B plants are presently supplied with lignite coal from the Mirash and Bardh mines, but these mines will be exhausted by 2009. In the short term Kosovo A and B will be supplied from the Sibovc D field; however, when the refurbished Kosovo A and the new Kosovo C power stations come on line the production of lignite coal will have to be increased by opening up the whole of the Sibovc field to the north of the existing Bardh and Mirash mines. The area that will eventually be affected is about 16km².

The affected area is rural with a few fairly large, nucleated or semi-nucleated villages. The total population of the affected area is estimated at around 1500 families. The largest villages are Hade, Shiptulle, Lajthishte, Sibovc and Plemetin. The present population of the villages is mainly ethnic Albanian, although Plemetin is a largely Serbian village. The economy of the villages appears to be based on agriculture, although some people work outside the area; some villagers are employed by KEK in the mines and power plants. The survey should provide the following information:

- Detailed description of the population in the directly affected project area and in the surrounding area (description of the population in the affected villages; ethnicity and the impacts of the conflict; economic activities: agriculture and off-farm employment; levels of unemployment; migration to urban areas, emigration)

- A detailed estimate of the requirements for land and involuntary resettlement and the likely timing of land acquisition

- A summary of the consultations carried out to date and the consultation schedule required for completion of the SESA

The affected areas can be divided into three separate categories:
• The areas that will be directly required for the mining and power complex, including the areas needed for any ancillary facilities. If Kosovo C is built within the boundaries of the Kosovo A or B plant, there will be no need for additional land acquisition for the power plant.

• The areas required for the safety zone of the mine (i.e. in the 200m or more from the side of the excavations) and the safety zones for any new roads, sub-stations and transmission lines.

• The areas that are not required for the mining and power complex or for the formal safety zones but which suffer or will suffer significant social and environmental impacts: such as dust, noise, light, air pollution and contamination of ground and surface water, etc.

The first two categories have to be acquired. This means people will lose their land, houses and other assets. The third category is more problematic. It includes populations that have been affected by existing mining operations and power generation – this includes the village of Dardhiste and perhaps the village of Grabovc. To a lesser extent it also includes the town of Obiliq and the surrounding areas that are affected by dust from fly ash dumps and by the contamination of groundwater. The social and economic impacts on these villages may include impacts to human health and the loss of productivity of farmland. The first strategy to resolve these problems should be to mitigate the environmental impacts wherever this is possible. However, there may be cases where the level of contamination and the risks to human health are so severe that it would be advisable to relocate the population. The final decision will have to be based on solid scientific evidence and should be clarified once the baseline environmental studies have been completed. The key questions that would guide the decision are:

• Do the levels of dust, air and/or water pollution represent a significant risk to human health?

• Have the levels of dust, air and/or water pollution had a significant effect on agricultural production or on the health of people that consume the produce from the area?

If the answer to either of these questions is yes, and levels of dust, air and/or water pollution cannot be reduced to acceptable levels within a space of say five years, then the land should be acquired and the families moved, applying exactly the same criteria that will be applied to people whose land is required for the mining and power complex.

It is important to emphasize that the impacts of land acquisition involve much more than the loss of housing. In the first place, given that the affected areas are largely rural, it could result in a significant loss of livelihoods. The results of the consultations suggest that there are high levels of unemployment and under-employment in the area; this means that people depend on their farmland for a significant part of their subsistence and cash income. This makes resettlement particularly difficult, since international standards rightly require affected families to be compensated for the loss of their livelihoods and/or
subsistence. In addition the land take for the mines and power plant may affect some small businesses and result in people losing employment.

Another significant impact of land acquisition is the disruption of social networks if people have to move away from their relatives, friends and neighbors. There will be a loss of cultural heritage and local memories. It is impossible to replace memories, history and social networks. However, some level of mitigation could be achieved through a sensitive social support program that would take local people’s concerns and expectations into account. This would include measures to remove and restore local historical and cultural sites, such as mosques, cemeteries, churches and war memorials. It could also include assistance to help the most vulnerable people, especially the elderly, readjust to their new homes and new locations, for instance, facilitating contact with social and health services at their new site. A critical issue here, which needs to be discussed in more detail, is the proposal to offer people the option of relocating together in a new resettlement village, thus allowing them to maintain a certain level of social cohesion. This should be an option, but should not be obligatory, since there are situations where people will want to use the opportunity provided by resettlement to move away, to seek employment, education or – as often happens with elderly people – to retire from farming and move closer to their children, who may be living and working in the city.

The principal social and economic impacts of land acquisition include:

- **Loss of land.** Where all or a significant part of a person’s farmland is lost, they will lose their income and often a significant part of their food supply (for instance, vegetables, milk and poultry). In the process of moving to a new site they are likely to lose at least one harvest.

- **Loss of housing.** As well as losing the physical structure of the house, people will lose the associated services and facilities: water supply, drainage, road access and electricity. In the process of moving they will also incur significant transitional costs, including transport for themselves and their personal effects, legal fees, taxes, and so on.

- **Loss of businesses.** As well as loss of physical premises, small businesses may be affected by the loss of business locations and loss of clientele, especially their regular customers. In the process of moving they will lose business and may incur significant transitional costs, including the transport of equipment, stock, etc.

- **Loss of employment.** If an affected business closes the employees will lose their jobs. Other people may lose employment if they are obliged to move a long distance from their existing workplaces.

- **Loss of services and cultural heritage.** This includes loss of access to facilities such as schools, clinics, mosques, cemeteries, war memorials, and others.
9 Eligibility and Entitlements

The Entitlement Matrix shown in Table 1 summarizes the proposed resettlement options that could be offered to the different categories of persons affected by the projects.

Table 1: Entitlement Matrix – Proposed Options

<table>
<thead>
<tr>
<th>Affected People</th>
<th>Options</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>People Affected by Loss of Farmland</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owners with full legal title whose plots will be fully affected (people whose houses are affected are also entitled to the options described below)</td>
<td>- An alternative plot on rehabilitated land + compensation for other assets (barns, outhouses, permanent crops, etc.), or - A letter of credit, or - Cash compensation for land and other assets + all transitional costs (transport, legal fees, loss of crops or earnings)</td>
<td>An alternative plot or letter of credit is the preferred option for people that depend on farming. The letter of credit must be sufficient to allow the beneficiary to acquire a plot better or at least equal to the affected plot</td>
</tr>
<tr>
<td>Recognized owners that do not have full legal title to the land and whose plots will be fully affected (people whose houses are affected will also be entitled to the options described below)</td>
<td>- An alternative plot on rehabilitated land + compensation for other assets (barns, outhouses, permanent crops, etc.), or - A letter of credit, or - Cash compensation for land and other assets + all transitional costs (transport, legal fees, loss of crops and/or earnings)</td>
<td>In the absence of full legal title the owner/s must be recognized as the person/s with full, unchallenged rights to the property. This would require regularization of ownership rights or an affidavit from neighbors, validated by the municipality</td>
</tr>
<tr>
<td>Landowners that have fled the area as a result of the conflict, and whose properties are fully affected</td>
<td>- An alternative plot on rehabilitated land + compensation for other assets (barns, outhouses, permanent crops, etc.), or - A letter of credit, or - Cash compensation for land and other assets</td>
<td>It is understood that most people that have fled will choose cash compensation. The Kosovo Property Agency (KPA) will be responsible for deciding who would be entitled to benefits</td>
</tr>
<tr>
<td>Affected People</td>
<td>Options</td>
<td>Observations</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Landowners whose properties are partially affected (i.e. where the remaining areas are viable)</td>
<td>• Compensation for the loss of farmland and other assets in the affected area (barns, outhouses, crops, etc.)</td>
<td>* The new expropriation law will define fully and partially affected properties</td>
</tr>
<tr>
<td>Tenant farmers or sharecroppers(^4)</td>
<td>• Compensation for the loss of two years net earnings + all transitional costs (transport and legal fees)</td>
<td>Need to ensure that affected tenants can take on new tenancy contracts</td>
</tr>
<tr>
<td>People Affected by the Loss of their Homes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Recognized owners with or without formal title to their houses                 | • A new house in a resettlement village • Compensation at replacement cost + all transitional costs (legal fees, taxes, transport of personal effects, etc.) | The replacement housing will satisfy basic standards for social housing and services and will be provided regardless of the condition or value of the affected property  
In the absence of full legal title the owner/s must be recognized as the person/s with full, unchallenged rights to the property. This would require regularization of ownership rights or an affidavit from neighbors, validated by the municipality |
| Homeowners that have fled the area as a result of the conflict                | • A new house in a resettlement village • Compensation at replacement cost + any transitional costs (legal fees, taxes, transport, etc.) | It is understood that most people that have fled will choose cash compensation. The Kosovo Property Agency (KPA) will be responsible for deciding who would be entitled to benefits                                                                 |
| Tenants with formal tenancy agreements                                         | • Compensation equivalent to six months rent                                                                                                                                                           | Need to determine whether new tenancy agreements can                                                                                                                                                         |

\(^4\) It is understood that there is no village, cooperative or common land in the areas affected by the project.
<table>
<thead>
<tr>
<th>Affected People</th>
<th>Options</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ all transitional costs (legal fees and taxes, transport, etc.)</td>
<td>be arranged. The beneficiary must have a formal agreement from before the “cut-off” date for eligibility</td>
<td></td>
</tr>
</tbody>
</table>

**People Affected by Loss of Businesses and Other Enterprises**

**Owners of business premises such as shops, workshops or garages**
- Replacement premises in a resettlement village
- Compensation for loss of the premises
  + compensation for the loss of 6 months net income or 12 months net income if the beneficiary re-establishes a business in the municipality
  + all transitional costs, including packing and transport of equipment, legal fees, taxes, etc.
- Different rates of compensation are offered to encourage the owner to re-establish the business or set up a new business in the affected municipality

**Non-owners**
- Compensation for loss of 6 months net income or 12 months net income if the beneficiary re-establishes a business in the affected municipality
  + all transitional costs, including packing and transport of equipment, legal fees, taxes, etc.
- Different rates of compensation are offered to encourage the owner to re-establish the business or set up a new business in the affected municipality

**Government, Municipalities and Public Utility Companies**
(for assets such as school buildings, clinics, water supply, electricity distribution lines, etc.)
- Compensation of assets at replacement cost, or
- Replacement of assets at the new resettlement sites
- To be agreed on a case by case basis

**Community assets, particularly mosques, cemeteries & churches**
- Removal and/or replacement
- To be agreed with the communities on a case by case basis
### Affected People Options Observations

#### People Affected by Loss of Employment

<table>
<thead>
<tr>
<th>Affected People</th>
<th>Options</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full time employees that lose employment because of expropriation of their employer’s premises</td>
<td>Compensation equivalent to six months salary plus support to find employment or opportunities for training</td>
<td>Compensation will be based on their average earnings over the previous 12 months. Help will be given to find alternative employment</td>
</tr>
<tr>
<td>People losing regular part-time employment</td>
<td>Compensation equivalent to six months part-time earnings plus support to find employment or opportunities for training</td>
<td>Compensation will be based on their average earnings over the previous 12 months. Help will be given to find alternative employment</td>
</tr>
</tbody>
</table>

#### 9.1 People affected by loss of land (farmland, grazing, forest land)

**Landowners.** People whose land is affected by the mining or power projects will be offered the following alternatives: i) an alternative plot on an area of land rehabilitated from the large area of overburden dumps that presently belong to KEK ("land for land"), ii) a letter of credit to acquire another plot of land of equivalent area and quality to the affected plot, or iii) cash compensation. All their transitional costs will also be covered or compensated. This will include the costs of transporting their equipment, machinery, livestock and all other moveable assets, all the legal fees and taxes needed for the transfer of their land and acquisition of replacement plots, and compensation for any loss of crops or other loss of income and/or subsistence. Since many affected households depend on their land for all or part of their livelihoods – including subsistence farming and raising livestock – the aim is to ensure that the options allow them to improve or at least recover their previous standard of living.

The three options will be offered to all landowners whose plots are fully affected, who depend on the affected property for a significant part of their livelihood or subsistence, and who do not own or occupy other viable holdings. Landowners that do not depend on their land: i.e. whose land is partially affected, who rent their land out under formal tenancy or sharecropping arrangements or who have other viable holdings, would only be eligible for compensation. The criteria for defining which properties are classified as fully affected and which are classified as partially affected are set out below in Section 9. These options will be offered regardless of whether or not the landowners reside on the affected plot (entitlements for people whose houses are affected are set out separately below). The options will be offered to all those people that have legal title to the land or who are recognized as having full, unchallenged rights of ownership. In relation to irregular rights the following points should be noted:

- Land that was originally acquired through an irregular transfer (such as an unregistered civil contract) will have to have the arrangement regularized by the
courts and then registered at the appropriate municipal cadastre office, which in turn will inform the Kosovo Cadastral Agency (KCA). The cost of regularizing the title will be covered by the Project Company.

- Other persons that claim ownership but lack full legal titles will have to show they have been living and working the land for the last 10 years or have inherited or legally acquired usufruct rights to the land. The claim will be reviewed by the project resettlement office and must be backed with evidence from the municipality (for instance, tax records), government institutions (for instance, school records) or affidavits from neighbors.

- If there are outstanding claims on the property, including disputes over ownership, boundaries or inheritance the Project will deposit the estimated value of the land and property in a special account and will only pay the compensation or provide other resettlement benefits once the dispute has been adjudicated in the courts. If there is a mortgage on the property the Project will negotiate with the mortgager with the aim of transferring the mortgage to the new property acquired by the affected landowner.

- The Kosovo Property Agency will be responsible for determining the ownership of land that was abandoned and/or occupied by others during the 1999 conflict and subsequent periods of unrest. Once the KPA has established ownership of the land, the owner will be eligible for exactly the same resettlement benefits as any other affected landowner. Non-owners that are occupying property belonging to people that fled during the conflict will be entitled to cash compensation for improvements and payment for loss of standing crops, but will not be entitled to any other resettlement benefits.

The surveys conducted by Prism and CDF for the SESA have not identified any people working on village or community lands.

Rehabilitated land. There is an acute shortage of good agricultural land in the area around the proposed mining and power complex. The option of providing a plot of rehabilitated land is intended to encourage the Project Company to rehabilitate and make use of a large area of overburden dumps that is presently owned by KEK. To make this option more attractive, it is recommended that the Project offer affected landowners a larger area of land than the plot that is affected and/or a package of additional benefits, which might include technical assistance and/or the use of shared equipment. For instance, it may be feasible to set up small agricultural cooperatives for groups of say 5 to 10 farmers from the same village who wish to work together. The details of the option ought to be developed in close consultation with the affected families.

Letter of Credit. The option of a letter of credit is designed to encourage affected households to acquire new plots of agricultural land. The amount of the letter of credit would be determined on the basis of the replacement value of the affected land, housing and other immovable assets plus a small percentage (say 10%) intended to make this option attraction more attractive to affected landowners. Once the amount has been
determined, the landowner would be free to try and find a suitable plot for more or less the same value as the letter of credit. The project would review the proposed purchase, to ensure the land and other assets have been correctly valued and that documents are in order and there are no outstanding disputes over boundaries, and will pay for the land, transferring the title directly to the affected landowner. Given the fact that many people in the project area do not reside on their land, this option may actually involve two letters of credit: one for a new plot of agricultural land, and another for a new house.

Compensation. Compensation is not the preferred option for landowners whose farmland is fully affected. Experience shows that affected families often use their compensation for other purposes, leaving them without the means to recover their livelihoods and their previous standards of living. Moreover, land markets in the project area are not very well developed and it is difficult to establish accurate market values for agricultural land. However, compensation is the only realistic option for landowners whose properties are partially affected. In addition there are situations when compensation can provide a useful opportunity for affected households to change their situation, for instance, people that would like to retire from farming and move to urban areas, or people that depend on other sources of employment and who would like to use their compensation to acquire an apartment in town or capitalize a small business. The Project should employ a small team of social workers, who would explain the different options to the affected households and would help them decide which option would be most appropriate. The social workers should review the situation of all landowners whose land is affected and should discuss the use of compensation with them before their compensation payments are authorized.

Tenant Farmers and others working the land (sharecroppers, people with use rights). The survey will show whether there are any non-owners working the land in the project area and under what kind of arrangements. It is envisaged that people with formal tenancy or sharecropping agreements will not be eligible for the same benefits as owners or people with recognized rights to the land, since in these cases it is the landowner that will receive compensation. The same applies to people that are using land belonging to others without making any payments, for instance, sons working on their father’s land or people working the land of absentee relatives (in these cases the landowner would be entitled to the land for land option or a letter of credit).

The main concern is to ensure that any non-owners who depend on the land can recover their livelihoods. This might involve some kind of formal agreements with the owner/s of the land who will be given other plots or compensation. It may also be possible to find alternative areas that can be rented. The proposed compensation – equivalent to two years loss of net earnings plus all transport costs and legal fees, is intended to give tenants and sharecroppers sufficient time to arrange a new tenancy or sharecropping agreement and assumes they will lose at least one year’s harvest and may need another year to find a landowner willing to allow them rent or sharecrop an equivalent plot of farmland. However, if the survey and public consultations show that this option is not feasible it may be necessary to consider alternative options, such as providing tenants and sharecroppers with plots of rehabilitated land.
There may be situations where people have occupied land that belongs to people that have fled from the area. The occupants would be entitled to compensation for any improvements they have constructed plus their transitional costs, including loss of harvest, but they will not be eligible for any other benefits. The legal owner of the land, as determined by the KPA, will be entitled to the compensation, land for land or a letter of credit.

9.2 People affected by loss of housing

Owners. People whose houses are affected will be offered the options of an alternative house in a new village or cash compensation. These options will be offered to all farmers that reside on their farms and to all households that own or occupy homes in the area affected by the project, regardless of the legal status of their titles. However it will not apply to tenants that have formal tenancy agreements or to people that have occupied houses that were abandoned by people that fled during the conflict. The replacement housing will include the provision of basic social housing that satisfies national and municipal standards. The exact size of the replacement house and number of rooms will be determined by the size of the household and not by the value of the house that is affected. This option is intended to make resettlement attractive for poorer, more vulnerable families, especially people living in sub-standard housing conditions. It also intended as an option that would allow neighbors, friends and relatives to continue living in close proximity. If they wish, people with larger, more valuable houses will be allowed to opt for cash compensation for their houses and other structures and a building plot in the resettlement village of the same size as their original house plot.

The new housing project will provide houses with access to all basic services, including road access, street drainage, water supply, sewerage or connection to septic tanks, electricity and street lighting. A site for resettlement of the households from the village of Hade has already been selected in Shkabaj. The proposed site will be sufficient to house all the families from Hade, but is not large enough to replace the agricultural land that will be affected. The proposal would therefore be to re-house any families that wish to move from Hade to Shkabaj and to provide alternative plots of farmland on reclaimed land belonging to KEK, plots acquired with letters of credit or to allow farmers to use the compensation for their land to acquire new plots elsewhere.

Compensation will be offered as an option to all owners. However, if the value of the compensation is less than the value of a new house, the payment would have to be authorized by the social worker and the manager of the resettlement program. This is to prevent compensation leading to the impoverishment of affected families.

People that are given new houses in the resettlement village will be given freehold titles, issued in the joint names of both spouses. Non-owners and people whose original houses were worth less than the nominal value of the new house will not be allowed to sell or transfer their houses to a third party for a period of five years without the approval of the manager of the resettlement program. This is to reduce the possibility of low income families selling their houses to raise cash.
Tenants. Tenants that rent their houses or apartments under formal tenancy arrangements will be paid the equivalent of six months rent plus all transitional costs such as transport for their personal effects and any legal fees or taxes, and will be given assistance to find suitable alternative accommodation.

9.3 People affected by loss of businesses or commercial premises

The aim is to encourage businessmen and businesswomen to continue operating elsewhere or to set up a new business. Where an affected business is conducted on premises belonging to the owner, the owner will be offered the options of an alternative site for the business in the resettlement village or compensation for his/her land and premises at replacement value. The owner and will also be paid the equivalent of six months loss of net earnings if he/she opts for compensation and twelve months loss of net earnings if he/she opts to set up the business or open a new business in the resettlement village or elsewhere in the municipality. The project will also pay all transitional costs, such as packing and transport of equipment and/or stock to the new site, legal fees, taxes, and so on, and/or will provide assistance and logistic support to set up a new business.

If the business operates from borrowed or rented premises, the owner of the business will be paid six months loss of net earnings or twelve months loss of net earnings if he/she sets up the business or starts a new business at the resettlement site or at another site in the same municipality. The owner will also be paid all transitional costs, including packing and transport of equipment and stock, legal fees, taxes, and so on, and/or will be given assistance and logistic support to set up a new business.

9.4 People affected by loss of employment

People that lose their employment as a result of the acquisition or closure of their places of work will be given the equivalent of at least six months salary (based on average earnings over the year prior to closure of the employer’s business) and will be given all possible support to find alternative employment or to take up training. This will apply to people in regular full time employment and in regular part time employment.

9.5 Transitional costs

“Transitional costs” are the costs associated with the move from the original site to another site as well as loss of earnings and/or subsistence benefits. It includes all the legal fees, surveys and registration fees needed to transfer ownership and acquire a new property, as well as the costs of packing and transporting the affected household’s personal effects, equipment and livestock. It should also cover any damage to personal effects and goods and the time and expenses and logistic expenses of the affected household, including travel and associated expenses incurred when looking for alternative land, houses or business premises.

5 The project will pay any other redundancy payments required by law, including payments determined by length of service and/or other factors.
10 Eligibility Criteria

10.1 Cut-off dates

It is recommended that the date of the definitive census carried out for preparation of the RAP should be used as the cut-off date for eligibility for resettlement benefits. Once a definitive census of the affected households has been carried out for an area that will be acquired, no new entrants will be eligible for compensation. In the case of the areas needed for mining, it is envisaged that the land acquisition will take place in distinct stages – each stage affecting one village at a time, with the process starting typically about five years before mining is expected to take place. The aim should be to complete the acquisition of all the properties where ownership is not in dispute within a period of 12 months. A review procedure will be set up to determine the situation of any people that claim to have been missed by the census. Persons entering the affected area after the census has been completed will not be eligible for any benefits and could be evicted once title to the area has been transferred to the mine or power company. The census information will be shared with Government and the local Municipal Authorities and they will be jointly responsible for ensuring the affected area is not invaded by squatters seeking resettlement benefits.

10.2 The household

It is important to agree on a definition of “the household” - i.e. the people that would be entitled to replacement housing. This could be all the persons living in the same house, but it may be more appropriate to regard married couples, widows/widowers, divorced or separated people and their children as potentially separate households, each of which would be eligible for a separate housing unit at the resettlement village. The definition must be agreed before the first Resettlement Plan is finalized.

10.3 Viability of remaining areas

At present KEK defines a property as partially affected if the remaining area covers more than 14 are – that is to say, 0.14 of a hectare (one are is 10m x 10m). However, in practice few properties are classified as partially affected. A more practical definition that could be adopted is to offer the affected parties the option of selling the whole of their property if:

- Any part of the structure of the house, farm or business is affected
- More than 25% of the total property needs to be acquired
- The remaining area is less than 0.5 of a hectare
- The property is left without viable road access or loses access to any other critical asset, such as water or electricity supply, or
• The owner can demonstrate that the remaining property is no longer viable for the use to which it was previously put. In this case the owner would have to demonstrate that the remaining area is no longer viable.

In any of these cases the original owner should have the right to keep the remaining area if he/she so wishes.
11 Valuation of Land and Assets

11.1 Principles of valuation

Land and all other affected assets should be compensated at replacement value. In practical terms this means all buildings, outbuildings, fences and other structures, trees, permanent crops and improvements including pasture and standing crops, would be valued at the cost that would be needed to replace them, regardless of their condition at the time of valuation. The valuation of fruit trees and permanent crops should take into account the value of the harvests that will be lost. The value of farmland should be assessed on the basis of the classification of land types presently applied by KEK but would be based on the prices paid in actual land transactions in the same municipality and neighboring municipalities rather than the administrative values that are presently used. The existing classification of land types takes land use capacity into account, but does not consider factors such as distance from roads, rivers or towns. However it has the advantage of being transparent and relatively simple to operate. The most important concern is to ensure that the valuation is based on real land transactions, which are not always the same as the transactions registered in the local cadastral offices.

In addition landowners, homeowners and business owners should be compensated for all transitional costs. Some transitional costs, such as legal fees, surveys, registration and transport, can be paid directly by the project. The transitional costs associated with farms and businesses would also have to account for loss of earnings since many farmers will lose the opportunity to plant or harvest a crop because of displacement.

11.2 Outline of the procedure

The Project Company would be responsible for implementation of the procedures, which should be defined in more detail in the RAP. The Project would start by making contact with the affected parties. In the initial stages this would involve following up on contacts already established by MESP/Project Hade and KEK but could require a new, definitive census of the people that would be affected by the first phase of the mining project in order to prepare the RAP. All subsequent phases would require a new census to be carried out as part of the preparation of each RAP. If the affected parties agree, the project would then carry out a full survey the affected person or household’s property and assets and would assess: i) whether the property should be classified as fully or partially affected, and ii) the value of the land and assets in the affected area or property, depending on whether it were classified as partially or totally affected.

The initial valuation would be itemized, following existing KEK procedures, distinguishing the value of the land and the value of each affected asset: houses, barns, fences, trees and permanent crops, standing crops, and so on. This detailed estimate should be shared with the affected party, MESP (if it is agreed that MESP would be the Government agency responsible for overseeing resettlement) and the relevant Municipality. If the affected household accepts the valuation, the project would request approval from MESP. Once MESP has approved the valuation, the project would finalize the arrangements for the transfer of the property.
If the affected party does not accept the initial valuation or believes assets have been missed or undervalued, the project could carry out a second valuation. Alternatively – or if the parties fail to reach agreement after a second valuation – MESP could engage an expert or panel of experts to carry out an independent valuation. The experts would have the right to enter the property to carry out the survey and valuation. MESP would then call both parties to a meeting to discuss and agree on the level of compensation and/or eligibility for resettlement benefits (land for land, housing solutions, etc.). If the parties failed to reach an agreement after more than two attempts or if either of the parties failed to attend more than two consecutive meetings without presenting an adequate justification, MESP would take an independent decision on the level of compensation and would communicate the decision to both parties in writing.

The Project Company should be responsible for all the costs associated with implementation of the Resettlement Plan, including the costs of surveying, valuation, searches of the land registry and so on. However, to ensure independence, MESP should be responsible for all expenses associated with the independent valuation, including the hire of experts or a panel of experts.
12 Public Consultation and Grievance Procedures

A series of public consultations have already been carried out as part of the preparation of the Strategic Environmental and Social Assessment (SESA). The consultations have informed local people about the project and have identified their main concerns and expectations. However, once the Investor has been selected, the Project Company set up, and the key decisions taken in regard to the institutional responsibilities – especially the definition of the responsibility for implementing and paying for the resettlement of the villages of Hade and Dardhiste, it will be necessary to carry out a further round of public consultations in the affected area and in the town of Obiliq. The objectives would be to explain the principles of the RPF and develop the RAP.

One of the aims of the consultations should be to establish effective channels of communication between the affected families, the local and national authorities and the project. This might include:

- One or more negotiating committees comprising representatives from the villages affected by each stage of the mining and power project, which would help to develop the details of the resettlement plan, monitor its implementation, resolve disputes over eligibility for benefits and compensation, and perhaps negotiate the compensation measures for local infrastructure (for instance mosques, churches or cemeteries). The members of the committee would be elected by all the adults living in the affected villages.

- A joint committee, comprising representatives from the affected families or negotiating committee, representatives of Obiliq Municipality (officials from the land cadastre and other key departments and elected representatives) and officials from MESP and perhaps other ministries (MEM, Ministry of Economy and Finance). This committee would review and approve the RAP/s and review and provide initial approval for any proposed secondary legislation or formal agreements that may be needed to formalize the key criteria and benefits described in the RAP/s. The committee could also review outstanding disputes over eligibility for benefits or entitlements, and review the proposed compensation measures for publicly owned infrastructure, including schools, clinics, roads, and so on.

The details of the criteria, options and procedures from the resettlement plan should be widely publicized. This would involve printing booklets, radio shows and perhaps television.

In addition the Lignite Power Project should incorporate an independent complaints procedure or mechanism for the resolution of grievances. It is recommended that this should cover all aspects of the power and mining project, rather than simply the resettlement program. For instance, it should be able to address the wider environmental concerns related to the mining and power projects including social and environmental impacts caused by the construction projects (i.e. the rehabilitation of Kosovo A and the
construction of Kosovo C) and perhaps other more general issues, for instance relating to opportunities for employment.

The independent mechanism would comprise an independent expert and a technical assistant who would have direct access to the highest levels of management of the Project Company/Investors, local government and national government. The mechanism should be financed by the Project Company, but should report directly to Cabinet or the Minister of Environment and Spatial Planning and to the International Financial Agencies involved in financing the project. The independent expert would have an office in Obiliq and would have transport so that he/she could visit and investigate anywhere in the project area. The telephone, e-mail and location of the of the expert’s office would be widely publicized. All complaints or concerns would be registered in a confidential database. The independent expert would be required to investigate and respond to any complaints or concerns within a period of no more than 30 days. The independent expert would also prepare quarterly reports, showing the number of complaints, identifying the issues raised and the measures that were taken to resolve the problems that were presented. The names and contact information of the complainants (addresses, phone numbers, e-mail, etc.) should remain confidential; they should be registered in the database, but should not be disclosed in the quarterly reports.
13 **Timetable and Budget**

The detailed timetable for implementation of the resettlement program will be developed as part of the final resettlement plan. It should be developed in close cooperation with the mine planners, taking into account the proposed timing of the different phases of expansion of the Sibovc field. The most critical issue at this stage is preparation of the RAP for the first phase of the Sibovc mine.

The indicative budget for the resettlement of all the families affected by mining operations is EUR 180-200M. This is based on an average cost of around EUR 120,000 per household for a total of 1500 households.
Conclusions and Recommendations

It is envisaged that the Request for Proposals (RFP) will be finalized by June 30, 2008. Before the RFP can be finalized LPTAP should have agreed on the proposed approach and on the main issues identified in the present Resettlement Policy Framework. The most critical issues are:

i) To determine how the responsibilities for resettlement will be transferred from MESP/Project Hade and KEK to the Project Company.

ii) To determine whether the resettlement plan will cover the remedial actions needed to complete the resettlement of the families from Hade that are presently living in temporary accommodation and/or if it will cover the village of Dardhiste and/or any other villages outside the immediate area of the mining project.

iii) To decide whether a separate resettlement plan will have to be prepared for the Kosovo C plant (i.e. if the green field site is chosen for the new plant).

These issues will have to be discussed with MESP/Project Hade and with KEK/MEM. Once agreement has been reached, the Scope of Work will have to be prepared for the Social and Resettlement Components of the Project. The present document could be attached as an annex to the Request for Proposals.

Once the contract has been awarded, the Project Company will prepare the final RAP/s. The first priorities will be to agree on the general criteria and entitlements that will be offered and to develop a detailed plan for the first stage of land acquisition for the Sibovc Mine. If the recommendations of this report are followed, this would basically cover the resettlement of the village of Hade. Preparation of the final plan may take as much as six months, since it will require considerable negotiation with people that have been temporarily resettled and with people still living in the affected area. The land-for-land proposal – i.e. the use of rehabilitated land from the overburden dumps will require detailed studies to ensure that the proposal is technically feasible.

The detailed plans for acquisition of the villages that will be affected by subsequent phases of the expansion of the Sibovc field do not have to be prepared at this stage. It would be sufficient to include an indicative timetable, showing which villages will be affected by each stage of the mining project. However, the criteria, entitlements, institutional responsibilities and general approach should apply to all phases of the project and also to Kosovo C if the green field site is selected. If this is necessary, the preparation of a resettlement plan for Kosovo C should start as soon as selection of the site is confirmed.
Annex A: Outline for the Resettlement Action Plans

1. Introduction

- Location of the project (with detailed maps)
- Description and history of the project and associated works
- Analysis of alternatives for each component (mine, transport, access roads/railway, power plant, ash-dump or ash-pond, etc) showing that the alternatives have been chosen to minimize resettlement, but without jeopardizing public safety
- Institutions involved in the project (areas of responsibility)
- Participation of local agencies, organizations of affected people
- Present status of the project
- Outstanding issues

2. Baseline Socioeconomic Studies and Definitions

- The areas directly and indirectly affected by the project and associated works including definition of the safety zones between the works and nearest populations
- Accurate information on the people directly affected by category: loss of land and housing (owners/tenants), loss of housing (owners/tenants), loss of land (owners/tenants, sharecroppers, others), other loss of income (retail outlets, small enterprises, etc), other affected groups. This should be summarized in tables
- Key definitions: cut-off dates; viability of partially affected areas; the definition of the household; criteria used to define eligibility for different types of resettlement benefits
- Identification of any vulnerable groups (internally displaced people or refugees, ethnic groups such as Roma, landless laborers, women head of household, etc.)
- Land tenure of affected population (private owners, land in public ownership, communal or village landholdings, common land, tenants, sharecroppers, etc. – identify any issues that may affect rights to land or housing, for example, irregular transactions or inheritance, unpaid taxes, properties that have been abandoned during the war – include consideration of the rights of women household heads and women living in common-law unions)
• Land holdings of affected population (include local definitions of a “viable holding”)
• Agricultural production, livestock other on-farm income
• Any common productive assets that may be affected (communal pasture, forest used for collecting firewood, rivers and lakes used for fishing, etc.)
• Other economic activities – any local employment that may be affected
• Estimated levels of income and expenditure (including average costs for basic services: water, sewerage, electricity, and local taxes)
• Social and transport infrastructure (schools, health posts and health centers, churches, cemeteries, access roads, bridges, etc)

3. The Legal and Institutional Framework

• Scope, procedures and responsibility for the declaration of public utility
• Responsibility of project sponsors, Role of government and local government in preparation and implementation of the resettlement plan
• Responsibility for paying compensation and resettlement
• Land and property valuation & compensation
• Mechanisms for resolving disputes and problems over land or house titles (dispute resolution mechanisms including KPA and access to the courts, typical costs and timeframe)
• Government and municipal licensing and approval procedures
• Communication and coordination with local authorities, NGOs and organizations of affected people
• Procedures for managing complaints and arbitration
• Responsibility for monitoring and evaluation

6 Note that the law on expropriation is presently undergoing revision
4. Compensation and Rehabilitation

- Eligibility criteria for compensation (“cut-off dates”, informal and illegal titles, long-term tenants and other occupants)

- Compensation options for loss of land (total loss, loss of viable holdings, partial loss, restrictions on use, such as reservoir edges, transmission lines)

- Compensation options for loss of housing (owners, tenants, occupants, others)

- Detailed description of the proposed land for land and letter of credit options, including choices and factors that may affect choices and any potential problems such as debts, mortgages or unpaid land taxes

- Detailed description of the proposed housing and service solutions, with an analysis of the likely preferred choices and any potential problems (costs of service provision, maintenance, taxes, style of housing)

- Procedures, methodology and responsibility for the valuation of land, property and other assets procedures for paying compensation and timing for compensation

- Dispute settlement and arbitration procedures

- Compensation for temporary loss of income and subsistence crops for farms, retail outlets and other businesses (valuation, compensation, timing, dispute resolution)

- Procedures, responsibility for the valuation of loss of income, compensation, timing, and dispute settlement and arbitration

- Programs for training and institutional development

- Compensation for loss of social and/or transport infrastructure and items of social and/or cultural heritage (mosques, churches, cemeteries, war memorials, etc.)

- Impact of affected families on “host” populations, and measures to avoid any potential conflicts

- Facilities to accommodate demand from influx of construction workers (health services, schooling, etc)

5. Transport and Other Transitional Issues

- Arrangements to move affected households to new sites (transport, temporary accommodation, transport of furniture, equipment, livestock etc)
• Timing of move, particularly in relation to agricultural cycle and school year

6. Environmental Mitigation

This refers to the environmental impacts of the resettlement program, and not the impacts of the project that is causing the resettlement, and includes:

• Impacts of the housing program, including impacts associated with construction and longer term impacts, particularly on sources and use of water, sewage, street drainage, disposal of solid waste

• Potential impact of resettled population on local services (health, schooling)

• Impact of resettled population on local population (especially any vulnerable groups)

• Impacts of natural resources, such as firewood collection, fisheries, etc

• Impact of income restoration projects: agricultural and livestock programs (deforestation, potential for soil erosion, use of agro-chemicals); small industries (water use, potential for contamination)

• Environmental management and education plan for the resettlement program

• Any plans to provide housing, infrastructure or social services to members of the host population affected by the resettlement villages

7. Public Consultation and Grievance Procedures

• Consultation, public disclosure and social communication procedures

• Institutional responsibility for consultation and communication

• Description of the consultations carried out to prepare the resettlement plan and timetable for future activities

• Sectors ("stakeholders") involved in public consultation

• Measures to ensure vulnerable groups are fully consulted

• Review, summary and disclosure of results of consultations and how these are integrated into the resettlement planning

• Proposed mechanisms for the registration and resolution of grievances
8. **Schedule and Responsibilities for Implementation of the Resettlement Plan**

- Timing of baseline studies and census, evaluation of land/property/crops/loss of earning, payment of compensation, resettlement, rehabilitation, reconstruction of social infrastructure etc (this should be prepared as a gantt chart and should be related to the timing of the civil works and associated activities).

- Chart showing institutional responsibilities for each component of the resettlement plan, critical path and timing

9. **Costs**

- Estimated cost for each component and sub-component of the resettlement plan (land acquisition and compensation, housing, social infrastructure, economic rehabilitation, training)

- Estimated cost for each component, broken down by expected month/year of disbursement

- Estimated cost for each component and sub-component, broken down by institution responsible and expected month/year

- Overheads, by institution, and by month/year (staff costs, office and running costs, transport)

- Analysis of the costs of compensation and resettlement as a proportion of overall project costs

10. **Monitoring and Evaluation**

- Responsibilities for M&E

- Reporting procedures

- Indicators for M&E (housing/services, economic indicators, health, schooling)

- “Expert panel” option, to review specific issues and/or arbitration

- Ex-post evaluation