THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

ENERGY ACCESS PROJECT

OFF-GRID RURAL ELECTRIFICATION FUND

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

FOR

RENEWABLE ENERGY INVESTMENTS

June 2005
Addis Ababa
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1. Introduction

The government of Ethiopia has launched integrated Rural Development policies and strategies to promote and further transform the rural community towards rapid social and economic development.

Rural electrification is one major segment in rural development programs and has a significant role in the poverty reduction strategy by diversifying income sources of the poor. Hence, the government established the Rural Electrification Fund (REF) to support rural socio-economic development through improving access to electricity for purposes of productive economic uses and improving rural livelihoods by expanding access to electricity in rural off-grid areas through participation of the private sector, cooperatives and community-based organizations and local governments.

Rural energy service and distribution has its own key role in bringing practical development for the rural citizens of Ethiopia according to the government policy on rural development strategy. To enhance economic and social development modern energy service must be disseminated in rural areas.

Increasing access to electricity in rural areas to significant levels clearly requires huge resources both from the government and non-government sectors. The government in recognition of the above has formulated a rural electrification strategy with two components. The first is to extend the publicly owned grid system into rural areas while the second is to promote private sector-led off-grid rural electrification i.e. in villages which are found where EEPCO can't cover them in near future by extending its grid.

The general objective of the Rural Electrification Fund/REF project is to increase productivity and to improve social development by supplying electricity to rural villages. The Fund is to encourage and facilitate the participation of the private sector. The REF will extend confessional loan to private developers, cooperatives, community organizations and NGOs. The activity of the project will be facilitated by Rural Electrification Executive secretariat/REES/, its role is in appraising project proposals and giving technical and financial support for the project champions.

2. Project Objectives

The project’s development objectives are to:

(i) Establish a sustainable program for expanding the population’s access to electricity and improving the quality and adequacy of electricity supply, thus supporting broad-based economic development and helping to alleviate poverty;

(ii) Reduce environmental degradation and improve energy end-use efficiency;

(iii) Reduce the barriers to the wide spread adoption of renewable energy technologies, in particular Wind technology, solar photovoltaic (PV) and micro-hydro power generation in rural areas, thereby contributing to the reduction in greenhouse gas (GHG) emissions via displacement of kerosene and diesel that would otherwise be used for lighting and electricity generation; and

(iv) Provide technical support for institutional and capacity building of key sector agencies, including for regulatory, fiscal and institutional reforms in the mining sector.
2.1 Global environment objective:

The proposed global environment objective is to initiate the process of eliminating the barriers that impede the development of renewable energy, in particular solar photovoltaic (PV) systems, wind technology and develop micro hydro capacity. The global objective would contribute to the reduction of GHGs as a portion of the diesel used for power generation would be displaced by the renewable energy.

2.2 National Environment objective:

The overall National Environmental objective is to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs.

Some of the specific objective of the national environment is:

- Ensure that essential ecological processes and life support systems are sustained, biological diversity is preserved and renewable natural resources are used in such a way that their regenerative and productive capabilities are maintained and where possible enhanced so that the satisfaction of the needs of future generations is not compromised; where this capability is already impaired to seek through appropriate interventions a restoration of that capability;
- Identify and develop natural resources that are currently underutilized by finding new technologies, and/or intensifying existing uses which are not widely applied;
- Improve the environment of human settlements to satisfy the physical, social, economic, cultural and other needs of their inhabitants on a sustainable basis;
- Prevent the pollution of land, air and water in the most cost-effective way so that the cost of effective preventive intervention would not exceed the benefits;

3. Project Components

1.1 The Ethiopian Energy Access project has five components, these are:- i) Institutional and Capacity Building; ii) Urban Distribution and Load Dispatch; iii) Rural Electrification and Renewable Energy Promotion; iv) Biomass; and v) Environmental Mitigation.

1.2 Project Component 1: Institutional and Capacity Building. The project will comprise consultants services and training to support: (i) preparation of a long-term power sector strategy; (ii) preparation of an indicative rural electrification master plan and specific studies to build a pipeline of projects for private sector investment; (iii) preparation of an integrated rural energy strategy comprising both the biomass sector and the modern forms of energy; (iv) capacity building for private sector enterprises interested in investing in small-scale renewable energy investments; and (v) capacity building for the key sector agencies--EEPCo, EEA and the proposed RES; and (vi) regulatory, fiscal and institutional reforms in the mining sector.

(a) Long-term Power Sector Strategy: The long-term power sector strategy will examine the main challenges facing the power sector and develop strategies for addressing them. The principal challenges are: (i) the low rate of access to electricity and the poor quality of
service to existing consumers; (ii) the need to mobilize substantial financial resources for investment (about US$1.2 billion in the next five years); (iii) the potential for the country's large hydropower resource to be developed for both the domestic and export markets; and (iv) the need to develop technical and management skills, improve efficiency and ensure cost effective power supply for economic growth.

(b) Rural Electrification Master Plan and Project Studies: Consultants' services will be provided to assist the REES in carrying out an indicative rural electrification master plan, specific studies to determine the viability of sub-projects for implementation under this project, and other studies to build a pipeline of rural electrification projects to be funded out of the REF.

(c) Integrated Rural Energy Strategy Paper: The EREDPC will prepare a Rural Energy Strategy Paper which will synthesize the policies for the rural energy sector in line with the Government's Rural Development Strategy (RDS). The strategy paper will therefore cover both traditional and modern forms of energy.

(d) Capacity Building for Private Enterprises: The project will provide financing for the RES to disseminate information on investment opportunities in rural energy as well as to provide technical know-how to potential private sector investors, NGOs and legally constituted community organizations (e.g. electricity distribution cooperatives).

(e) Capacity Building for key sector agencies: The key areas for capacity building have been identified for EEPCo, EEA, and the REES. For EEPCo, about US$400,000 will be provided to support staff training to complement the on-going management and human resource development program under the Energy II Project and other training to be provided to technical staff under components to be implemented by EEPCo in this project. For EEA, the project will support training and study tours to strengthen its regulatory capacity for the small-scale isolated electrification systems. The REES will be supported through consultant's services in establishing its accounting and financial management systems, REES and its staff will receive training in project evaluation, financing of rural electrification and other relevant areas.

(f) Regulatory reforms in the mining sector: Support will be provided to the Ministry of Mines to carry out the following activities aimed at improving the investment climate in the sector: (i) a comprehensive study of the sector's regulatory, fiscal and institutional framework; (ii) design and installation of cadastre and data management facilities at both federal and regional levels; (iii) provision of technical advisory services and training to the Geological Survey of Ethiopia; and (iv) a study to promote new investment in the mining of artisan, construction and industrial minerals.

1.3 Project Component 2: Urban Distribution and Load Dispatch. This component comprises the following two sub-components: (i) Urban Distribution System Rehabilitation and Expansion; and (ii) a Load Dispatch Center (LDC). The distribution system is in a severe state of disrepair and needs urgent attention. The project will support investments to improve the quality of service to existing customers and to extend service to others, primarily within the 4 largest load centers: Addis Ababa, Nazareth, Dire Dawa, and Bahir Dare. Preparation of the component is based on studies previously carried out by independent consultants and updated by others during project preparation. At present EEPCo has neither a dispatch center nor a Supervisory Control and Data Acquisition (SCADA) system. A feasibility study for a load dispatch center has recommended a major reinforcement of the telecommunications systems and installation of SCADA to include an Energy Management System.
(EMS) and possibly automatic generation control, in view of the planned interconnection with Sudan and Djibouti. The LDC will be included under the project, but the EMS and Automatic Generation Control (AGC) modules will be deferred until such time as the system requires them. Rehabilitation and expansion of the urban system should enable the connection of about 70,000 new consumers.

1.4 **Project Component 3: Rural Electrification and Renewable Energy Promotion.** This component will support the Government’s strategy for improving the population’s access to electricity through the following two sub-components: (i) grid-based rural electrification to be undertaken by EEPCo (connection of about 135,000 new consumers) which has been prepared on the basis of a feasibility study prepared by independent consultants; and (ii) private sector-led rural electrification including renewable energy systems in isolated areas.

1.5a The private sector-led renewable energy sub-component will promote sustainable market development of least cost renewable energy systems for off-grid and augmented grid supply use. For the solar PV systems, market studies as well as a scooping study have been carried out to identify barriers to market penetration resulting in strategies on PV commercialization and adoption of PV systems for cross-sectoral applications. For the mini and village hydro systems, several pre-investment studies have been completed over the last decade and a strategy on village and mini-hydro development is being finalized. In parallel with these technology specific and market development efforts, the Government has established an institutional and financial architecture for planning, and financing of rural and renewable energy through the establishment of a Rural Electrification Fund under the Ministry of Rural Development. The component will support the following areas for renewable energy: (i) grid connected systems; (ii) village based systems; (iii) institutional systems and (iv) individual household systems.

1.5b The sub-component will include: (i) investments in renewable energy activities through the Rural Electrification Fund in two ways: concessional loans to businesses, NGOs and other qualified organizations; and concessional loans for leveraging financing from other commercial, development bank and micro finance institutions. And, (ii) technical assistance which is offered through two windows: full cost technical assistance window; and cost-shared technical assistance window (see also Annex 2 and Annex 3 Incremental Cost Analysis).

1.6 **Project Component 4: Biomass.** To help reduce environmental degradation and improve biomass energy end-use efficiency, the following planning, and supply and demand management activities are to be implemented: (I) development of a national strategic plan and policy framework for the biomass energy sector; (ii) planning, establishment and monitoring of participatory sustainable natural forest management systems covering about 302,000 ha in identified Woredas in the SNNPRG, Oromiya, Gambela, Amhara, and Tigray Regions; (iii) establishment and monitoring of farm/agro-forestry schemes, covering about 384,000 ha in the same Regions as in (ii) above, as well as in Dire Dawa and Harari, and in Benishangul-Gumuz, Afar and Somali Regions once the regional strategic plans have been formulated; and (iv) support for energy end-use efficiency improvement in the household sector, through the promotion of commercially-based production and dissemination of approximately 320,000 improved injera baking stoves in peri-urban and rural areas. All the schemes under (ii) and (iii) will be planned at the woreda level and implemented by individual farmers and Farmers’ Associations, and technical assistance will be provided by woredas, regional bureaus of agriculture, and the Natural Resources Management and Regulatory Department (NRMMD) of the Federal Ministry of Agriculture. However, procurement and financial management will initially be handled centrally at the PMU level, but could be devolved to the regions during later stages of project implementation depending on the results of capacity assessments. The end-use efficiency improvement sub-component will be implemented by regional bureaus of energy, with technical
assistance from and supervision by the Ethiopian Rural Energy Development and Promotion Center (EREDPC).

1.7 **Project Component 5: Environmental Mitigation.** The Project includes provision for financing the cost of implementing the Environmental Management Plan prepared under the Environmental and Social Impact Assessment (ESIA). The main activities to be funded under this component are: (i) capacity building (training and advisory services) for the environmental and social management and monitoring unit to be established by EEPCo for the purpose of carrying out environmental and social analysis of the various activities to be undertaken under this and future projects; (ii) implementation of a compensation plan for loss of crops during construction of power lines under EEPCo's urban distribution and grid based rural electrification components; and (iii) technical audits to ensure and support the safe disposal of old transformers containing polychlorinated biphenyl’s.

This component will also support the implementation of the Environmental and Social Management Framework (ESMF) for Rural and Renewable Energy Sub-projects currently under preparation. This framework will be completed, reviewed and approved by the Government of Ethiopia and the World Bank prior to Board presentation. To the extent that social issues arise due to land acquisition (loss of livelihoods, loss of access to economic assets) to accommodate renewable energy investments, the Project’s Resettlement Policy Framework (RPF) dated on April 23, 2002, that had been prepared for the IDA Energy Access Project will be implemented as appropriate.

1.8 The project’s estimated total costs are US$199.12 million, including contingencies, of which about US$132.70 million is estimated for IDA financing and US$4.93 million from GEF. The remaining is financed by the Government and the Private Sector.

4. **Objectives of the Environmental and Social Management Framework**

The purpose of the Environmental and Social Management Framework (ESMF) is to ensure that future investments in renewable energy such as PV solar and micro-hydro power systems are carried out in an environmentally and socially sustainable manner. This is an important aspect, because it is not possible at this time to determine the extent of localized impacts that might result from activities related to renewable energy investments such as the disposal of spent batteries or the construction of pipelines from the micro-hydro systems to the consumers’ facilities. It is expected that in most cases, the potential environmental and social impacts will be minor, while in some cases, they might be significant. Thus, the ESMF is designed to ensure that the appropriate level of environmental management is applied, which could range from the need for carrying out environmental impact assessments, to the application of simple environmental mitigation measures, to not requiring any environmental work. The steps involved in the environmental and social screening process are detailed in Annex 7. (see also Annex 7 below).

The ESMF will be applied by qualified experts of the Energy desk of the Local Committees who will be responsible for (I) carrying out the environmental and social screening of renewable energy investments at the planning stage; (ii) proposing simple mitigation measures, as necessary; and (iii) recommending actions such as preparing a separate EIA report for a particular renewable energy investment. The results of the screening process will be sent to the Appraisal Teams via the relevant Regional Bureaus. A qualified Environmental Specialist on the Appraisal Team will review the proposals and recommendations made by the Local Committees. Training for specific members of the Local Committees and Regional Bureaus will be provided as appropriate.
The ESMF will be useful to the Local Committees in Rural towns and Weredas as well as to the Appraisal Teams, because Ethiopia’s current *Environmental Impact Assessment Guideline Document (May 2000)* provides detailed guidance concerning the identification and mitigation of impacts of new large-scale sector investments, but lacks guidance with regard to smaller sector investments and rehabilitation activities. Instead, these types of investments are listed under Schedule 2 of the “Schedule of Activities” attached to the guideline document. According to Schedule 2, these types of projects “have potential to cause some significant environmental impacts but are not likely to warrant an environmental impact study”.

Therefore, to allow for the identification and mitigation of potential environmental and social impacts of future renewable energy investments, the GEF Energy Access Project will draw on the provisions of the World Bank’s safeguard policy OP 4.01 Environmental Assessment. Consistent with this policy, all projects submitted to the Bank for financing have to be screened for potential environmental and social impacts in order to determine their appropriate environmental categories (A, B, C, and FI) and – based on the results of the environmental screening process – to carry out the required environmental work. According to OP 4.01, projects involving construction and rehabilitation activities are classified as category B, meaning that an environmental analysis, or in this case, an ESMF be prepared and disclosed to the public.

Thus, the ESMF not only meets the safeguard policy requirements of the World Bank, but it also complements Ethiopia’s procedures for environmental management, because the screening process will allow for the identification, assessment, and mitigation of impacts of projects for which no EIA is required according to Schedule 2, but which could have localized impacts that might require mitigation. The screening results will determine whether a separate EIA would be required as described in the Environmental Impact Assessment Guideline Document (May 2000), or, whether no environmental work would be required, or, whether simple environmental mitigation measures might suffice.

The ESMF includes an Environmental Management Plan (EMP) for the GEF Energy Access Project to facilitate the implementation of the renewable energy investments. The EMP summarizes the institutional arrangements for the implementation of mitigation measures, the monitoring of the implementation of the mitigation measures, and environmental assessment and management capacity building needs as well as cost estimates and time horizons for such activities, and monitoring indicators. The EMP will be included in the Project Operational Manual (POM).

To address potential negative social impacts due to land acquisition for renewable energy investments, the GEF project will apply the existing Resettlement Policy Framework (RPF) that has been prepared and disclosed in the context of the IDA project in conjunction with this ESMF. The RPF has been prepared based on the requirements of the World Bank’s safeguard policy OP 4.12 Involuntary Resettlement. The RPF outlines the principles and procedures to be applied in the event that people are affected negatively by project activities, thus requiring the preparation of appropriate compensation measures.

5. Overview of Applicable World Bank Safeguard Policies
The proposed project has triggered two World Bank safeguard policies, namely, OP 4.01, Environmental Assessment and OP 4.12 Involuntary Resettlement. The remaining operational policies are not triggered by the project.

The objective of OP 4.01 is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts in its area of influence. Thus, the construction and operation of renewable energy investments is likely to have environmental impacts which will require mitigation.

The objective of OP 4.12 is to avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs. Furthermore, it intends to assist displaced persons in improving their former living standards; it encourages community participation in planning and implementing resettlement, and to provide assistance to affected people, regardless of the legality of title of land. This policy is triggered not only if physical relocation occurs, but also by any loss of land resulting in relocation or loss of shelter; loss of assets or access to assets; loss of income sources or means of livelihood, whether or not the affected people must move to another location.

A summary of the World Bank’s safeguard policies is provided in Annex 5 to provide guidance on measures to be taken during project implementation should any of these policies be triggered (in addition to OP 4.01 and OP 4.12).

6. Overview of Ethiopia applicable Environmental Polices and Procedures

Ethiopia has different levels of policy of and legislative frameworks covering different aspects of the environmental management and sustainable development issues. They are contained in the following documents:


Adopted on August 21, 1995, the Ethiopian federal constitution established a four-tier system of government. The regions are divided into 66 zones, six special Weredas, and 550 woredas. The average Woreda population is around 100,000, and the Woreda is considered the key level of local government. While there is no mention of the municipalities in the constitution or in the main government proclamations defining the structure and responsibilities of decentralized entities, the present government has issued three proclamations directly relevant to municipalities and urban areas ((i) giving the Ministry of Works and Urban Development broad powers and duties for urban development; (ii) assigning key responsibilities for municipalities to regional governments; and (iii) chartering Addis Ababa as a city government with clearly defined organizational structure and functions).

As regards the environment, the constitution includes Article 43: The Right to Development; Article 44: Environmental Rights; and Article 92: Environmental Rights and Enforcement Instruments.

Environmental Protection Authority (2002)

The Environmental Protection Authority (EPA) was established in response to the requirements of the constitutions (proclamation No. 295/2002). The objective of the EPA is to formulate policies, strategies, laws and standard, which foster social and economic development in a manner that enhance the welfare of humans and the safety of the environment sustainable, and to spearhead in ensuring the effectiveness of the process of their implementation.
The EPA supports the constitutional rights through guiding principles outlined in its Environmental Impact Assessment Procedural Guidelines Series Document (January 2004) as well as through its sectoral and cross-sectoral environmental policies. The powers and duties of the EPA include (i) the preparation of environmental protection policy and laws, and upon approval, follow-up concerning their implementation; (ii) the preparation of directives and systems necessary for evaluating impacts of social and economic development projects on the environment, follow-up and supervision concerning their implementation; (iii) preparation of standards that help in the protection of soil, water and air as well as the biological system they support, and follow-up concerning their implementation; and (iv) provision of advice and technical support to regions concerning environmental protection.

In addition to the EPA, the Investment Authority has responsibilities towards the environment, requiring investors to respect Ethiopia’s environmental protection laws.

Environmental Policy (1997)

Article 92 of the Constitution of Federal Democratic Republic of Ethiopia (FDRE) sets out the broad environmental objectives of the Government as the need to ensure that:

- All Ethiopians live in a clean and healthy environment;
- The design and implementation of programmes and development projects do not damage or destroy the environment;
- People participate fully in the planning and implementation of environmental policies and projects that affect them directly;
- The government and citizens should fulfill their duties to protect the environment.

The overall environmental policy goal is to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made and cultural resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. The policy outlines its specific policy objectives, key guiding principles, sectoral environmental policies, cross-sectoral environment policies, and an institutional framework for policy implementation.

The need for an environmental policy became obvious in light of the country’s declining natural resource base. For example, in economic terms, soil erosion in 1990 was estimated to have cost (in 1985 prices) nearly Birr 40 million in lost agricultural production (i.e. crop and livestock), and approximately 17% of the potential agricultural GDP was lost because of physical and biological soil degradation. Serious deficiencies in sanitation services and the inadequacy of sewerage infrastructure and random defecation in urban areas have created dangerous health and environmental problems. Much of the country’s heritage and culture is under threat through neglect, decay, removal or destruction.

Legislative Instruments

- Proclamation on Environnemental Impact Assesment.
- Establishment of Environmental Protection Organs proclamation no 295/2002
- Environnemental Pollution Control Proclamation no 300/2002
- Investment Proclamation No 37/1996.
- Public Health Proclamation 200/1996.
Environmental Protection Proclamations.


This document outlines the procedures for environmental impact assessment (EIA) and environmental management in Ethiopia. It aims at (i) providing all interested parties with a consistent approach to EIA (including project proponents, consultants, communities, NGOs, and the authorities); (ii) providing background information for the context of EIA in Ethiopia; (iii) assisting proponents in identifying their EIA responsibilities; (iv) assisting community and NGO groups in realizing their environmental rights with regard to EIA; (v) assisting the authorities in determining their roles and responsibilities as decision-makers in the EIA process; and (vi) assisting in decision-making with regard to cost and benefits of proposed development projects.

International Agreements to which Ethiopia is a party

- Vienna Convention for the Protection of the Ozone Layer, 1985
- Convention on Biological Diversity, ratified by the government on 5/04/1994 through proclamation 98/1994
- United Nations Convention to Combat Desertification, ratified by the government through proclamation No. 80/1992, signed on 15/10/1994
- Montreal Protocol on Ozone Depleting Substance, ratified by the government on 11/10/1994

Global Environmental Facility (GEF); the EPA has been officially designated as an Operational Focal Point for GEF projects in Ethiopia as of 11 October 1997. (Refer to the Environmental Guidelines by Contractors(Annex 6).

7. Methodology

This framework was prepared based on existing general literature, the Ethiopia Rural Electrification Project operation manual, Ethiopia Environmental Impact Assessment Guidelines, and the World Bank’s Safeguard Policies.

This ESMF will be used by the Energy Experts, Agricultural and Rural Development Experts, at the Wereda level operators or cooperatives who will be doing the screening work, as well as relevant Government Departments, Assemblies and their committees, the Ministry of Agriculture and Rural Development, Ethiopian Rural Energy and Development Center and other relevant stakeholders. It is designed to be a reference manual that provides an overall framework for the assessment and mitigation of environmental and social impacts resulting from the renewable energy investments.
8. Environmental Impacts

Construction activities related to the installation of renewable energy investments such as the construction of pipelines to connect micro-hydro systems to consumers' facilities or the installation of PV solar panels or the establishment of appropriate waste disposal sites, particularly for spent batteries, are likely to cause some negative environmental impacts such as soil erosion, soil and water pollution or loss of vegetation. While such impacts resulting from individual investments will be minimal, the magnitude of impacts is likely to increase significantly if one takes into consideration that some 220 potential sites for the installation of renewable energy investments have been identified and thus will have the potential for the generation of additional wastes. Therefore, it will be important to have qualified members of the Local Committees carry out the environmental and social screening process outlined in this ESMF.

9. Social Impacts

The project activities might have negative social impacts in the event that land is required for the installation of renewable energy investments or the establishment of appropriate waste disposal sites, particularly for spent batteries; compensation measures would be carried out as required by the RPF. Public health impacts might occur as a result of soil and water pollution, as well as dust and noise from construction activities. The magnitude of these impacts is likely to increase if one considers that about 220 sites have been identified.

10. Capacity building for Environmental and Social Management under the Project

To ensure that off-Grid rural Electrification activities are carried out in an environmentally and socially sustainable manner, which would serve as a resource for the off-Grid rural Electrification fund Secretariat who would coordinate the (i) implementation of the ESMF; (ii) environmental and social monitoring of off-Grid rural Electrification activities and implementation of remedial measures as necessary; and in collaboration with local committee and regional office (iii) organization of training in renewable energy technology waste management.

11. Environmental Aspects and project development

1. Environmental screening of projects will be carried out as part of the project initiation process (pre-appraisal). No project proposal without the results of the environmental screening will be submitted to-, or accepted by the Board of REES for authorising further project definition work.

Once the board approves the project definition work, the detailed field work – including an investment grade site evaluation – and the subsequent project definition work will cover all aspects of Environmental Appraisals, Management Plans and impact studies in conformity with WB 4.01 and 4.12.

In addition to the technical and financial chapters of the ‘bankable’ project proposal, there will be an environmental assessment section describing the results of environmental screening as well as subsequent mitigation measures, Management Plan actions etc. that has to be performed during both implementation and normal operations.
All “bankable proposals” submitted to the Trust Agent will have the environmental chapter, as well as all costs (if any) - arising from Environmental Management obligations - integrated into the project economic calculations.

On approval of the loan all environmental obligations will be communicated to subcontractors and suppliers in the tender documents. On completion of the implementation and of integration phases, a final acceptance and corresponding payments will be halted unless all obligations -including that of Environmental Management- will be met.

During the loan payback period the operator of the plant will be required to keep records and submit reports on technical and environmental performance of the installation at regular intervals. Regional REES officers will make a site inspection at least once a year. On any significant incident, the Regional REES Officer –together with a duly accredited environmental and/or OHS consultant - will visit the installation so as to qualify and quantify the mitigation measures.

Environmental assessment and capacity building measures have to be strengthened as follows:

(a) At the level of the Local Committee: the project would support the training, as necessary, of Regional or Zonal or Wereda Energy Experts and Agricultural and Rural Development Experts and members of the Subproject Appraisal Teams to ensure that there is sufficient capacity at the local level to carry out environmental and social screening and to develop simple mitigation measures;

(b) at the level of the relevant Regional Bureaus: the project would support either the training of existing staff at the relevant Regional Bureaus or the recruitment of qualified Environmental Assessment consultants to carry out the review function as described in step 4;

(c) At the federal level: the project would support the environmental assessment training for staff of the ERDPC responsible for the coordination of the environmental assessment work under the project;

(d) At the federal level establishment of an environmental units and establishment of environmental information and network system.

Proposed Training Program and effective implementation of the ESMF

The following environmental training would be necessary for the above groups to ensure that renewable energy investment project will be implemented in an environmentally and socially sustainable manner the training on design of environmental management plan and system, environmental impacts management of energy sector development. The training should be at local level for Regional and Wereda experts and abroad postgraduate program for federal level:

Environmental assessment process

- Screening process
- Assignment of environmental categories
- Rationale for using Environmental Checklists
- Report writing and presentation
- Preparation of terms of reference for carrying out EA
- How to review and approve EA reports
- The importance of public consultations in the EA process
How to monitor project implementation
Case studies

Environmental policies, procedures and sectoral guidelines

• Review and discussion of Ethiopia environmental policies, procedures, & legislation
• Review and discussion of the Bank’s safeguards policies
• Collaboration with institutions at the local, regional and national levels.

Selected topics on environmental protection

• Soil erosion
• Waste disposal – including battery, oil and asbestos disposal
• Ground and Surface Water management

In this regard, the training focused on:

(A) Training needs at the local level
(b) Training needs at the regional level
(c) Training needs at the federal level and postgraduate program
(d) Possible assistance from the EPA

The Secretariat, responsible for environment, would arrange for the following:

1. Review and approval of the results of the environmental and social screening form (Annex 1)
   And the mitigation measures proposed in the environmental and social checklist (Annex 2)
   Submitted by the Local Energy Expert;
2. Preparation of draft EIA terms of reference for off-Grid rural Electrification Fund Renewable
   Energy investment activities requiring a separate EIA;
3. Arrangements for the implementation of the Resettlement Policy Framework the event of land
   Acquisition;
4. Recruitment of qualified consultants to carry out EIAs, if required;
5. Recruitment of qualified consultants to prepare compensation plans, if required;
6. Disclosure of the EIA reports at relevant institutions that are accessible to the public in the
   Respective renewable energy investment.
7. Implementation of compensation measures as required under the RPF;
8. Carrying out of environmental and social monitoring in the context of the renewable energy
   Investment and making adjustments as appropriate; and
9. Arrangements for training and workshops in renewable energy waste management and how to
   Prepare a national renewable energy waste management plan.

Cost estimates

The costs for the proposed activities will be included in the costs for the Project. Cost estimates for the
proposed capacity building activities are as follows:

Funding

Post to be created:
• One Full time post of senior environmental expert focusing on issues at federal/national level as well as the organisational and training aspects at all levels. The senior expert should be stationed at EREDPC/REES federal bureau and report to the Director. 
Budget: 30,000 US$ for 3 years + Over Head cost (O/H)

• One Full time post of environmental expert focusing on organisational and procedural aspects and on evaluating/verifying the Environmental Section of Renewable Energy based bankable project proposals.
Budget: 20,000US$ for 3years + O/H

Training courses and workshops

Budget: 50,000 US$

• Post graduate training course in Environmental Management with options on Regulatory, normalisation, and networking aspects. The training course is likely to be held as special colloquium at an academic institution abroad.
Budget: 26,000 US$

• Post graduate training course in Environmental Management with options on Environmental Management Planning, Social and economic impact assessment of RE power projects, and special EIA procedures for RE power projects. The training course is likely to be held as special colloquium at an academic institution abroad.
Budget 26,000 US$

• Regional Training courses , Workshops for operational personnel and implementation of the ESMF (REES, Energy and Mining Bureaus etc) involved in project initiation, definition, implementation, and monitoring. 8 training courses and field visits for approximately 10-15 participants each.
Budget: 60,000 US$ for the four courses

• Zone level, Short training courses (crash-course) and implementation of the ESMF for members of administrative and business promotional entities active at Zone level. 8 training courses organised by regional REES/Energy and Mining bureaus with field visits for 10-15 participants each.
Budget 16,000 US$ for the eight courses

• Woreda level, compiling, printing and implementation of the ESMF a Best Practice Manual and conducting training courses for Woreda administrative personnel and local representatives of business development agencies. Up to 96 courses to be given by the personnel of the 8 regional REES offices/Energy and Mining bureaus over a period of 3 years. Courses are to be given shortly after loan approval was granted by the Trust Agent but installation work did not start.
Budget: 46,000US$ for the courses and
Budget: 20,000 US$ for drafting, translating, printing and distributing the Best Practice Manual and related material.

Budget Summary

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<tr>
<th>Post Senior Environmental Expert</th>
<th>30,000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Environmental Expert</td>
<td>20,000</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>(Inter)national Workshop</td>
<td>50,000</td>
</tr>
<tr>
<td>Post Grad course abroad</td>
<td>26,000</td>
</tr>
<tr>
<td>Post Grad course abroad</td>
<td>26,000</td>
</tr>
<tr>
<td>8 Regional Training and Workshop</td>
<td>60,000</td>
</tr>
<tr>
<td>Zone level training</td>
<td>16,000</td>
</tr>
<tr>
<td>Woreda level training</td>
<td>46,000</td>
</tr>
<tr>
<td>EIA studies</td>
<td>25,000</td>
</tr>
<tr>
<td>Best Practice guide</td>
<td>20,000</td>
</tr>
<tr>
<td>In various languages</td>
<td></td>
</tr>
<tr>
<td>Total without overheads</td>
<td>319,000</td>
</tr>
</tbody>
</table>

Carrying out of EIA Studies:

**EIA and Social:** Environmental Impact Assessments (EIAs) might be required for some off-Grid rural Electrification (Renewable Energy investment) activities and social studies to ensure they are environmentally and socially sustainable and the compensation measures are carried out consistent with the principles and procedures outlined in this document.

12. **Environmental Management Plan (EMP) for off-Grid rural Electrification Fund**

Institutions and administrative levels that will require support:

Institutions involved in the preparation of the project initiation process should have a clear understanding of the Environmental Management Plan and its implementation.

These Institutions are:

12.1 At Woreda level:

12.1.1 Woreda administration
- One person in charge of rural development (socio economic) and natural resources management,
- One person in charge of the energy desk (if there is one)

12.1.2 At Woreda level business support organisations:
- One person from a local business development agency (like Cooperatives) taking an active part in the creation and support of Rural Electrification Enterprises.

The training will have to be organised as projects are identified in the area.

12.2 At Zone level:

If environmental administration is practiced at this level, the officer(s) in charge should have a clear understanding of both the Environmental Management Plan and the Environmental Assessment procedures and techniques.
Training course to that effect will have to be organised at regional centres for at least one person from each Zone administration (in charge of environment) and one person from business/cooperative development agencies.

12.3 At Regional administration level:

12.3.1 Institutions directly in charge of Environmental Management and Environmental Impact Assessment (EIA) implementation (EPA Regional officers) should be trained so as to understand and appreciate environmental and social aspects of renewable energy projects.

12.3.2 Energy and Mining Bureaus should have a clear understanding of the Environmental Management Plan and the Environmental Assessment procedures and techniques. This knowledge will have to be used in the project initiation phase where the environmental aspects have a deciding role in choosing the site and the appropriate technology for the RE project.

12.3.3 REES Regional Bureaus (to be established) will be in charge of project initiation, definition and implementation and will have to verify the results of environmental screening as well as the implementations of the recommendations of EIA studies (if any). The post-implementation project monitoring is an integral part of the regional REES Bureau’s work; thus following the environmental performance of renewable energy installations and perform all related reporting to Federal REES office will be ensured by members of the office.

An appropriate training covering all aspects of Environmental Screening, Management and Monitoring should be provided:

- For two persons in each Regional REES Bureau,
- For at least one person in the Energy and Mining Bureau, and
- For at least one person in the EPA regional establishment.

12.4 National level

The principal activities at national level are linked to the (i) selection and control of developing prospective renewable energy based electrification projects, as well as (ii) setting the guide lines for the implementation of prescribed procedures and (iii) liaison with all entities directly concerned with environmental aspects of Rural Electrification.

In addition to the environmental protection work performed in the course of normal duties at the EPA, it is important to have at REES ‘s federal bureau a well trained energy and environment specialists who are:

- Well informed of legal obligations on environmental issues;
- Capable to collaborate in national efforts aimed at developing environmental norms/procedures for Renewable Energy installations;
- Can develop and oversee the implementation of screening procedures, Environmental Management Plans for Renewable Energy installations, monitoring activities, etc. on a national scale;
- Familiar with the technical and organisational requirements of Environmental Impact Assessment studies and managing inputs from external consultants;

An appropriate (in depth) training should be provided for at least two Officers of EREDPC /REES federal bureau, one of which is to focus
• On legal, collaboration and national norms aspects, and the other
• On the organisational and procedural aspects of Environmental Management, social and economic impacts of Renewable Energy projects.

In addition to the specific operational training needs at the EREDPC/REES federal bureau, other federal institutions/agencies actively participating in rural electrification actions (like EPA, EEA, Eepco the Federal Commission of Cooperatives, Small and Macro Enterprises Development Agency etc.), should be briefed of the various aspects of environmental issues related to Renewable Energy based rural electrification and to its social and economic consequences.

A national workshop, with the participation of federal stakeholders, addressing these issues is to be organised.

The purpose of the Environmental Management Plan (EMP) is to clarify environmental and social impacts/enhancements, mitigation measures to be undertaken and the institutional responsibilities for: (i) the identification of environmental and social impacts; (ii) the preparation and implementation of mitigation measures; (iii) monitoring the implementation of the mitigation measures; (iv) monitoring of monitoring indicators, and (v) capacity building to ensure the afore-mentioned responsibilities will be carried out effectively. Thus, the responsibilities at the local level, the regional level and the federal level, as well as time horizons and cost estimates in implementing the EMP, the project will also take into account the Bank’s safeguard policy (annex 5) to ensure that their requirement are met. The EMP Summary Table is given below.

<table>
<thead>
<tr>
<th>No.</th>
<th>Environmental/ Social Impacts</th>
<th>Proposed mitigation Measures</th>
<th>Roles and Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Relocation or loss of shelter</td>
<td>Preparation and implementation of a compensation and/or Resettlement action plan in accordance with the Resettlement Policy Framework (RPF).</td>
<td>Wereda Administrator, Regional Government, MoARD, EAP/REES</td>
</tr>
<tr>
<td>2</td>
<td>Loss of assets or access to assets</td>
<td>Preparation and implementation of a compensation and/or Resettlement action plan in accordance with the Resettlement Policy Framework (RPF).</td>
<td>Wereda Administrator, Regional Government, MoARD, EAP/REES</td>
</tr>
<tr>
<td>3</td>
<td>Loss of income sources, and or means of livelihood</td>
<td>Preparation and implementation of a compensation and/or Resettlement action plan in accordance with the Resettlement Policy Framework (RPF).</td>
<td>Wereda Administrator, Regional Government, MoARD, EAP/REES</td>
</tr>
<tr>
<td>5</td>
<td>Loss of vegetation</td>
<td>Selective clearing of project sites, reforestation, preservation of protected plant species, use of alternative</td>
<td>Contractors, Wereda Administrator, Regional Government, MoARD, EAP/REES</td>
</tr>
<tr>
<td></td>
<td>Sources of energy, use of environmental friendly technologies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------------------</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Loss of Soil</td>
<td>Stabilization of loose soil, controlled excavation, preservation of vegetation cover, controlled transportation of raw materials, appropriate land scaping.</td>
<td>Wereda Administrator, Regional Government, Ministry of ARD, EAP/REES</td>
</tr>
<tr>
<td>7</td>
<td>Loss of fragile ecosystems</td>
<td>Conduct feasibility studies before construction, use expert knowledge of ecologists, introduction of ecosystem conservation projects, fencing</td>
<td>Contractors, MoARD, EPA, Project staff, Forester, Energy Expert.</td>
</tr>
<tr>
<td>8</td>
<td>Asbestos pollution (from roofing sheets)</td>
<td>Seal in plastic containers and dispose in appropriate landfills or designated sites, avoid exposing personnel to dust by providing them with appropriate equipment during disposal. Training in (i) how to recognize asbestos; and (ii) how to handle asbestos</td>
<td>Wereda Administrator, Regional Government, MoARD, EAP/REES</td>
</tr>
<tr>
<td>9</td>
<td>Soil and water pollution resulting from the accumulation of solid and liquid waste</td>
<td>Controlled disposal of wastes and effluent by use of appropriate disposal facilities, use of appropriate drainage structures, use of cleaner technologies, proper storage of materials</td>
<td>Contractors, Wereda Administrator, Regional Government, MoARD, EAP/REES</td>
</tr>
<tr>
<td>10</td>
<td>Dust, Emissions, Strong Light, Noise and Vibration</td>
<td>Controlled operation times, use of appropriate equipment, proper orientation of lights, use of alternative materials, use water sprinklers to control dust, use of scrubbers</td>
<td>Contractors, Energy Expert, EPA, Health Officer.</td>
</tr>
<tr>
<td>11</td>
<td>Occurrence of Communicable diseases</td>
<td>Provision of potable water supplies and sanitation facilities, capacity building in sanitation and health issues</td>
<td>Contractors, MoHealth, Wereda Administrator, Regional Government, MoARD, EAP/REES</td>
</tr>
<tr>
<td>12</td>
<td>Loss of natural and cultural heritage.</td>
<td>Conduct feasibility studies, fencing, introduce proper antiquity education programmes</td>
<td>Wereda Administrator, Regional Government, MoARD, EAP/REES</td>
</tr>
<tr>
<td>13</td>
<td>Loss of animals and aquatic life.</td>
<td>Minimize vibrations and strong noise, enforcement of parks and wildlife law</td>
<td>Wereda Administrator, Regional Government, MoARD, EAP/REES</td>
</tr>
</tbody>
</table>
Definition of Roles and Responsibilities

Wereda Administrator and committee

Local Committees at the Woreda Level: i.e. responsibilities of the qualified Energy Desk Experts and Rural Experts

- The Energy Expert will be responsible for completing the environmental and social screening lists (Annex 1) and the environmental and social checklists (Annex 2) to be able to identify and mitigate the potential environmental and social impacts of construction and rehabilitation activities. As required, they will receive environmental training to be able to carry out this task.

- The Local Environmental Committee (Wereda Level) will assist in the above tasks; its members will receive environmental training as required.

- The community Committee will be responsible for (i) determining the environmental category and the extent of environmental work required based on the screening results; (ii) approving the review recommendations made by the relevant sector committees on the basis of the screening results; and (iii) the approval of EIA reports for new construction, if required.

- Public consultations will be carried out by the Wereda Administrator.

- The contractors are responsible for the implementation of the majority of mitigation measures, including safe disposal of asbestos.

Rural Town level:

- Qualified staff at the rural town will be responsible for carrying out the environmental and social screening of planned activities using Annex 1.

- Qualified staff at the rural towns and villages will be responsible for determining the appropriate environmental category for the proposed activity and to arrange for the appropriate level of environmental work to be carried out.

- Qualified contractors and service providers will be responsible for implementing mitigation measures such as construction site waste management or the safe disposal of old construction materials, including asbestos.

- The rural towns and villages will arrange for the conduct of EIAs as may required based on the screening results.
- The rural towns will be responsible for restoring borrow pits.
Annex 1: ENVIRONMENTAL AND SOCIAL SCREENING FORM

This environmental and social screening form has been designed to assist in the initial screening of off-renewable energy investments supported by the Grid rural Electrification Fund. The form is designed to place information into the hands of implementers and reviewers so that environmental and social impacts and related mitigation measures, if any, can be identified and/or that requirements for further environmental analysis can be determined. The screening form contains information that will allow reviewers to determine the characterization of the prevailing local biophysical and social environment with the aim to assess the potential impacts on it. The screening form will also identify potential socio-economic impacts that will require mitigation measures and/or compensation.

If the screening form has any “Yes” entries, or evidently unjustified “No” entries, the proposal would need to adequately explain and demonstrate that the issue has been managed to avoid unacceptable adverse effects/impacts.

Name of Village/rural Town/Area in which the facility is to be constructed: ________________

Name of Contact Person: ______________________

Name of Wereda: ______________________

Name of Approving Authority: ______________________

Name, job title, and contact details of the person who is responsible for filling out this form:

Name: ______________________

Job Title: ______________________

Telephone number: ______________________

Fax number: ______________________

E-Mail address: ______________________

Names, jobs title, and contact details of the local authorities and potentially affected persons who have been consulted during the completion of this form:

Date: ______________________

Signatures: ______________________
PART A: Brief Description of the off-Grid rural Electrification Fund/ Micro Hydro Power and Solar PV/ Activity

Please provide information on the type and scale of the off-Grid rural Electrification Fund activity (area, required land, and approximate size of total building area).

Provide information about actions needed during the construction of the micro hydro power and PV solar systems, including support ancillary structures and activities required to build them, e.g. need to quarry or excavate borrow materials, laying pipes/lines to connect to energy or water source, access road etc.

Describe how the micro hydro power and PV solar systems will operate including support/activities and resources required to operate them, e.g. roads, disposal site, water supply, energy requirement, human resource etc.

Part B: Brief Description of the Environmental Situation and Identification of Environmental and Social Impacts

1. Brief Description of the proposed renewable energy investment

Please provide information on the type and size of the micro hydro power or PV solar systems, and indicate the area of land to be acquired, if necessary.

________________________________________________________________________

2. The Natural Environment

(a) Describe the land formation, topography, and vegetation adjacent to the micro hydro power or PV solar systems

________________________________________________________________________

(b) Estimate and indicate where vegetation might need to be cleared

________________________________________________________________________

(c) Are there any environmentally sensitive areas or threatened species (specify below) that could be adversely affected by the micro hydro power or PV solar systems?

   (i) Intact natural forests Yes_____ No_____
   (ii) Riverine forest Yes_____ No_____
   (iii) Wetlands (lakes, rivers, seasonally inundated areas) Yes_____ No_____
   (iv) How far are the nearest Wetlands (lakes, rivers, and seasonally inundated Areas)? _______________ km
   (v) Habitats of endangered species for which protection is required under national Laws and/or international agreements. Yes_____ No_____
   (vi) Others (describe). Yes_____ No_____
3. RIVERS AND LAKES ECOLOGY

Is there a possibility that, due to construction/rehabilitation and operation of the micro hydro power or PV solar system, the river and Lake Ecology will be adversely affected? Attention should be paid to water quality and quantity; the nature, productivity and use of aquatic habitats, and variations of these over time.
Yes______ No______

4. PROTECTED AREAS

Does the area around the micro Hydro power or PV solar system (or components thereof) occur within/adjacent to any protected areas designated by the Government (National Park, national reserve, world heritage site etc.)?
Yes______ No______

If the renewable energy facility is outside of, but close to, any protected area, is it likely to adversely affect the ecology within the protected area (e.g., interference with the migration routes of mammals or birds)?
Yes______ No______

5. GEOLOGY AND SOILS

Based upon visual inspection and/or available literature, are there areas of possible geologic or soil instability (erosion prone, landslide prone, subsidence-prone)?
Yes ______ No______

Based upon visual inspection and/or available literature, are there areas that have risks of large scale increase in soil salinity?
Yes______ No______

6. Contamination and Pollution Hazards

Is there a possibility that the micro hydro power or PV solar system will be a source of contamination and pollution (from spent batteries, etc)
Yes ______________ No ______________

7. LANDSCAPE/AESTHETICS

Is there a possibility that the micro hydro power or PV solar system will adversely affect the aesthetic attractiveness of the local landscape?
Yes______ No______

8. Historical, archaeological or cultural heritage sites.
Based on available sources, consultation with local authorities, local knowledge and/or observations, could the facility alter any historical, archaeological or cultural heritage sites or require excavation near same?

Yes____ No____

9. Resettlement, Compensation and/or Land Acquisition

Will involuntary resettlement, land acquisition, relocation of property, or loss, denial or restriction of access to land and other economic resources be caused by the construction and operation of the proposed micro hydro power or PV solar system?

Yes____ No____

If “Yes” OP 4.12 Involuntary Resettlement is triggered. Please refer to the Resettlement Policy framework (RPF) for guidance and appropriate mitigation measures to be taken.

10. Loss of Crops, Fruit Trees and Household Infrastructure

Will construction or rehabilitation of the proposed micro hydro power or PV solar system result in the permanent or temporary loss of crops, fruit trees, and household infrastructure (such as granaries, outside toilets and kitchens, etc)?

Yes____ No____

11. Noise pollution during Construction and Operations

Will the operating noise level exceed the allowable noise limits?

Yes____ No____

12. Solid or Liquid Waste

Will the facility generate solid or liquid wastes?

Yes____ No____

If “Yes”, does the facility design include a plan for their adequate collection and disposal?

Yes____ No____

13. Blocking of access, routes or disruption of normal operations in the general area

Will the installation of micro hydro power or PV solar systems interfere with or block access routes etc (for people, livestock and wildlife) or traffic routing and flows?

Yes ________________ No ________________

14. Degradation and/or depletion of resources during construction and operation
Will the operation involve use of considerable amounts of natural resources (construction materials, water spillage, land, energy from biomass etc.) or may lead to their depletion or degradation at points of source?

Yes ____________ No ________________

15. Occupational health hazards

Will the construction of the micro hydro power or PV solar system requires large number of staff and laborers; large/long-term construction camp?

Yes ______________ No ________________

Are the construction activities prone to hazards, risks and could they result in accidents and injuries to workers during construction or operation?

Yes ______________ No ________________

16. Will the micro hydro power or PV solar system require frequent maintenance and/or repair

Yes ______________ No ________________

17. PUBLIC CONSULTATION

Has public consultation and participation been sought?

Yes____ No____

If “Yes”, describe briefly the measures taken to this effect.

Part C: Mitigation Measures

Upon completion of Annex 1, for all “Yes” responses, the qualified Energy Expert or agriculture and Rural Development Expert should describe briefly the measures taken to this effect.
### Annex 2: Environmental and Social Impacts Checklist

For each proposed construction, rehabilitation operation and maintenance activity fill out the corresponding section of the checklist; Table 1 below lists several mitigation measures; these can be amended as necessary.

**Table 1: Environmental checklist for construction/Rehabilitation for renewable energy Technology facilities.**

<table>
<thead>
<tr>
<th>Off-Grid REF Activity</th>
<th>Questions to be answered</th>
<th>YES</th>
<th>NO</th>
<th>If YES,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction &amp; Rehabilitation of Off-Grid REF facilities (micro hydro power and PV solar systems – combine with section below)</td>
<td>Is any land cultivated or uncultivated, natural resources, structures or other property, used or not used for any purposes, in any way affected? Will any vegetation be lost during rehabilitation? Are adequate waste disposal services (for cement, paint, engine oil, battery acid etc.) provided for during rehabilitation? Will the construction site be cleaned regularly, using water to control dust? Is a schedule in place to clean drains regularly? (Where do the drains belong?) Will refuse generated during construction be cleaned up? Will first aid materials or facilities be available during rehabilitation? Refer to i) The implantation of the RPF; ii) mitigation measures presented on page 18; and iii) consult annex 5, and other measures as might be appropriate.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation Renewable energy technology</td>
<td>Is there a Renewable energy technology Waste Management Plan? Is there a potential for ground water pollution? Are there any important environments in the vicinity of that could be impacted negatively? Are there any impacts due to</td>
<td>YES</td>
<td>NO</td>
<td>If yes, please refer to the plan for appropriate mitigation and monitoring measures.</td>
</tr>
<tr>
<td>Construction &amp; Operation of Micro hydro power facilities</td>
<td>smoke/air pollutants and toxic ash residues from open burning? Are there any impacts on the public’s health and the health of workers? Are there any visual impacts of waste management transport, treatment and disposal practices? Are there any odors from waste degradation? Are there human settlements and land uses (i.e. agriculture, grazing, forestry, recreation) near the as well as sites of cultural, religious or historical importance?</td>
<td>Is any land cultivated or uncultivated, natural resources, structures or other property, used or not used for any purposes, in any way affected? Will any vegetation be lost during construction and operation? Are the facilities located at the minimum distance from the nearest MHP source, according to criteria to be determined? Does the design of the MHP take into account local soil and water table conditions, so as to prevent contamination according to procedures to be determined? Does a maintenance plan and schedule exist, and is the community knowledgeable about the need to sanitarily maintain the latrine?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Annex 3: Compensation in accordance with the RPF

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>Potential environmental and social impacts</th>
<th>Mitigation Measures</th>
<th>Responsibility for implementing the Mitigation Measures</th>
<th>Responsibility for monitoring implementation of the mitigation measures</th>
<th>TIME</th>
<th>Cost estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction &amp; operation of Solar PV</td>
<td>Air pollution loss health</td>
<td>Environmental guideline</td>
<td>Contractors</td>
<td>Energy expert</td>
<td>As necessary</td>
<td>Included in Project</td>
</tr>
<tr>
<td></td>
<td>Land acquisition for Big system</td>
<td>Compensation based or existing</td>
<td>Service Provider/ Woreda Administrator</td>
<td>Regional Agriculture and Rural Developement. Office</td>
<td></td>
<td>As Necessary</td>
</tr>
<tr>
<td></td>
<td>Soil contamination from need Battery disposal</td>
<td>Dispose battery recycling plant</td>
<td>Owners</td>
<td>Energy Expert and Health Officer.</td>
<td></td>
<td>As Necessary</td>
</tr>
<tr>
<td>Construction and operation of MHP</td>
<td>Soil erosion,</td>
<td>Environmental Guideline contractors</td>
<td>Contractors</td>
<td>Energy Expert</td>
<td>As Necessary</td>
<td>Included in Project cost</td>
</tr>
<tr>
<td></td>
<td>Land acquisition</td>
<td>Compensation based or existing</td>
<td>Service Provider/ Woreda Administrator</td>
<td>Regional Agriculture and Rural Developement. Office/ Land Office/</td>
<td></td>
<td>As necessary</td>
</tr>
<tr>
<td></td>
<td>Increase in soil erosion; Siltation cause down stream channel</td>
<td>Re-vegetation/ Reforestation</td>
<td>Owens</td>
<td>Agriculture office</td>
<td></td>
<td>As necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Utilize appropriate clearing techniques</td>
<td>Service Provider</td>
<td>Energy and Agriculture Office</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Studies</td>
<td>Address environmental issues</td>
<td>Recruitment of EIA consultants to carry out EIA</td>
<td>REES Secretariat</td>
<td>EREDPC</td>
<td>As needed</td>
<td>As required</td>
</tr>
<tr>
<td></td>
<td>Address social issues</td>
<td>Recruitment of Social consultants to prepare compensation plans</td>
<td>REES Secretariat</td>
<td>EREDPC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
N.B

PV systems may use batteries to store the electricity they produce. The most common battery types in use are lead-acid and nickel-cadmium. Lead and cadmium are extremely toxic elements. When the batteries are in use, there is little danger of these elements being ingested or absorbed by humans or animals. Anyone using a PV system with batteries should be sure that the batteries can and will be recycled, so they will not end up in landfills or incinerators, where they can pose an environmental risk. The lead and cadmium industries actively promote the recycling of batteries. There are alternative battery technologies available, such as nickel-iron, nickel-metal hydride, lithium-ion, and chloride, which pose fewer environmental hazards. The electrolytes in wet cell batteries should be neutralized when disposed of to avoid environmental problems.
Annex 4: EIA Terms of Reference (TORs)

I. Introduction and context

This section will be completed at the appropriate time, and will provide the necessary information with respect to the context and methodological approaches to be undertaken.

II. Objectives of the study

This section will (i) outline the objectives and particular activities of the planned Off-Grid REF activity; and (ii) indicate which activities are likely to have environmental and social impacts that will require appropriate mitigation.

III. Terms of Reference

The consultant will perform the following tasks:

(a) Carry out a description of the biophysical characteristics of the environment in which the planned Off-Grid REF activity will take place, and highlight the major constraints that need to be taken into account during construction as well as during operation of the facility;

(b) Assess the potential environmental and social impacts due to construction or rehabilitation activities, and recommend mitigation measures as appropriate, including cost estimates;

(c) Assess the potential environmental and social impacts due to the provision of water supply and sanitation facilities that might be needed for the planned facility and make appropriate recommendations;

(d) Assess the need for liquid and solid waste collection, disposal and management in the facility, and make recommendations accordingly;

(e) Carry out a review of the respective national environmental policies, legislation, regulatory and administrative frameworks in conjunction with the World Bank’s ten safeguard policies, indicate which of these policies is triggered by the planned Off-Grid REF activity, identify any gaps that might exist, and make recommendations as to how potential gaps should be bridged in the context of the planned Off-Grid REF activity;

(f) Review the Conventions and Protocols to which the respective country is a signatory;

(g) Assess the country’s environmental assessment and management capacity, as well as the capacity to implement the proposed mitigation measures, and make appropriate recommendations, including potential capacity building and training needs, and their costs;

(h) Prepare an Environmental Management Plan (EMP) for the planned Off-Grid REF activity. The EMP should outline (a) potential environmental and social impacts resulting from the Off-Grid REF activity; (b) proposed mitigation measures; (c) institutional responsibilities for implementation of the mitigation measures; (d) monitoring indicators; (e) institutional responsibilities for monitoring the implementation of the mitigation measures; (f) cost estimates for these activities; and (g) time horizons for implementing the EMP.

(i) Public consultations. EIA results and proposed mitigating measures will then be shared with the potentially affected population, NGOs, local authorities and the private sector working in the area where the activity will take place. Minutes of this consultation will form an integral part of the report.
## Annex 5: Summary of the World Bank’s Safeguard Policies

<table>
<thead>
<tr>
<th>Annex</th>
<th>Policy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OP 4.01 Environmental Assessment</strong></td>
<td>The objective of this policy is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts on its area of influence. OP 4.01 covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and trans boundary and global environment concerns.</td>
<td>Depending on the project, and nature of impacts a range of instruments can be used: EIA, environmental audit, hazard or risk assessment and environmental management plan (EMP). When a project is likely to have sectoral or regional impacts, sectoral or regional EA is required. The Borrower is responsible for carrying out the EA. Activities planned under the project will be carried out in accordance with OP 4.01.</td>
</tr>
<tr>
<td><strong>OP 4.04 Natural Habitats</strong></td>
<td>This policy recognizes that the conservation of natural habitats is essential to safeguard their unique biodiversity and to maintain environmental services and products for human society and for long-term sustainable development. The Bank therefore supports the protection, management, and restoration of natural habitats in its project financing, as well as policy dialogue and economic and sector work. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. Natural habitats are land and water areas where most of the original native plant and animal species are still present. Natural habitats comprise many types of terrestrial, freshwater, coastal, and marine ecosystems. They include areas lightly modified by human activities, but retaining their ecological functions and most native species.</td>
<td>This policy is triggered by any project (including any sub-project under a sector investment or financial intermediary) with the potential to cause significant conversion (loss) or degradation of natural habitats, whether directly (through construction) or indirectly (through human activities induced by the project). The project will not carry out any construction and/or rehabilitation activities that will have negative effects on natural habitats and/or critical natural habitats.</td>
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<tr>
<td><strong>OP 4.36 Forests</strong></td>
<td>The objective of this policy is to assist borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development and protect the vital local and global environmental services and values of forests. Where forest restoration and plantation development are necessary to meet these objectives, the Bank assists borrowers with forest restoration activities that maintain or enhance biodiversity and ecosystem functionality. The Bank assists borrowers with the establishment of environmentally appropriate, socially beneficial and economically viable forest plantations to help meet growing demands for forest goods and services.</td>
<td>This policy is triggered whenever any Bank-financed investment project (i) has the potential to have impacts on the health and quality of forests or the rights and welfare of people and their level of dependence upon or interaction with forests; or (ii) aims to bring about changes in the management, protection or utilization of natural forests or plantations. The Project will not carry out any construction and/or rehabilitation activities that might negatively affect the health and quality of forests or will bring about changes in their management.</td>
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<tr>
<td><strong>OP 4.09 Pest Management</strong></td>
<td>The objective of this policy is to (i) promote the use of biological or environmental control and reduce reliance on synthetic chemical pesticides; and (ii) strengthen the capacity of the country’s regulatory framework and institutions to promote and support safe, effective and environmentally sound pest management. More</td>
<td>The policy is triggered if: (i) procurement of pesticides or pesticide application equipment is envisaged (either directly through the project, or indirectly through on-lending, co-financing, or government counterpart</td>
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specifically, the policy aims to (a) Ascertain that pest management activities in Bank-financed operations are based on integrated approaches and seek to reduce reliance on synthetic chemical pesticides (Integrated Pest Management (IPM) in agricultural projects and Integrated Vector Management (IVM) in public health projects. (b) Ensure that health and environmental hazards associated with pest management, especially the use of pesticides are minimized and can be properly managed by the user. (c) As necessary, support policy reform and institutional capacity development to (i) enhance implementation of IPM-based pest management and (ii) regulate and monitor the distribution and use of pesticides.

**OP 4.11 Cultural Property**

The objective of this policy is to assist countries to avoid or mitigate adverse impacts of development projects on physical cultural resources. For purposes of this policy, “physical cultural resources” are defined as movable or immovable objects, sites, structures, groups of structures, natural features and landscapes that have archaeological, pale ontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above ground, underground, or underwater.

This policy applies to all projects requiring a Category A or B Environmental Assessment under OP 4.01.

The project will not use pesticides or herbicides in the maintenance of the right-of-way, or for any other purposes.

**OP 4.20 Indigenous Peoples**

The objective of this policy is to (i) ensure that the development process fosters full respect for the dignity, human rights, and cultural uniqueness of indigenous peoples; (ii) ensure that they do not suffer adverse effects during the development process; and (iii) ensure that indigenous peoples receive culturally compatible social and economic benefits.

The policy is triggered when the project affects the indigenous peoples (with characteristics described in OD 4.20 Para 5) in the project area.

The project will not carry out any construction and/or rehabilitation activities that might have negative impacts on cultural property.

**OP 4.12 Involuntary Resettlement**

The objective of this policy is to (i) avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; (ii) assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them; (iii) encourage community participation in planning and implementing resettlement; and (iv) provide assistance to affected people regardless of the legality of land tenure.

This policy covers not only physical relocation, but also any loss of land or other assets resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; (iii) loss of income sources or means of livelihood, whether or not they affected people must move to another location. This policy also applies to the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

The project has prepared and disclosed a Resettlement Policy Framework (RPF); its principles and procedures are to be applied in the event of land acquisition due to the planned funding; (ii) the project may affect pest management in a way that harm could be done, even though the project is not envisaged to procure pesticides. This includes projects that may (i) lead to substantially increased pesticide use and subsequent increase in health and environmental risk; (ii) maintain or expand present pest management practices that are unsustainable, not based on an IPM approach, and/or pose significant health or environmental risks.

The project will not carry out any construction and/or rehabilitation activities that might have negative impacts on indigenous peoples.
| OP 4.37 Safety of Dams | The objectives of this policy are as follows: For new dams, to ensure that experienced and competent professionals design and supervise construction; the borrower adopts and implements dam safety measures for the dam and associated works. For existing dams, to ensure that any dam that can influence the performance of the project is identified, a dam safety assessment is carried out, and necessary additional dam safety measures and remedial work are implemented. | This policy is triggered when the Bank finances: (i) a project involving construction of a large dam (15 m or higher) or a high hazard dam; and (ii) a project which is dependent on an existing dam. For small dams, generic dam safety measures designed by qualified engineers are usually adequate. The project does not include any activities that involve the construction/rehabilitation of dams. |
| OP 7.50 Projects in International Waters | The objective of this policy is to ensure that Bank-financed projects affecting international waterways would not affect: (i) relations between the Bank and its borrowers and between states (whether members of the Bank or not); and (ii) the efficient utilization and protection of international waterways. The policy applies to the following types of projects: (a) Hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial and similar projects that involve the use or potential pollution of international waterways; and (b) Detailed design and engineering studies of projects under (a) above, include those carried out by the Bank as executing agency or in any other capacity. | This policy is triggered if (a) any river, canal, lake or similar body of water that forms a boundary between, or any river or body of surface water that flows through two or more states, whether Bank members or not; (b) any tributary or other body of surface water that is a component of any waterway described under (a); and (c) any bay, gulf strait, or channel bounded by two or more states, or if within one state recognized as a necessary channel of communication between the open sea and other states, and any river flowing into such waters. The project will not carry out any construction and/or rehabilitation activities that could have an impact on international waterways. |
| OP 7.60 Projects in Disputed Areas | The objective of this policy is to ensure that projects in disputed areas are dealt with at the earliest possible stage: (a) so as not to affect relations between the Bank and its member countries; (b) so as not to affect relations between the borrower and neighboring countries; and (c) so as not to prejudice the position of either the Bank or the countries concerned. | This policy will be triggered if the proposed project will be in a “disputed area”. Questions to be answered include: Is the borrower involved in any disputes over an area with any of its neighbors. Is the project situated in a disputed area? Could any component financed or likely to be financed as part of the project situated in a disputed area? The project will not carry out any construction and/or rehabilitation activities in disputed areas. |
Annex 6: Environmental Guidelines – Environmental Guidelines for Contractors
General Environmental Management Conditions

General

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Energy expert to fulfill his obligation within the requested time, the Owner reserves the Right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.

2. Notwithstanding the Contractor’s obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an EMP. In general these measures shall include but not be limited to:

(a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.

(b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.

(c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.

(d) Prevent bitumen, oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.

(e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.

(f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archeological or historical importance during the execution of works, immediately report such findings to the Supervising Energy expert so that the appropriate authorities may be expeditiously contacted for fulfillment of the measures aimed at protecting such historical or archaeological resources.

(g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.

(h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.

(i) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.

(j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.

(k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.

3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.
4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / Strategy to ensure effective feedback of monitoring information to project management so that Impact management can be implemented properly, and if necessary, adapt to changing and Unforeseen conditions.

5. Besides the regular inspection of the sites by the Supervising Energy expert for adherence to the Contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance With these environmental conditions and any proposed mitigation measures. State environmental Authorities may carry out similar inspection duties. In all cases, as directed by the Supervising Energy Expert, the Contractor shall comply with directives from such inspectors to implement measures Required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment And compensation for socio-economic disruption resulting from implementation of any works.

**Work site/Campsite Waste Management**

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous Chemicals shall be bonded in order to contain spillage. All waste containers, litter and any other waste Generated during the construction shall be collected and disposed off at designated disposal sites in Line with applicable government waste management regulations.

7. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated Before being discharged into the drainage system in line with applicable government water pollution Control regulations.

8. Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.

9. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures Such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

10. Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a Daily basis.

11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the Supervising Energy Expert, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

**Material Excavation and Deposit**

12. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.

13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.

14. New extraction sites:

   a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas.

   b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.

   c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.

   d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.
c) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.

f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.

15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.

17. The Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable EMP, in areas approved by local authorities and/or the Supervising Energy expert.

18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the Supervising Energy expert and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

Rehabilitation and Soil Erosion Prevention

19. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.

20. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.

21. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.

22. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.

23. Locate stockpiles where they will not be disturbed by future construction activities.

24. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.

25. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.

26. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.

27. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.

28. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.

29. Minimize erosion by wind and water both during and after the process of reinstatement.

30. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.

31. Re-vegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.
Water Resources Management

32. The Contractor shall at all costs avoid conflicting with water demands of local communities.

33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.

34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.

35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities down stream, and maintains the ecological balance of the river system.

36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.

37. Wash water from washing out of equipment shall not be discharged into water courses or road drains.

38. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

Traffic Management

39. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.

40. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.

41. Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

Blasting

42. Blasting activities shall not take place less than 2km from settlement areas, cultural sites, or wetlands without the permission of the Supervising Energy expert.

43. Blasting activities shall be done during working hours, and local communities shall be consulted on the proposed blasting times.

44. Noise levels reaching the communities from blasting activities shall not exceed 90 decibels.

Disposal of Unusable Elements

45. Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the Supervising Energy expert. The Contractor has to agree with the SE which elements are to be surrendered to the Client’s premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.

46. As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the Supervising Energy expert and the local authorities concerned.

47. AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.

48. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for
Health and Safety

49. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.

50. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.

51. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

Repair of Private Property

52. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner’s satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

53. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the Supervising Energy expert. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

Contractor’s Environment, Health and Safety Management Plan (EHS-MP)

54. Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works. The Contractor’s EHS-MP will serve two main purposes:

- For the Contractor, for internal purposes, to ensure that all measures are in place for adequate EHS management, and as an operational manual for his staff.
- For the Client, supported where necessary by a Supervising Energy expert, to ensure that the Contractor is fully prepared for the adequate management of the EHS aspects of the project, and as a basis for monitoring of the Contractor’s EHS performance.

55. The Contractor’s EHS-MP shall provide at least:

- a description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP;
- a description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
- a description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and
- the internal organizational, management and reporting mechanisms put in place for such.

56. The Contractor’s EHS-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor’s EHS-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

EHS Reporting

57. The Contractor shall prepare bi-weekly progress reports to the Supervising Energy expert on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a Contractor EHS report is given below. It is expected that the Contractor’s reports will include information on:
- EHS management actions/measures taken, including approvals sought from local or national authorities;
- Problems encountered in relation to EHS aspects (incidents, including delays, cost consequences, etc. as a result thereof);
- Lack of compliance with contract requirements on the part of the Contractor;
- Changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects; and
- Observations, concerns raised and/or decisions taken with regard to EHS management during site meetings.

58. It is advisable that reporting of significant EHS incidents be done “as soon as practicable”. Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keep his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendices to the bi-weekly reports. Example formats for an incident notification and detailed report are given below. Details of EHS performance will be reported to the Client through the Supervising Energy expert reports to the Client.

Training of Contractor’s Personnel

59. The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHS-MP, and are able to fulfil their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP.

General topics should be:
- EHS in general (working procedures);
- emergency procedures; and
- social and cultural aspects (awareness raising on social issues).

Cost of Compliance

60. It is expected that compliance with these conditions is already part of standard good workmanship and state of art as generally required under this Contract. The item “Compliance with Environmental Management Conditions” in the Bill of Quantities covers these cost. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable EHS impact.

Example Format: EHS Report

Contract: Period of reporting:

EHS management actions/measures:
Summarize EHS management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), EHS training, specific design and work measures taken, etc.

EHS incidents:
Report on any problems encountered in relation to EHS aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.
**EHS compliance:**
Report on compliance with Contract EHS conditions, including any cases of non-compliance.

**Changes:**
Report on any changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects.

**Concerns and observations:**
Report on any observations, concerns raised and/or decisions taken with regard to EHS management during site meetings and visits.

**Signature (Name, Title Date):**
Contractor Representative

**Example Format: EHS Incident Notification**

Provide within 24 hrs to the Supervising Engineer

**Originators Reference No:**

**Date of Incident:**

**Location of incident:**

**Name of Person(s) involved:**

**Employing Company:**

**Type of Incident:**

**Description of Incident:**
Where, when, what, how, who, operation in progress at the time (only factual)

**Immediate Action:**
Immediate remedial action and actions taken to prevent reoccurrence or escalation

**Signature (Name, Title, Date):**
Contractor Representative
Example Format: Detailed EHS Incident Report

The Incident Notification should be followed up by a Detailed EHS Incident Report containing the following information where applicable:

1. Incident Summary

2. Specific Details
   - Date
   - Time
   - Place
   - Weather/Visibility
   - Road conditions

3. Persons Involved
   - Name/s
   - Age/s
   - Experience
   - Date joined Company
   - Last Medical Check
   - Current Medical Treatment
   - Evidence of Drugs/Alcohol
   - Last Safety Meeting attended
   - Infringements/Incidents record

4. Equipment Involved

5. Description of Incident

6. Findings of Investigation Team Interim/Final
   - Investigation Team Members
   - Persons Interviewed
   - Recommendations & Remedial Actions
   - Investigation Methodology

7. Signature (Name, Title, Date):

8. Attachments
   - Photographs
   - Witness Statements and Incident Notification Report
Annex 7. The Screening Process

The sections below (steps 1-7) illustrate the stages of the environmental and social screening process. The extent of environmental work required for off-Grid rural Electrification activities such as the installation of Micro-Hydro power and PV solar will depend on the results of this screening process. It will be the purpose of this screening process to (i) determine which investment activities are likely to have negative environmental and social impacts; (ii) determine appropriate mitigation measures for activities with adverse impacts; (iii) identify those activities requiring separate EIAs; (iv) outline institutional responsibilities for the review and approval of screening results, implementation of the proposed mitigation measures, and the preparation of separate EIA reports; (v) monitoring environmental parameters during the construction of the investments and their subsequent operation and maintenance.

The extent of environmental work that might be required prior to the commencement of construction and operation of renewable energy facilities will depend on the outcome of the screening process described below.

**Fig. 1 The Screening process**

**Steps 1: Screening**

Completion of the initial screening form (Annex 1) and the environmental and social checklist, including the proposal of appropriate mitigation measures (Annex 2) will be carried out by qualified members of the Local Committees, for example, Energy Experts (From Regional Office or Zonal, Wereda) or Rural Experts, as may be the case at the local level. In addition to potential environmental and social impacts, the screening results will also indicate the need for land acquisition; and the type of public consultations that were conducted during the screening exercise.

The completed annexes, along with a copy of the investment design plans, will be submitted via the relevant Regional Bureaus to the Environmental or Energy Expert of the Appraisal Team who will review the screening results and make recommendations.
Step 2: Assigning the appropriate Environmental Categories

Based on the screening results, the appropriate environmental category - B, or C - for the proposed off-Grid rural Electrification activity will be determined, which in turn will determine the scope of environmental work required. This step will be carried out by the qualified Environmental Specialist on the Appraisal Team who has been requested to review the screening results in step 1 and to make recommendations.

The assignment of the appropriate environmental category will consistent with provisions in OP 4.01 Environmental Assessment. Consistent with this operational policy, construction and rehabilitation activities under Energy Access Project (EAP) Rural Electrification Fund causing impacts on the human and biophysical environment are likely to be categorized as B, meaning that their potential adverse environmental impacts on human populations or environmentally important areas – including wetlands, forests, grasslands, and other natural habitats – are site-specific, few if any of the impacts are irreversible, and can be mitigated readily.

Energy Access Project (EAP) Rural Electrification Fund activities classified as “B” will require some environmental work, either the application of simple mitigation measures, or the preparation of a separate EIA.

Environmental category “C” indicates that the potential environmental and social impacts are considered insignificant, not requiring mitigation. For example, replacements of spare parts might be categorized as “C” if the environmental and social screening results indicate that such activities will have no significant environmental and social impacts, and therefore do not require additional environmental work. Thus, if the screening form has ONLY “No” entries, the proposed activity will not require further environmental work, and the national expert for environment will recommend approval of this proposal, and implementation can proceed immediately.

Environmental category “A” indicates that the proposed activity is likely to have significant, irreversible impacts and will require a full EIA. However, since the Energy Access Project (EAP) Rural Electrification Fund Project is categorized as a “B”, it will not finance any activities that would call for the assignment of the environmental category “A”.

Step 3: Carrying out Environmental Work

After reviewing the screening results, and having determined the appropriate environmental category and hence, the scope of the required environmental work, the Environmental Expert or Specialist responsible for the review of the screening results will make a recommendation as to whether (a) no environmental work will be required; (b) the application of simple mitigation measures will suffice; or (c) a separate Environmental Impact Assessment (EIA) needs to be carried out. Depending on the screening results, the following environmental work can be carried out:

Environmental and Social Checklist: The Environmental and Social Checklist (Annex 2) will be completed by qualified members of the Local Committees, that is the Energy Experts (Regional or Zonal or Wereda) or the Agriculture and Rural Expert in consultation with the relevant local community and authorities and potentially affected persons; they will carry out this activity in conjunction with the preparation of investment design plans. The checklist will outline simple mitigation measures for environmental and social impacts that do not require a full EIA.
Carrying out Environmental Impact Assessment (EIA): In some cases, the results of the environmental and social screening process may indicate that the planned activities are more complex and therefore will require the preparation of a separate EIA. Qualified Environmental Assessment consultants will carry out the EIA. The consultants would be recruited by the Energy Access Project (EAP) Off-grid Rural Electrification Fund Secretariat.

The EIA will identify and assess the potential environmental impacts of the proposed construction activities, evaluate alternatives, as well as design appropriate mitigation measures, management, and monitoring measures. These measures will be captured in the Environmental Management Plan (EMP) which will be prepared as part of the EIA for each facility.

The preparation of the EIA and the EMP will be carried out in consultation with the relevant stakeholders, including potentially affected persons. The Energy Access Project (EAP) Off-Grid Rural Electrification Fund Secretariat will arrange for the (i) preparation of EIA terms of reference; (ii) recruitment of qualified service providers to carry out the EIA; (iii) conduct of public consultations as per EIA terms of reference; and (iv) review and approval of the EIA/EMP through the national EIA approval process.

**Step 4: Review and Approval**

Review.: The Environmental Expert of the relevant Regional Bureau, will carry out a review of (i) the results and recommendations presented in the environmental and social screening forms; (ii) the proposed mitigation measures presented in the environmental and social checklists; and (iii) as appropriate, EIAs to ensure that all environmental and social impacts have been identified and effective mitigation measures have been proposed. In complex cases, the relevant Regional Bureau will consult with the EPA and other Federal experts as appropriate.

Recommendation for Approval/Disapproval: Based on the results of the above review process, and discussions with the relevant stakeholders and potentially affected persons, the Environmental Experts of relevant Regional Bureau will make recommendations to the Rural Electrification Fund Secretariat at federal level for approval/disapproval of the review results and proposed mitigation measures.

Approval/Disapproval: The Off-Grid Rural Electrification Fund Secretariat, in coordination with the EPA as necessary, will be responsible for officially approving/disapproving the recommendations of the review and inform the relevant stakeholders accordingly. The timing of this approval process will be coordinated with the timetable of the approval of subprojects as described in the POM.

**Step 5: Public Consultation and Disclosure**

Public consultations are critical in preparing an effective proposal for the construction of off grid Rural Electrification Fund project / Renewable energy /activities that might have impacts on the environment and the population. The first step is to hold public consultations with the local communities (Regional or Woreda Level Energy Expert/ Agriculture and Rural Development Expert) and all other interested/affected parties during the screening process and in the course of preparing the EIA. These consultations should identify key issues and determine how the concerns of all parties...
will be addressed in the terms of reference for the EIA which might be carried out for construction proposal. The results of the consultations will be incorporated into the EIA report and will be made accessible to the public through the Rural Electrification Fund Secretariat.

**Step 6: Monitoring**

Environmental monitoring needs to be carried out during the construction of the Renewable Energy Investment (Off-Grid Rural Electrification Fund) as well as during their operation and maintenance activities as part of the Project’s monitoring system. The Rural Electrification Fund Secretariat will ensure that the monitoring of environmental and social indicators is carried out, and that remedial measures are carried out in cases where the monitoring results indicate deterioration in the quality of, for example, groundwater resources or soils. Particular attention will be paid to the disposal of Batteries and other wastes that might be generated by the project.

Energy/Electricity facilities in rural (Off-grid) areas: off-Grid rural Electrification Project will primarily operation electricity facilities in rural areas, and there are plans to construct and disseminate a new Renewable energy Investment (PV solar and Micro Hydropower) the sites will be determined.

In the course of rehabilitation/construction and operation and maintenance of renewable Energy investments in rural (Off-grid) areas, designated members of the Local Committees at the Wereda level will be responsible for the monitoring of (i) the work of the contractors, (ii) provisions for reduction of noise; (iii) construction site waste management (proper storage of construction materials, sanitation, solid waste disposal, (iv) safe disposal of wastes (old construction materials, malfunctioning service infrastructure, etc.); (v) as required, the implementation of recommendations made in EIAs for new construction; (vi) the implementation of plans for the restoration of the construction sites once rehabilitation has been completed as.

**Step 7: Monitoring Indicators**

In order to be able to assess the effectiveness of renewable energy investment/ PV and Micro Hydropower/ activities, including the construction and rehabilitation of renewable energy investments and their subsequent operation and maintenance, the following monitoring indicators are proposed:

- Number of facilities for storage, collection, and disposal of battery, oil & other waste.
- Safe solid waste disposal either on-site or through private waste management companies
- Frequency of maintenance requests from renewable energy activity constructed and rehabilitated under off-Grid rural Electrification.
- Number of individuals at renewable energy facilities who have received training in disposal waste management
- These monitoring indicators will be incorporated into the off-Grid rural Electrification Project operation and Monitoring Manuel.
- For Micro hydro operation :
  - Make sure that the diverted water for the Micro hydropower turbine return to the river course within a short distance.
  - Poundage sometimes creates stagnant water ideal for mosquito breeding.
  - Safeguarding the terrain from erosion at the entrance and tailrace canals, erosion problem have to be controlled.
- For PV :
  - Battery recycling plant, better handled by private business (The lead used for local soldering purpose) needs incentive.