GEORGIA FORESTS DEVELOPMENT PROJECT
LABORATORY ZONE

SECTORAL ENVIRONMENTAL ASSESSMENT

FINAL REPORT

May 2001

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# TABLE OF CONTENTS

## VOLUME I

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acronyms and definitions</td>
<td>vi</td>
</tr>
<tr>
<td>0. Summary</td>
<td>x</td>
</tr>
<tr>
<td>Foreword</td>
<td>1</td>
</tr>
<tr>
<td>1 Introduction</td>
<td>3</td>
</tr>
<tr>
<td>1.1 Background</td>
<td>3</td>
</tr>
<tr>
<td>1.2 Project Objectives and Components</td>
<td>3</td>
</tr>
<tr>
<td>1.3 Project Steps</td>
<td>8</td>
</tr>
<tr>
<td>1.4 Objectives of the SEA</td>
<td>10</td>
</tr>
<tr>
<td>1.5 Methodology of GIS</td>
<td>10</td>
</tr>
<tr>
<td>1.6 Description of Georgia</td>
<td>12</td>
</tr>
<tr>
<td>2 Baseline Information</td>
<td>14</td>
</tr>
<tr>
<td>2.1 Social Assessment</td>
<td>14</td>
</tr>
<tr>
<td>2.2 Physical Description of the Lab Zone</td>
<td>27</td>
</tr>
<tr>
<td>2.3 Forest Fund, Forest Resources, Forest Use</td>
<td>46</td>
</tr>
<tr>
<td>2.4 Biodiversity</td>
<td>60</td>
</tr>
<tr>
<td>2.5 Cultural Heritage</td>
<td>82</td>
</tr>
</tbody>
</table>

## VOLUME 2

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Legislation</td>
<td>83</td>
</tr>
<tr>
<td>3.1 Existing Conditions</td>
<td>83</td>
</tr>
<tr>
<td>3.2 Impact Analysis and Mitigation Measures</td>
<td>95</td>
</tr>
<tr>
<td>3.3 Significance of Impacts after Implementation of Mitigation Measures</td>
<td>98</td>
</tr>
<tr>
<td>4 Institutions</td>
<td>100</td>
</tr>
<tr>
<td>4.1 Existing Conditions</td>
<td>100</td>
</tr>
<tr>
<td>4.2 Impact Analysis and Mitigation Measures</td>
<td>115</td>
</tr>
<tr>
<td>4.3 Significance of Impacts after Implementation of Mitigation Measures</td>
<td>117</td>
</tr>
<tr>
<td>5 Forest Ownership and Liability</td>
<td>118</td>
</tr>
<tr>
<td>5.1 Existing Conditions</td>
<td>118</td>
</tr>
<tr>
<td>5.2 Impact Analysis and Mitigation Measures</td>
<td>120</td>
</tr>
<tr>
<td>5.3 Significance of Impacts after Implementation of Mitigation Measures</td>
<td>122</td>
</tr>
<tr>
<td>6 Forest Management Planning</td>
<td>123</td>
</tr>
<tr>
<td>6.1 Existing Conditions</td>
<td>123</td>
</tr>
<tr>
<td>6.2 Impact Analysis and Mitigation Measures</td>
<td>124</td>
</tr>
<tr>
<td>6.3 Significance of Impacts after Implementation of Mitigation Measures</td>
<td>126</td>
</tr>
<tr>
<td>7 Protective, Tourist and Cultural Use of Forest</td>
<td>127</td>
</tr>
<tr>
<td>7.1 Existing Conditions</td>
<td>127</td>
</tr>
<tr>
<td>7.2 Impact Analysis and Mitigation Measures</td>
<td>127</td>
</tr>
</tbody>
</table>
7.3 Significance of Impacts after Implementation of Mitigation Measures 129

8 Forest Products, including Illegal Wood Cuts 130
   8.1 Existing Conditions 130
   8.2 Impact Analysis and Mitigation Measures 131
   8.3 Significance of Impacts after Implementation of Mitigation Measures 134

9 Infrastructure and Wood Harvesting Systems 135
   9.1 Existing Conditions 135
   9.2 Impact Analysis and Mitigation Measures 135
   9.3 Significance of Impacts after Implementation of Mitigation Measures 138

10 Biodiversity and Landscape 139
   10.1 Existing Conditions 139
   10.2 Impact Analysis and Mitigation Measures 140
   10.3 Significance of Impacts after Implementation of Mitigation Measures 143

11 Sustainable Forest Management 144
   11.1 Existing Conditions 144
   11.2 Impact Analysis and Mitigation Measures 146
   11.3 Significance of Impacts after Implementation of Mitigation Measures 146

12 Public Participation in Forest Management and Gender Issues 147
   12.1 Existing Conditions 147
   12.2 Impact Analysis and Mitigation Measures 151
   12.3 Significance of Impacts after Implementation of Mitigation Measures 152

13 Monitoring and Management Plan Guidelines 153
   13.1 Environmental Management Plan and Monitoring Guidelines 153
   13.2 Environmental and Forests Monitoring 153

14 Conclusions - Tentative Scenario Comparison 176
   14.1 "Existing Project" Scenario 176
   14.2 "No Project" Scenario 177
   14.3 "Integrated Forest Development" Scenario 177

15 References and Bibliography 179

VOLUME ANNEXES

Annex 1 Lists of Preparers and Individuals Consulted
Annex 2 Forests Development Project (P044800) Project Summary (December 2000)
Annex 3 Forests Development Project (P044800) Project Summary (May 2001)
Annex 4 Forests Development Project (P044800) Budget Component (March 2001)
Annex 5 Law on Environmental Permit – Law on the State Ecological Expertise
Annex 6 The World Bank Operational Policies: OP 4.01 on Environmental Assessment
The World Bank Environmental Sourcebook: Sectoral Environmental Assessment

Annex 7 Montreal Process Criteria and indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests

Annex 8 Public Consultation and Disclosure Plan Guidelines

Annex 9 SEA Terms of Reference – Tasks Breakdown

Annex 10 Report on Public Meetings

List of figures

Figure 1 Laboratory Zone

Figure 2 General Scheme of the Laboratory Zone

Figure 3 Aerial photos - 2000

Figure 4 Aerial photos - 1989

Figure 5 3D model of Oni area

Figure 6 Geology of Oni area (based on the map compiled by S. Geguchadze, I. Gvineria, E Kalinini, R Beradze, 1970)

Figure 7 Oni – 3D aerial photo

Figure 8 Soil Scheme (based on the map compiled by T. Urushadze, 1999)

Figure 9 Geology Scheme

Figure 10 Forest Species (based on the map compiled by N. Ketskhoveli, 1959)

Figure 11 Fauna Scheme - Mammals

Figure 12 Fauna Scheme - Reptilians

Figure 13 Fauna of the degraded landscape

Figure 14 Forests Districts in the Laboratory Zone

Figure 15 Cultural and Natural Heritage

Figure 16 Recreation Scheme (based on the map compiled by G Ushveridze, P. Kavkasidze, 1965)
LIST OF ACRONYMS AND TERMINOLOGY

asl Above Sea Level
BSAP Biodiversity Strategy and Action Plan
CBO Community Based Organization
CITES Convention on International Trade in Endangered Species of Wild Fauna and Flora
EA Environmental Assessment
EIA Environmental Impact Assessment
EMP Environmental Management Plan
EP Environmental Permit
ERDAS Earth Resource Data Analysis System
ESRI Environmental Systems Research Institute
FAO Food and Agriculture Organization
FDF Forestry Development Fund
FDP Forests Development Project
FMIS Forest Management Information System
FMP Forest Management Plan
FSDC Forest Sector Development Center
FSU Former Soviet Union
GEF Global Environmental Facility
GEL Georgian Lari
GoG Government of Georgia
GIS Geographic Information System
GORBI Georgian Opinion Research Business International
GRP General Road Planning
IDA International Development Association
IUCN World Conservation Union
LUP Land Use Plans
LSDFM Local office of State Department of Forest Management
MFRI Mountain Forestry Research Institute
MoE Ministry of Environment
NACRES Noah's Ark Center for the Recovery of Endangered Species
NEAP National Environmental Action Plan
NFDP National Forest Development Program
NGO Non-Governmental Organization
OD World Bank's Operational Directives
PA Public Awareness
PAD Project Appraisal Document
PADP Protected Areas Development Project
PCD Project Concept Document
PCDP Public Consultation and Disclosure Plan
PFE Permanent Forest Estate
PMU Project Management Unit
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPF</td>
<td>Project Preparation Fund</td>
</tr>
<tr>
<td>PR</td>
<td>Public Relations</td>
</tr>
<tr>
<td>RS</td>
<td>Remote Sensing</td>
</tr>
<tr>
<td>SA</td>
<td>Social Assessment</td>
</tr>
<tr>
<td>SDFM</td>
<td>State Department of Forest Management</td>
</tr>
<tr>
<td>SDLM</td>
<td>State Department of Land Management</td>
</tr>
<tr>
<td>SDPA</td>
<td>State Department of Protected Areas, Nature Reserves and Hunting Farms</td>
</tr>
<tr>
<td>SEA</td>
<td>Sectoral Environmental Assessment</td>
</tr>
<tr>
<td>SEE</td>
<td>State Ecological Expertise</td>
</tr>
<tr>
<td>SEMP</td>
<td>Site Environmental Management Plan</td>
</tr>
<tr>
<td>SFM</td>
<td>Sustainable Forest Management</td>
</tr>
<tr>
<td>sp</td>
<td>Specie</td>
</tr>
<tr>
<td>spp</td>
<td>All species belonging to identified genus</td>
</tr>
<tr>
<td>ToR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environmental Programme</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
</tr>
<tr>
<td>USSR</td>
<td>Union of Soviet Socialist Republics</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
<tr>
<td>WWF</td>
<td>World Wide Fund for Nature</td>
</tr>
</tbody>
</table>
### DEFINITION OF TERMS USED IN THE REPORT

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Afforestation</strong></td>
<td>Establishment of a tree crop in an area, which it has always, or long been absent. Equivalent to reforestation;</td>
</tr>
<tr>
<td><strong>Annual cut</strong></td>
<td>The allowable quantity of wood that can be harvested from a specified area of land;</td>
</tr>
<tr>
<td><strong>Biodiversity</strong></td>
<td>Or biological diversity: the diversity of plants, animals, and other living organisms, including genes, species, ecosystems, and the evolutionary and functional processes that link them;</td>
</tr>
<tr>
<td><strong>Clear cutting</strong></td>
<td>The process of removing all trees, large and small, in a stand in one operation. If followed by forest regeneration, natural or planted, clear cutting is not synonym of deforestation;</td>
</tr>
<tr>
<td><strong>Cut (in road construction)</strong></td>
<td>The excavation required to lower the natural ground line to the desired road profile;</td>
</tr>
<tr>
<td><strong>Deforestation</strong></td>
<td>Change of forest with depletion of tree crown cover to less than 10 percent. The clearing of forests and conversion of land to non-forest usage;</td>
</tr>
<tr>
<td><strong>District</strong></td>
<td>Politico-administrative unit or forest management unit. The precise use of this word and the distinction of &quot;sub-district&quot; or &quot;region&quot; depend on the context and on the person. It can be the source of misunderstandings. The <em>Forest Code</em> defines forest district as a territory of the State Forest Fund separated out for the purposes of better management;</td>
</tr>
<tr>
<td><strong>Environmental Assessment</strong></td>
<td>EA is a process whose breadth, depth and type of analysis depend on the nature, scale and potential environmental impact of the proposed project. EA evaluates a project’s potential environmental risks and impact in its area of influence.</td>
</tr>
<tr>
<td><strong>Environmental Impact Assessment</strong></td>
<td>Environmental Impact Assessment (EIA) – is an instrument to identify and assess the potential environmental impacts of a proposed project, evaluate alternatives, and design appropriate mitigation, management, and monitoring measures.</td>
</tr>
<tr>
<td><strong>Forest Fund</strong></td>
<td>Integrity of forests and their resources owned by the State and forests under different types of ownership;</td>
</tr>
<tr>
<td><strong>Forest inventory</strong></td>
<td>An integral part of the State Forest Fund registry system;</td>
</tr>
<tr>
<td><strong>Forestry</strong></td>
<td>The practice of managing and using the natural resources in association with forest lands;</td>
</tr>
<tr>
<td><strong>Forest user</strong></td>
<td>A person authorized for forest use by the Georgian legislation;</td>
</tr>
<tr>
<td><strong>Fuel wood</strong></td>
<td>Wood used for heating and cooking;</td>
</tr>
<tr>
<td><strong>Harvesting</strong></td>
<td>Practice of felling and removing trees from the forest;</td>
</tr>
<tr>
<td><strong>Laboratory Zone</strong></td>
<td>Or lab zone: a &quot;Laboratory Zone&quot; has been defined for the Georgia Forests Development Project in the Central Caucasus and covers only the 4 districts of Oni, Ambrolauri, Lentekhi and Tsageri. The 5th Lab Zone district – Mestia - is not covered by the present study;</td>
</tr>
<tr>
<td><strong>Local Forest Fund</strong></td>
<td>A part of the Usable State Forest Fund legally regulated by the local governing and self governing bodies in accordance with <em>the Forest Code</em> and Georgian legislation;</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Logging</td>
<td>The process of harvesting timber from a forest, logging has come to be used in the context of unsustainable cutting, which is cutting that is not focused on long-term timber supplies;</td>
</tr>
<tr>
<td>Pilot Zone</td>
<td>Territory surrounding of Oni area, where 3D model was made in GIS;</td>
</tr>
<tr>
<td>Protective forests</td>
<td>Forest areas, which are important for the protection of human life or valuable goods against natural hazards. Not the same as “protected forests” (forests to be protected for their biodiversity values);</td>
</tr>
<tr>
<td>Reafforestation</td>
<td>Establishment of a tree crop in an area, which it has always or long been absent. Equivalent to afforestation;</td>
</tr>
<tr>
<td>Secondary Wood Materials</td>
<td>Roots, bark, branches, brushwood, stumps, and seeds of wood species;</td>
</tr>
<tr>
<td>Sectoral Environmental</td>
<td>SEA is a much needed complement to project-specific EAs in development planning. Where project EAs focus on the impacts of specific investment and often treat sector strategic planning as given, SEA offer an opportunity for sector-wide environmental analysis before investment priorities have been determined.</td>
</tr>
<tr>
<td>Environmental Assessment</td>
<td>SEA avoids the inherent limitations of project-specific EAs in addressing issues related to policy and planning and the legal and institutional framework. By moving upstream in the planning process to a stage where major strategic decisions have not yet been made, SEA offers better opportunities not only for analyzing existing policies, institutions, and development plans in terms of environmental issues, but also for supporting environmentally sound sector-wide investment strategies.</td>
</tr>
<tr>
<td>Silviculture</td>
<td>The science and practice of establishment and maintenance of forests and woodlands, to meet the diverse needs and values of landowners and society;</td>
</tr>
<tr>
<td>Silvicultural treatment</td>
<td>Any activity on forest stands to meet stand-specific objectives;</td>
</tr>
<tr>
<td>Stand</td>
<td>A community of trees sufficiently uniform in species composition, age, arrangement and condition to be distinctive as a group from the forest or other growth on the adjoining area, and thus forming a silviculture or management entity;</td>
</tr>
<tr>
<td>State Forest</td>
<td>Forest owned by the State;</td>
</tr>
<tr>
<td>State Forest Fund</td>
<td>Integrity of State Forests as well as lands and resources attributed to these forests;</td>
</tr>
<tr>
<td>Sustainable forest management</td>
<td>The present report suggests that Georgia sets its own definition of Sustainable forest management, see chapter 11;</td>
</tr>
<tr>
<td>Sustained yield</td>
<td>Amount of wood products, revenue, or wildlife, etc. that can be used over a long time without depleting the resource;</td>
</tr>
<tr>
<td>Thinning</td>
<td>Forest management activity; cutting made in a stand to improve the average form of remaining trees and accelerate increment of their diameter by suitable selection;</td>
</tr>
<tr>
<td>Timber</td>
<td>Round wood used for building, furniture making (in opposition to fuel wood and pulp wood);</td>
</tr>
<tr>
<td>Usable State Forest Fund</td>
<td>The State Forest Fund apart from Protected Areas of the State Forest Fund.</td>
</tr>
</tbody>
</table>
0 Executive summary

0.1 The Georgia Forests Development Project

The main objective of the Project is to establish sound forest management system that would maximize the contribution of Georgia's forests to economic development and rural poverty reduction on an environmental friendly basis.

The Project is expected to be implemented over a period of 5 to 6 years, starting in February 2002, and will include the following five components:

<table>
<thead>
<tr>
<th>Components</th>
<th>Estimated Total Cost (US$ m)</th>
<th>% of Total Cost</th>
<th>IDA (US$ m)</th>
<th>of which PPF for 2000-01 (US$ m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Support to national forest policy</td>
<td>6.8</td>
<td>25%</td>
<td>6.0</td>
<td>0.34</td>
</tr>
<tr>
<td>formulation and implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(B) Support to efficient and participatory</td>
<td>3.3</td>
<td>13%</td>
<td>2.7</td>
<td>0.51</td>
</tr>
<tr>
<td>forest management planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(C) Support to effective forest protection</td>
<td>9.5</td>
<td>35%</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>and afforestation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(D) Promotion of private sector participation</td>
<td>6.0</td>
<td>22%</td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>in sustainable forest management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(E) Project management</td>
<td>1.4</td>
<td>5%</td>
<td>1.0</td>
<td>0.14</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>27.0</td>
<td>100%</td>
<td>20.0</td>
<td>0.99</td>
</tr>
</tbody>
</table>

0.2 Baseline

Social Assessment

The social study identifies major potential social impacts related with the Project implementation and development of the forest sector, reviews and highlights social assessment completed by GORBI, underlines issues identified by stakeholders and proposes management and mitigation plans.

In the Laboratory Zone, one major concern is the general poverty of the population.

Living standard according to the regions of the study area can be given as follows:

<table>
<thead>
<tr>
<th>Living standard</th>
<th>Oni</th>
<th>Lentekhi</th>
<th>Ambrolauri</th>
<th>Tsageri</th>
</tr>
</thead>
<tbody>
<tr>
<td>The poorest</td>
<td>50%</td>
<td>45.3%</td>
<td>23.3%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Middle poor</td>
<td>32%</td>
<td>42%</td>
<td>70.7%</td>
<td>46.6%</td>
</tr>
<tr>
<td>The least poor</td>
<td>18%</td>
<td>12.7%</td>
<td>6%</td>
<td>52.7%</td>
</tr>
</tbody>
</table>

Due to the energy crisis, taking place in the 90s, excess pressure has been imposed on forests in the vicinity of populated areas. The main source of energy is wood in the Laboratory Zone, which is cause by the location and economic situation. Around 90% of energy for cooking and heating of the local population comes for the wood.
Geology - Geography

Georgia is located between the southern side of the Great Caucasus and the northern side of the Lesser Caucasus, between 43°35' and 41°03' latitude, and between 41°00' and 46°43' longitude.

Covering a territory of 69'700 km², Georgia is a typical mountainous country. About 54% of the territory are mountains, 33% - foothills and mounds, and only 13% are occupied by plains. The average altitude of the country’s territory is 1,230 m above sea level. Almost one-fifth of the territory is occupied by high-mountains, which explains a low demographic density, with approximately 5 million inhabitants.

The study area (Laboratory Zone) consists of four, medium and high mountainous administrative districts - Lentekhi, Tsageri, Oni and Ambrolauri.

Climate, the complicated relief of the region conditions the variety of climate. The following topographic features directly affect the climate:

1. Altitude that ranges from 150 to 4,000 m;
2. Mountain massif of the Great Caucasus range as well as its adjacent ranges;
3. Existence of glaciers and snow cover in the high-mountainous part;
4. Black Sea that keeps the warmth and large amounts of precipitation within the region;
5. Distinctive division between the plain and mountainous parts of the relief, orientation of the major ranges and their steep slopes.

Erosion is a considerable problem in the mountain areas, where along with natural processes, significant contributions come from cultivation of steep slopes (without terracing), impact from overgrazing and uncontrolled, disorganized cutting of trees.

Hydrography, the Central Caucasus is located within the catchments of the Rioni River, belonging to the Black Sea Basin.

Geomorphology, according to the scheme of geomorphologic division of Georgia, Oni and Lentekhi districts are located mainly within the zone of folded ranges and massifs, composed by terrigenous-volcanic formations of Jurassic and Tertiary periods - represented by clay-schists, sandstones, porphyrites, tuff breccias, rarely limestone.

Stratigraphy, the major watershed range in the Lab Zone mostly coincides with the Caucasus geological axis. Eastwards of the Mamisoni pass the watershed range deviates from the geological axis to the South and enter the stratigraphic-tectonic zone of the Great Caucasus range.

Deposits of Mineral Resources, among deposits of mineral resources developed throughout the study area, the most significant are Chordi barite deposit in the Oni district and Lukhumi arsenic deposit in the Ambrolauri district. Except the mentioned deposits a large deposit of manganese is located in Shkmeri (Ambrolauri district), which has been explored geologically, but has never been exploited.

Forest Fund, Resources and Uses

The entire standing volume of the State Forest Fund in the Laboratory Zone is 47,7 million m³, for a total area covering up to 462,000 ha.

Dominant species in the Lab Zone are: Abies nordmanniana, Picea, Pinus, Fagus, Quercus, Carpinus, Castanea, Acer, Alnus glutinosa (alnus barbarata in mountains), Betula.
During the last decade, due to financial restrictions, the regeneration of the forest has not been practiced and the process takes place mainly naturally. Taking into account environmental conditions of cut areas, the regeneration with relevant species proceeds satisfactorily. It should be mentioned that natural restoration occurs only in the areas where cattle grazing does not take place. Monitoring of natural restoration, as well as pastures, is not carried out. An intensive cattle grazing is practiced within 2 km radius from the populated areas. These places constitute approximately 10% of the entire forest fund i.e. 30,000 ha of the study territory.

**Biodiversity**

It is quite difficult to draw a clear line between floristic and faunistic regions represented in the Caucasus due to the mutual penetration of species. Considering biodiversity, the Caucasus is characterized by its complex, sometimes mosaic spatial structure of biological communities representing different biogeographic zones.

Flora and fauna are very diverse, due to the country’s location.

0.3 **Laws**

Laws on forestry and more specifically the Forest Code provide the legal basis that has to be improved for a real sustainable forest management. Improvements are needed to bring forestry and environmental protection to coincide.

Considering Georgia’s legal, institutional and political situation, a major characteristic is the imperfect enforcement of existing laws.

0.4 **Forest Ownership and Liability**

Today, forests belong to the State and, according to the Georgian Legislation (*Forest Code*, (Article 7)), in all legal affairs concerning the Forest Fund, the State is represented by the following entities:

- The Ministry of Environment,
- The State Department of Forest Management,
- The State Department of Protected Areas, Nature Reserves and Hunting Farms and their territorial units,
- Local governing and self-governing bodies.

Property rights to the Georgian Forest Fund may be held by the State, the Patriarchy of Georgia and a physical or legal entity by the private law.

The Georgian State Forest Fund is a State property and its privatization will be regulated by the law "*On the privatization of Georgian Forests*", which is not already adopted.

0.5 **Forest Management Planning**

Traditional Soviet-type forest management plans have been elaborated for 10-year period, for Oni - in 1991-92, Ambrolauri - in 1995-96, Tsageri and Lentekhi - in 1996-97. However, due to a variety of reasons (mainly because of budgetary restrictions), they have not been fully carried out.

Forest management plans in the broad sense (including periodic forest inventory, classification of forest functions based on comprehensive assessment of needs and values
of the forest resources, determination of management objectives on the basis of multiple-use strategies, monitoring of ongoing operations and periodic updating of the plans) are needed for the preservation of the forests and the successful development of the forest sector.

Adoption of a Forest Management Information System, elaboration of land-use plans on a district basis and development of multiple use and sustainable forest management plans will provide a much improved management basis, where environmental considerations can be reflected and accounted. Mitigation measures are proposed to improve land-use planning. Forest management planning (and control) will have positive environmental impacts if its objectives are adhered to and its results are implemented correctly. Additional measures are proposed for further improvement of the environmental impact of forest management planning.

0.6 Protective, Tourist and Cultural Use

Mountain forests, such as forests of the Lab Zone, exert a protective function against natural hazards (such as avalanches, landslides, rock falls, erosion, etc.) and this was recognized in the traditional forest management plans, according to which all forests were classified as protective forests of some kind. Cutting restrictions were imposed depending on the forest conditions, but these limitations have not been stated explicitly, which is one of the main reasons why opponents have criticized the traditional management plans.

Non-monetary value of the role of forests for protection against natural hazards of the existing infrastructure (roads, bridges, buildings) and for tourist and cultural uses has not been evaluated. It is probably much higher than the timber revenues.

0.7 Forest Products

Mountain forests are presently exploited (as a green mine) in an extensive way for the extraction of various wood and non-wood products. Defective or dying trees are harvested in small quantities and on scattered places (so called sanitary cuts) in forests accessible by tractors. Individuals near villages and roads collect firewood. Commercial harvesting operations make up officially less than 10% of the wood harvested.

Contrary to popular belief, according to these figures the forests are underused with regard to wood harvesting, and the growing stock should be on the increase. Poor harvesting techniques are to be blamed for the local degradation of forest conditions, for soil erosion on steep slopes and soil compaction. In addition, illegal wood cutting (wood harvested without official permit) is taking place in various ways and places. The extent of these illegal activities is unknown (with estimates for the Lab Zone varying from a low 3'500 m$^3$ to unsubstantiated claims as high as 100'000 m$^3$ per year).

0.8 Infrastructure and Wood Harvesting System

Infrastructure (roads, buildings) and wood harvesting systems (skidders, skyline ropeways, trucks, chainsaws, etc.) used for tending and harvesting the forest resources of the Lab Zone are rudimentary and in acute need of repair and maintenance. The same is true for the main district roads connecting towns in the valleys.

The Forests Development Project would finance a demonstration program of low-impact harvesting and transportation systems, as well as forest road rehabilitation (190 km in the Laboratory Zone) and construction (40 km) program, using equipment and construction methods minimizing the impact on sensitive landscapes and ecotypes. Training in the use of environmentally friendly road construction and harvesting systems will be financed.
0.9 Biodiversity and Landscape

Thanks to the diversity of the natural conditions (altitude, exposition, soils, water availability) characteristic of this mountainous region, the Central Caucasus, is that it represents a shelter for many species of flora and fauna.

Existing reports show lack of solid data on fauna. Nevertheless, indices show decreases in large mammals' populations (some of which must now be considered as endangered) due to poaching.

The present forest use patterns have complex, both positive and negative impacts on biodiversity. It is hereby important to underline the difference between deforestation and logging (see Definitions at the beginning of the report). Deforestation, a process that would constitute one of the severest threats to biodiversity, is nowadays hardly found in the Lab Zone. On the contrary, the total forest area is probably increasing in the region.

0.10 Sustainable Forest Management

The concept of "sustainable development" has become widely accepted on the international policy level. Some definitions put the emphasis rather on its growth aspect, such as: economic growth that benefits present and future generations without adversely affecting biological and other natural resources\(^1\). Others rather underline the social and the environmental dimensions: improving the quality of human life while living within the carrying capacity of supporting ecosystem\(^2\). The concept of "Sustainable Forest Management" enjoys similarly a global consensus on the general policy level.

It appeared quite soon that more precise definitions are necessary, which take into account the diversity of situations. Different international processes are attempting to settle precise criteria and indicators with which it will be possible for a country to assess its own situation and improvements. The discussions lead in the Montreal Process, as they dealt with temperate and boreal forests, may be of interest for Georgia and gave a general framework for the present study. The 7 criteria used in the Montreal Process were used as a framework to gather the data on which the present study is based.

0.11 Public Participation

According to the Chapter X of the Forest Code, representatives of population and public organizations have a right to:

a) receive full, reliable and timely information on current condition of the State Forest Fund;

b) fully participate in the planning of forest management of the State Forest Fund (Article 35.1).

At present, no detailed procedure for ensuring public participation in decision-making process exists.

Available reports do not mention any participation in the forest management planning taking place in the 90s in the Laboratory Zone.

In order to ensure sustainability and effectiveness of the Forests Development Project in long term, considerable attention should be paid to public participation issues.

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1 FAO, 1995: Environmental Assessment of Albania Forestry Project
0.12 Environmental Management Plan and Monitoring Guidelines

This chapter presents the environmental management plan and monitoring guidelines, which have been developed in response to the analysis of impacts. These guidelines incorporate revealed, ecological, social, geological, etc. cumulative impacts, propose mitigation and monitoring measures to each of them and propose institutional roles and responsibilities in relation to each of the mitigation and monitoring measures.

The environmental management plan and monitoring guidelines developed for the different components of the proposed Project are presented in the following tables.

0.13 Conclusions - Tentative Scenario Comparison

The Sectoral Environmental Assessment of the forest sector in the "Laboratory Zone" has brought to light that the presence of forests is overwhelming and forests are increasing area wise.

Forests are very diverse not only in their composition, structure and productivity (growth potential and timber quality), but also in their functions (roles) and represent a shelter for a rich biodiversity. If the forests were managed in an optimal way, they could have contributed much more to the regional development by providing local employment, revenues for local communities, wood energy for the local population, raw material for wood processing industries as well as an attractive environment for the tourism, habitat for the wildlife and protection from natural hazards.

The present situation differs from the optimum:

- forests are exploited in a haphazard way by the population for firewood and selectively "creamed" by poachers for exportation of high quality timber, mainly to Turkey;
- the silvicultural operations scheduled in the management plans are not carried out;
- official forest revenues are sent to the central State Budget, without retaining a real benefit for the local economy.

ANALYSIS OF ALTERNATIVES

"Existing project" scenario"

The project development objective is to "establish Sustainable Forest Management Systems, which would maximize the contribution of forests to economic development and rural poverty reduction on an environmentally sustainable basis".

The project would support many positive measures for reforming the legal system and financial and tax regulations. It would also support capacity-building of the State Department of Forest Management, and, in the Laboratory Zone, development of improved forest planning methods, improvement of silvicultural operations, rehabilitation, construction and maintenance of roads needed for the implementation of the management plans, use of low-impact cable-logging systems, plus various other useful measures such are: support to improved forest pest protection, private sector involvement in non-timber forest products, community forestry.

The "Existing project" addresses the right issues in the forest sector. It would contribute to significant improvements of the socio-economic and environmental conditions of the forest.

3 "Existing Project" as presented in the Project Summary (Project-Summary-010130.doc February 13, 2001)
sector if the general conditions prevailing in Georgia were favourable for the sustainable and fair management of renewable resources.

However, the severe economical crisis, the incapacity of State agencies to enforce laws and the “quick money” culture to be found at all levels in all sectors will probably continue for some years. In this context, improving the management of forests is important, but one must consider that:

- objectives must remain modest,
- project activities opening opportunities for increased logging might be misused to unsustainable exploitation what is perceived to be a “mine” of wood.

"No project" scenario

Under the "No project" scenario, the Government of Georgia would not receive the loan from the World Bank. As a result, it is assumed that none of the project components would be implemented as planned.

The State Department of Forest Management would continue to exert some control over forest uses with the limited means in its disposal. The forests would continue to expand area wise, despite illegal cutting of firewood for local consumption and timber for exportation.

The local economy would benefit very little from the surrounding forests and the existing infrastructure (roads, buildings, paths) would further deteriorate, making the region less attractive for tourists.

The "No project" scenario is environmentally inferior to the "Existing project", since illegal cutting will continue and the "creaming" of high value timber will cause a deterioration of the genetic stock. Risks of erosion will be greater, because skidding trails could be built without environmental considerations and maintenance. Damages to standing trees will be more significant, since trees will be cut in a haphazard way. The "No project" scenario could be considered as inferior due to the fact that in this case all the instruments for improving the sustainability of forest management (regional land use plans, forest inventories, forest management plans, general road plans, detailed road projects, EIAs, etc.) will not be available.

The "No project" scenario is socially and economically inferior to the "Existing project" since the potential contributions of the forest sector to the development of the regional economy would remain minimal in terms of employment, revenues and supply of raw material for the wood processing industries.

"Integrated forest development" scenario

The "Integrated forest development" scenario would take intersectoral relations into account and concentrate on activities which provide employment opportunities and do not open the doors to the misuse of the forest resources. A careful and participative land use planning would provide the initial development framework.

An "Integrated forest development" as a tentative list of components would include:

1. *reduced intensity support to the forest management system*, with emphasis on the adequate tending of protective forests;

2. *support to local capacities for the rehabilitation of main roads and energy infrastructures*, since the difficult access to the valleys can be considered as one of the main obstacles to the valorization of the local wood resources. Electricity shortage makes local wood processing difficult;
3. **support to the tourism sector**, with priority on the rehabilitation of existing infrastructure and marketing in Georgia and abroad, since ecotourism could create local employment and added value with low negative environmental impact;

4. **selected support to livestock breeding**, since grazing around villages exerts some pressure on the forests and breeding concerns a high proportion of the population in terms of occupation and subsistence.

Such scenario would enable the development of interesting synergies: improvement of the road and electrical infrastructure can create employments and offer better conditions for the tourism development; adequate tending of protective forests can produce some wood which can be processed locally; protection of biodiversity, which would be supported by the Protected Areas Development Project, can protect this important asset for tourism.

Given the present situation in the Laboratory Zone, such scenario offers better chances for positive socio-economic and environmental conditions than a sectoral forestry approach. The implementation of an integrated regional development requires cooperation of different State agencies. The design and monitoring of the “Integrated land-use and forest development” support project would require analysis competences and tools, which can be provided by the World Bank.
### Summary of Sectoral Issues and Mitigation Measures - Forestry

<table>
<thead>
<tr>
<th>Issues</th>
<th>Mitigation and additional measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Laws</strong></td>
<td></td>
</tr>
<tr>
<td>1. Improving the forest legislation</td>
<td>1.1 To support the implementation of the 1999 <em>Forest Code of Georgia</em>; a simplification of this Code must be considered. A streamlined <em>Forest Code</em> should be reduced to the principles, while enforcement issues will be handled in the regulations.</td>
</tr>
<tr>
<td></td>
<td>1.2 Rules, which shall be declared void, should be listed and be declared annulled as soon as possible.</td>
</tr>
<tr>
<td></td>
<td>1.3 Missing regulations shall be issued by the responsible authorities. The coherence with other rules shall be checked. For instance, regulations for long term planning of forest resources shall be created.</td>
</tr>
<tr>
<td>2. Contradictions between Laws, especially overlapping of competences</td>
<td>2.1 Laws shall be analyzed and improved in order to clear overlapping competences and contradictions between laws. If necessary, the <em>Forest Code</em> shall be improved taking into account all comments and conclusions made by relevant governmental structures.</td>
</tr>
<tr>
<td>3. Tax system and local economic development</td>
<td>3.1 The <em>Tax and Customs Code</em> shall be changed to encourage development of alternative, environmentally safe industries based on the local use of forest resources.</td>
</tr>
<tr>
<td>4. Balance between sanctions for illegal cutting and taxes for legal cutting</td>
<td>4.1 Incentives shall be created for the law-enforcement agencies to implement sanctions on illegal actions.</td>
</tr>
<tr>
<td></td>
<td>4.2 Regarding taxes and fees for commercial logging, the foreseen reform of the forestry financial system must pragmatically take in consideration the balance between costs for legal and penalties on illegal logging.</td>
</tr>
<tr>
<td>5. Legal basis for Environmental Impact Assessments (EIA) and environmental permits</td>
<td>5.1 The laws and regulations concerning EIA and environmental permits must be issued and legalized.</td>
</tr>
<tr>
<td><strong>Institutions</strong></td>
<td></td>
</tr>
<tr>
<td>6. Institutional capacity for enforcing legislation</td>
<td>6.1 A cohesive system of implementing regulations shall be elaborated.</td>
</tr>
<tr>
<td>7. Overlapping geographic and functional competences</td>
<td>7.1 In order to clarify geographic and functional competences, overlapping competences shall be put in evidence, discussed and eliminated through transparent and formal agreements.</td>
</tr>
<tr>
<td>8. Implementation of the Law on Local Governments and Self-Governments</td>
<td>8.1 Local communities shall receive an adequate legal status to be able to assume rights and responsibilities in local forest management.</td>
</tr>
<tr>
<td>9. Reorganization of the State</td>
<td>9.1 An institutional reorganization plan will be prepared for strengthening the regulatory functions of the State</td>
</tr>
</tbody>
</table>
### Department of Forest Management of Georgia

**9. Improved capacity for environmental management in the forest sector**

1. The Forest Service must be trained on the implementation of updated legislation. It will be the opportunity to disentangle the net of valid and void regulations. Innovative and participative training methods will be useful.

**10. Improved capacity for environmental management in the forest sector**

1. Participative training sessions and excursions on the issue of sustainable forest management shall be organized. Sharing of experiences with selected countries might be useful.
2. Staff at key positions in the State Department of Forest Management shall be trained in matters of EIA. For most of the staff, detail know-how on all aspects of EIA is probably not necessary.
3. Staff of the Department of State Ecological Examination and Environmental Permitting of the MoE and independent experts reviewing the EIAs must be adequately trained in the assessment of activities proposed and carried out in the field of forestry.
4. A database should be created in order to give experts access to information on methods and techniques used in European countries.
5. The know-how of consulting companies in the field of EIA shall be recognized and improved for use in the forest sector.

### Forest ownership and liability

**11. Privatization of forests**

1. Existence of recent forest privatizations in Georgia shall be verified and documented. It will be important and interesting to analyze them and to discuss which are the "lessons learnt".
2. In a later phase, at most 1 or 2 tests could be implemented in low-conflict areas. Documentation and transparency in all activities and decisions will be essential. Strict conditions for the realization of the tests shall be defined, regarding, for instance, protective forests and biodiversity conservation. Liabilities and penalties in case of legal violations shall be clearly stated before the beginning of forest use.
3. The clarification of the regulations defined for the State forests and which will remain valid in privatized forests must be done. State bodies will have the competence and the duty to control their enforcement. It will be necessary to underline that, against common understanding in Georgia, private ownership does not imply that the owner can do anything he wants in his forests. Given this clarification and its implementation, the environmental situation might not be worse in privatized test plots than it is the case presently.

**12. Transfer of rights and liability on forests to local communities**

1. Definition of a legal status for local communities will be necessary.
2. International experiences in community forestry will be analyzed. Adaptation to Georgian post-soviet and mountainous conditions is needed.
3. 1 or 2 tests shall be studied in a well-chosen, "low-conflict" area. An essential condition of success is a
careful support to the internal community organization and to the discussions between local communities
and Forest service. Much time and energy will be gained by taking international experiences in community
forestry into account.

12.4 The information activities foreseen for promoting public awareness in sustainable forest management
should be expanded to include information on the experiments in forest privatization and community
forestry.

**Forest Management planning**

<table>
<thead>
<tr>
<th>13. Scope of the forest management plans</th>
<th>13.1 The forest management information system should incorporate information on protected areas and vice-versa, so that data can be exchanged between the Forests Development and the Protected Areas Development Projects, in order to facilitate coordination of two parallel projects and resolution of conflicts. In particular, the same Geographical Information System (GIS) should be used by both projects.</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Land use planning</td>
<td>14.1 The Forests Development Project and the Protected Areas Development Project shall agree on a common methodology for land use planning, using the same classification criteria for allocating land to defined land uses, taking into account the principles of multiple use of forests and agriculture and evaluation of the ecological and economic values of the various ecosystems, using the notion of prevailing function (see chapter 7, Protective uses). The same guidelines for land use planning should be used for these two projects.</td>
</tr>
<tr>
<td>15. Need of EIA for forest management plans</td>
<td>15.1 The consistency of management plans with multiple use and sustainable forestry could be evaluated by the Ministry of Environment without carrying out a full EIA. This simplification would be made possible by adapting the legislation on EIA.</td>
</tr>
<tr>
<td>16. Technical requirements for updating forest management plans</td>
<td>16.1 In addition to temporary sample plots, a sub-sample of permanent plots should be laid out in the whole Laboratory Zone, as the starting basis for a modern National forest inventory for the whole country. This National forest inventory will eventually provide reliable statistical information on the forest resources (such as changes in the forest cover, volume trends, balance between growth and wood harvests), which are presently lacking and badly needed for policy decisions at the State and regional levels.</td>
</tr>
</tbody>
</table>

16.2 Permanent sample plots and other monitoring means such as GIS will also be used for periodic monitoring (on a 5- to 10-years rotation) of environmental changes in the forest (and could be expanded to the protected areas).
17. Notion of prevailing function

17.1 The notions of multiple use and of prevailing functions should be incorporated in the *Forest Code* and in particular in the *Regulations for Allocating Territories* (art. 21 al. 7).

17.2 As an example, the Oni land-use plan should be complemented, incorporating the notions of multiple use and prevailing functions. Forests should be classified according to their prevailing function. For instance, the location and extend of protective forests (forests with a prevailing protective function) would be determined. The resulting "Multifunctional plan" would be of great help for the resolution of land-use conflicts and would also be used as a planning tool for the forest management plan.

18. Management of protective forests

18.1 The definition of forests with prevailing protective function is to be included in the *Forest Code* and in normative acts.

18.2 Normative acts must be developed to better define and incorporate silvicultural measures and maintenance activities in protective forests (i.e. forest improvement activities).

18.3 The planning and implementation of protective measures must be incorporated in the Forest Management Information System (FMIS).

18.4 Training in forest management planning should be extended to training in silviculture of mountain forests, including the planning of silvicultural measures for protective forests. Such training could rely on experiences from Europe (Austria, Bavaria, Switzerland).

19. Management of forests with tourist or cultural functions

19.1 Forests with prevailing tourist or cultural functions will have to be determined and incorporated in the planning process.

19.2 Tourist and cultural uses in the forests will have to be coordinated with those to be implemented in the protected areas.

19.3 Maintenance of trails and other tourist and cultural infrastructures is to be financed on cost-sharing basis with the Protected Areas Development Project.

20. Illegal cutting operations

20.1 The monitoring of illegal cutting operations (see chapter 13, *Monitoring*) must be an integral part of the Forest Management Information System (FMIS) and have a first priority.

20.2 Penalties (fines) imposed on trespassers should be collected and the revenues should be used for the restoration of forests damaged by illegal cutting operations should be collected.

20.3 Eradication of large-scale illegal cutting operations is to be made a condition of compliance for the IDA credit.

21. "Creaming" the forest

21.1 The State must pay correctly to its personnel and give them means to carry out their supervisory duties.
### 22. Sanitary cuts

22.1 As for "Creaming": the State must pay correctly to its personnel and give them means to carry out their supervisory duties.

### 23. Enhancement of biodiversity through silvicultural measures

23.1 The provision of wood cutting measures for biodiversity enhancement must be incorporated in the forest and in the protected areas management plans.

### 24. Improved economic utilization of forest resources and improved supply of forest products to the regional economy

24.1 A substantial part of the additional forest revenues should be allocated to the local communities for their own use (subject to controls by the central State).

24.2 Another portion of the additional revenues shall be dedicated to financing local forest activities as prescribed in the management plans (tree plantations, cleaning and tending operations, road and trail maintenance, etc.).

### Infrastructure and wood harvesting systems

#### 25. Need for a general plan and detailed plans of road rehabilitation and construction activities

25.1 Before laying out new roads, a regional road and harvesting system plan must be designed, incorporating results of the land-use and of forest management plans (in addition to other pertinent data, such as geotechnical maps, maps of natural hazards and of protected areas). The regional plan will indicate where new access roads can be built, where harvesting with skyline systems is feasible and which zones should be left road less. Preliminary cost estimates will be used for cost/benefit analysis. Investment priorities will be determined for different forests according to their growth potential, value of forest products and harvesting costs. The regional plan would be subject to an environmental impact assessment.

25.2 Road stretches that have been included in the regional plan should be laid out in details on a map and on the ground. A detailed road project will be prepared, including proposals for alternative designs and layouts. Detail planning will take into account all factors having an incidence on risks of erosion and visual impact on the landscape (slope of the terrain and road inclination, geotechnical characteristics, problems of stream crossings, management of surface, water, etc.). Total road costs (construction costs plus maintenance costs) will be computed. The best proposal would show the lowest cost/benefit ratio and the smallest risks. According to law, for each road project (renewing, rehabilitation or creation) an EIA shall be submitted to the Ministry of Environment.

25.3 Construction standards will be adapted to the severe weather conditions of the Central Caucasus, in order to minimize future maintenance costs and risks of damages to roads and the environment.

#### 26. Need for environment-friendly equipment and construction methods

26.1 In zones with too steep slopes or/and instable geological conditions no roads shall be built.

26.2 The use of explosives shall be restricted. Conditions such as specialized staff with permits to use explosive will be defined. Training on the adequate explosive quantities will be useful.

26.3 The management of cut material should be planned and optimized at the detailed planning phase of a road. During detailed planning, several alternative road locations should be studied, to look for the best adaptation to the relief and to geology.
26.4 Excess cut material must be transported to the planned earth dumps located on safe grounds.

26.5 Low impact construction equipment, such as backhoe shovels and percussion hammers (Montabert hammers) will be required. Bulldozers should not be used and traxcavators should be restricted to truck loading. Earthworks should be performed by backhoe shovels (shovel excavators).

26.6 Environmentally conscious contractors using skilled machine operators should be given preference.

26.7 Best environmental management practices for road construction should be incorporated in the technical specifications for the bidding and road construction contracts.

26.8 Road construction should be supervised by qualified engineers trained in environmentally friendly road construction methods.

26.9 The State Department of Forest Management shall periodically inspect the construction sites and report to the FSDC if important project modifications occur and if recommended mitigation measures have not been carried out.

27. Need for proper use of harvesting systems

27.1 Best management practices for minimizing environmental impacts of harvesting systems should be incorporated in the technical specifications for the delivery of a wood permit. They shall include, among others, the following conditions:

- Harvesting operations must be planned in details (selection of cutting area, observance of felling direction, distance between cable lines, location of landings, etc.). They should be coordinated with wood marking and subsequent log transportation.

- Skidding operations should be stopped under adverse atmospheric conditions, to avoid soil compaction and water logging. Deep skidding spurs must be leveled out.

27.2 The local office of SDFM shall periodically inspect harvesting sites and report irregularities.

28. Improved economic utilization of forest resources and improved supply of forest products to the regional economy

28.1 Refer to point 24

Biodiversity and landscape

29. Biodiversity & landscape, planning, legal and enforcement improvements

No supplementary mitigation measures are needed.

30. Road construction and poaching

30.1 During the regional forest road planning phase, which shall precede any particular construction (or/and during the EIA, see chapter 9), places which serve as sanctuary for large mammals must be situated. They
<table>
<thead>
<tr>
<th>30.2 Opportunity to close forest roads to non-authorized persons will be evaluated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>31.1 At the stage of detailed planning of a new road, different locations must be evaluated on the base of the impacts on humid biotopes. This may be part of the EIA of proposed construction projects. Prescriptions about drainage in humid biotopes must be defined.</td>
</tr>
<tr>
<td>31.2 Road construction standards should be established. They should include guidelines about the equipment to be used for road building.</td>
</tr>
<tr>
<td>32. See under the issue Need for environmentally friendly equipment and construction methods in chapter 9 Infrastructure.</td>
</tr>
<tr>
<td>Sustainable forest management</td>
</tr>
<tr>
<td>33. Definition of sustainable forest management in Georgia</td>
</tr>
<tr>
<td>No mitigation measure is needed.</td>
</tr>
<tr>
<td>Public participation in Forest Management, Gender issues</td>
</tr>
<tr>
<td>34. Promotion of public awareness in sustainable forest management through participatory management planning for community and local forests</td>
</tr>
<tr>
<td>See chapter 5, Forest Ownership;</td>
</tr>
<tr>
<td>35.1 The management planning model shall be completed with a participation model. Opportunity and forms of public participation to different land-use and/or forest levels (local, regional, national) shall be studied.</td>
</tr>
<tr>
<td>35.2 Role of different NGOs shall be further analyzed. Experience shows that the exclusion of powerful NGOs in the planning processes may facilitate the planning activities but does not mitigate conflicts during implementation.</td>
</tr>
<tr>
<td>35.3 Participation model(s) shall take into account the public mistrust to officials and NGOs.</td>
</tr>
<tr>
<td>36. Forest management and gender issues</td>
</tr>
<tr>
<td>36.1 Gender issues shall be integrated in adequate form in policies and activities.</td>
</tr>
</tbody>
</table>
Summary of the Indicators of Sustainable Forest Management in the Laboratory Zone

<table>
<thead>
<tr>
<th>Issue</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Conservation of biological diversity</td>
<td></td>
</tr>
<tr>
<td>Protection of endangered plant and animal species</td>
<td></td>
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<tr>
<td>Protection and management of representative areas, especially sites of ecological importance</td>
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<tr>
<td>Planting based on locally adapted species and varieties</td>
<td></td>
</tr>
<tr>
<td>B. Maintenance of productive capacity of forest ecosystems</td>
<td></td>
</tr>
<tr>
<td>Silvicultural systems are appropriate to forest type and produce growth</td>
<td></td>
</tr>
<tr>
<td>Harvesting systems and equipment matching forest conditions</td>
<td></td>
</tr>
<tr>
<td>Infrastructure is laid out prior to harvesting and is adequate to prescription</td>
<td></td>
</tr>
<tr>
<td>Annual cut prescription and enforcement</td>
<td></td>
</tr>
<tr>
<td>C. Maintenance of forest ecosystem health, vitality and protective function</td>
<td></td>
</tr>
<tr>
<td>Insurance of the forest capacity for natural regeneration</td>
<td></td>
</tr>
<tr>
<td>Skidding damages trees and soil</td>
<td></td>
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<tr>
<td>Air pollution impact on forest vitality on the long run</td>
<td></td>
</tr>
<tr>
<td>Mining activities impact on forest vitality</td>
<td></td>
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<tr>
<td>Risk of flooding and erosion for downstream areas</td>
<td></td>
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<tr>
<td>Landslide danger</td>
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<tr>
<td>Avalanche danger</td>
<td></td>
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<tr>
<td>D. Conservation and maintenance of soil and water resources</td>
<td></td>
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<tr>
<td>Forest management resulting in ponding or waterlogging</td>
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<tr>
<td>Soil erosion</td>
<td></td>
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<tr>
<td>Influence of forest related activities to groundwater and mineral springs</td>
<td></td>
</tr>
<tr>
<td>Pollution of food chains and ecosystem by forest related activities</td>
<td></td>
</tr>
</tbody>
</table>

Key:  
S = Significant Issue  
M = Moderate Issue  
I = Insignificant Issue

To be completed during the EIA process itself.
E. Maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies

- Distribution of the economic benefits of forest utilization among forest-dependant local population
- Participation of stakeholders/local populations in the definition of objectives
- Sustainable use of non-wood products
- Impact on landscape
- Impact on cultural heritage

F. Legal, institutional and economic framework for forest conservation and sustainable management

- Policy and planning based on recent and accurate information
- Application of effective instruments for intersectoral coordination of land use and land management
- Adequate protection by law of the Permanent Forest Estate (PFE)

Social conflicts between locals and migrant workforce
Mistrust of the locals towards officials and NGOs
Danger of forest appropriation
Disruption of agricultural activity caused by road building
Grazing
Road construction
Pollution of cutting sites
Saw dust removal
FOREWORD

The Sectoral Environmental Assessment (SEA) offers an opportunity for sector-wide environmental analysis before investment priorities are determined. It avoids the inherent limitations of project-specific Environmental Assessments (EA) in addressing issues related to policy and planning and the legal and institutional framework.

By moving upstream in the planning process to a stage where major strategic decisions have not yet been made, SEA offers better opportunities not only for analyzing existing policies, institutions, and development plans in terms of environmental issues, but also for supporting environmentally sound sector wide investment strategies.

Sectoral environmental assessment (SEA) is an important part in development planning. SEA offers an opportunity for sector-wide environmental analysis before investment priorities have been determined. It also supports integration of environmental concerns into long-term development and investment planning. SEA is applied in the FDP since sector investment program involves multiple components and sub-projects.

This SEA is made according to World Bank guidance on sectoral EA - Operational Directive (OD) 4.00, Annex A: Environmental Assessment (amended in 1991 as OD 4.01), the Environmental Assessment Sourcebook Update, which belongs to Chapter 1: The Environmental Review Process.

Sectoral EA is a good planning tool for investment to:

- prevent serious environmental impacts through analysis of sector policies and investment strategies upstream in the planning process, before major decisions are made.

- assist governments in forming a long-term view of the sector and increase the transparency of the sectoral planning process, thereby decreasing the opportunities for purely political decisions that might be environmentally harmful.

- analyze institutional, legal and regulatory aspects related to the sector, and for making comprehensive and realistic recommendations regarding, for example, environmental standards, guidelines, law enforcement, and training, thus reducing the need for similar analysis in downstream EA work.

- provide opportunities for consideration of alternative policies, plans, strategies or project types, taking into account their costs and benefits.

- help to alter or eliminate environmentally unsound investment alternatives at an early stage, thus reducing overall negative environmental impacts, while also eliminating the need for project-specific EA of these alternatives.

- consider cumulative impacts of multiple ongoing and planned investments within a sector, as well as impacts from existing policies and policy changes.

- collect and organize environmental data into information and, in the process, identify data gaps and needs at an early stage, and to outline methods, schedules and responsibilities for data collection and management during program or project implementation.

- allow for comprehensive planning of general sector-wide mitigation, management, and monitoring measures, and for identifying broad institutional, resource and technological needs at an early stage.
• provide a basis for collaboration and coordination across sectors, and help to avoid
duplication of efforts and policy contradictions between sector agencies and
ministries.

• strengthen preparation and implementation of sub-projects by recommending criteria
for environmental analysis and review, and standards and guidelines for project
implementation.

The SEA is preceding, in the development of the project, the Environmental Impact
Assessment (EIA), which is an instrument to identify and assess the potential environmental
impacts of a proposed project, evaluate alternatives, and design appropriate mitigation,
management, and monitoring measures.

Due to its position in the Project Processing evolution, some inconsistencies with names,
titles and figures could appear in the documents edited during the process.

In the different reference documents used as basis for the present SEA, the title of the
project appears in different versions. At present, the correct one is Forests Development
Project.

During the carrying out of the study, the Project Preparation Unit (PPU) took the name of
Forest Sector Development Center. Both names could appear in the text.

In the same way, the Project Description itself evaluated during the SEA process; the present
report is trying to include the last version.

The Terms of Reference (ToR) of the present SEA have also been adapted, since its first
publication and the beginning of the study. Considerable limitations (such as limitation to a
defined Laboratory Zone, covering four districts in the Central Caucasus) have been placed,
taking into account the Project conditions.

The English final report is the reference version, if some discrepancy occurs in the
translation.
1 Introduction

1.1 Background

The Government of Georgia (GoG) has requested that the World Bank (the Bank) provide support for a Forests Development Project. This Project will help the GoG to establish sound forest management systems that would maximize the contribution of Georgia’s forests to economic development and rural poverty reduction on an environmentally sustainable basis. The Project is of critical importance to Georgia’s forests and people. With the enactment of the new *Forest Code of Georgia* in June 1999, Georgia has adopted a legal framework and roadmap for transition to market principles of forest economy, including its possible privatization, while safeguarding the critical environmental, social and cultural functions of the nation’s forests. Identified as P044800, the Project that will be implemented in 2002-2007 is designed to provide critical support to this ambitious transition. The total project cost estimate is about US$27 million dollars equivalent and is proposed to be financed in 2002-2007 by an IDA credit of US$20 million. It is closely linked and coordinated with the Protected Areas Development Project (GEF grant of US$8.7 million).

The project has been placed in the Bank environmental screening category “B.” However, the GoG, as part of the ongoing preparation activities, decided to undertake a Sectoral Environmental Assessment (SEA)⁴, which will be consistent with the Georgian environmental legislation, and the requirements of the Bank’s environmental screening category “A,” outlined in Operational Policy 4.01 “Environmental Assessment”. As a significant focus of Project implementation is to promote policy development, it is expected analyses on the sectoral environmental impact will continue as policies and forests-related programs evolve.

1.2 Project Objectives and Components

The Project is expected to be implemented over a period of 6 years and will include the following five components:

<table>
<thead>
<tr>
<th>Components</th>
<th>Estimated Total Cost (US$ m)</th>
<th>% of Total Cost</th>
<th>IDA (US$ m) of which PPF for 2000-01 (US$ m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Support to national forest policy formulation and implementation</td>
<td>6.8</td>
<td>25%</td>
<td>6.0</td>
</tr>
<tr>
<td>(B) Support to efficient and participatory forest management planning</td>
<td>3.3</td>
<td>13%</td>
<td>2.7</td>
</tr>
<tr>
<td>(C) Support to effective forest protection and afforestation</td>
<td>9.5</td>
<td>35%</td>
<td>5.0</td>
</tr>
<tr>
<td>(D) Promotion of private sector participation in sustainable forest management</td>
<td>6.0</td>
<td>22%</td>
<td>5.3</td>
</tr>
<tr>
<td>(E) Project management</td>
<td>1.4</td>
<td>5%</td>
<td>1.0</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>27.0</td>
<td>100%</td>
<td>20.0</td>
</tr>
</tbody>
</table>

⁴ Depending on the project, a range of instruments can be used to satisfy the Bank’s EA requirement: environmental impact assessment (EIA), regional or sectoral EA, environmental audit, hazard or risk assessment, and environmental management plan (EMP). When the project is likely to have sectoral or regional impacts, sectoral or regional EA is required. A Sectoral Environmental Assessment (SEA) is an instrument, which offers opportunities for sector-wide environmental analysis and support integration of environmental concerns into long-term development and investment planning. SEAs are particularly suited for reviewing (a) the effect of sectoral policy changes; (b) sector investment alternatives; (c) institutional capacity and requirements for environmental review, implementation and monitoring at the sectoral level; and (d) cumulative impacts of many relatively small, similar investments which by themselves may not appear to have significant environmental impact. World Bank guidance on sectoral EA can be found in OP 4.01, the Environmental Assessment Sourcebook (1991) and the October 1993 Environmental Assessment Sourcebook Update (Number 4).
Project Description

Component A “Support to National Forest Policy Formulation and Implementation” (US$ 6.8 million)

Under this component, investments would be made in improving the capacity of the Government of Georgia (GoG) for forest sector analysis, planning and policy formulation, completing the legislation for implementation of the new Forest Code, designing and carrying out appropriate institutional, governance and financial reform in the sector, training of public officials, and raising public awareness in the objectives of the national forest policy.

In particular, this component would support the State Department of Forest Management (SDFM) and other relevant agencies in:

(i) finalization and public discussion of new forest regulations supporting implementation of the Forest Code, including harmonization with existing laws; this would include regulations for the transfer of kolkhoz (collective farms) forests to communities and development of guidelines for privatization of certain forest lands;

(ii) development and implementation of a forestry institutional reorganization plan;

(iii) development and implementation of a forestry financial system reform plan; including:

- revision of the method of financing the State Department of Forest Management to guarantee for it a sustainable source of revenue to carry out forest management and protection functions;
- revision of stumpage regulations in order to differentiate by quality and provide incentives for resource conservation; and
- implementation of administrative regulations in order to allow for better tracking of timber production and exports.

(iv) preparation and public discussion of the National Forest Policy and Strategy and the draft law “On Privatization of State Forests in Georgia”.

A cohesive system of implementing regulations would form initial basis for further forest governance reforms and forest policy formulation. Given this priority, development and discussion of regulations is already carried out under the PPF financing, while the privatization law and national policy would be finalized at the later stages of the project. The development of the financial system reform plan is also already being financed though the PPF; it would be based on the overall assessment of the national forest resources, evaluation of the governance, transparency and capacity of the private sector in forestry, evaluation of the market prospects for wood and non-wood products, and analysis of all public revenues from forestry, including the setting of stumpage values and the organization of auction systems.

The component would then support implementation of this plan, specifically by setting up a Forest Management Information System (FMIS) and training the SDFM and core ministries’ staff in operating it. The development of an institutional reorganization plan (also financed under the PPF) would lay ground for strengthening normative and regulatory functions of the SDFM, rationalizing central and field capacity for its forest management planning and oversight responsibilities and proper coordination with other line agencies, private sector, communities, and civil society. In addition to restructuring the central office, the existing 54 district offices would be replaced with two regional offices and 36 range offices.
The component would then provide all the necessary technical assistance, training and incremental logistical means (mainly building rehabilitation, transportation, equipment/materials) to implement this plan. Overall, the most critical elements of this component (development of implementing regulations and reform planning) are financed up-front through the PPF phase (which activities were financed in 2000-2001 by the PPF credit advance of US$ 0.99 million).

**Component B "Support to Efficient and Participatory Forest Management Planning" (US$ 3.3 million)**

Under this component, investments would be made in improving the quality of forest assessment and inventory carried out by the SDFM, introduction of integrated forest conservation and utilization planning techniques on a landscape-ecological basis, enabling transparent access to forest management planning process and facilitating public participation in it.

In particular, this component would support:

(i) a total economic valuation of Georgian forests;

(ii) preparation of an improved forest inventory for a model forest area of the Central Caucasus Planning Area ("laboratory zone" - four districts over around 460,000 ha); in the Central Caucasus; through:

- development of a methodology for ecosystems-based landscape planning and forest inventory using sustainable forest management principles;
- support to a landscape planning, ecosystem-based inventory;
- detailed forest inventory and management plan in the areas selected for sustainable forest utilization; and
- development of a forest management information system.

(iii) preparation of model land-use and forest management plans for the above areas; and

(iv) promotion of public awareness in sustainable forest management through participatory management planning for community and local forests.

These activities would be implemented jointly and in coordination with the planning component of the GEF-financed Protected Areas Development Project. The underlying landscape-ecological planning techniques have already been developed using Japanese grant funding under the preparation phase and the field-testing, and an initial inventory of 70,000 ha (together with provision of equipment and aerial photography) is being carried out with PPF financing. The component would then support provision of additional equipment, surveys and training to replicate improved inventory and planning on a significant scale outside of the laboratory zone, and additional facilities and equipment for information dissemination.

**Component C "Support to Effective Forest Protection and Afforestation" (US$ 9.5 million)**

Under this component, investments would be made in forest protection and afforestation of the most critically degraded forest areas near population centers through improvements in technical capacity of local forest management units and development of public works in community-based forestry.
In particular, this component would support:

(i) improved seed production/processing and nursery development;
(ii) carrying out an afforestation program over about 3,100 ha; and
(iii) carrying out a forest restoration program over about 5,600 ha in the priority zone around Tbilisi.

Seed processing and testing operations will be brought together under one existing Seed Center that will be upgraded. An existing nursery in the priority zone will be expanded/upgraded and used for supplying quality seedlings for afforestation and forest restoration, and as a model for replication in other districts. The afforestation and restoration programs will take place in the priority zone using a combination of community-managed public works and, where appropriate, private contractors using more cost-efficient techniques.

These actions will result in the SDFM having significantly increased its capacity for collecting, processing and testing quality seeds and producing quality seedlings. They would also facilitate a phased development of community-managed forestry in Georgia (to be supported by parallel donor financing). Moreover, around 40% of the erosion-prone areas in the priority zone will be afforested and 10% of the degraded areas restored.

Component D "Promotion of Private Sector Participation in Sustainable Forest Management" (US$ 6.0 million)

Under this component, investments would be made in development, demonstration, certification and promotion of sustainable forest harvesting and transportation standards and techniques, so as to facilitate the emergence of private sector operators in forestry, as well as in the development of non-wood forest products, hunting and ecotourism on an environmentally sustainable basis.

This component would significantly draw on the technical assistance provided under Component A towards development of the draft law "On Privatization of State Forests in Georgia" where the parts of the national legal and fiscal systems dealing with the possible operations of private businesses in forestry will be revised, simplified and made more stimulating for entrepreneurs. In particular, this component would support setting up a privately run Business Support Association.

The Association would be set up on a full cost-recovery basis and would provide demand-driven support services to interested entrepreneurs (e.g. training in book keeping and management, market intelligence, certification of products and systems and transfer of improved technologies). The Association would be initially operated under contract by the private sector that would eventually be expected to take it over and convert it into a private entity. Furthermore, upon completion of the improved forest management plan in a suitable area of the Central Caucasus Laboratory Zone, the component would support there a privately-run demonstration program of improved, low-impact harvesting and transportation systems and a forest road rehabilitation/construction public program.

The program should result in a growing use by private entrepreneurs of independently certified techniques, processes and equipment that are more cost-efficient and environment-friendly. Moreover, the forest road network inside the laboratory zone will be significantly improved through the operation of the road construction unit included as part of the demonstration program introducing improved transportation systems. In addition, the road rehabilitation/construction works under the public program - contracted out to private entrepreneurs - will cover about 225 km outside of the Laboratory Zone. Lastly, the
component would support preparation of a strategy for promoting non-wood forest products and carrying out pilot investments in 2 or 3 selected sites. The component's support should result in increased sales and exports of wood and non-wood products from the private sector and in a greater involvement of the entrepreneurs in the carrying out of forestry operations.

**Component E "Project Management" (US$ 1.4 million)**

This component would support overall project administration and provide to the SDFM staff hands-on training and technology transfer in project development and implementation, application of fiduciary and anti-corruption safeguards. A number of critical capacity building steps, including setting up the project management unit, training in implementation and procurement planning, monitoring and evaluation, financial management systems, etc. - is being financed up-front under the PPF phase (see Table 1.2.1).

**Implementation Arrangements**

The preparation and implementation of the Project is administered by the Georgia Forest Sector Development Center (FSDC) - a legal body of civil law established by the decree of the President of Georgia on October 29, 2000. FSDC operates under the overall guidance of a Supervisory Board appointed by the President of Georgia. The Supervisory Board is chaired by a member of the Parliament of Georgia and comprised of officials of the key interested ministries and presidential administration, with participation of the academic and NGO community. (To ensure proper coordination between this project and the GEF-funded Protected Areas Development Project, a significant overlap is ensured in the membership of their respective Supervisory Boards.) FSDC is headed by the Project Director selected in an open tender by a selection commission and approved by the President of Georgia. FSDC reports to the Ministry of Finance of Georgia on financial matters and to the Georgian State Department of Forest Management on technical matters.

**Timetable of Project Processing (February 2001)**

- October 1998  - FAO identification report
- March 1999   - FAO preparation report
- April 1999    - Project endorsement by the Presidential Investment Council
- June 1999     - PCD review and Country Director's recommendation for PPF
- June 1999     - New Forest Code enacted
- March 2000    - PPF approval (ratified in July 2000)
- May 2000      - Social Assessment completed
- October 2000  - New PMU (FSDC) established by Presidential decree
- March 2001    - Draft PAD and PIP
- April 2001    - Environmental Assessment completed
- June 2001     - Decision meeting, appraisal departure
- September 2001 - Negotiations
- November 2001 - Board
- February 2002 - Effectiveness and project launch.
Table 1.2.1. Summary of PPF-funded Project Activities

The Government of Georgia has already borrowed US$0.99 million of IDA funds through a PPF credit advance to implement in 2000-2001 the following subset of front-loaded project activities:

(1) Development of improved forest policies and regulations, including
   (i) finalization and public discussion of new forest regulations supporting implementation of the 1999 Forest Code of Georgia;
   (ii) development of a forestry institutional reorganization plan; and
   (iii) development of a forestry financial system reform plan;

(2) Development of improved forest management planning and protection techniques, including
   (i) total economic valuation of Georgian forests;
   (ii) methodology of improved forest inventory on a landscape-ecological basis in a model forest area in the Central Caucasus;
   (iii) participatory management planning for community forests; and
   (iv) promotion of public awareness in sustainable forest management;

(3) Project implementation capacity building, including
   (i) setting up a project management unit;
   (ii) preparation of detailed project implementation, procurement and monitoring and evaluation plans, financial management systems, including project advisory and audit services; and
   (iii) training of project management unit staff.

1.3 Project steps

Substantial technical work detailing each component was completed in 1998-99 by the SDFM together with the FAO specialists. Additional preparation work (including Overall Forest Utilization Planning, Social Assessment, and this Sectoral EA study) is being financed by a Japanese project preparation grant and has to be completed before project appraisal. The remaining critical preparation and start-up activities for the Project including: (i) development of improved forest policies and regulations; (ii) development of improved forest management planning and protection techniques; and (iii) project implementation capacity building - are being funded through a project preparation advance (PPF) in September 2000 to July 2001.

Project implementation is being carried out in the following way. The Forestry Development Fund (FDF) - a project preparation unit established under the SFD that is currently administering the Japanese Grant, was used as the core of the new Project Management Unit (PMU) that has been established in March 2001 by a decree of the President of Georgia. Administration of the remainder of the Japanese grant will also be transferred to this new entity. The PMU was established as a legal person under Georgia's civil law and its Executive Director was nominated by the Ministry of Finance and SFD and appointed by the President. The PMU will report to a twelve-member Supervisory Board that will include
representatives of the Ministries of Economy, Finance, Agriculture, and Environment, SDFM, State Department of Protected Areas, Nature Reserves and Hunting Farms (SDPA), State Department of Land Management, Parliamentary Committee on Environmental Protection and Natural Resources, Georgian Academy of Sciences, and non-governmental organizations.

The first stage of the Project will focus on implementing land-use and forest management planning activities agreed to by all interested stakeholders during project preparation and early stages of implementation. After sufficient dialogue and analyses, later stages of implementation will focus more directly on forest sector investments, with an increasingly important role played by the private sector. Work on land-use planning and forest management information systems will, however, continue for the duration of the Project and beyond.

An environmental management plan (EMP) for project implementation is developed as part of this study. This EMP provides a process by which specific environmental impact assessments will be conducted for each of the Project’s subcomponents before the Bank financing. Guidelines for sustainable forest management in a format that can act as a sourcebook for forest managers and which are consistent with the FAO Model Code of Forest Harvesting Practice will also be developed during project implementation. These will include not only guidelines for environmentally friendly silvicultural and harvesting operations, but also guidelines for the EIA of forestry practices on forest biodiversity, ecosystems-based inventories, but also for the establishment of forest lands Landscape Ecological Networks. These will culminate in the preparation of sustainable forest management 10-year plan guidelines.

The Implementing Agency for the Project is the Georgian State Department of Forest Management. Financing for Project preparation commenced in July 1998. Significant analysis (including legal analysis) and proposals for Project financing were developed in partnership with FAO. A Social Assessment was carried out in August-December 1999 and its results were published in July 2000.

The main objective of the NFDP is to help Georgia maximize – on a sustainable basis – the environmental and economic benefits from its forests. The critical assumption for the achievement of the program’s objective is that the Government, in particular the Parliament, supports the implementation of the NFDP as well as of the GEF-funded Protected Areas Development Project. This latter project - now being formulated by the WB - is expected to be implemented in parallel with the NFDP and to complement its activities, especially in the program’s Laboratory Zone composed of four districts (Ambrolauri, Lentekhi, Oni and Tsageri) located in the Central Caucasus Mountains (see Figures 1 and 2).

Furthermore, it is also assumed that all the other stakeholders, particularly at the district/field levels, actively support the program. In addition to the SDFM in charge of implementing the NFDP, the other stakeholders consist mainly of the MoE, the MFRI, the SDPA, the State Agrarian University and various NGOs possibly involved in the program’s various components.

Laboratory Zone (Ambrolauri, Lentekhi, Oni and Tsageri regions), selected as priority zone for the Project, is located in the Central Caucasus region and spreads over an area of 460,000 ha with a population of 56,000 inhabitants (see Figure 1 and 2). A 1996 forest inventory listed some 35 existing tree/bush species and beech dominated over more than 50% of the total area. A large part of the zone’s forests are located in very remote areas and on difficult terrain5.

The project in Laboratory Zone will focus on development and improvement of forest planning and management systems including forest inventory, landscape-ecological zoning and environmental and social assessments for forest conservation and multiple-purpose use.

1.4 Objective of the SEA

The objectives of the SEA are to:

(i) analyze the policy, legal and administrative framework relevant to the forest sector and make recommendations for reform if needed;
(ii) identify major environmental and social issues related to the development of the forest sector;
(iii) collect baseline data in relation to these environmental and social issues and their trends;
(iv) analyze potential impacts from proposed Project activities, particularly for long-term sustainable development, and make recommendations for mitigation if necessary;
(v) analyze in-country capacity for environmental management and assessment in the sector;
(vi) provide general guidelines for long-term sector-wide environmental monitoring; and
(vii) assist in inter-agency coordination and public/NGO consultation process.

1.5 Methodology of GIS and Remote Sensing

The necessity of applying the Geographical Information Systems (GIS) and Remote Sensing (RS) for Forests development Project is conditioned by the following factors:

- Existence of large databases of forest resources, which needs permanent update;
- Existence of different types of information, which needs integrated study and information synthesis;
- Authenticity of information;
- Spatial Analysis of data;
- Dynamic study of processes;
- Modeling & prognosis;
- Establishment and maintenance of the monitoring system.

- Database and Forest Information. Key issues for the development of proper forestry strategy are creation of comprehensive database, its management and analysis. Forestry Geo-Information System should comprise data on forest, ecosystem and other related information. Forest information includes: types of forest resources and information on standing volume. Ecosystem information comprises electronic layers on each component of forest ecosystem together with all kind of information linked.

Furthermore, other information on forestry GIS includes electronic layers on phenomenon and processes (natural, socio-economic, historic-cultural, etc.), which take place on study area and influence sustainable development of entire territory system.
Alphanumeric databases are linked with the graphic representations, which allowed us to compile thematic matrices, build graphs, diagrams and make statistical analysis during the working period.

Permanently updated Geo-Information System is an excellent tool for spatial and dynamic analysis of various phenomenon and processes.

- **Modeling.** Relief of the territory plays one of the determining factors of diversity of forest cenosis. Altitude of the territory, inclination of slopes and exposition are one of the main influencing factors on development of the most complicated natural complexes.

Considering this fact, our team developed 3D mathematical model of surface for Oni area (see figure 5) and its adjacent territories (Pilot Zone) in 1:50,000 scale on the basis of topographical map. New aerial photos (2000) were stretched on 3D model, which gave opportunity to visualize virtually above-mentioned territory (see figure 7).

Modeling of relief on the pilot zone was done, which gave possibility to calculate inclination of slopes, exposition and altitude of the territory. The hydrological model could be made based on long-term observation data of hydro-meteorological centers and a number of other parameters. Experts team tried to obtain necessary information, however, unfortunately, these data are not available in Georgia. Furthermore, creation of hydrological model must be based on results of lab analysis.

- **Authenticity of information.** Aerial photos of 2000 (see Figure 3) give possibility to obtain reliable data about existing situation and to compare and correlate them to those of 1989 (see Figure 4). New (2000) and old aerial photos (1989) were projected and linked to the coordinates. On the basis of color classification of aerial photos, team experts distinguished 4 categories: forests, clear areas, waters and settlements. According to this classification, comparative analysis of new and old aerial photos has been implemented.

Unfortunately, the part of aerial photos was covered with dark shadows, effect of reflection was rather high and it was impossible to make spectral analysis considering conditions of very complicated relief. In order to reach desirable results in spectral analysis, it is recommended to purchase multispectral satellite images. Proposed software for processing of satellite images is ERDAS Imagine.

- **Monitoring.** Developed forestry needs effective, long-term monitoring. GIS and Remote Sensing give possibility to identify sensitive areas (hot spots) needing special attention and monitoring. Hot spots needing intensive monitoring could be: territories with high biodiversity value, geo-dynamic processes, forest diseases, etc.

**Methodology**

The software used by experts' team during the work was the Arc View GIS 3.2 (ESRI) and Image Analysis - (united product of ESRI and ERDAS).

As a background, topographical maps (1:50,000) were applied.

The following GIS are prepared:

- baseline information, (see Figures 6, 8, 9, 11, 12, 13)

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1 ESRI and ERDAS are registered trade marks
existing forest districts and plots, (see Figure 14)
forest species, (see Figure 10)
resorts, (see Figure 16)
geology, (see Figure 6)
prevalent soils, (see Figure 8)
fauna, (see Figures 11, 12, 13)
socioeconomic information,
cultural and natural heritage. (see Figure 15)

Through the application of the special GIS module, team identified concrete territories, which according to the legislation and normative acts, falls under the cutting prohibition status:

For Oni area and its adjacent territories, 3D mathematical model of surface was built (1:50,000), which allows: to derive aspects, distinguish slopes under 30°, between 30°-35° and above 35° and make hydrologic modeling of the given territory (see Figure 5).

Through the application of another GIS module, the following territories in the pilot zone were identified:

- natural habitats of sub-alpine zone with the width of 300 m;
- forest line located within 200 m from permanent snow beds;
- potential avalanches and floods;
- protective forest areas located within 300 m from the river banks;
- lakes;
- water reservoirs;
- protective forest lines located within 100 m from steep slopes (above 400 m);
- karst objects,
- forest areas located within 1 km radius of the mineral springs.

- **Prognosis.** Result of any kind of modeling and analysis is the prognosis, which helps decision-making bodies to make the right decision.

### 1.6 Description of Georgia

Georgia is located between the southern side of the Great Caucasus and the northern side of the Lesser Caucasus, between 43°35' and 41°03' latitude, and between 41°00' and 46°43' longitude. (See Figure 1)

**Relief**

Covering a territory of 69700 km², Georgia is a typical mountainous country. About 54% of the territory are mountains, 33% - foothills and mounds, and only 13% are occupied by plains. The average altitude of the country's territory is 1,230 m above sea level. Almost one-fifth of the territory is occupied by high-mountains, where only several villages are located.
3D model of Oni area
Figure 5
Oni - 3D aerial photo
Due to its position, the absolute altitude changes from 0 m (sea level) up to 5,201 m (Mt. Shkhara)

High-vertical zones are strongly pronounced in the mountain territories and are related to the change of natural conditions with altitude. The following vertical divisions exist in Georgia:

- **High-mountain relief** - begins from the upper border of forest, 2,000-2,500 m above sea level. The existence of strong segmentation, steep slopes, cliffs and old frozen forms are characteristic for this region.
- **Middle-mountain relief** - the altitude of location fluctuates 800-2,200 m in the East.
- **Low-mountain relief** - begins from 1,000 m.
- **Plateaus** - according to altitude they are divided into low and high plateaus.
- **Inter-mountain hollow.**
- **Hilly relief** - average altitude is 100-200 m. In western Georgia hilly relief mainly is found up to 200-500 m, but in eastern Georgia it is found between a broad of range of the altitudes (400-1,000 m).
- **Law places** - are located below 200 m (Kolkheti wetland, Alazani plain).

The territory of Georgia comprises volcanic, glacial, paleoglacial, erosion, erosion-denudation, karstic, alluvial, and prolluvial types of relief.

The morphology of the country results in shortage of arable land, about 20% of territory is located higher than 2,000 m, and therefore, agriculture is rather impossible there. Another 34% of the territory is occupied by lands, altitude of which is 1,000-2,000 m. The majority of this territory is presented by steep and middle slopes (more than 15-20°). The agricultural lands occupy only 7,400 km².

**Climate**

The country, being protected from cold air by the Caucasus mountain receives warm and moist air from the Black Sea.

Due to its position, the West Georgia has a humid subtropical climate, the South Georgia - continental climate and the climate of the East Georgia varies between moderate humid to dry subtropical.

**Forest**

According to the data of 1988 Forest Fund inventory, some 40% of Georgia's total territory is actually covered with forests, which means approximately 2.75 million ha. About 2.2 million ha are classified as State Forests under the responsibility of the SDFM and the remaining consists of former "Kolkhoz lands" part of which are now in the process of being transferred to the SDFM. The State Forests are composed of 80% of broadleaves and 20% of conifers. The main species are: beech covering 49% of the lands, oak - 10%, fir - 8%, hornbeam - 7%, spruce - 6%, pine - 5%, alder - 3% and chestnut - 3%. In terms of age structure, 48% of the State Forests (area-wise) are medium-aged, 15% - maturing and 30% mature and over mature (7% are considered as young).
2 Baseline Information

2.1 Social Assessment

Introduction and general approach

The Government of Georgia (GoG) has identified sustainable forest management systems as one of top priority issues, which would maximize the contribution to country's economical development and rural poverty reduction on the environmental sound basis. In 1997, after study of the field and various consultations with different stakeholders, the Government prepared National Forest Strategy. In June 1999, the Parliament adopted "The Forest Code", which establishes a legal framework for utilization, protection, restoration and maintenance of forest resources.

To improve forest management in Georgia, the GoG requested the World Bank to assist in preparation and financing of a Georgia Forests Development Project (FDP). FDP has been prepared with the assistance of the World Bank (WB) and the Investment Center of the Food and Agriculture Organization (FAO Investment Center). Georgian authorities – the State Department of Forest Management (SDFM), Ministry of Environment (MoE) and other governmental and non-governmental organizations, who took part in this preparation of the Project. FDP is a five-year investment program. Its main purpose is to maximize economic benefits from the forest and at the same time protect its rich ecosystem.

As it was mentioned above, SEA is an important part in development planning since it offers an opportunity for sector-wide environmental analysis before investment priorities have been determined. SEA is applied in the FDP since sector investment program involves multiple components and sub-projects.

According to the World Bank guidance public consultation is an integral part of the sectoral EA (see OD 4.01 and EA Sourcebook Update No. 5: Public Involvement in Environmental Assessment for more specific guidance). However, since the SEA covers an entire forest sector in a national context and is conducted before concrete investment decisions are made, at this level, it was not possible to consult representatives of all potentially concerned people during preparation of this SEA. Obviously, successful consultation process will help ensure public support for the final forest sector program. Therefore, in the beginning of the study potential stakeholders were identified and consultations were held. Consultations were held with national NGOs (for nature protection), scientific experts, relevant government agencies, and also industrial and commercial interests.

According to the World Bank's Operational Directive on Environmental Assessment (OD 4.01), once the project will be ready for Environmental Impact Assessment (EIA), affected groups and NGOs must be consulted as part of the environmental assessment process, and the draft EIA must be disclosed to the public for review and comment prior to finalizing the report. In order to ensure that this will be carried out in a systematic way and that the views and interests of all project stakeholders will be taken into account, a Public Consultation and Disclosure Plan (PCDP) should be prepared for the EIA of project. The objective of the PCDP will be to ensure that all stakeholders and interested parties will be fully informed of the environmental assessment process and that they will have the opportunity to voice their concerns and opinions on environmental issues and management during the EIA preparation process.

The social study implemented in the framework of SEA identifies major potential social impacts related with the Project implementation and development of the forest sector,
reviews and highlights social assessment completed by GORBI, underlines issues identified by stakeholders and proposes management and mitigation plans.

The social study has been carried out at two levels:

- At national level: interested government bodies (SDFM, MoE, SDPA, State Department of Land Management, State Department of Geology, etc.), NGOs and other interested members of the society have been interviewed and consulted during the study.
- At the local level: government authorities, potentially affected nearby villagers, wood processing enterprises, forest users (private companies), NGOs and other interested stakeholders in Oni and Ambrolauri districts were interviewed.

Consultation methodology

Initially, consultation during the SEA preparation process helped to identify key forest related and environmental issues on national and local levels and provide information on stakeholders’ major concerns.

The following key stakeholders were identified at the national and local levels:

Table 2.1.1 Key Stakeholders

| National |
|-----------------|-----------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| State Department of Forest Management | Ministry of Environment | Parliament of Georgia, Commission for the Environmental Protection and Natural Resources | Ministry of Agriculture and Food | Ministry of Finance | Ministry of Income and Tax | Ministry of Internal Affairs (Department of Ecopolic e) |
| Ministry of Agriculture and Food | Ministry of Finance | Ministry of Income and Tax | Ministry of Economy, Industry and Trade | State Department of Protected Areas, Nature Reserves and Hunting Farms | State Department of Tourism and Resorts | State Department of Land Management |
| State Agrarian University | State Enterprise Lesoproject | The Mountain Forestry Research Institute (MFRI) | Institute of Plant Protection | Protected Areas Development Center | Wood processing enterprises | Forest users (private companies) |
| NGOs | Local |
| Local branches of the State Department Forest Management | Local branches of the Ministry of Environment | Local government authorities | Village Councils nearby forest who might be affected by the project implementation | NGOs active in the relevant local areas | Forest farms |
The team of experts conducted group meeting, carried out individual and group consultations, and conducted interviews in Tbilisi, in Oni and Ambrolauri. During interview/consultation phase, combination of semi-structured interviews, in-situ observation and focus groups were used. The aim of these meetings was to obtain essential objective information about educational level, main jobs, economical situation, out-migration, etc. in the view of forest management and utilization.

In semi-structured interviews took part the individuals whose activities are related with forests: SDFM's representatives, environmentalists, scientists, foresters, NGOs, etc. The main purpose of the questions used in semi-structured interviews was to receive information about the existing forest management practices.

**Main Concerns:**

The opinion about the forest condition is changing depending in which region a person lives. Suggested alternative management "model" must be implemented in the already selected Laboratory Zone.

Socioeconomic conditions of local populations in the selected Laboratory Zone in the Central Caucasus region, which comprises Racha (Oni and Ambrolauri), Svaneti (Lentekhi) and Lechkumi (Tsageri) districts are rather complicated. Certainly, these circumstances must be taken into consideration while preparation of the "model" forest management or inventory plans and implementation of the Forests Development Project. For this purpose, the Georgian Opinion Research Business International (GORBI) was commissioned to implement Social Assessment (SA) of the Laboratory Zone of the project in 1999-2000.

**Poverty:**

It must be noted that according to the GORBI report, a new social class living below the poverty limit (consisting mainly of the unemployed, pensioners, invalids, part of the intelligentsia and people employed with State organizations) emerged in Oni, Ambrolauri, Tsageri and Lentekhi districts. The earthquake aggravated the socioeconomic condition in 1991, causing serious damages to the Ambrolauri and Oni districts.

According to income level, three major groups can be identified within the local population. Almost all residents of these districts cut wood; woodcutting increases as income decreases.

Three major groups of local population according to the income level are:

<table>
<thead>
<tr>
<th>%</th>
<th>Description</th>
<th>Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>25%</td>
<td>can not buy neither food nor clothes</td>
<td>the poorest group</td>
</tr>
<tr>
<td>25%</td>
<td>can buy food, but not always clothes</td>
<td>middle poor</td>
</tr>
<tr>
<td>50%</td>
<td>can buy both of them</td>
<td>the least poor</td>
</tr>
</tbody>
</table>

戈尔比报告
Living standard according to the regions can be given as follows:

<table>
<thead>
<tr>
<th>Living standard</th>
<th>Oni</th>
<th>Lentekhi</th>
<th>Ambrolauri</th>
<th>Tsageri</th>
</tr>
</thead>
<tbody>
<tr>
<td>The poorest</td>
<td>50%</td>
<td>45.3%</td>
<td>23.3%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Middle poor</td>
<td>32%</td>
<td>42%</td>
<td>70.7%</td>
<td>46.6%</td>
</tr>
<tr>
<td>The least poor</td>
<td>18%</td>
<td>12.7%</td>
<td>6%</td>
<td>52.7%</td>
</tr>
</tbody>
</table>

According to the main purposes of woodcutting, the local population can be divided into two groups:

- Those who cut wood to use it for heating, cooking and construction purposes;
- Those who cut wood to sell it.

The poorest householders more likely live in Oni and Lentekhi. The main problems in the regions are unemployment, low income and poor transportation. They depend on the forest resources greatly and they are less informed about the forest issues.

The middle poor more likely reside in Ambrolauri. They are more informed about forest related issues and are not content with forest conditions.

The least poor residents are fewer dependants on the forest. They use alternative fuel for heating and cooking. As for other groups, their problems are low income and unemployment, but they also inadequate electricity and healthcare problems.

The change of the social system and regaining of sovereignty necessitated a fundamental reorganization of the health system. Unless the serious problems of funding for the health system are addressed, existing critical situation will not be completely overcome. The State funding for the health system in the project region is rather low. Namely, according to the 1998 data, the State funding for the health system came to 3 GEL (1 GEL = 0.5 US$) per capita in the district of Lentekhi, 2 GEL in Ambrolauri, 1.2 GEL in Oni and 1 GEL in Tsageri. Due to the funding problems, the number of in-patients has decreased. Namely, the number of places for in-patients in hospitals of the district of Ambrolauri amounted to 90 per 90,000 residents in 1989, but it dropped to 38 in 1998.8

Unemployment

At present, unemployment and low personal incomes are the most urgent issues the local population in the laboratory zone is facing. In this respect, socially vulnerable people (pensioners, invalids, etc.) and people employed with the state institutions are particularly in critical position. Comparing remuneration figures of the 1998 with those of 1989, shows clear downward trend in personal incomes: the average monthly salary paid to employees engaged in industry in 1998 accounted for 20% of the corresponding figure in 1989 in the Lentekhi district, 27% in Ambrolauri, 29% in Oni and 59% in Tsageri. This causes difficulties in purchasing alternative fuel, health problems, insufficient food, poor farming equipment and out-migration. It should be noted that because of few employment opportunities in their own districts, the significant and most active part of the population, especially the youth, seeks work in economically better-developed regions and cities. Almost one member of the family (about 45%) left the family.

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8 Information synthesis, Protected Areas Development Project
There has been an upward trend in retail in the project districts in the latest years. According to the 1998 data, there were 52 retail businesses in Lentekhi, 156 - in Ambrolauri, 43 - in Oni and 142 - in Tsageri. The inner structure of the trade sector is analogous virtually in every district. Namely, agricultural products, as well as oil products and cigarettes make up the major portion of the total volume of trading.

It must be noted that present trade figures can be hardly compared with those of 1989. Namely, according to the 1998 data, the volume of retail accounted for 7% of the analogous volume of 1989 in the Lentekhi district, 8% in Tsageri. The districts of Ambrolauri and especially Oni are exceptions, where the volume of retail is quite high, accounting for 35% and 56%. This can be explained by the fact that the Ambrolauri district serves as a regional center, when the Oni district still serves seasonally for domestic tourism.

Existence of unique medicinal mineral waters, recreational resources, as well as certain infrastructure and traditions for tourism development, can stimulate development of trade and service sectors, which will create job opportunities and increase personal incomes.9.

It should be mentioned that 57% of respondents are willing to start their own business, they are interested in forest related activities, bee-keeping and forest nurseries; others are interested in tourism; some are interested in weaving, mineral water, wine, silk, fruit preservation. Therefore, support to small business of the local population will significantly assist forest improvement.

**Market capacity**

The Laboratory Zone is not rich in land resources owing to its geographical situation. The area of agricultural plots accounts for:

<table>
<thead>
<tr>
<th>District</th>
<th>Percentage of Total Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lentekhi district</td>
<td>21% of the total area of land</td>
</tr>
<tr>
<td>Ambrolauri district</td>
<td>25% of the total area of land</td>
</tr>
<tr>
<td>Oni district</td>
<td>35% of the total area of land</td>
</tr>
<tr>
<td>Tsageri district</td>
<td>20% of the total area of land</td>
</tr>
</tbody>
</table>

Agricultural products are virtually totally processed by private sector. In the Ambrolauri district, plant-growing is the leading sector of agriculture, making up 60% of the total agricultural products, while in other districts stock-breeding is given priority, making up 53% in the district of Tsageri, 64% in Lentekhi. Stock-breeding is the leading sector of agriculture in the Oni district, where 90% of the total agricultural products were processed in 1998.

Virtually, in every district, much of agricultural products are processed for personal use. Thus, one of the main problems is lack of the market capacity causing low income. The local population has difficulties with transportation and marketing of their goods. Road constructions and rehabilitation, which from one hand, is a critical for the local population in terms of facilitation of transportation and promotion of the local economy, from another hand, could create easy access to the forest for non-residents and could contribute to increase of forest use. This also could cause conflicts between the locals and non-local residents, and in case of improper forest management and utilization - forest degradation. However, as it was mentioned above, at the same time, roads will create opportunity for villagers to market their goods, which could increase their income and decrease their dependence on the forest. Therefore, roads construction with consideration of geological issues and relevant forest regulations will assist improvement of forest conditions.

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9 Information synthesis, Protected Areas Development Project
**Education**

After gaining independence, the educational materials and technical basis, which were rather outdated in the Soviet times, became even poorer. The 1991 earthquake in the Racha Region caused significant damages to the social institutions and worsened the situation.

According to 1998 data, an annual expenditure on education per capita was the following:

<table>
<thead>
<tr>
<th>Location</th>
<th>Expenditure (GEL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lentekhi</td>
<td>20</td>
</tr>
<tr>
<td>Ambrolauri</td>
<td>17</td>
</tr>
<tr>
<td>Oni</td>
<td>12.8</td>
</tr>
<tr>
<td>Tsageri</td>
<td>17.4</td>
</tr>
</tbody>
</table>

All the above-mentioned is a clear indication that the situation in the education system in the study region is critical, which is conditioned mostly by shortage of funds, deficient material and technical basis for educational institutions and inadequate qualification of teachers.¹⁰

**Privatization / Leasing**

Individuals who thought that forest privatization would help forest improvement were in minority in the focus groups. They believe that if the forest is privatized, people will protect it more, owing it as a private property. However, taken into consideration existing hard economical situation, dependence of the local residents of the lab region on the forest, it is expected that the locals will continue woodcutting activities.

Privatization could accelerate forest degradation, since in private forest plots locals will be able to cut wood more easily and the relevant governmental agencies will have additional difficulties to control woodcutting on the privatized areas. Thus, at present, privatization as a mean for the forest protection seems rather doubtful.

**Public Participation**

The local population of the Laboratory Zone lack even basic information and have mistrust in most of the sources of information. Generally, locals are disregarded from social, economic, political and nature resources management activities and decision-making.

This circumstance makes it very difficult to address forestry management issues in sustainable way in the long term. Obviously, without active participation and involvement of the local population, there is a little chance that government initiatives will be successful in solution of the urgent forestry issues. However, Local participants appear to be eager to learn more and participate in nature resource management and decision-making process of their region.

**ONI REGION**

- **Industry**

There are 38 industrial enterprises in the Oni district, out of which only 25 enterprises function. Food industry is the leading sector of the industrial activities, proportion of which

¹⁰ Information synthesis, Protected Areas Development Project
comes to 50%, electro-engineering is represented by 19%, timber production, paper and furniture industries by 10%.

- **Poverty**

According to the GORBI report, almost 50% of the respondents cannot buy food and clothes due to unemployment and low income. The living standard of this region is worse than in other three regions of the Lab Zone, since the main source of income is governmental benefits (salaries, pensions, which are usually delayed or not paid) and remittances from relatives. The local population is much depended on agriculture, crops and livestock raising on their own or state owned lands. 92.7% of the local residents owns or exploits land and only 4% intends to sell it. In Oni, households have primarily poultry, pigs, cattle, sheep, goats.

- **Energy crisis**

Each family, depended on its location, uses averagely 5 to 25 m$^3$ firewood. Energy crisis is greatly evident during the winter. Although, the information about the main sources of income shows that forest-related activities have relatively minor contribution in the locals' income. Alternative fuel is too expensive or unavailable for the locals, therefore, cutting and collecting of wood for heating and cooking is critical for these regions.

Energy sources are distributed in the following way:

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td>79.2%</td>
</tr>
<tr>
<td>Kerosene</td>
<td>17.5%</td>
</tr>
<tr>
<td>Electricity</td>
<td>3.3%</td>
</tr>
</tbody>
</table>

Almost all the local population in the Oni district uses firewood for heating and the majority for cooking as well:

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firewood for cooking</td>
<td>98.7%</td>
</tr>
<tr>
<td>Firewood for heating</td>
<td>100%</td>
</tr>
</tbody>
</table>

- **Opinion about forest condition**

The most part of households thinks that forest condition have been degraded during past five years, and a few people believes that condition has improved.

<table>
<thead>
<tr>
<th>Condition of forest</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deteriorated</td>
<td>55.5</td>
</tr>
<tr>
<td>Same</td>
<td>42.7</td>
</tr>
<tr>
<td>Improve</td>
<td>1.8</td>
</tr>
</tbody>
</table>
The main causes of forest deterioration was named as:

<table>
<thead>
<tr>
<th>Cause</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive wood cutting</td>
<td>60.9%</td>
</tr>
<tr>
<td>Poaching</td>
<td>16.9%</td>
</tr>
<tr>
<td>Global climatic changes</td>
<td>13.8%</td>
</tr>
<tr>
<td>Air pollution</td>
<td>3.1%</td>
</tr>
<tr>
<td>Fertilization &amp; other chemical</td>
<td>1.5%</td>
</tr>
<tr>
<td>Expansion of urban areas</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

The local residents think that to improve existing situation, the government should strengthen control on wood export, introduce restrictions in forest utilization and make alternative fuel resources more easily available on site.

- **Lack of public information and awareness**

One of the urgent issues is public information and awareness raising on forest related issues. The problem is that the local population does not receive a sufficient amount of information and they do not believe the most of the information they receive. With this regard, confidence of the local population towards the source of information should be considered:

<table>
<thead>
<tr>
<th>Source of information</th>
<th>Confidence %</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV</td>
<td>49.1</td>
</tr>
<tr>
<td>Friends and family</td>
<td>25</td>
</tr>
<tr>
<td>Trust none</td>
<td>6.9</td>
</tr>
<tr>
<td>Newspapers</td>
<td>5.2</td>
</tr>
<tr>
<td>Natural resources management</td>
<td>4.3</td>
</tr>
<tr>
<td>Radio</td>
<td>4.3</td>
</tr>
<tr>
<td>Neighbors</td>
<td>2.6</td>
</tr>
<tr>
<td>Conservation organizations</td>
<td>2.6</td>
</tr>
<tr>
<td>Brochures</td>
<td>0</td>
</tr>
<tr>
<td>Forest managers</td>
<td>0</td>
</tr>
</tbody>
</table>

- **Healthcare problems**

Economical condition and psychological stress influences the health of the population. Most of the locals consider that the health of their family members worsened over past five year:

<table>
<thead>
<tr>
<th>Health condition</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worsened</td>
<td>50</td>
</tr>
<tr>
<td>Remained the same</td>
<td>47.3</td>
</tr>
<tr>
<td>Improved</td>
<td>2.7</td>
</tr>
</tbody>
</table>

As the main reasons of health worsening, the local population considers aging and psychological stress.
• Out-migration

Unemployment, difficult economic conditions and low income are the main reasons of out-migration. As residents of Oni mentioned, there is little chances to return this people back in existing socioeconomic situation. At least one family member (about 45%) of the households leaves the village. Youth are most likely to leave their villages, depriving both families and communities of the energy and strength needed to cut, collect fuel wood and to farm. Out-migration is slowing economic growth in the region.

According to the GORBI report, main reasons of departure of local residents are:

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marriage</td>
<td>41.6%</td>
</tr>
<tr>
<td>Work in other places of Georgia</td>
<td>32.8%</td>
</tr>
<tr>
<td>Education</td>
<td>11.5%</td>
</tr>
<tr>
<td>Work in other countries</td>
<td>9.7%</td>
</tr>
<tr>
<td>Instability in the region</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

Obviously, out-migration changes demographics of the region; 36% of the population is over the age of 55 and 17% under the age of 26.

• Public participation

As SA found, the local population is willing to participate in the forest management activities, but few of them have opportunity to do so. Almost all residents of the Oni region claimed that no one from the national, state or commercial forest management authorities has asked them for help or for their opinion. Although they believe that they must participate in forest management, 1,2% does not know what they must do actually to "Take care of our resources". This answer was named by 29,6% of population, 16% thinks they must participate in afforestation.

LENTEKHI REGION

• Industry

The industrial complex of Lentekhi is represented by electro-engineering, timber production, paper and furniture industries. There are 30 industrial enterprises in the district, 26 of which operate, most of them relate to the timber production.

• Poverty

According to the living standards, the population can be divided into the following classes:

<table>
<thead>
<tr>
<th>Living standard</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>The poorest</td>
<td>45.3</td>
</tr>
<tr>
<td>Middle poor</td>
<td>42</td>
</tr>
<tr>
<td>The least poor</td>
<td>12.7</td>
</tr>
</tbody>
</table>
The main jobs on site are crop cultivation and livestock raising. Their main problems the local population is facing are the following:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment</td>
<td>22.2%</td>
</tr>
<tr>
<td>Delay in salary / pension</td>
<td>16.4%</td>
</tr>
<tr>
<td>Low income</td>
<td>14.6%</td>
</tr>
</tbody>
</table>

The main sources of the income are: job, relatives' remittance, agriculture and livestock (meat, dairy products). Most of the local residents grow fruit, vegetable and raise livestock and it is very difficult for them to purchase products in the market.

- **Energy crisis**

In Lentekhi, 99.3% of the locals uses wood for cooking and 99% for heating purposes. They cannot afford to buy gas and kerosene; 12.4% uses electricity.

Georgia's energy crisis is acute especially during the winter. Urban areas often receive as little as two hours of electricity a day and supply to rural areas is even less (usually electricity supply is 2 hours per week). Rural inhabitants do not have access to alternative fuel and generally cannot afford to utilize non-wood fuel. Their cooking and heating needs are met by the only available energy supply – wood from the forests. All other potential supplies such as kerosene, gas and electricity are too expensive or unavailable.

- **Opinion about forest conditions**

According to the GORBI report, 59.3% of the local population believes that forest is in the same condition as in past, 46% thinks forest is deteriorated and only 0.7% regarded forest to be improved.

As a main reason of the forest degradation, the locals mostly consider excessive woodcutting, global climate changes and converting forest into agricultural lands:

Major causes of Forestry Degradation Given by the local population are:

<table>
<thead>
<tr>
<th>Causes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive wood cutting for firewood</td>
<td>77.7</td>
</tr>
<tr>
<td>Global climate changes</td>
<td>7.9</td>
</tr>
<tr>
<td>Converting natural forests to agricultural lands</td>
<td>6.6</td>
</tr>
<tr>
<td>Poaching</td>
<td>3.9</td>
</tr>
<tr>
<td>Air pollution</td>
<td>3.9</td>
</tr>
<tr>
<td>Expansion of urban areas</td>
<td>0</td>
</tr>
<tr>
<td>Expansion of recreation areas</td>
<td>0</td>
</tr>
<tr>
<td>Mass exporting</td>
<td>0</td>
</tr>
<tr>
<td>Economic poverty</td>
<td>0</td>
</tr>
<tr>
<td>Fertilizers &amp; other chemicals</td>
<td>0</td>
</tr>
</tbody>
</table>

In addition, as one of the reasons of forest degradation, the local residents consider poor governmental management system. Around 32% of the locals think that control on wood export must be intensified and 24.1% believes that the government must make alternative fuel more available, 19.2% thinks there must be restrictions in forest use. The locals trust mostly TV and radio, which should be used in the future for informing the population about the forest related problems.
• **Healthcare problems**

According to the GORBI report, 35% of the local population believe that the health of their family members are worsened, the main reasons of what they consider the following:

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic condition</td>
<td>33.9%</td>
</tr>
<tr>
<td>Aging</td>
<td>32.1%</td>
</tr>
<tr>
<td>Reduced quality of health service</td>
<td>14.3%</td>
</tr>
<tr>
<td>Psychological stress</td>
<td>11.6%</td>
</tr>
<tr>
<td>Insufficient food</td>
<td>6.3%</td>
</tr>
<tr>
<td>Poor quality of food</td>
<td>1.8%</td>
</tr>
<tr>
<td>Poor quality drinking water</td>
<td>0%</td>
</tr>
<tr>
<td>Inadequate sanitation</td>
<td>0%</td>
</tr>
</tbody>
</table>

Around 2.7% of the local population considers that health conditions improved and 62% believes that it remained the same.

• **Out-migration**

Poor living conditions, poverty and unemployment cause out-migration. The local population of the Lentekhi region, seeking for better life conditions in other regions or abroad, is leaving these places. This situation is rather painful and stresses psychologically the aged members of family.

• **Public participation**

As in the other regions of the Lab Zone, the local population is rather neglected during decision-making process on social, economic, political and nature resources management activities at the local level.

Around 99.3% of the local residents thinks that forest management authorities are not encouraging their participation in forest management issues and activities. Although 43.8% does not know public participation ways or tools for solving forest related problems, 26.4% believes they can take part in afforestation activities. 13.1% of the locals is convinced that people must not cut wood without licenses.

**AMBROLAURI REGION**

• **Industry**

Around 35 industrial enterprises function out of 70 existing in the Ambrolauri district. Food industry and electro-engineering are the leading sectors, proportion of which is 43% and 42% correspondingly. The food industry is mainly represented by the wine enterprises, which use the endemic species of grapes. There is a considerable demand for the products both at the internal and external markets. The timber production, paper and furniture industries are represented by 4%.

• **Poverty**

The living standards in Ambrolauri are relatively better comparing with other regions described above. 70.7% of population consists of the middle poor, 23.3% poorest and the least poor comprise 6%, which is less than in the Oni and Lentekhi regions.
The local residents have three main sources of income: livestock (meat and dairy products), relatives’ remittances and crops. The locals are raising mostly poultry, cattle and pig.

- **Energy crisis**

In comparison with other regions described above, there is a hydropower station in Ambrolauri, which supplies mainly the town dwellers. However, since electricity is unaffordable for locals, almost the whole population of the region uses wood fuel for heating and cooking. Therefore, use of electricity is rather insignificant comparing with wood use, which makes 90%.

- **Opinion about forest condition**

82% of the local population regarded forest resources to be deteriorated and 18% to be the same. In the Ambrolauri region, no one believes that forest has been improved.

<table>
<thead>
<tr>
<th>Opinion about forest condition</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worse</td>
<td>82</td>
</tr>
<tr>
<td>Same</td>
<td>18</td>
</tr>
<tr>
<td>Improved</td>
<td>0</td>
</tr>
</tbody>
</table>

The main reasons of forest deterioration according to the locals are:

- Excessive wood cutting 68.8%
- Poaching 16%

**TSAGERI REGION**

- **Industry**

According to the 1999 data, the industrial complex of Tsageri is represented by 21 enterprises, out of which 19 are functioning. The growth rate of output came to 247.2% compared with the corresponding period in 1998, largely due to the volume of electricity generated by joint-stock company “Lajanurhesi”. Electro-engineering is a leading sector of industry (72%). There are enterprises of food industry specialized in wines made of unique species of grapes in the Tsageri region.

- **Poverty**

The Tsageri region is in the best situation in terms of poverty:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>can buy some expensive things</td>
<td>0.7%</td>
</tr>
<tr>
<td>least poor population</td>
<td>52.7%</td>
</tr>
<tr>
<td>middle poor</td>
<td>46%</td>
</tr>
<tr>
<td>poorest</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

Population of none of regions described above can afford buying expensive things. Income of the local residents mostly depends on trade, relatives’ remittances, salary and livestock.

- **Trade of forest related products**
Trade of forest related products is not a main activity for the local population of all four regions located in Laboratory Zone. Residents of Lentekhi receive less than 6% of their cash income from this activity. Population of Tsageri is greatly dependant on agricultural activities.

- **Energy crisis**

Although the local population depends on wood, there is a better condition in the Tsageri region in terms of using alternative fuel.

<table>
<thead>
<tr>
<th>Fuel</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td>90.5%</td>
</tr>
<tr>
<td>Gas</td>
<td>9.4%</td>
</tr>
<tr>
<td>Kerosene</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

- **Opinion about forest conditions**

Around 79% of local residents think that forests are degraded, the main causes of which they consider excessive wood cutting, poaching and economical poverty. The local residents believe that the government should strengthen control on wood export and make alternative fuel more easily available to improve forest conditions.
2.2 Physical description of the Lab Zone

Geographical and administrative borders of the study area (Laboratory Zone)

Study area consists of four, medium and high mountainous administrative districts of Georgia - Lentekhi, Tsageri, Oni and Ambrolauri. Lentekhi district belongs to the Lower Svaneti region and is surrounded from the North by Mestia (Upper Svaneti) and from the South by Lechkhumi region. Tsageri is the administrative center of the region. Eastern and northeastern parts of the study area (about 70% of the total area) belong to the Ambrolauri (Lower Racha administrative unit) and Oni (Upper Racha administrative unit) regions. Similarity of physical-geographical conditions and peculiarities of relief stipulates expedient of join description for all above regions.

Climate

The complicated relief of the region conditions the variety of the climate. The following topographic features directly affect the climate:

1. Altitude that ranges from 150 to 4,000 m;
2. Mountain massif of the Great Caucasus range as well as its adjacent ranges;
3. Existence of the glaciers and snow beds in the high-mountainous part;
4. Black Sea that keeps the warmth and large amounts of precipitation within the region;
5. Geographic location of the region that predetermines significant positive balance of much of its territory;
6. Distinctive division between the plain and mountainous parts of the relief, orientation of the major ranges and their steep slopes.

Significant amplitude of the absolute elevations determines a distinct vertical zoning, ranging from the subtropical climatic elements of Kvemo Racha to everlasting glaciers of the Great Caucasus range. The following vertical zones could be identified:

1. Humid climate with temperate cold winter and long warm summer at 1,200 m;
2. Humid climate with temperate warm summer and cool winter at 1,200-2,300 m;
3. Humid climate with short cool summer and long winter at 2,300-3,500 m;
4. High-mountain climate;
5. Climate with everlasting glaciers and snow beds over 3,300 m.

Complicated orographic conditions greatly affect climates of each zone as well as egzodynamic process, their orientation and intensity, determining their morphosculptural variety largely.

Air masses that dominate in the Racha-Lechkhumi and Kvemo Svaneti regions are determined by northeast and southwest wind directions with average velocity of 2-2.5 m/s.

Northeast winds that reach considerable speeds at some places are formed in the autumn-winter. The contact of the high-pressure area formed on the territory of the North Caucasus with low-pressure area from the Black Sea causes air masses to be shifted from the East to the West. At some places, speed of winds reaches 30-40 m/s.
Winds of west origin are borne in the summer, when the high-pressure area is formed on the Black Sea, while there is the low-pressure area in the interior of the continent. Such winds tend to carry abundant moisture.

Temperature is marked with diversity. Average annual temperature ranges from +14.5°C to -2.4°C. January is considered as the coldest period; the temperature in January ranges between +5.2°C and -12°C, while the temperature in August reaches +24°C.

Temperature gradient is of little significance in high-mountain zones and its annual changes are distinctive. The annual amplitude of temperature comes to 22°C in major parts of the region (500-1,600 m), while in high-mountain zones it comes to 18-19°C. The same is characteristic for the difference between minimal and maximum temperatures.

The annual distribution and intensity of precipitation changes significantly with increase in elevation. Distribution of precipitation is affected by the Black Sea as well as by the orientation of the ranges. Average annual amount of precipitation in the study area reaches 1,200 mm. The atmospheric precipitation mainly is represented by rain, seldom by wet snow. According to longstanding observation data, the annual value of precipitation in Oni and Ambrolauri districts fluctuates from -1,200 to -1,400 mm and increases considerably within the Tsageri and Lentekhi districts, where this index reaches 1,800 mm. For example, Precipitation in Oni town at 700-800 m asl is 971 mm, in the surroundings of Utsera - reaches 1,387 mm, conditioned by orographic conditions, namely by the Shoda-Kedela range.

Precipitation in the form of snow can be observed in low mountain areas in November - April, at the elevation of 1,500 m - in October-May, while at the elevation of 2,800 m, precipitation in the form of snow can occur in the summer. The thickness of snow cover corresponds to increase of elevation. Thickness of snow cover is 30-34 cm at 400-800 m asl, while it is 56 cm at 1,000-1,600 m, and 90-110 cm at the elevation of 2,500 m. In lowland areas, the maximum thickness of snow cover comes to 150 cm, while in highland areas to 350 cm.

Despite the large amounts of precipitation within the region, sometimes droughts also occur that can last for 25-30 days. In this period, precipitation is either too low or equal to zero. Summer droughts sometimes comprise the whole region.

At the lower elevations, the stable snow-cover is rare phenomenon. Within the central part of the Great Caucasus, strong snowstorms are observed and fogs are spread in summer period.

Relief

The relief of the Central Caucasus region is distinguished with high complexity. The region is divided into several physical-geographical areas.

Great Caucasus range borders Svaneti from the North and divides it into two parts - Zemo (upper) and Kvemo (lower) Svaneti.

The Great Caucasus range is the highest part of the Caucasus within the region. The altitude of highest peaks exceeds 5,000 m.

Study area comprises Svaneti, Lechkhumi and Racha ridges, which serve as watershed for rivers coming from the south slope of the Great Caucasus.

Tectonic, erosive, geomorphologic and other classical processes as well as glaciers are key factors that formed the present relief of the Central Caucasus.
The following large orographic features can be distinguished within the lab zone:

1. Major watershed range, including its wide branches;
2. Svaneti range;
3. Plains of the Tskhenistskali river;
4. Lechkhumi Range;
5. North slope of the Khvamli massif;
6. Rioni plains (the Racha depression that extends to the village of Tvishi);
7. North slope of the Racha range.

**The Great Caucasus range:**

The crest of the Major watershed range is oriented towards the Greater Caucasus. Great part of the Lentekhi and Oni districts (especially their northern part) belongs to the main range of the Great Caucasus and its south slope. Relief is represented by ridges of meridian direction of medium altitude and flattened areas between ranges. The Racha-Svaneti section is its major part within the region.

Besides the widely developed tectogenic-erosional high and medium mountainous relief there are glacial, early glacial, karst (cockpit), landslide and mountain creep forms of relief. The crest of the Great Caucasus is narrow, with cogged high and very steep slopes. Meridional ranges are also characterized by vertical or very steep slopes, transformed gradually to the South into the medium mountainous, less intersected, relief with elevations about 600-1,200 m and relative altitude from riverbed 200-300 m.

The Racha-Svaneti section is composed of oldest crystal rocks. Several different formations can be observed there:

a) Crystalline strata, gneiss, etc.;  
b) Gray granite of the Major range;  
c) Granodiorites.

Several morphological complexes are typical for the relief of the Great Caucasus range:

1. Rocky and glacial mountain peaks that are characterized by abrasion and intensive glacial processes;  
2. Recent glaciers and V-shaped valleys;  
3. Early glacial abrasion and accumulative forms;  
4. Erosive forms.

 Abrasion is the key process in the glacial-nival zone that forms steep-slope peaks as a result of glacial weathering; correspondingly pyramid-shaped inaccessible peaks are formed. Most of these peaks are characterized by steep and rocky forms. The trace of the glacial period is well marked along the Racha-Lechkhumi section.

Moraines and troughs of late glacial period descend to the elevations of 1,200-1,500 m in Svaneti and Racha. The troughs in the Racha section of the Great range are less distinct: they come down to the elevation of 1,600-1,700 m.
Water erosive forms of the relief are developed along the south slope of the Great Caucasus range. Terraces can be rarely found on the slopes; they occupy small areas.

**The Kvemo (Lower) Svaneti depression**

The Kvemo (Lower) Svaneti depression has a latitudinal orientation. The lowest point of the depression located in Lentekhi is at 706 m asl. The Kvemo Svaneti depression is composed of the Jurassic sandstones. The Tskhenistskali River lowland, which has a latitudinal orientation from the Shushara River mouth, changes its orientation and morphological character several times. Above areas are densely populated and covered by agricultural activities.

The Kvemo Svaneti depression is smaller and deeper than the Zemo Svaneti depression. The erosional and denudative relief prevails in the area and is represented by comparatively gentle forms.

The Rstkmeluri gorge unites the Kvemo Svaneti depression with the Lechkhumi (Tsageri) depression. The gorge has a sub-meridian orientation and stretches over 16 km from Lentekhi to Tsageri. The gorge is composed of the lower Jurassic sandy-schist strata, middle Jurassic porphyritic stratum and at the lower section by Cretaceous gravel mass. The V-shaped gorge has series of erosive stairs on the slopes.

The Racha depression is bordered by the watershed range from the North and East and is separated from the Kvemo Svaneti by the Lechkhumi range. Racha is divided into two parts: Kvemo (Ambrolauri district) and Zemo (Oni district) Racha.

The altitude of the major watershed range decreases towards west-northwest direction, which is its main morphological peculiarity.

**The Racha range**

The Racha range, which is a branch of the Caucasus range at the Zekara mountain, runs westwards and in the Tvishi village borders the Rioni river gorge. Cretaceous rocks form west part of the range. The middle Jurassic porphyritic compounds and lower Cretaceous flysch are developed in the east part.

Western part of the Racha range represents a classical massif of the mountainous karst with different distinctive karst relief forms. The east part is marked by erosion; while the upper zones are marked by glacial forms.

**The Racha depression**

The Racha depression is the basin of the upper section of the Rioni River from the Tvishi village. The Racha depression in comparison with the Kvemo Svaneti depression is much more diverse in lithological constituents, tectonic conditions and age. Multiplicity of granite of the early Paleozoic period and crystalline rocks is determined by the existence of the major watershed range.

**The Tsageri depression**

The Tsageri depression is bordered by the branches of the Odishi range on the northwest, the Lechkhumi lowland on the southeast and the Askha and Khvamli massifs on the southwest. The depression has a long axis that is oriented from northeast to southeast. It is formed with terrigenous, at some places, carbonaceous rocks, the age of which ranges from Oligocene to Sarmatian. The south-westernmost and north-easternmost parts of the depression are formed by Eocene clays, marls and Cretaceous rocks. The bottom of the
depression is formed by terraces composed of Quaternary alluvial sediments. Slopes of the depression are covered by Oligocene-Neogene stratum and are characterized by lowland relief and contain landslide sections.

Altitude of the Shua (central) Lechkhumi highland is 500-600 m and represents the left side of the depression. Right side of the Tsageri depression is wider and reaches 6 km.

The Lechkhumi range

The Lechkhumi range deviates from the Great Caucasus range at the Pasa Mountain and is oriented southwestwards up to the Chutkharo mountain. Further, its direction coincides with the direction of the Great Caucasus range. The Lechkhumi range is a watershed between the Tskhenistkali River and the right tributaries of the Rioni River as well as the left tributaries of the Tskhenistskali. The cross section of the Lechkhumi range is quite asymmetric: its northern slope is short with few branches and plains, while the southern slope, directed towards Lechkhumi, is quite long and dismembered into numerous branches and river basins. Composition of the range, which is similar to the Svaneti range, is composed of early Jurassic sandy stratum and has the identical relief forms, but with lower altitudes.

Hydrography

The Central Caucasus is located within the catchments of the Rioni River, belonging to the Black Sea Basin.

The Rioni originates from glaciers of the southern slopes of the Great Caucasus range (the area of the Pasa Mountain at 2,960 m). The Rioni River (along the section Brili-Gebi-Giola) runs through the wide gorge from northwest to southeast and funnels through the narrow rocky gorge southward, crossing the Shoda Kedela range. From the Oni town, Rioni has a sub-latitudinal orientation and flows westwards in a wide terraced riverbed. The Khidikari section is an exception, where it reaches the narrow gorge, but passing the Ambrolauri-Chrebalo district the gorge widens again. From the Alpana village the river turns towards the South and flows through the narrow gorge that turns into canyon at the village of Tvishi.

Parameters of hydrological regime of the Rioni River are given below:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>337 km</td>
</tr>
<tr>
<td>Catchments area</td>
<td>13,418 km²</td>
</tr>
<tr>
<td>Average elevation point of the basin</td>
<td>1,086 m</td>
</tr>
<tr>
<td>Altitude difference of the canyon</td>
<td>2,495 m</td>
</tr>
<tr>
<td>Average perennial discharge</td>
<td>- 410 m³/s</td>
</tr>
<tr>
<td>Average perennial depth of the run-off</td>
<td>995 mm</td>
</tr>
</tbody>
</table>

Floods in the Rioni River occur from March till October. Accidental floods are frequent and are repeated almost during the whole year.

The main right tributaries of Rioni are: Sakaura, Luhuni, Ritsulea, Lajanuri, Tskhenistskali. The left tributaries are: Chanchakhi, Gharula, Jejora, Lekhidari.

The Tskhenistskali River, which is the largest tributary of the Rioni River, represents the main hydrographic element on the territory of Lentekhi and Tsageri districts. The Tskhenistskali River joins Rioni beyond the Lab Zone limits. Source of the Tskhenistskali River is the Great Caucasus range at the Pasa Mountain at the altitude of 2,710 m.
Main tributaries of the Tskhenistskali River within the study area are Laskanura, Kvedrula, Lektareshi, Januali rivers. Canyons of these tributaries are steep and are covered with dense forest. The main parameters of hydrological regime of the Tskhenistskali River are as following:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>183 km</td>
</tr>
<tr>
<td>Catchments area</td>
<td>2,122 km²</td>
</tr>
<tr>
<td>Average elevation point of the basin</td>
<td>1,660 m</td>
</tr>
<tr>
<td>Altitude difference of the canyon</td>
<td>2,695 m</td>
</tr>
<tr>
<td>Average longstanding discharge</td>
<td>80,6 m³/s</td>
</tr>
<tr>
<td>Average longstanding depth of the run-off</td>
<td>1,301 mm</td>
</tr>
</tbody>
</table>

River canyon is deep whose steep slopes are covered by forest. Gradually, closer to the Tsageri district, canyon is transformed into middle mountainous zone. The tributary is nourished by snow and rains, while the upper segment of the basin by glaciers. As majority of mountainous rivers, the Tskhenistskali River is characterized with extremely not stable hydrological regime. Floods are frequent, especially from spring till early autumn and 70% of superficial runoff comes on this period. In winter, this figure is minimal and does not exceed 10%.

Large and medium-sized lakes are not found within the region. Small-sized Kvedi lake is situated in the basin of the Jojora River at 1,567 m. The area of its basin is 11.8 km². Network of rivers in the lake basin is quite dense. The Kvedrula, its principal river, has many small tributaries. It flows into the lake on the East and flows out on the West. The main water supplier of the lake is the Kvedrula River. The surface area of the lake is 9 ha, the maximum depth 14.5 m, average - 8.2 m, volume is 0.71 million m³.

The Shaori reservoir, located within the Ambrolauri district, was formed in 1954 after the Shaori (Didichala) had been dammed up. The surface area of the Shaori reservoir is 126 km², altitude 1,133 m, the average depth 7 m, the maximum depth 15.2 m, the length of the coastline 25 km.

**Soils**

According to the latest (1999) classification of soils in Georgia, the main soil forming rocks developed within the Lab Zone are (see Figure 8):

<table>
<thead>
<tr>
<th>District</th>
<th>Soils Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oni district</td>
<td>Porphyrites, andesites, partly carbonaceous rocks - limestones, marls, dolomites</td>
</tr>
<tr>
<td>Lentekhi district</td>
<td>Mainly metamorphic schists and clayey schists</td>
</tr>
<tr>
<td>Tsageri and Ambrolauri</td>
<td>Mainly Loeses, Loesic loams, clay schists, etc. Subordinating role take porphyrites and andesites, sometimes - carbonaceous rocks</td>
</tr>
<tr>
<td>districts</td>
<td></td>
</tr>
</tbody>
</table>

There is a significant vertical difference in the project region, ranging from 400 m to 5,000 m asl. The following soil types are found in the Central Caucasus region:

- mountain-meadow primitive,
- mountain-meadow,
- mountain meadow peaty,
- mountain - forest-meadow,
- gray-brown acid,
- gray-brown podsols,
- yellow-brown,
- humus-carbonate,
- humus-karst red,
- alluvial acid,
- highly eroded soils and exposed rocks.

High-mountainous soils occupy the highest positions in the vertical zoning. These soils are formed in the sub-alpine and alpine zones above 2,000 m altitude. The mountain-meadow soils are most common. These soils are marked by undifferentiated profile.

Pastures are located on the mountain-meadow soils. Mountain-meadow asymmetric soils are quite common. They are characterized by absence of one of the genetic horizons.

Mountain-meadow peaty soils are formed in two completely different ecological conditions. On the one hand, they are common under rhododendrons. The formation of peat is a result of so-called "dry peat forming", when peat is accumulated in humid environments. On the other hand, the mountain-meadow peaty soils are characterized by spread in highly humid environments around water sources (riversides, lakeside).

The mountain-meadow peaty soils are characterized by medium and small thickness, except the peaty horizons. The principal soil-forming processes are: accumulation of peat, humus-formation, humus-podsolization, structuring.

Mountain-forest-meadow soils are formed in the sub-alpine zone in the sub-alpine forests. They are distinguished by undifferentiated profile, by humus horizons - the dark brown soils. The principal soil-forming processes are: humus-podsolization and humus-formation.

The gray-brown soils (acid and podsols) occupy the largest area at of 1,000-2,000 m under different types of forests.
Yellow-brown soils are common at 450-9,000 m under weathered volcanic rocks.

The principal soil-forming processes of the yellow-brown soils are: humus-formation and weathering.

The humus-carbonate soils are mainly formed in the forest zone on rocks containing large amounts of calcium-carbonate (limestone, marble, dolomite, etc.) and are characterized by leaching and periodically leaching regime. These soils exhibit well-developed humus horizons.

The alluvial soils are spread on limited areas under terraces of flood plains. These soils are characterized by acid, neutral or alkali reactions, (depending on the basin where they develop), as well as by middle or low composition of humus.

The arable soils of the study area are rather eroded, which is caused by wide distribution of annual crops as well as discounting of the elementary agrotechnical requirements. The figure of erosion exceeds 70%.

The region is characterized by interesting soils and topsoil.
According to the scheme of physical-geographic zoning, the study area belongs to the Great Caucasus Southern Slope mountainous region and mainly is characterized by abundant and moderately humid mountain-forest landscape, where brown, humus - calcareous - rendzic leptosols, forest podzolic soils are developed. Southwards, on the territory of the Ambrolauri district, yellow and red raw humus calcareous and mountain meadow soils occur as well.

**Geomorphology**

According to the scheme of geomorphologic division of Georgia, Oni and Lentekhi districts are located mainly within the zone of folded ranges and massifs, composed by terrigenous-volcanic formations of Jurassic and Tertiary periods - represented by clay-schists, sandstones, porphyrites, tuff breccias, rarely limestone.

Characterizing geomorphologic elements are nival-glacial and erosional-glacial ranges and massifs. Within the Tsageri and Ambrolauri districts, dominated geomorphologic elements are represented by structural piedmont zone. It is characterized by fracture-folded and monoclinal structure and composed mainly by Tertiary terrigenous facies - conglomerates, sandy-clayey and carbonaceous formations. The characteristic form of relief here is denudation-erosional piedmont.

**Landscapes**

Composition of landscapes in the Laboratory Zone (Racha-Lechkhumi and Lower Svaneti) could be summarized as follows:

- One (1) class of landscapes;
- Four (4) types: low mountainous, medium-mountainous, upper-mountainous and Alpine;
- Eight (8) subtypes;
- Twelve (12) families; and
- Thirty nine (39) series

Classification of landscapes is given according to landscape families. The bottom of the Racha-Lechkhumi depression is represented principally by the low-mountainous moderately warm humid landscapes. They represent two landscape families:

- 30th low-mountainous karst with mixed oak-grove, deciduous and evergreen forests; and
- 31st mountainous depression low-mountainous erosive-accumulative landscape with mixed oak and deciduous forests.

At the altitude of 600-800 m, above-mentioned landscapes are gradually replaced by medium-mountainous moderately warm humid landscapes of Kolkheti (H2) represented by two families:

- 36th medium-mountainous erosive-denudative landscape with mixed, evergreen forests and
- 37th medium-mountainous karst landscape with mixed and evergreen forests.

The 36th landscape occupies a large territory. It is bounded on the southwest by the 30th and 31st landscapes, where it embrace the northern part of the Tsageri depression and stretches
upstream to the Kvemo Svaneti depression, where it is bounded by the northern branches of the Lechkhumi range. In the Ambrolauri district, the 36th landscape is bordered on the North by the Rioni River.

At 1,000-1,200 m, above listed landscapes are replaced by medium-mountainous moderately cold landscapes (K) with mixed forests and mountainous chernozem soils (black earth). In the Shovi district, they are bordered by coniferous forests. Two landscape families are encountered in the project region:

- **51st - medium-mountainous erosive-denudative landscape with mixed, coniferous forests (spruce, abies)** More widespread in the project region, which embraces the slopes of the Svaneti, Lechkhumi and Shoda-Kedla ranges, and the Racha and Caucasus ranges in the East
- **52nd medium-mountainous karst with mixed-coniferous and evergreen forests** Found on the Askha plateau and the northern slopes of the Racha range

The upper-mountainous moderately cold forest landscape (T2) is represented only by the 54th landscape family, that is known as the upper-mountainous erosive-denudative, rarely paleoglacial, landscape with coniferous and oak forests. The mentioned landscape is bounded by the 51st landscape, which comprises the Egrisi, Svaneti, Lechkhumi, Shoda-Kedla and Great Caucasus ranges.

At 2,000 m, they are replaced by high-mountainous sub-alpine meadow shrub landscapes (L1), which are represented by three landscape families:

- **58th high-mountainous denudative paleoglacial landscape with high and dense grassy meadows and shrubberies,**
- **59th high-mountainous karst thick grassy meadows and sparse forests,** and
- **64th high-mountainous denudative and paleoglacial landscape with sub-alpine meadows and sparse forests.**

Hypsometrically, the 58th is bordered by the 52nd landscape and extends to the slopes of the Egrisi, Svaneti, Lechkhumi, Shida-Kedla and Great Caucasus ranges. The 59th landscape is found on the slopes of the Racha range and in the southernmost part of the region.

The high-mountainous sub-nival landscapes (L3) are represented only by one landscape family (70) that is spread at 2,800-4,000 m asl. Thus, it comprises the upper parts of the Egrisi, Svaneti and Great Caucasus ranges.

The glacial-nival landscape (M) is represented by 72nd landscape family, i.e. glaciers. It is found in the northwestern part of the region and comprises the peaks of the Great Caucasus watershed range.

**Geology**

**Stratigraphy**

The major watershed range in the Lab Zone mostly coincides with the Caucasus geological axis. Eastwards of the Mamisoni pass the watershed range deviates from the geological axis to the South and enters the stratigraphic-tectonic zone of the Great Caucasus range (see Figure 9).
Geology scheme

Figure 3

- Cretaceous, limestone, marl, sandstone
- Lower Jurassic - clay, schist, sandstone, limestone
- Palaeogene - clay, sandstone, limestone
- Palaeozoic granulites
- Quaternary - clay, sand, shingle
- Upper and Middle Jurassic - porphyries, their volcanic tufts, sandstone, schist
The Caucasus principally seats on Mesozoic and early Mesozoic rocks. Arrangement of the rocks depends on the geological zoning. The oldest rocks are located in the axial zone of the Caucasus. To the South of the geological axis, the stratigraphic complexes are presented in the form of lines stretched along the axis of the Great Caucasus range from west-northwest to east-southeast. Their geological age is gradually decreasing. The oldest lower Paleozoic rock formations are presented by crystalline rocks (granite, crystalline schist). Such rocks are stretched along the major watershed range till the Mamisoni pass. The upper Paleozoic metamorphic rocks (sandstone, quartzite, phyllite, marble) are found in the form of a narrow line along the Great Caucasus range.

The largest part of the area is occupied by the Jurassic rocks, bordering the Kvemo (Lower) Svaneti depression, the Svaneti range and the Lechkhumi and Egrisi ranges. Rocks of the late Jurassic period are presented by clays and sandstones. The middle Jurassic period is characterized by volcanic rocks (porphyry, tuff, tuff conglomerates). As for upper Jurassic, it is connected with Cretaceous systems and is mainly represented by carbonaceous rocks (marls, schist, marly clay).

Cretaceous sedimentary rocks are marked by homogeneous schist stratum. They surround the Lechkhumi and Racha depressions from the North to the South. These depressions were drained comparatively later, that is why they are presented by Paleogene, less by Neogene, fine terrigenous (conglomerates, sandstones and clays), as well as carbonaceous sedimentary rocks.

Glacial and fluvial, as well as talus and proluvial sedimentary rocks, are most common among the Quaternary sediments.

The oldest crystalline rocks are connected with the glacial-nival zone of the Great Caucasus range, characterized by distinct rocky relief. Such relief is marked by firmness of denudative, granite and gneiss massif.

The Jurassic clay-sandstone sediments zone determines existence of the relatively gentle relief. This is caused by low hypsometric elevation (only a few reach the glacial-nival zone) and denudation of the clay-sandstone sedimentary rocks. The sections composed of the middle Jurassic volcanic sediments are quite distinctive in this gentle relief.

The Cretaceous rocks are characterized by karstic relief with weak erosional splits, where caves and caverns of typically karst origin are found. The classical karst line is encountered to the South of the Askhi and Khvamli massifs.

The Racha-Lechkhumi depression (they are often referred to as separate depressions) is of synclinal origin and is composed of the Tertiary terrigenous sedimentary rocks.

As it was mentioned above, north part of the study area (Lentekhi and Oni districts), geologically is located within zone of development of thick, terrigenous, Lower Jurassic (Lias - J1) formation. Clay-schist, sandstone and rarely limestone represent above formation.

Besides Middle Jurassic (Bajocian - J2), porphyritic formation is widespread on the north part of the Oni district, which is built by Porphyrite and their pyroclastolites (volcanic tuff), sandstones, schists. Southward Upper Jurassic (J3) carbonaceous formations - limestone, marls, sandstones, conglomerates occur in the study area.

In the Lentekhi district, together with above-mentioned Lower Jurassic formation, Upper Paleozoic - Triassic (P2 - T) metamorphic rocks are wide spread, which are represented by Aspidic clay-schists and quartzites.

Middle Miocene (N12) terrigenous facies is dominant within the Tsageri and Ambrolauri districts and is represented by sandstones, claystones, clay-limestone and conglomerates. Above-mentioned formation builds up the axial zone of the Lechkhumi and Racha synclines. Oligocene - Lower Miocene (Maicop series) clays and sandstone are developed on the wings
of these synclines. Upper Cretaceous limestone, marls, sandstones and volcanic formations occur on the peripheries.

**Tectonics**

According to the scheme of Geotectonic Zoning of Georgia (Academician P. Gamkrelidze, 1964), all the studied districts tectonically are situated within the Great Caucasus South Slope folded system (II), which is divided on separate tectonic zones.

Lentekhi district is situated on the boundary of two large tectonic units - Upper Paleozoic and Triassic metamorphosed clay-schist zone (I) on the North and porphyritic Jurassic sub-zone on the South (II, III). This sub-zone spreads all over the Oni district.

Above mentioned tectonic zones and sub-zones of the Great Caucasus South Slope (developed from Northwest to the Southeast) during the Paleozoic, Triassic, Jurassic, Cretaceous and partly Paleogene were the entire geosyncline, composed by thick sedimentary and volcanic-sedimentary formations. Rocks are intensively folded, fractured, heavily compressed and overturned to the South as isocline or asymmetric folds of general Caucasian direction.

Tsageri and Ambrolauri districts (disposed southwards) belong to the Racha-Lechkhumi synclinal sub-zone (IV), characterized by smooth tectonics, relatively gentle and wide secondary synclinal folds altering with narrow and steep anticlinal folds.

**Seismic Conditions**

According to the latest data of macroseismic zoning of Georgia, earthquakes of 8 degree of Richter surface-wave magnitude (Ms) can occur within Oni and Ambrolauri districts. Within the Tsageri and Lentekhi districts, the same figure varies in range of 6-7 Ms.

According to the degree of seismic activity, the Oni and Ambrolauri districts are very notable. Prognostic epicenters of strong earthquakes with magnitude (Ms> 4-5) are located there. Relatively favorable situation exists on the territory of Tsageri and particularly in the Lentekhi district, where the frequency of epicenters on each square trapezium does not exceed 0-5, when the same figure within Oni and Ambrolauri districts is 5-15.

**Quaternary Geology, Recent Geodynamic Processes**

Strongly carved relief of the study area, dense network of deep and steep ravines of mountainous rivers with unstable regimes, variety and complexity of geological structure, tectonics, and hydrogeological conditions in a whole, stipulate abundance of different types and intensity of recent Geodynamic Processes. These recent geodynamic processes are: weathering, rock avalanches, rock falls, taluses, collapses, mudflows, mud streams, landslips, landslides, linear and vertical erosion, etc.

One of the most significant issues in forest use to be foreseen as a direct impact on the environment is activation of erosion and gravitational processes caused by mismanagement of forest resources. At present, it is impossible to give scientifically proven forecast without consideration of development, thickness, lithology, physical, mechanical and aquatic properties of the Quaternary sediments (cover).

The Quaternary cover is well developed on the study area. Rocks are represented by different kinds of ground. The most significant are:

- Alluvial and alluvial-proluvial sediments;
- Glacial formations;
- Late Quaternary and recent alluvial and fluvial-glacial sediments;
- Eluvial-talus and proluvial-talus loams and gravel;
- Colluvial sediments, represented by gravel and rock fragments.

Within the Tsageri and Lentekhi districts, base rock outcrops often occur.

The most frequent gravitational processes on the study area are active landslides, and potential and stabilized landslides. For example, according to the State Cadastre, there are over 70 active landslides identified and described within the Tsageri administrative district in the ravines of the Tskhenistkali River and its tributaries.

The most of landslides are formed on the Miocene geological substratum (sandstones, clay stones, and marls), although landslides are developed on the older geological substratum as well (Lias and Bajocian terrigenous and volcanic-sedimentary formations).

Thickness of the landslide bodies range in wide diapason from 3-5 m up to 50 m and is connected with different thickness of Quaternary cover. Most of landslides belong to the plastic type of landslides.

Consequent sliding landslides are rarely developed. As it is known, they occur in case of coincidence of rock strike and grade of slope. Large landslides, with several hundreds of meters in length and width occur quite often; most of landslides are of medium or small size.

Relatively low intensity of landslide process is expressed on the territory of the Oni district. According to the State Cadastre, 30 active landslides are identified there. Most part of these landslides belongs to the Category of Large Landslides. Sometimes area of landslip exceeds 1 km². Thickness of the sliding body is important as well. It varies between 5-15 m and mainly is represented by talus loams with abundant coarse inclusions of bedrock.

The main part of the landslides exposed on the area are developed on the terrigenous volcanic sub-stratum of Lower, Middle and Upper Jurassic represented by clayey schists, sandstones, marls, limestone, etc. Natural inclination of landslide slopes range in limits of 15-45°.

In the Lentekhi and Ambrolauri districts, high degree of landslide damage is observed. Most of 40 landslides described there belong to the active group, a number of potential landslide areas occur as well.

Mainly Oligocene clays represent sliding geological sub-stratum, partly - Sarmatic sandstones and clays. Thick (up to 20 m) eluvial-talus cover represented by plastic clays and loams is developed on the mentioned sub-stratum.

Therefore, main part of the landslides belongs to the plastic group. As a rule, landslides of this group are large and sliding area reaches 1-1.5 km².

Active landslides are developed on the slopes of the Rioni River and its tributaries (Sakoria, Askistskali, Pepelas Khevi, etc.) covered by forest. Sliding of settlements and agricultural land often occur as well on this territory.

Among the other geodynamic processes, characterizing for the West Caucasus Range, it is necessary to mention snow avalanches, rock falls, taluses, erosion, etc. With regards of forest use and agricultural purposes, the special attention deserves soil erosion. Therefore, this issue is subject of separate discussion, which is given below as general recommendation (Chapter 10).
Historic information on the monetary damage of an average caused by flood/landslide/avalanche on human settlements, including houses, bridges, etc. in the Oni Region:\(^2\):

<table>
<thead>
<tr>
<th>Date</th>
<th>Geological Process</th>
<th>Location (village)</th>
<th>Results</th>
<th>Cost(^3) (approximate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968</td>
<td>Landslide</td>
<td>Chordi</td>
<td>• In 1991, 70 ha of forested areas was damaged by landslides</td>
<td>25,000,000 Roubles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The village was covered by landslides</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 70 households were relocated in newly established village</td>
<td></td>
</tr>
<tr>
<td>1968</td>
<td>Landslide</td>
<td>Tskmori</td>
<td>• 15 ha of forests and hey lands were damaged</td>
<td>100,000 Roubles</td>
</tr>
<tr>
<td>1969</td>
<td>Landslide</td>
<td>Kvajhagomi</td>
<td>• 350 ha of forests, agricultural and grazing lands were damaged</td>
<td>4,000,000 Roubles</td>
</tr>
<tr>
<td>1670</td>
<td>Landslide</td>
<td>Left riverbank of</td>
<td>• 12 households were relocated from Joisubani</td>
<td>1,500,000 Roubles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the Rioni River:</td>
<td>• Seva was covered with landslides</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Joisubani, Seva,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parakheti, Shardomd?k</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td>Landslide</td>
<td>Gomi</td>
<td>• More than 40 ha was damaged</td>
<td>400,000 Roubles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 1 district of the village was covered by landslides</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 15 households were relocated</td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td>Landslide</td>
<td>Psori</td>
<td>• 20 ha of forests and hey lands were damaged</td>
<td>350,000 Roubles</td>
</tr>
<tr>
<td>1991</td>
<td>Landslide</td>
<td>Bajikhevi</td>
<td>• 25 ha of agricultural lands, forests, hey lands were damaged</td>
<td>3,000,000 Roubles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Lake was created</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 7 households were relocated</td>
<td></td>
</tr>
</tbody>
</table>

\(^2\) It should be noted that territories located on the left riverbanks of the Rioni and Jejora Rivers from town of Oni till Ambrolauri are characterized by ongoing erosion and landslide processes.

\(^3\) Rate of Rouble with USD varied in time.
<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>Location</th>
<th>Description</th>
<th>Damage Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>Landslide, Mudflow</td>
<td>Jhashkva</td>
<td>12 ha of hey lands and agricultural lands were damaged</td>
<td>200,000 Roubles</td>
</tr>
<tr>
<td></td>
<td>Landslide</td>
<td>Korta</td>
<td>50 ha of hey lands and forests are damaged in spring and autumn of every year</td>
<td>6-10,000 GEL annually (3-5,000 USD)</td>
</tr>
<tr>
<td>1991</td>
<td>Landslides</td>
<td>Parakheti</td>
<td>Village was covered with landslides, 15 ha of hey lands and grazing lands were damaged, 14 houses were damaged and households were relocated</td>
<td>800,000 Roubles (1,280,000 USD)</td>
</tr>
<tr>
<td>2001 March</td>
<td>Landslide</td>
<td>Chala</td>
<td>Landslide cut the river and water flooded the village</td>
<td>15,000 GEL (7,500 USD)</td>
</tr>
<tr>
<td>Periodically almost every year</td>
<td>Landslide</td>
<td>Shardometi</td>
<td>Damages surroundings of the village, around 30 ha of agricultural and grazing lands</td>
<td>15,000 GEL (7,500 USD)</td>
</tr>
<tr>
<td>Since 1989</td>
<td>Erosion</td>
<td>Somitso</td>
<td>170-200 ha was damaged, 160 households were relocated to Apkhazia, Intensive erosion processes are being continued</td>
<td>30,000,000 Roubles</td>
</tr>
<tr>
<td>2001</td>
<td>Erosion</td>
<td>Komandeli Junction of Rioni and Jejora Rivers</td>
<td>Erosion is developed in spring and autumn, 50-60 ha of grazing land, hey land and forests were damaged, Destroyed main road</td>
<td>6-10,000 GEL annually (3-5,000 USD)</td>
</tr>
<tr>
<td>1987 and repeated in 1989</td>
<td>Mudflow (the largest in last 15 years; caused by intensive rains)</td>
<td>Rioni River Gorge (Gebi, Oni, Chiora)</td>
<td>In 1989, 8 km of main road in the section Oni – Shovi was destroyed, 3 bridges were wrecked, 4 'summer' bridges were broken down, 60 ha of agricultural lands were damaged, Enterprises, saw mills, administrative buildings, school, gasoline stations were destroyed, 200 ha of forest massive was heavily damaged</td>
<td>18-20,000,000 Roubles</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
<td>Location</td>
<td>Details</td>
<td>Costs</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------------</td>
<td>----------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>1987</td>
<td>Mudflow&lt;sup&gt;14&lt;/sup&gt;</td>
<td>Gebi</td>
<td>Around 2,000m³ of forest was flooded down</td>
<td>750,000 Roubles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30 ha of forest massifs and agricultural lands were damaged</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>32 households were relocated</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td>Avalanche</td>
<td></td>
<td>Road to Shovi was cut in the sections Oni-Shovi and Oni-Gebi</td>
<td>Costs associated with road cleaning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>for 1.5 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Although avalanche was quite large, it did not cause damage to</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>settlements</td>
<td></td>
</tr>
<tr>
<td>1989 June</td>
<td>Mudflow</td>
<td>Gebi</td>
<td>Oni was flooded by mudflows, level of water was 1 m</td>
<td>1,000,000 Roubles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mudflow brought down around 4,000m³ gravel</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>Intensive slides,</td>
<td>Sakao</td>
<td>Roads were destroyed</td>
<td>300 - 400,000 GEL (150 - 200,000 USD)</td>
</tr>
<tr>
<td></td>
<td>Large mudflows</td>
<td>Tsiklnarebi</td>
<td>2 fundamental bridges were destroyed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(caused by intensive rains)</td>
<td></td>
<td>2 'summer' bridges were ruined</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Upper district of Oni town was flooded</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Forest was damaged</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>Avalanche</td>
<td>In 30 locations in the Oni region</td>
<td>Road was blocked for 1 month</td>
<td>Costs associated with road cleaning</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>14</sup> Mudflow is usually characterized in Spring during and after intensive rain and hail. In the Oni region, they mainly take place in the surrounding of villages Glola (Bdgviola River), Chiora (Shkhiroli River), Gebi (Jijahori River), etc.

Source: Local Authority in Oni
Hydrogeology

According to the Scheme of Hydrogeological Zoning (I. Buachidze, 1970), main part of the study area belongs to the hydrogeological region (II) of water pressure system of Great Caucasus South Slope. The later covers wide part of piedmont and high mountainous zone and consists of several hydrogeological sub-regions.

Among these sub-regions, the Svaneti fracture water pressure system (II2) is extremely important since it covers both the Lentekhi and Oni districts. Dizi series (Pz-T) and Upper and Middle Jurassic metamorphic, sedimentary and volcanic rocks compose this hydrogeological sub-region. Water bearing capacity of above mentioned rocks changes in accordance with rock joining and varies between 5-30 l/s. Small discharge springs (0.1-0.5 l/s) occur within zones of weak joining covered by the crust of weathering. Groundwater mineralization is low up to 0.4 g/l. Temperature fluctuates from 7 to 12°C. Carbon-sour mineral water spreads within the Lentekhi district. Mineralization varies in wide range from 0.3 up to 18.0 g/l.

Tsageri and Ambrolauri districts hydro-geologically belong to the Racha-Lechkhumi artesian basin of fracture and fracture-karstic water (III4). Above mentioned basin spreads all over the Racha-Lechkhumi synclinorium, composed by Mesozoic-Cainozoic sediments. The main water bearing horizons and complexes are connected with Middle Jurassic volcanic-sedimentary formations (Porphyritic series) and partly with Quaternary alluvial-talus cover.

Karstic-fracture groundwater connected with Valanginian-Barremian thick bedded limestone is developed on the south part of study area. In the submerged zones of Bajocian and Bathian stage, chloride-sodium and chloride calcium (sometimes sulphate) waters occur. Within the tectonic rupture zones carbon-sour mineral water of hydrocarbon-chloride composition is spread. Mineralization is up to 5 g/l. Natural resources of sub-terranean water for the mentioned hydrogeological sub-region is evaluated as 26 m³/s. The main source for natural resources is groundwater and partly pressured waters.

Deposits of Mineral Resources

Among deposits of mineral resources developed throughout the study area, the most significant are Chordi barite deposit in the Oni district and Lukhumi arsenic deposit in the Ambrolauri district. Except the mentioned ones, a large deposit of manganese is located in Shkmeri (Ambrolauri district), which has been explored geologically, but has never been exploited.

Ore valley of the Chordi hydrothermal deposit links to the south wing of Chordi-Sokhti anticline, composed by Bajocian porphyritic series. Reserves are evaluated as approximately 1.5 million tons. This deposit has been intensively worked during the Soviet era and has been main supplier of raw material for the Kutaisi lithophone works. Recently, mining of the deposit was ceased.

Region of Lukhumi (Lower Racha) Realgar-Auripigment deposit is composed by thick Upper Jurassic - Lower Cretaceous clay-carbonaceous flysch rocks. According to reserves deposit belongs to group of Medium Deposit. It has been intensively worked during the Soviet times and materials were mainly exported to Russia. At present, preparation works for mining in full capacity are going on.
General Recommendations

Description of physical environment and general recommendations are based on analysis of existing geological and aerial photography materials.

Due to the fact, that the work was fulfilled in wintertime and there was not possibility for field works, specific objects with relevant concrete recommendations are not given in the present report. Nevertheless, it is not necessary due to identical natural conditions of all four districts.

Due to the fact that recent geodynamic processes of different kind and intensity take place in the Oni, Ambrolauri, Tsageri and Lentekhi mountainous districts, forest related activities should be managed according to the optimal methodology and technology to minimize risk on the environment.

No official figures concerning negative impact to the environment caused directly by forest utilization during last 10 years is available. Unfortunately, this issue is not enough highlighted in the Forests Development Program preparation report.

Special attention deserves the danger of activation of such geodynamic processes as erosion in general, and specifically soil erosion, landslides, mudflows and avalanches.

Prevention of snow avalanche and reduction of its energy by forest is possible only upslope. In the middle and lower parts, vegetation cover practically could not ensure extinction of avalanche's kinetic energy. Consequently, danger of snow avalanches exists upslope of high mountains, therefore, heavy logging is inadmissible in such places and this requirement should be strictly observed.

Considering dense hydrographical network, complicated and intensively curved relief, formation of mudflow hearts and furthers activation of mudflow processes is an urgent issue in terms of negative environmental impact of unsystematic forest cuts.

Entire surface of structural and turbulent mud stream's area in Georgia is 18,500 km². Approximately 14,000 km² occur on the South Slope of the Caucasus Range, where the Lab Zone is located. At present, there are not active mudflow hearts identified in the region, however, it should be always considered that there is a potential danger of formation and development of powerful mudflow processes.

Moreover, the most of rivers of the region upstream have a mudflow nature. In such conditions, any change of formed natural physical-geographical balance caused by incorrect management of forest and pastureland might result in sharp activation of mudflow processes.

Although characteristics of western part of the Caucasus Range such as: existence of dense vegetation cover, abundant precipitation, well developed cultural soil layer and absence of drought periods, do not contribute to the formation of powerful mudflows, nevertheless there are mudflow danger areas and consequently possibility of their activation in the surroundings of the Rioni and Tskhenistkali Rivers' ravine (mainly within the Lentekhi and Oni districts).

Timber skidding trails, when allowed, need to be protected from lateral and linear erosion and erosion control measures should be installed to ensure quick diversion of perch water out of trails.

Soil erosion occurs on the study area, which in most cases causes complete loss of soil layer and outcropping of base rocks. Considering this fact, forest cut at such sites should be allowed below the 20° inclination of the slope, and cuts should have selective and seasonal character. On the slopes with higher inclination, forest cut is not reasonable due to the danger of formation of erosion and mudflow processes.
The most necessary measures for prevention of forming and further development of soil erosion, mudflow and landslide processes are as follows:

- Pasture control, observing terms and periods of the pasturing;
- Pasture remediation - amelioration by periodic seeding of grass;
- Construction of lined channels and installation of terraces on the slopes, phytomelioration works, re-vegetation of grass and bushes in sub-alpine zone.

These complex measures will minimize activation of already running geodynamic processes or provoking and further developing of potential hearts of these processes caused by the forest cuts and road infrastructure.

The following preventive measures complement guidelines provided by forest related legal basis:

- Prohibition of any forest cutting on the slopes with inclination $\alpha > 35^\circ$;
- Prohibition of timber skidding trails on the slopes with inclination $\alpha > 30^\circ$;
- Prohibition of any cuts within the 300 m area of sub-alpine zone;
- Prohibition of any cuts within 200 m area from active beds of snow avalanches and mudflows;
- Prohibition of any cutting within 100 m area from landslides, rock falls, karsts;
- Prohibition of any cutting in 1 km area around mineral springs;
- Prohibition of any cutting in stands damaged by erosion within 100 m radius.

Reforestation and biological methods against erosion are urgent around settlements where degraded forest stands and eroded slopes are frequent. With this regards, it is necessary to mention the method developed by Georgian specialists, which provides stabilization of eroded slopes by natural materials (bentonite and zeolite) for further re-cultivation of grass cover\textsuperscript{15}.

Hydrogeological aspects related with forest are also very important issue. Namely, not systemized forest cut could result in failure of natural balance, formed in relation with perched water, infiltration water, evapotranspiration and groundwater. Destruction of the vegetation on the slopes causes sharp increase of perched water and relatively significant reduction of infiltration and groundwater, together with disappearance of evapotranspiration. As a result, decrease of groundwater level may cause impoverishment and ceasing of wells used by local population for water supply purposes.

Activation/development of gravitational processes, especially landslides due to the above-mentioned reasons is obvious. Due to the reduction of evapotranspiration rate practically to the zero, whole mass of infiltrated water accumulates within elluvial-talus and colluvial cover. Thickness of the cover, represented by plastic clays and loams, on slopes frequently is more than 10 m. Due to saturation of eluvial-talus and colluvial sediments, slope becomes heavier. Volume weight of the ground as well as tension of displacement sharply increases. At the same time, the friction angle ($\alpha^\circ$) and specific friction (C) is reduced unevenly, which inevitable cause distortion of natural balance and sliding of the slope.

Unfortunately, there are many examples of improper forest management that have rather negative impacts on the forest and environment. Intensive cuttings might weaken anti-

\textsuperscript{15} Brief description of the method: Suspension of bentonite and seeds of grass and/or bushes is prepared and spread over the eroded slope. Cost of the method depends on the market price of bentonite, transportation, preparation of suspension, price of seeds, labor.
erosion - hydrological and soil protective functions. All above-mentioned issues stipulate necessity of selective cuttings together with forest regeneration activities.

In conditions of complicated, intensively folded relief and development of dangerous geodynamic processes, which take place all over the study area, it is very important to select correctly infrastructure of roads, skidding trails, etc. Otherwise, sharp activation of existing geological processes - rock falls, landslides, etc. is inevitable. Engineering-geological conditions of the region have decisive impact on secondary and main road infrastructure, according to which road could be constructed with so-called "zero works", embankments, semi-embankments, grooves, etc. On steep slopes and declivity, road construction is carried out by different combinations of embankments and grooves, which is accompanied with huge earthworks and sometimes explosions.

Road construction works in the areas with landslide danger, close to the avalanches and mudflow beds bear great negative environment risk. Conditions are worsened when seismicity of the territory is high that actually takes place on the whole study area. In order to ensure stability of road in such areas, it is necessary to carry out large and expensive engineering works. Due to this fact it is more expedient to avoid construction of roads on sensitive places and construct them on more stable areas.

At the slopes with relatively small (α<20°) inclination (Ambrolauri district, partly Oni and Tsageri districts) quite thick (h>10m) Quaternary eluvial-talus and colluvial grounds are developed. These areas are weakly drained. In these conditions, groove made during the road construction is located within soft coherent and incoherent grounds, which could represent also a basis for embankment. Cutting of slopes in this case can cause significant landslides. Situation is worsened due to high humidity of slope grounds (due to the weak natural drainage) and dynamic load of transport on the slope.

Therefore, before constructing grooves and embankments, assessment and prognosis of slope stability should be carried out. This issue is vital for slopes with inclination more than 25°. Stability assessment is carried out mainly according to the scheme of consequent landslide or for the circular-cylinder form of sliding surface. Rate of the embankment stability is determined by value of stability coefficient (η), which is:

\[ \eta = \frac{N \cdot \tan(\varphi) + c \cdot L}{T} \]

- \( N \): normal constituent of gravitational force, which tries to keep balance of the embankment
- \( T \): constituent of gravitational force, which works on displacement-sliding of the embankment
- \( L \): length of the sliding surface
- \( c \) and \( \varphi \): indexes of resistance on displacement

It is important to assess stability of embankments and grooves constructed on the karstic rocks, since they are frequently found on the study area (Ambrolauri and Tsageri districts). In this case, qualitative assessment of the road, which is based on the study of karst forms revealed on the surface and degree of karstation, is enough.

Above-mentioned indicates on the necessity to carry out geological and environmental assessment and prognosis on road infrastructure before start of any forest utilization activities to avoid further complications during road construction and exploitation.
**2.3 Forest Fund; Forest Resources; Forest Use**

**Background**

Around 2.75 million ha of Georgia's territory (39.6% of total surface) is covered by forests. The total standing volume reaches 434 million m$^3$ and annual growth is about 4 million m$^3$. The forest ecosystems are characterized with complex of soil, water, air and unique flora and fauna species.

The forests are a unique source of biodiversity and a major economic resource. They are situated mainly on steep mountain slopes, and fulfill an important function in preventing soil erosion, having a water retaining and water regulating ability. They provide habitats for many rare and endangered plants and animals, many of plants being endemic or glacial relics.

Forests are distributed unevenly in the country, which is caused by complex relief and variable climate on Georgia's territory. Together with forested territories, areas with less then 10% of forestation could be found.

Differences of climate conditions between the East and West Georgia determine differences in the vegetation.

**Distribution of forest according to altitude**

<table>
<thead>
<tr>
<th>Forest</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>22.3%</td>
<td>0-500 m</td>
</tr>
<tr>
<td>23.5%</td>
<td>501-1000 m</td>
</tr>
<tr>
<td>16.6%</td>
<td>1,001-1,500 m</td>
</tr>
<tr>
<td>17.4%</td>
<td>1,501-2,000 m</td>
</tr>
<tr>
<td>19.8%</td>
<td>above 2,001 m</td>
</tr>
</tbody>
</table>

The majority of forests are situated mainly on steep mountain slopes. Forest distribution according to the inclination of slope is the following:

<table>
<thead>
<tr>
<th>Forest</th>
<th>Inclination of slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.8%</td>
<td>0-10°</td>
</tr>
<tr>
<td>33.4%</td>
<td>11-25°</td>
</tr>
<tr>
<td>38.7%</td>
<td>26-35°</td>
</tr>
<tr>
<td>24.1%</td>
<td>35° and at steeper slopes</td>
</tr>
</tbody>
</table>

Over 80% of the State Forests are composed of broadleaves and 20% of conifers. The main species in the forests are:

<table>
<thead>
<tr>
<th>Species</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oriental beech</td>
<td>49%</td>
</tr>
<tr>
<td>Hornbeam</td>
<td>7%</td>
</tr>
<tr>
<td>Oak</td>
<td>10.2%</td>
</tr>
<tr>
<td>Alder</td>
<td>3.2%</td>
</tr>
<tr>
<td>Chestnut</td>
<td>3.8%</td>
</tr>
<tr>
<td>Evergreen species:</td>
<td></td>
</tr>
<tr>
<td>Caucasian fir, Oriental spruce and Bichvinta pine</td>
<td>19.4%</td>
</tr>
</tbody>
</table>

(NEAP - Georgia, 2000)
During the soviet time, Georgia imported most of its wood resources from Russia, keeping its own forest resources mostly untouched. Most of Georgia's forests are still categorized as protected and most harvesting is therefore illegal. Illegal harvesting, mainly for local consumption as firewood, takes place, which is for the most part out of the control of the SDFM. Low prices on timber cause and condition its exportation from Georgia. At present, due to the economical situation in Georgia, import of timber in the medium term will be rather difficult due to the high price of this resource in world markets. Therefore, a policy should be created to meet a rising demand for timber in the domestic economy and for export of local wood products to other markets with proper preservation of ecological, social, protective and other functions of the forests.

The Strategy for Development of the Forestry in Georgia has been worked out with support of the World Bank in order to preserve and to ensure sustainable management of the fragile biodiversity and ecological balance of the mountain forests. The Strategy identified institutional changes and major investment projects for promotion of sustainable development of the forestry economy in the transition period. The Strategy states that the forest management system, which was created in the period of central planning, does not meet the actual needs of the forestry.

**Description of Laboratory Zone**

The Forests Development Project (FDP) aims to work out the basis for sustainable and rational forestry management. With this regard, a "Laboratory Zone" was selected in the Central Caucasus region as pilot zone for the development of sustainable forest management.

The Laboratory Zone of the region comprises four medium and high mountainous administrative regions, namely: Lentekhi, Tsageri, Oni and Ambrolauri. The total area makes up to 462,000 ha.

The forests of the Laboratory Zone are managed by the State Department of Forest Management and its regional offices in Lentekhi, Tsageri, Oni and Ambrolauri.

The part of the forests owned by the former collective farms and state farms have been transferred to the State Department of Forest Management (2,839 ha in Lentekhi, 111.02 ha in Tsageri, 18,631 ha in Oni, 307,13 ha in Ambrolauri).

276,000 ha of the Forest Fund are located within the Laboratory Zone. The territory of 259,000 ha out of this area is covered with mountain forests.

Other categories of the Forest Fund's land are represented by:

<table>
<thead>
<tr>
<th>Land Category</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low density stands and glades</td>
<td>4,000 ha</td>
</tr>
<tr>
<td>Hay mowing areas and pastures</td>
<td>4,000 ha</td>
</tr>
<tr>
<td>Rocks and landslides</td>
<td>8,000 ha</td>
</tr>
<tr>
<td>Roads</td>
<td>100 ha</td>
</tr>
</tbody>
</table>

The remaining territory with a total area of 900 ha is occupied by rivers, lakes, etc.
The latest forest inventory in the lab zone districts have been executed in:

- Oni forestry 1991
- Ambrolauri forestry 1995
- Tsageri forestry 1996
- Lentekhi forestry 1996

The entire standing volume of the State Forest Fund in the laboratory zone is 47,7 million m$^3$. An average annual revegetation is 48.1 ha. Dominant species in the Lab Zone are distributed in the following way (see Figure 10):

<table>
<thead>
<tr>
<th>Specie</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abies nordmanniana</td>
<td>29,000</td>
</tr>
<tr>
<td>Picea orientalis</td>
<td>9,000</td>
</tr>
<tr>
<td>Pinus sosnowskyi</td>
<td>6,000</td>
</tr>
<tr>
<td>Fagus orientalis</td>
<td>133,000</td>
</tr>
<tr>
<td>Quercus iberica</td>
<td>26,000</td>
</tr>
<tr>
<td>Carpinus caucasica</td>
<td>21,000</td>
</tr>
<tr>
<td>Castanea sativa</td>
<td>4,000</td>
</tr>
<tr>
<td>Acer campestre</td>
<td>3,000</td>
</tr>
<tr>
<td>Alnus glutinosa</td>
<td>5,000</td>
</tr>
<tr>
<td>Betula verrucosa</td>
<td>13,000</td>
</tr>
</tbody>
</table>

Fraxinus excelsior
Acacia robinia pseudoacacia
Carpinus orientalis
Salix viminalis
Juglans regia 1,000
Boxus colchica Pojark
Malus orientalis Uglitz
Corylus avellana

Distribution of dominant bushes is the following:

- Rhododendron pontica
- Laurocerasus officinalis Roem 9,000 ha
- Rhododendron flavum Don, etc.

Forest, covering the land areas, mainly consists of the stands composed of different age classes. The average age of these stands is 95 years. Table 2.3.1 shows distribution areas for different age classes, Table 2.3.2 – distribution of stands on different grade of slope.

Table 2.3.1. Distribution areas of different age classes

<table>
<thead>
<tr>
<th>Age (year)</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-40</td>
<td>20,000</td>
</tr>
<tr>
<td>41-80</td>
<td>118,000</td>
</tr>
<tr>
<td>81-100</td>
<td>33,000</td>
</tr>
<tr>
<td>100 and older</td>
<td>88,000</td>
</tr>
</tbody>
</table>
Forest species

Figure 10
Table 2.3.2. Distribution of stands on different grade of slope

<table>
<thead>
<tr>
<th>Grade of slope</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°-5°</td>
<td>5,000</td>
</tr>
<tr>
<td>6°-15°</td>
<td>15,000</td>
</tr>
<tr>
<td>16°-20°</td>
<td>22,000</td>
</tr>
<tr>
<td>21°-25°</td>
<td>34,000</td>
</tr>
<tr>
<td>26°-30°</td>
<td>46,000</td>
</tr>
<tr>
<td>310 and more</td>
<td>137,000</td>
</tr>
</tbody>
</table>

According to the ecological, social and economic values, the Forest Fund is divided into three categories:

<table>
<thead>
<tr>
<th>Forest categories</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resort zone forests</td>
<td>2,000</td>
</tr>
<tr>
<td>Green zone forests</td>
<td>68,000</td>
</tr>
<tr>
<td>Soil protecting and water regulating forest</td>
<td>206,000</td>
</tr>
</tbody>
</table>

Only maintenance cutting is allowed in resort zone forests, green zone forests, and soil protecting and water regulating forests.

Resort forests are situated around the resorts of Shovi and Utsera, the green zone forests - around the Oni and Ambrolauri districts.

Types of forests

Georgia's forests have the following classification:

Coniferous forests

- Dark color fir-needle and *Fagus* - dark color fir-needle;
- *Fagus* - dark color fir-needle evergreen sub-forest;
- *Fagus* - dark color fir-needle evergreen subforest and deciduous bushes;
- *Fagus* - dark color fir-needle evergreen subforest, deciduous bushes and dead layer;
- *Fagus-*dark color fir-needle forests, deciduous bushes and evergreen sub-forest;
- Dark color fir-needle, dead layer, rarely covered with minor grass cultures; and
- Dark color fir-needle *Pinus* and *Pinus* forests with grass cultures.

Deciduous forests

- Colchica holidominant forests with evergreen sub-forests;
- Carpinus forests and Caprinus-Fagus forests with deciduous bushes and evergreen subforest;
- Capricus and Fagus forests with deciduous bushes and evergreen sub-forest;
- Carpinus-Quercus and Fagus forests with evergreen sub-forest;
- Fagus forest with deciduous bushes;
• Fagus forest with deciduous bushes and evergreen sub-forest;
• Fagus forest with evergreen sub-forest;
• Fagus forest and Fagus-Caprinus forests with deciduous bushes and evergreen subforest;
• Upper mountain Betula forests with low grass cultures;
• Upper mountain Betula forests with high grass cultures;
• Upper mountain Betula forests and Quercus pontica C.Koch forests with deciduous bushes and evergreen sub-forest;
• Quercus-Carpinus forests and Caprinus-Fagus forests with deciduous bushes and grass cultures;
• Quercus forests, Quercus-Carpinus forests with deciduous bushes and grass cultures;
• Quercus forests, Quercus-Carpinus forests with deciduous and evergreen sub-forest;

High mountainous meadows

• Subalpine meadows with different grass cultures;
• Subalpine meadows and stew stem forests;
• High grass cultures and subalpine meadows with different grass cultures;
• High grass cultures and subalpine meadows with different grass cultures, subalpine bushes and stew stem forests;
• Alpine meadows; and
• Sub-nivalis vegetation

**Forest types (Latin)**

<table>
<thead>
<tr>
<th>Forest Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fageta nuda</td>
<td>Fagus forest with deciduous bushes and evergreen sub-forest;</td>
</tr>
<tr>
<td>Fageta festucosa</td>
<td>Fagus forest with evergreen sub-forest;</td>
</tr>
<tr>
<td>Fageta asperulosa – Saniculosa</td>
<td>Fagus forest and Fagus-Caprinus forests with deciduous bushes and evergreen subforest;</td>
</tr>
<tr>
<td>Fageta rubosa</td>
<td>Upper mountain Betula forests with low grass cultures;</td>
</tr>
<tr>
<td>Fageta filicosa</td>
<td>Upper mountain Betula forests with high grass cultures;</td>
</tr>
<tr>
<td>Fageta azaleosa</td>
<td>Upper mountain Betula forests and Quercus pontica C.Koch forests with deciduous bushes and evergreen sub-forest;</td>
</tr>
<tr>
<td>Fageta – arctostaphelosa</td>
<td>Quercus-Carpinus forests and Caprinus-Fagus forests with deciduous bushes and grass cultures;</td>
</tr>
<tr>
<td>Fageta ilexosa</td>
<td>Quercus forests, Quercus-Carpinus forests with deciduous bushes and grass cultures;</td>
</tr>
<tr>
<td>Fageta laurocerasosa</td>
<td>Quercus forests, Quercus-Carpinus forests with deciduous and evergreen sub-forest;</td>
</tr>
<tr>
<td>Fageta rododendrosa pontica</td>
<td>High mountainous meadows;</td>
</tr>
<tr>
<td>Fageta subalpina</td>
<td>Subalpine meadows with different grass cultures;</td>
</tr>
<tr>
<td>Fageta corylosa</td>
<td>Subalpine meadows and stew stem forests;</td>
</tr>
<tr>
<td>Fageta – picieta laurocerasosa</td>
<td>High grass cultures and subalpine meadows with different grass cultures;</td>
</tr>
<tr>
<td>Fageta Abiete rododendrosa</td>
<td>High grass cultures and subalpine meadows with different grass cultures, subalpine bushes and stew stem forests;</td>
</tr>
<tr>
<td>Fageta – picieta – rodedenrosa asalosa</td>
<td>Alpine meadows;</td>
</tr>
<tr>
<td>Picieta nuda Abieta nuda</td>
<td>Sub-nivalis vegetation</td>
</tr>
<tr>
<td>Picieta – Pineta - festucosa</td>
<td></td>
</tr>
</tbody>
</table>

50
Carpineta Fageta comosa
Fageta – cometo
Carpineto – Querceta festucosa
Querceto – Querceta cornisa
Querceto – Cornosa crataegosa
Querceta mixtofru - ticos
Querceta calamagroatosa
Querceta poosa
Fageta – Querceta, calama – grostosa
Carpineto Querceta poosa
Picceto Fageta festicosum
Abieto – fageta ilexosum
Betuletum subalninum mixtoherbosum
Betuletum myrtillosum
Betuletum rhododendruosum
Betuletum - Aconetum - Telecosum
Abieto – Piceetum – saniculosum
(most spread in Shovi forestry district of Oni Forest district in the catchments area of Chanchakhi River)
Pineta – festucosa
Betuletum – Piceeto prasinosum

Subalpine vegetation

Subalpine vegetation is represented with the alpine forests and park forests’ groups.

The following species of tree plants are spread there:

Acer Trautvetteri Megw.
Betula litwinowii A.Dol
Salix caprea L.
Sorbus Caucasigena Kom.

Sub-forest:

Vaccinium arctostaphylus L.
Sambucus nigra L.

High grass vegetation:

Veratrum lobelianum Berh.
Lilium lhovitsianum L.
Aconitum orientale Mill.
Lenecio platyphyllus (MB) DC
Delphinium flexuosum MB.
Daphne mesereum L.
Heracleum Mantegazzianum SetL.
Inula magnifica Lipsky

Subalpine meadows:

Poa longifolia Trin
Inula grandulosa W.
Betonica grandiflora
Festuca varia Haenke
Calamagrostis arundinaceae L.
Scabiosa Caucasia W.
Piretrum roseum MB
Piretrum carneum MB

Alpine meadows

Alchimilla Caucasica Bus
Astragalus Levieri Freyn
Trifolium polyphyllum C.A.M.
Campanula tridentate Ichreb
Carum caucasicum Boiss
Sibbaldia procumbens L.
Veronica gentianoides Vahl
Festuca Lupina Schur
Cerastium purpureascens A.D., etc.

Subnival zone

Primula algida AD
Campanula tridentata Schreb
Ceentiana dshimilensis D.Koch
Alchimilla sericea W.
Sibaldia semiglabra C.A.M
Sibaldia parviflora W.

In order to protect forest biodiversity in the Laboratory Zone it is prohibited to cut, collect or use flora and disturb fauna included in the Red Data Book of Endangered Species of Georgia. These species include relict vegetation such as:
Endangered Species in the area:

<table>
<thead>
<tr>
<th>Vegetation</th>
<th>Endemic vegetation</th>
<th>Other types of plants</th>
<th>Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxus baccata</td>
<td>Corylus ibericum</td>
<td>Castanea</td>
<td>Lutra lutra meridionalis</td>
</tr>
<tr>
<td>Buxus colchica Pojark</td>
<td>Quercus imeretina Stev.</td>
<td>Quercus hartwissiana Stev.</td>
<td>Ogn.</td>
</tr>
<tr>
<td>Corylus ibericum</td>
<td>Colchic leptopus</td>
<td>Quercus maranthera F. et M.</td>
<td>Felis lynx orientalis Sat.</td>
</tr>
<tr>
<td>Ostrya carpinifolia Scop</td>
<td>Silene Murcoviczii S.</td>
<td>Ulmus Scabra Mill</td>
<td>Haliaetus Linnaeus</td>
</tr>
<tr>
<td>Diospyros lotus L.</td>
<td>Schischk.</td>
<td>Ulmus suberosa</td>
<td>Mountain eagle</td>
</tr>
<tr>
<td>Quercus imeretina Stev Junglas</td>
<td>Cyclamen colchica</td>
<td>Hippophae rhamnoides L.</td>
<td>Pandion haliaetus Linnaeus</td>
</tr>
<tr>
<td>Staphylea colchica Stev</td>
<td>Heracleum Sommeri Manden</td>
<td>Nuphar luteum</td>
<td>Caucasus Lirurus</td>
</tr>
<tr>
<td>Staphylea pinnata L.</td>
<td>Erythronium caucasicum G. Wor.</td>
<td>Triticum aestivum L.</td>
<td>Miccosievitshi</td>
</tr>
<tr>
<td>Symphyandra pendula DC.</td>
<td>Triticum carthlicum</td>
<td>Triticum durum Dest.</td>
<td>Taczanowskii</td>
</tr>
<tr>
<td>Senecio Mmasagetovis</td>
<td>Triticum Timopheevii Azek</td>
<td></td>
<td>Aegipius monachus Lin.</td>
</tr>
<tr>
<td>Senecio platyphyllus D.C.</td>
<td></td>
<td></td>
<td>Gips fulvus Habili.</td>
</tr>
<tr>
<td>Muscar</td>
<td></td>
<td></td>
<td>Carpodacus rubicilla</td>
</tr>
<tr>
<td>Alpanica</td>
<td></td>
<td></td>
<td>Guldenstadt</td>
</tr>
<tr>
<td>Triticum tubalicum Dek (ancient relict of wheat)</td>
<td></td>
<td></td>
<td>Phoenicurus erythrogaster</td>
</tr>
<tr>
<td>Old Colchic grain</td>
<td></td>
<td></td>
<td>Guldenstadt</td>
</tr>
</tbody>
</table>

Pinus, Abies, Castanea, Quercus, Fraxinus Acacia, Fagus, Picea, Acer and Pyrus caucasica A. Fed are artificially planted in Laboratory Zone having the area of 2,400 ha.

Normative acts on creation of plantation for timber production have not been applied. Georgia’s experience in this field is related solely to Junglas plantations.

During the last decade, due to financial restrictions, the restoration of the forest has not been practiced and the process of restoration takes places mainly naturally. Taking into account environmental conditions of cut areas, the regeneration with relevant species proceed satisfactorily. It should be mentioned, that natural restoration occurs only in the areas where cattle grazing does not take place. Monitoring of natural restoration, as well as pastures, is not carried out. An intensive cattle grazing is practiced within 2 km radius from the populated areas. These places constitute 10% of the entire forest fund i.e. 30,000 ha of the study territory. Separate grazing areas are assigned and allocated by relevant laws and regulations. According to which, there must be ‘corridors’ for cattle to bring them from the settlements to the grazing areas. Although, communities have grazing lands allocated, locals reserve these lands to grow grass to have hay for cattle in wintertime. Certainly, all this is caused by poverty. Solution could be to make cattle feed more easily available for the local population. There is no need to change relevant regulations.

In spite of existence of the Forest Code and normative acts regulating main, sanitary, maintenance and other types of forest use, exploitative commercial cuts, justified as sanitary cuts, are carried out in the sensitive parts of the Laboratory Zone. These activities lead to the degradation of endemic and relic vegetation of the region.
There are no parameters, criteria and normative acts in Georgia, which could assign intact (virgin) statues to the forests. If the territories, which are inaccessible, uncut and distant from the populated area, are included in the virgin forest category, then untouched area in the Lab Zone will amount to approximately 30,000 ha.

The annual cuts are planned according to the forest inventory data, based on the existing normative acts and considering continuous utilization of the forest. Table 2.3.3 shows data on annual cuts in the Laboratory Zone.

**Table 2.3.3. Annual cuts in the Laboratory Zone**

<table>
<thead>
<tr>
<th>Types of cuts</th>
<th>Area (ha)</th>
<th>Standing volume (thousand m³)</th>
<th>Timber (thousand m³)</th>
<th>Firewood (thousand m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final cutting (exploitative)</td>
<td>1,700</td>
<td>54,8</td>
<td>32,0</td>
<td>22,8</td>
</tr>
<tr>
<td>Selective cutting among them</td>
<td>1,700</td>
<td>54,8</td>
<td>32,0</td>
<td>22,8</td>
</tr>
<tr>
<td>Thinning</td>
<td>442</td>
<td>12,8</td>
<td>5,0</td>
<td>7,8</td>
</tr>
<tr>
<td>Sanitary</td>
<td>2,202</td>
<td>42,9</td>
<td>14,3</td>
<td>28,6</td>
</tr>
</tbody>
</table>

The normative acts related to the forest cutting are created considering state of the forest ecosystem (productivity, species, density, slope, soil condition, renewal, etc.). The main violation, which takes place in the process of forest cutting, is removal of the best trees and young growth.

Foresters having university degree determine cutting area and the trees to be cut. The cutting area is divided into several parts according to the types of cuttings to be accomplished. All trees of the cutting area that should be removed are marked by specialists.

Cutting is performed by the organizations, which succeeded to obtain this right on the basis of tender. The personnel of these organizations have practical experience, but do not have education in the field of ecology and environmental sciences. The specialists and workers involved in forest exploitation have no monetary incentives to conduct their activities in compliance with normative acts on forest exploitation.

According to the normative acts, people intending to process timber in the cutting area are required to prepare a technical plan for utilization of cutting area prior to commencement of their activities. The technical plan is a document showing planned exploitation scheme, characteristics, technical advice and quantitative indexes related to the cutting area. The map is created considering all features of the cutting area such as: area; relief; soil; forms; type of cutting and logging; ways of cleaning the cutting area; location of upper storehouse; loading place; structure of the transportation roads; main and supplementary logging paths; arrangement of skyway facilities; security zones; requirements on natural restoration, protection against erosion and preservation of young growth at the cutting area.

Forest is cut with chain saws such as "Ural" and "Druzhba". Crown is cleaned and arranged according to assortments on the cutting site. Transportation from the cutting site to the main road is done with tractors, after which special trucks deliver the timber to the destination place.

After termination of cutting activities in the mountain forests, the mineralized surface area (including the logging trails, loading and other areas) should not exceed 15% of total cutting area. The width of skyways should exceed 15 m, while that of a logging tractor road should be 2 m wider than the width of the logging tractor. In order to maintain young growth and threes not assigned for cutting, it is allowed to build winding (zigzag) logging roads. It is also
possible to widen the road where the turn is very sharp. If inclination of a slope is above 31-35°, timber should be transported with skyways. Normative acts do not provide any other criteria regarding the forest roads. The road in the forest is mainly made by means of tractors and explosion of rocky areas.

Timber producers are obligated to respect relevant standards on construction of logging trails and timber transporting road to avoid development of erosive processes. One of the main causes of erosion is logging, since logging, as well as skidding follows the slope inclination.

Since skyway equipment for timber transportation actually does not exist, at least 50% of soil layer in the cutting area is damaged by logging. This fact causes erosion in the areas where slope grade is equal to or is more than 25°.

The total length of roads in the laboratory zone is 750 km, which is 2.7 km per 1,000 ha. This is a very low index for carrying out an intensive farming and forestry.

According to the requirements of normative acts, forest located on the steep slopes is selectively cut only in those places where slope inclination is less than 35°. In order to carry out cuttings, it is necessary to have a sufficient level of natural regeneration. Intensiveness of cutting depends on slope inclination, exposition, existing species and their density. Cutting amount varies form 10 to 25% of entire standing volume.

According to the requirements of normative acts, timber producer is obliged to clean the cutting area. They are requested to pile the waste materials to let it decay. Piles should be located along the logging trails to reinforce them or in the areas free from the young growth. The waste materials, which are piled to decay, should be firmly placed on the ground in order to avoid development of forest parasites.

Practically, the requirements of the normative acts regarding the cutting site clearance are not respected. The cutting areas are blocked with waste materials, monitoring of these sites is not carried out. The notion of control and environmental audit of cutting areas is not included in the Forest Code. However, it is planned to introduce this practice, and nowadays, there are works started in this direction.

Annulment of ban on timber export in 2000, made forest-cutting activities profitable, and in some cases, the only possibility of income. High quality *Fagus* timber, are main subject to export. The most important violations, which take place during the process of forest cutting are: cutting of highly valuable trees; intensive cutting along the roads; damaging the young growth; increasing risk of blocking and consequent deterioration of phytosanitary conditions of the forest. In some cases, cutting is carried out is such places where conditions of the stands do not satisfy the cutting rule requirements.

Above mentioned violations cause forest degradation and deterioration of its sanitary conditions. Due to above mentioned processes, the area of ecologically unbalanced territory is being increased.

According to the existing legislation, the State Forest Fund Registry System consists of forest fund monitoring, cadastre and forest management.

Forest management is carried out based on the forest inventory materials and management projects (made by Lesoprojekt) specifying activities to be undertaken. Due to the fact that the normative basis (Forest Code, cutting rules, maturity age of cutting, etc.) has been considerably changed during the last few years, and that the management projects were developed in the period when regulations were quite different, caused that the management projects does not meet the actual standards and needs of the forestry and practical application of the forest management projects (plans) became difficult.
Forest inventory is conducted once in ten years. Forest inventory materials include inventory and cartographic materials, as well as planning materials related to the forest maintenance, protection, restoration and utilization activities based on the existing normative acts.

Normative act on the State Forest Fund Registry System, determining goals and functions of forest management and cadastre, is now being elaborated. Due to the absence of finances, forest management and monitoring activities are not regularly conducted. The goals and purposes of forest cadastre are not clearly defined.

The Ministry of Environment is now working on the normative act, which will regulate final cuttings of the areas covered with forest and their usage in agriculture.

Final cutting is not permitted in the protected forests. In these places, only thinning and sanitary cuttings are practiced. However, in some cases, during the sanitary cutting, healthy and “the best” trees are removed instead of damaged and diseased ones.

In order to avoid erosion the normative acts prohibit the following activities:

- cutting on the slopes where inclination is more than 35°;
- logging on the slopes where inclination is more than 30°;
- damaging more than 15% of upper soil layer of entire cutting area.

The monitoring of eroded areas and their development is not carried out.

The normative acts allow usage of pesticides and herbicides. However, their list and parameters, which should have been approved by the Ministry of Environment, do not exist. Practically, no pesticides and herbicides are applied in the study region.

Limits and prohibitions connected to the different types of oil products and their accidental spills are not specified by the normative acts. Although these events take place, they are not registered.

Saw mills are located in the suburbs of settlements. There are no normative acts related to the sawing activities. As sawdust is not utilized, it is piled to decay. At present, timber is not treated with chemicals.

Due to the current economic crisis and unemployment, about 40% of the local population is involved in the forest business, which is mainly based on illegal cuts and corruption. The local population practically has no legally generated profit from the forest utilization.

The breakdown of forest utilization by locals largely depends on the region, existing conditions, season, demand, etc. The forest utilization by locals could be broken in the following way:

<table>
<thead>
<tr>
<th>Usage Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own consumption</td>
<td>25%</td>
</tr>
<tr>
<td>Utilization upon demand</td>
<td>10%</td>
</tr>
<tr>
<td>Commercial purposes</td>
<td>5%</td>
</tr>
</tbody>
</table>

In order to clearly define the use of forest by locals needs separate detailed study.

According to the existing normative acts, the public and NGOs have the right to obtain objective and timely information on the condition of the State Forest Fund and to participate
in all activities of planning stages of the state forest fund management. However, the local population practically is not involved in the process of forest management.

Usage of non-wood resources of the State Forest Fund is implemented on the basis of forest resources evaluated through special research and forest management materials. Currently, the Ministry of Environment is elaborating "The rule on usage of non-wood resources of the State Forest Fund" and relevant normative acts.

Actually, local population can exploit non-wood resources for their personal needs without any limit.

Approximate amount of annual non-wood resources consists of:

<table>
<thead>
<tr>
<th>Type of plants</th>
<th>Amounts (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Different species of fungi</td>
<td>30</td>
</tr>
<tr>
<td>Rosa canina L.</td>
<td>30</td>
</tr>
<tr>
<td>Cornus mas L.</td>
<td>15</td>
</tr>
<tr>
<td>Vaccinium myrtillus L.</td>
<td>4</td>
</tr>
<tr>
<td>Staphylea</td>
<td>50</td>
</tr>
<tr>
<td>Medicinal herbs</td>
<td>0.5</td>
</tr>
</tbody>
</table>

There are various indigenous plants and their wild ancestors in the Laboratory Zone. These are: grains such as *Triticum vulgare* Vil. var. *erythrospermum* Korn, *Triticum aestivum* L., *Triticum durum* Desf., *Triticum monococcum* L., *Triticum tubalicum* Dek., etc.; different species of grapes such as *Tsolikauri*, *Alexandrouli* etc.; some species of apples such as *Tusharauli*, *Kitra vashli*, *Abilaurni*, etc.; pears such as *Sheura*, *Mepis mskhalii*, *Gulshava*, *Taphlamskala*, etc.; and naciferous; plants such as *Junglans*, *Castanea*, *Corylus*, etc.

Orchards create small groups of trees, which protect soil and regulate water flow. These are the buffer zones between villages and forest, protecting the former from landslides and erosion. These facts should be considered in the processes of elaborating biologic restoration methods for eroded and landslide areas and reconstruction of degraded forests adjacent to villages.


The territory of the region has significant historic cultural heritage. There are many medieval and ancient churches and castles, a number of which is ruined. Historic archeological monuments, widely spread in the region, give exceptional splendor to the environment and
are of high aesthetic value. The local population exceptionally cautiously keeps and protects the forest stands adjacent to the historic archeological monuments.

Forest user has the right to:

a) use forest resources in accordance to the forest usage documents;

b) demand compliance with the conditions provided under the agreement;

c) construct farming and other temporary facilities for special purposes for exercising his/her right to use forest resources (based on the agreement with relevant authorities of the forest management);

d) utilize forest roads and other infrastructure while exercising his/her right to use forest resources;

e) participate in activities related to forest maintenance, protection, restoration and renewal;

f) own, use and manage the resources obtained from forest utilization; and

g) get acquainted with rules of forest usage.

Forest sector salaries are at the same level as other civil salaries. The Georgian legislation defines minimum and maximum salaries for staff of State institutions. It ranges between 150 GEL (75 USD) and 15 GEL (7.5 USD). The average salary of forest farming employee is equivalent of 25 USD in GEL. The salaries are financed from the State Budget and do not change according to the extent of work. The payment of salaries is often delayed for several months or sometimes years.
### Table 2.3.4. Forest cutting types and their volumes in different forest farming in 2000

<table>
<thead>
<tr>
<th>Name of forest farming</th>
<th>Final cutting (m$^3$)</th>
<th>Thinning (m$^3$)</th>
<th>Special usage (m$^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Liquid</td>
<td>Timber</td>
<td>Firewood</td>
</tr>
<tr>
<td>Lentekhi</td>
<td>1,663</td>
<td>875</td>
<td>788</td>
</tr>
<tr>
<td>Tsageri</td>
<td>492</td>
<td>250</td>
<td>242</td>
</tr>
<tr>
<td>Oni</td>
<td>463</td>
<td>259</td>
<td>204</td>
</tr>
<tr>
<td>Ambrolauri</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total in the region</td>
<td>2,618</td>
<td>1,384</td>
<td>1,234</td>
</tr>
</tbody>
</table>

### Table 2.3.5 Volume of forest cuts without permits in different forest farming in 2000

<table>
<thead>
<tr>
<th>Name of forest farming</th>
<th>Total volume (m$^3$)</th>
<th>Among them (m$^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Timber</td>
</tr>
<tr>
<td>Lentekhi</td>
<td>1,077</td>
<td>755</td>
</tr>
<tr>
<td>Tsageri</td>
<td>1,280</td>
<td>849</td>
</tr>
<tr>
<td>Oni</td>
<td>699</td>
<td>195</td>
</tr>
<tr>
<td>Ambrolauri</td>
<td>422</td>
<td>68</td>
</tr>
<tr>
<td>Total in the region</td>
<td>3,478</td>
<td>1,867</td>
</tr>
</tbody>
</table>

*Source: Data from the State Department of Forest Management*
2.4 Biodiversity

Georgia is one of the interesting countries in terms of biodiversity. Almost 40% of the territory is forested. Only 59,500 ha is classified as "artificial" forests; 5% of the natural cover is represented by so-called "aged, virgin forests" which are not exploited; 40% still preserve its initial structure. Along with their significance to biodiversity, the forests of Georgia are important in the context of global climate changes.

It is quite difficult to draw a clear line between floristic and faunistic regions represented in the Caucasus due to the mutual penetration of species (see Figures 11,12 and 13). Considering biodiversity, the Caucasus is characterized by its complex, sometimes mosaic spatial structure of biological communities representing different biogeographic zones. The outlining of the optimal way for protection of the biodiversity requires special attention to this problem, as the most important feature of it is the permanent interaction of the local, West-Asian and East-European communities, which deeply influenced the genetic structure of Caucasian populations of animals and plants and the physiognomy of the biological communities.

The territory of Georgia is the most diverse of all Caucasian countries regarding its climate and landscape. It covers almost all biogeographic regions represented throughout the Caucasus Isthmus as well as a "mixed" zone with communities of diverse origin, including representatives of different floras and faunas. Georgia extends over the Caucasian mountain systems, the southern slopes of the Great Caucasus and the northern part of the Lesser Caucasus. At the same time, all types of Caucasian landscapes are represented: in the western part of the country there are humid subtropical landscapes in which autochtonous Caucasian (or Kolkhetian) fauna and flora prevail; alpine landscapes with plenty of East-European elements dominate in the northern and north-eastern parts; the typical Middle East treeless uplands form the characteristic landscape of southern Georgia, and in the south-east, semi-deserts and deserts of Turanian type are predominant (Badridze, Bukhnikashvili, 1996).

The following biogeographical districts are represented in Georgia:

1. Kolkheti District covers most of the area of western Georgia;
2. Caucasian or Kavkasioni District covers the uplands of the Great Caucasus (usually 2,000 m and higher);
3. mountain plateaus of the Lesser Caucasus cover about one-tenth of Georgia's territory;
4. Mtkvari (Kura) district covers a comparatively small part of Georgia's territory in the south-east (the lori uplands and Lower Kartli).

The relief creates relatively clear boundaries between different biogeographic districts. However, these boundaries remain conditional. Kolkhetian elements are found along the southern slopes of the Great Caucasus up to the eastern border of Georgia. As a result of such mutual penetration of elements, a significant part of the country is taken up by communities of mixed origin, which cannot be unified in any of the listed districts and sub-regions.

Thus, according to the geographic position of Georgia, four biogeographic districts are represented throughout the country's territory, as well as at least three zones of mixed origin.
Fauna scheme - reptiles

Figure 12

[Map showing distributions of reptiles with labels and symbols for different areas.]

Legend:
- Forests
- Pedidedon eugonias, Tropidurus vagans
- Throughout the whole map zone
- Varia maculata, Varia m. varia
- "W" indicates Water bodies

[Specific areas marked with symbols and names, such as "Ambrezelut" and "Oni"]
Numbers of Species and Levels of Endemism

Plants

Flora is very diverse and comprises around 4,100 species of vascular plants, 675 mosses, 1,763 algae, more than 7,000 fungi, 738 lichens. Out of all the vascular species distributed in Georgia 380 (9.0%) are endemic of country and 600 (14.2%) - endemic of the Caucasus. The endemics can be roughly divided into 2 categories:

1) local endemics, and
2) endemics distributed throughout many provinces.

The first type is represented by such species as *Campanula mirabilis*, *Hypericum theothrobicum*; the second category consists of such species as *Senecio rhombifolius* (endemic of the Caucasus, found almost everywhere throughout Georgia). It is worth mentioning that both Georgian and Caucasian endemics are connected with different plant communities such as - peat bog coenoses (*Solidago turfosa*), Kolkhetian forests (*Epigaea gaultherioides*), sub-alpine megaphorbasia (*Heracleum sommieri*), alpine communities (*Rhododendron caucasicum*), subnival coenoses (*Delphinium caucasicum*) (Badridze, Bukhnikashvili, 1996).

Vertical zones are strongly pronounced in the vegetation cover on the territory of the country and are related to the change of natural conditions according to altitude.

Animals

Fauna is very diverse and includes species with different categories of endemism - from strictly endemics to species, which are quite common all over the world. However, the geographical position of Georgia even enables species whose range of distribution is very limited (i.e. Kolkhetian endems) to spread over neighboring countries as well. Considering this situation, the following categories of endemism can be outlined:

(0) endems of Georgia *sensu stricto* (however most taxa, whether of animals or plants, do not include such forms except for very few ones);

(1a) endems of the Caucasus Isthmus (plus northern slopes of Lazistan and Ponto ridges which represent the Kolkhetian-type ecosystems); at least half of their ranges are situated in Georgia;

(1b) endems of the Caucasus; less than half of their ranges is situated in Georgia;

(2) endems of South-Western Asia;

(3) East-Mediterranean species (South-Western Asia, South-East Europe and North-East Africa);

(4) widespread species. Well-known groups of animals are presented in this category. With not so well known animals, the division is less distinct (Badridze, Bukhnikashvili, 1996).

Fishes: Practically all information on this group is outdated. According to the information of 1970, the percentage of Caucasus endems reaches 23%. From the obviously endemic Georgian or mostly Georgian species group the following ones are worth mentioning: *Leucisus borysthenicus*, *Alosa caspia*, *Chondrostoma kolkhicum*, *Variocorhinus sieboldi*, *Barbus mursa*, *Albumus filippi*, *Albumus charusini*, *Nemachilus angorae*. 
Amphibians: Caucasian endems are 23% of the total number of species. The species of category (1a) are: *Mertensiella caucasica*, *Pelodytes caucasicus*, *Bufo verrucosissimus*, hybrid zones of the *Rana macrocnemis* complex and *Hyla arborea* complex.

Reptiles: Endems of the Caucasus in this group are approximately 25%. The species of category (1a) are: Lizards of *Archaeolacerta* species group: *Lacerta rudis*, *L. derugini*, *L. parvula*, *L. mixta*; Gartersnake *Natrix megalopehala*; Viper of *Vipera* (*Pelias*) kaznakovi complex. Probably, hybrid zones of the *Archaeolacerta* group lizards (at least 10 species) and vipers of *Pelias* group belong to this group too.

Birds: There are two galliform species in this group - *Lyrurus mlokosiewiczi* and *Tetraogallus caucasicus*. Caucasian endems represent 0.08% of avian fauna. An isolated geographical population of alpine finch, *Carpodacus rubicilla*, is noticeable (the main population inhabits the mountains of Central Asia).

Mammals: The following species of categories (0) and (1) belong to this group: shrew *Sorex raddei* (1b), *S. caucasica* (1b), *S. volnuchini* (1b), *Neomys schelkownikowi* (1b), *Talpa caucasica* (1a), *Sicista caucasica* (1b), *S. kazbegica* (1b-1a), *S. kluchorica* (1b-1a), *S. armenica* (1b), *Prometheomys schaposchnikowi* (1a), *Mesocricetus brandti* (1a), *M. raddei* (1b), *Terricola daghestanicus* (1b), *N. nasarovi* (1b), *Apodemus* (1b), *S. fulvipectus* (1b), *A. (S.) ponticus* (1b); there are also contact and/or hybrid zones of *Apodemus* species and *Mus musculus* groups, as well as *Capra caucasica* group (Caucasian goats - both (1b)). Caucasian endems represent 15.8% of Georgia's teriofauna (Badridze, Bukhnikashvili, 1996).

Threats to Flora and Fauna

In general, reasons for the extinction and/or decline of plant and animal populations can be divided into two main large groups with several categories:

I. Direct causes, including hunting, fishing, catching, grazing, etc.

II. Indirect causes, which can be divided into the following sub-categories:

(a) destruction of natural habitats;
(b) fragmentation of habitats;
(c) invasion of introduced plant/animal species;
(d) pollution,
(e) global reasons, including anthropogenic, climatic changes, and
(f) inbreeding.

Main reasons for the extinction of plant and animal population are: destruction and fragmentation of natural habitats (urbanization, increase of agricultural land, modification of lakes, building of new reservoirs), cutting of forests, due to the energy problems in the country, and poaching. Although, legislation on the protection of biodiversity is already adopted by the government of the country, it needs further refinement since the legislation lacks provisions which hampers its actual work. Environmental awareness of people is rather low and causes extinction of many species of plants and animals.

In order to protect biodiversity, Georgia ratified the Convention on Biological Diversity (Rio de Janeiro, 1992), Convention on Wetlands of International Importance Especially as a Waterfowl Habitat (Ramsar, 1971) and Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, Washington, 1973), which formed a basis for
broadening international co-operation and expanding activities in the field of the preservation of biodiversity.

Together with the development of protected areas, there are the following priority directions in the field of biodiversity:

- conservation - e.g. preservation of rare and endangered species in bio-reserves; creation of genetic fund of wild nature;
- sustainable use of renewable natural resources;
- reproduction - breeding of rare and endangered species and their introduction in the nature.

These activities are considered in the Biodiversity Strategy and Action Plan drafted under the guidance of the Ministry of Environment with financial support from the GEF.

**Biodiversity of the Central Caucasus Region - Racha and Lechkhumi regions**

**The mycobiotic diversity of Racha-Lechkhumi**

The flora of Racha-Lechkhumi consists of 1,198 species (excluding mosses), out of which:

<table>
<thead>
<tr>
<th>Plant Group</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>ferns</td>
<td>40</td>
</tr>
<tr>
<td>gymnosperms</td>
<td>7</td>
</tr>
<tr>
<td>angiosperms</td>
<td>1,151</td>
</tr>
</tbody>
</table>

(Gagnidze, Kemularia - Natadze, 1985)

There are 1,089 fungi species in Racha. Among these, the most diverse are *Basidiomycota* and *Deuteromycota*. The distribution of fungi according to the host plant families is as follows:

<table>
<thead>
<tr>
<th>Plant Family</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosaceae</td>
<td>163</td>
</tr>
<tr>
<td>Fabaceae</td>
<td>72</td>
</tr>
<tr>
<td>Fagaceae</td>
<td>64</td>
</tr>
<tr>
<td>Corylaceae</td>
<td>54</td>
</tr>
<tr>
<td>Asteraceae</td>
<td>49</td>
</tr>
<tr>
<td>Vitaceae</td>
<td>46</td>
</tr>
<tr>
<td>Poaceae</td>
<td>39</td>
</tr>
<tr>
<td>Solanaceae</td>
<td>38</td>
</tr>
<tr>
<td>Caprifoliaceae</td>
<td>35</td>
</tr>
<tr>
<td>Moraceae</td>
<td>34</td>
</tr>
<tr>
<td>Pinaeae</td>
<td>30</td>
</tr>
<tr>
<td>Salicaceae</td>
<td>27</td>
</tr>
<tr>
<td>Apicaceae</td>
<td>23</td>
</tr>
<tr>
<td>Lamiaceae</td>
<td>22</td>
</tr>
<tr>
<td>Ranunculaceae</td>
<td>23</td>
</tr>
<tr>
<td>Polygonaceae</td>
<td>21</td>
</tr>
</tbody>
</table>

The majority (44 species) out of 56 species listed above are trees and bushes.

According to Svanidze (1985), the distribution of fungi species among botanical-geographic regions is as follows:

1. Highland geo-botanic region of Racha and Lechkhumi Range - 415 species
   - Sub-region of Lechkhumi Range and Chutkharo-Shusharo 161 species
   - Gebi sub-region 54 species
   - The massive of Racha Caucasus and Shoda-Kedela 291 species

2. Racha Limestone Range and Racha-Lechkhumi Depression - 769 species
   - Racha-Lechkhumi Hollow low mountain sub-region 511 species
   - Nakerala Range sub-region 129 species
   - Satsalike-Khokhata-Leknari sub-region 301 species
   - Shkmeri sub-region 72 species

Macromycetes are very important for forest ecosystems, all of them belong to Basidiomycota - 200 species. Their distribution in altitudinal zones is as follows:

<table>
<thead>
<tr>
<th>Forest Type</th>
<th>Number of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed forests</td>
<td>136</td>
</tr>
<tr>
<td>Deciduous forests</td>
<td>144</td>
</tr>
<tr>
<td>Dark coniferous forests</td>
<td>146</td>
</tr>
<tr>
<td>Sub-alpine forests</td>
<td>22</td>
</tr>
<tr>
<td>Alpine zone</td>
<td>5</td>
</tr>
</tbody>
</table>

Aphillophorous fungi inhabit on both live and dead trees, dry and fallen trees and branches. Many of them are pathogenic and cause withering of trees, rotting of rind. Other species are important agents causing cellulose and lignin decomposition and they play an important role in the mineralization of organic matter. The richest in species are genera Phellinus (8 species), Polyergus (8) and Ramaria (4).


The richest in species among macromycetes are Agaricales (incl. Boletales, Russules).

Lignophiles inhabit necrotic tissues of live trees, dry and fallen trees, logs, branches, and leaves. Lignophiles are divided into 3 groups depending on substratum they use (Nakhutsrisvill, 1975). The species of these groups in Racha-Lechkhumi forest coenoses are as follows:


2. Fungi growing on coniferous plants: Lentinus lepideus, Mycena resella, Paxillus atrotomentosus, Pholiota aurivella van. abies-nordmanniana, Tricholomopsis rutilans.


From the above-mentioned species, only Armillaria mellea is a facultative parasite, all the others develop on dead trees and play an important role in wood decomposition.

Saprophytes of dead matter include: Clitocybe gibba, Collybia confluens, C. driophila, Hebeloma crustuliniforme, Lepiota friesii, Marasmius alliaceus, M. rotula, Mycena rossella, Oudemansiella radicata etc. Most of these species belong to the following genera: Clitocybe, Marasmius, Mycena, Rhodophyllus, Tricholoma (Nakhutsrisvill, 1975).

Humus saprophytes are found both in forests and open barren areas where grass does not grow. These are almost all species of the following genera: Agaricus, Hygrocybe, Inocybe, Macrolepiota. In particular: Agaricus arvensis, A. campestre, A. silvaticus, Hygrocybe conica, Inocybe patouillardi, Macrolepiota procera etc. Marasmius oreades grows by forests edges, on pastures, in meadows - up to sub-nival zone (Nakhutsrisvill, 1975).

Coprophiles are: Agaricus campestris, Anellaria semiovata, Corpinus comatus, C. ephemerus, Panaeolus papilionaceus.

Biophiles grow between and on mosses and include Fayodia maura, Mycena supina, M. vulgars.

Edible and poisonous fungi: A total of 70 species of edible fungi have been recorded in Racha-Lechkhumi. The number of potentially poisonous and poisonous species is probably the same as in Svaneti (approximately 30). As mentioned above, the content of species of edible and poisonous fungi does not differ greatly in Svaneti and Racha-Lechkhumi.

Fungi of cultural and economically important wild plants According to T. Svanidze, more than 600 fungi species are found on cultural and economically important wild plants of Racha. Out of these, 280 species are found on cultural
plants. In terms of the spectrum of phytopathogenic fungi, their significance and control, in Racha the situation is similar to that in Svaneti.

**Botanical-geographic features**

According to the botanical-geographic and floristic peculiarities, Racha-Lechkhumi is divided into two major phytoborionomic districts. Its highland part belongs to the Svaneti-Racha Caucasus District, whereas its middle-height limestone part belongs to the Racha-Lechkhumi and Imereti limestone District.

**Habitat description**

Botanically Racha belongs to Colchic (Kolkhetian) floristic province. Due to its mountainous relief, several vertical zones are developed:

1. 400-2,300 m - different types of forests, mainly deciduous and mixed, with evergreen bushes.
2. 800-900 m - dark coniferous (spruce, fir) forests which may expand up to 2,300 m with secondary oak, pine and *Populus hybrida* forests. In some gorges, dark coniferous zone is replaced by deciduous.
3. 1,800 (2,000) – 2,350 (2,600) m - sub-alpine forests, tall grasslands, sub-alpine bushes and meadows.
4. 2,350 (2,500) – 2,900 (3,150) m - alpine zone.
5. 2,900 (3,150) – 3,100 (3,300) m - sub-nival and nival zones.

Racha generally is rich in fir (*Abies Nordmanniana*) and beech (*Fagus orientalis*) forests.

Racha-Lechkhumi is divided into several botanical-geographic regions according to diversity of ecosystems and floristic variety. They are represented by floristic complexes, whose formation largely depended on the physical environment and history of relief formation.

**Highland botanical-geographic region of Racha and Lechkhumi Range**

As it was mentioned above, the region has the Colchic type of vertical zoning of plants, with its characteristic formations: deciduous, dark conifers, sub-alpine light and crooked-stem forest (birch, *Acer campestre*, *Fagus orientalis*), tall grasslands, mezophilous mixed grass meadows. In the alpine zone, there are formations of the endemic species *Genista suanica* (Notsarula Gorge, m. Shusharo). There are also groups of mixed grass with rare *Cirsimulus bushiorum* and *Delphinium izonorum* (Bubistskai, Geske). Endemic *Paeonia steveniana* and *Symphytum ibericum* are found in the dark coniferous zone.

The alpine and sub-nival zones are rich, containing ultrareophytes or highland species: *Symphyoloma* (*S. graveolens*), *Aetheopappus caucasicus*, *Delphium caucasicum*, *Petasites fominii*, *Saxifraga kusnecowiana*, *Silene marcowiczii*, *Euphorbia kemulariae*.

Three sub-regions are distinguished within the region:

1. The sub-region of the Lechkhumi Range and Chutkharo-Shusharo Massif;
2. Gebi sub-region;
3. The sub-region of the Racha Caucasus and Shoda-kedela.
Taxonomic and geographic diversity of flora

The flora of Racha-Lechkhumi includes 1,198 species of 491 genera and 106 families. Out of these, 40 species are ferns, 7 are gymnosperms, 1,151 angiosperms, 957 dicotyledons and 194 are monocotyledons.

*Senecio, Cirsium* are most common genera, which dominate sub-alpine and alpine ecosystems. The *Leguminosae* family is represented by *Vicia* (19 species) and *Trifolium* (13 species).

Other genera dominating these ecosystems are *Betonica* (18), *Serophularia* (12), *Petentella* (13). From *Rosaceae* family West Caucasian endemic genus *Norohowia* is widespread in Racha-Lechkhumi. *Crisiferae* family is characterized by disperse endemism i.e. endemic species belong to different genera and are represented by one or two species. From the *Cruciferae* family, the Caucasian endemic *Pseudovesicaria* is found in Racha-Lechkhumi. *Genera* of the *Umbelliferae* family widespread there are *Agasyllis* and *Symphyoloma*, from the *Campanulaceae* family - *Gadellia*.

The number of endemic species found in Racha-Lechkhumi is as follows:

<table>
<thead>
<tr>
<th></th>
<th>Number of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endemic to the Caucasus Region</td>
<td>110</td>
</tr>
<tr>
<td>Endemic to the Great Caucasus</td>
<td>99</td>
</tr>
<tr>
<td>Endemic to Georgia</td>
<td>54</td>
</tr>
<tr>
<td>Endemic to Racha-Lechkhumi</td>
<td>9</td>
</tr>
</tbody>
</table>

Geographic and ecological-coenotic spectrum of Racha-Lechkhumi flora is diverse. There are 272 species. *Palearctic, Holarctic, European, Mediterranean* elements are most numerous. The geographic spectrum of Racha-Lechkhumi flora is as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian species</td>
<td>336</td>
</tr>
<tr>
<td>Palearctic species</td>
<td>192</td>
</tr>
<tr>
<td>European</td>
<td>164</td>
</tr>
<tr>
<td>Holarctic</td>
<td>131</td>
</tr>
<tr>
<td>Kolkhetian</td>
<td>130</td>
</tr>
<tr>
<td>Eucaucasian</td>
<td>98</td>
</tr>
<tr>
<td>Mediterranean</td>
<td>81</td>
</tr>
<tr>
<td>Pancontinental</td>
<td>62</td>
</tr>
<tr>
<td>Euxinic (circumeuxinic)</td>
<td>4</td>
</tr>
</tbody>
</table>

The ecological-coenotic spectrum of Racha-Lechkhumi flora is as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mezophilous species of forest and forest-meadow</td>
<td>199</td>
</tr>
<tr>
<td>Alpine-sub-alpine meadows</td>
<td>326</td>
</tr>
<tr>
<td>Mezophilous and hemixerophilous species of forests and bushes</td>
<td>274</td>
</tr>
<tr>
<td>Tall grassland species</td>
<td>49</td>
</tr>
<tr>
<td>Wetland species</td>
<td>63</td>
</tr>
<tr>
<td>Lithophilous, including calciphilous</td>
<td>54</td>
</tr>
<tr>
<td>Granite, porfrite, sand-stone, clay</td>
<td>156</td>
</tr>
<tr>
<td>Ruderal, weed, sagetal</td>
<td>75</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1198</strong></td>
</tr>
</tbody>
</table>
Calciphilous complexes are dominated by Colchic and Caucasian species. This fact indicates their ancient origin.

**Svaneti Region**

Since the Lentekhi region is a part of the Kvemo Svaneti and thus, part of the Svaneti region, it is worth mentioning floristic and faunistic characteristics of the Svaneti region as a whole.

**Habitat description**

Svaneti belongs to the floristic province of Kolkheti. Due to mountainous relief, it has vertical zoning of Kolkheti type. The following zones are represented on its territory:

- Up to 2,300 m is forest zone, with different versions of mixed and deciduous forests.
- From 800-900 m dark coniferous forests (spruce, fir, pine) are found, with secondary pine and poplar forests.
- From 1,900-2,350 to 2,000-2,600 m there are sub-alpine forests, meadows and bushes.
- From 2,350-2,500 to 2,900-3,150 m there is alpine zone with vegetation developed on post-avalanche and sandy soils.

**The mycobiotic diversity of Svaneti**

**Fungi of the region**

According to R. Gagnidze et al (1985) there are 1,100 vascular plant species recorded in Svaneti. In 1975-80, the Department of Lower Plants of the Institute of Botany listed 2,010 lower species in the Mestia, Lentekhi and Tsageri districts, including:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>fungi</td>
<td>800</td>
</tr>
<tr>
<td>lichens</td>
<td>245</td>
</tr>
<tr>
<td>algae</td>
<td>615</td>
</tr>
<tr>
<td>mosses</td>
<td>350</td>
</tr>
</tbody>
</table>

(Kanchaveli et al, 1985).

**Macromycetes in forest ecosystems**

The main characteristic components of forest ecosystems are macromycetes, which participate in mycorrhizas, cause diseases of trees and bushes, or are saprotrophs feeding on dead matter.

*Oak forests:* According to Gulmagarashvili et al, (1977); Nakhutsrishvili, (1975, 1981), some macromycetes are especially abundant and even form aspects in certain places e.g. *Chrepidotus mollis, Actarius piperatus, Annelus stipticus, Leurotus ostreatus, Russula lepida.*

*Fir and spruce forests:* The species widespread in these forests are: *Agaricus campestris, Anellaria semiovata, Hygrocybe conica, Marasmius oreades* etc. Species of Gasteromycetes are: *Bovista nigrescens, Calvatia caelata, Langemania gigantea* etc. (Kanchaveli et al, l.c.).
Edible and poisonous fungi: There are 80 species of edible fungi and 30 poisonous or potentially poisonous fungi in Svaneti (Kanchaveli, 1985). Locals collect some species including: Amanita caesarea, Lactarius deliciosus, L. piperatus, cantharelus cibarius, Pleurotus ostreatus, Armillaria mellea etc.

Fungi of cultural and wild plants of economical importance: More than 300 fungi species of cultural and wild plants of economic value are recorded in Svaneti. These include the fungi of fruit-trees, vine, potato, other vegetables, meadow plants, forest-trees etc.

Botanical-geographical features

Diversity of the relief and climatic factors condition the diversity of habitats. Separate orographic units and river basins are characterized by different type of Kolkheti vertical zoning depending on climatic factors, orography and the history of the territories.

According to the vertical distribution of vegetation, Svaneti region can be divided into different botanical-geographical districts. The division is based also on floristic criteria, and the links between ecosystems and terrain of different forms.

The following botanical-geographic regions are distinguished in Svaneti (Gagnidze et al, 1985).

1. Nenskra-Nakri Catchment
2. Dolra Catchment
3. Mestia-Chala-Gulkhuri catchment
4. Hadish-Enguri and Upper Tskhenistskali catchments
5. Tkhvish-Khumpreri catchments
6. Svaneti Range botanical-geographic region
7. Upper Tskhenistskali and Kheledul-Laskadura catchments

Taxonomic diversity of the flora

1,100 vascular species are recorded in Svaneti (Gagnidze et al, 1985) including: 10 families of ferns with 20 genera and 30 species; 89 families of angiosperms with 416 genera and 1,062 species (of these 17 families, 86 genera and 194 species are of monocotyledons and 72 families, 329 genera and 866 species of dicotyledons.

Dicotyledons are most numerous (typically 10-15 leading families are taken into account, which represent 75% of species found in the study area). Families Scrophulaziaceae, Leguminosae, cazyophyllacae, Cruziferae, Umbeliferae, Labiatae are characteristic of different geo-botanical provinces of Georgia.

From monocotyledons, Gramineae and Liliaceae are most common. Gramineae species are dominant in meadow ecosystems. The Liliaceae family contains many bulbous plants. Many of them are rare and are included in the Red Data Book (representatives of Galanthus, Scilla, Fritillaria, Lilium, Muscari, Eruthroniemne)

The taxonomic diversity of Svaneti flora according to genera is as follows:

The most widespread genera are: Carex, Tlieracium, Cirsium, Veronica etc. Urethrum and Chentaurea create aspects of meadow ecosystems. The genera Aethacapappus and
Surinella contain rare lithophytous species and belong to the flora of rock piles. Emulariella is endemic. Other important genera are: Heracleum, Agasyleis, Trifolium, Vecia, Tathyrus, etc.

Ecosystems of mixed grass consist of: 18 species of the genus Veronica of Scrophulariaceae, represented by several endemic and rare species found in the alpine and sub-nival zones of protected areas.

There are 15 species of Ranukulus of Ranukulaceae family, 12 species of Cerastium of Caryophyllaceae family, 12 species of Saxifraga of Saxifragaceae family, etc.

Although the families Rosaceae (16), Cruciferae (50) and Labiatae (32) are rich in species, their role is limited in Svaneti ecosystems. Floristically important genera are: Draba, Rosa, Scutearia, Alyssoides (Visicaria), Pseudovesicularia (endemic to the Caucasus), Coluteocarpus (from Asia Minor).

Campanulacea family is represented by rare, floristically interesting species, needing protection. The most important genera of sub-alpine and alpine meadow ecosystems are Geranium and Alchemilla, those of forest ecosystems are Vaccinium, Rhododendron, Sorbus, Ulex, Fragis, Carpinus, Casta-salix, Populus. The following genera of Gramineae are most widespread: Poa, Hordeum, Calamagrostis, Bromus, Festuca, Colpodium. Lilium is mostly characteristic of sub-alpine meadows with tall grass.

**List of flora species found in Svaneti**

- Acer trautvetteri
- Acer pseudoplatanus
- Aconitum nasutum
- Aconitum orientale
- Alnus barbata
- Athyrium alpestre
- Betula litwinowii
- Capra caucasica
- Castanea sativa
- Centaurea nigrofimbria
- Chamaenerium angustissimum
- Cirsium svaneticum
- Corylus avellana
- Daphne pontica
- Digitalis ciliata
- Dracocephalum ruyschiana
- Euphorbia glaberrima
- Genista suanica
- Gentiana acrapiacea
- Gentianella biebersteinii
- Geranium gymnocaulent
- Grossheimia ossica
- Heracleum mantegazzianum
- Hypericum nummularoides
- Hypericum perforatum
- Ilex colchica
- Inula magnifica
- Inula orientalis
- Jurrinella subcaulis
- Lathyrus roseus
- Lilium szovitsianum
- Matteuccia struthiopteris
- Mtiuleti and Lesser Caucasus
Paeonia steveniana
Petasites albus
Phytolacca Americana
Polygonum grandiflorum
Polygonum verticillatum
Populus tremula
Psephelus colchicus
Pyrethrum macrophyllum
Quercus iberica
Rhododendron caucasica
Rhododendron luteum
Rhododendron ponticum
Robinia pseudoacacia
Rumex. Crocus scharojanii
Salix caprea
Salix micans
Senecio othonae
Senecio platiphylloides
Senecio pojarovae
Senecio rhombifolius
Sorbus aucuparia
Thalictrum buschianum
Vaccinium arctostaphylos
Vaccinium myrtillus
Vaccinium vitis-ideae

The rare species include: Psephelus colchicus, endemic of West Caucasus, chiefly found on lime-stone; Gentianella biebersteinii, found only in Svanetia, Mtiuleti and Lesser Caucasus; Grossheimia ossica, endemic to western South Caucasus; Genista suanica, endemic to West Caucasus, Dracocephalum ruyschiana, palearctic species; Digitalis ciliata, endemic to West Caucasus.

Endemism and the geographic structure of the flora

There are 264 endemic species in Upper and Lower Svaneti, out of which, Caucasus endemic species are 212 and Georgian endemic species - 52 species. Endemic plants of Svaneti are 10.

There are six Caucasus and Georgian endemic genera:

<table>
<thead>
<tr>
<th>Genus</th>
<th>Endemic to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Szedynskyia</td>
<td>West Caucasus and Daghestan</td>
</tr>
<tr>
<td>Charesia</td>
<td>Central Caucasus</td>
</tr>
<tr>
<td>Pseudovesicaria</td>
<td>the Caucasus</td>
</tr>
<tr>
<td>Kemulariella, Agayllis</td>
<td>endemic to the Caucasus endem</td>
</tr>
</tbody>
</table>

71
Fauna of the Central Caucasus (Racha-Lechkhumi-Lower Svaneti)

Mammals and Reptilians

<table>
<thead>
<tr>
<th>Forests</th>
<th>Gorges and rocks</th>
<th>Subalpine and alpine zones</th>
<th>Degraded landscape</th>
<th>Throughout the whole Lab Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mammals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talpa caucasica</td>
<td>Chionomys gud</td>
<td>Talpa levantia</td>
<td>Erinaceus concolor</td>
<td>Sorex volnuchini</td>
</tr>
<tr>
<td>Sorex raddei</td>
<td>Sorex caucasicus</td>
<td>Crocidura gueldenstaedti</td>
<td>Neomys schelkovnikovi (^{\text{W}})</td>
<td></td>
</tr>
<tr>
<td>Plecotus auritus</td>
<td>Sicista kluchorica</td>
<td>Lepus europaeus</td>
<td>Rhinolophus hipposideros</td>
<td></td>
</tr>
<tr>
<td>Nyctalus noctula</td>
<td>Prometheomys schaposchnikovi</td>
<td>Rattus rattus</td>
<td>Pipistrellus pipistrellus</td>
<td></td>
</tr>
<tr>
<td>Scirurus anomalus</td>
<td>Terricola daghestanicus</td>
<td>Rattus norvegicus</td>
<td>Myotis mystacinus</td>
<td></td>
</tr>
<tr>
<td>Scirurus vulgaris</td>
<td></td>
<td>Mus musculus</td>
<td>Myotis bily</td>
<td></td>
</tr>
<tr>
<td>Myoxus glis</td>
<td></td>
<td></td>
<td>Epitesicus seriginosus</td>
<td></td>
</tr>
<tr>
<td>Driomys nitedula</td>
<td></td>
<td></td>
<td>Vespertilio murinus (^{\text{W}})</td>
<td></td>
</tr>
<tr>
<td>Terricola majori</td>
<td></td>
<td></td>
<td>Chionomys robustus (^{\text{W}})</td>
<td></td>
</tr>
<tr>
<td>Apodemus mystacinus</td>
<td></td>
<td></td>
<td>Apodemus uralensis</td>
<td></td>
</tr>
<tr>
<td>Apodemus ponticus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lutra lutra (^{\text{W}})</td>
<td></td>
<td></td>
<td>Mustela nivalis</td>
<td></td>
</tr>
<tr>
<td>Martes foina</td>
<td></td>
<td></td>
<td>Martes Martes</td>
<td></td>
</tr>
<tr>
<td>Lynx lynx</td>
<td></td>
<td></td>
<td>Meles meles</td>
<td></td>
</tr>
<tr>
<td>Capreolus capreolus</td>
<td></td>
<td></td>
<td>Ursus arctos</td>
<td></td>
</tr>
<tr>
<td>Reptilia</td>
<td></td>
<td></td>
<td>Canis lupus</td>
<td></td>
</tr>
<tr>
<td>Triturus vulgaris (^{\text{W}})</td>
<td>Lacerta rudis</td>
<td></td>
<td>Rana macrocnemis (^{\text{W}})</td>
<td></td>
</tr>
<tr>
<td>Triturus vitatus (^{\text{W}})</td>
<td>Lacerta caucasica</td>
<td></td>
<td>Natrix natrix (^{\text{W}})</td>
<td></td>
</tr>
<tr>
<td>Triturus karelini (^{\text{W}})</td>
<td>Lacerta agilis</td>
<td></td>
<td>Natrix tessellata (^{\text{W}})</td>
<td></td>
</tr>
<tr>
<td>Pelodites caucasicus (^{\text{W}})</td>
<td>Elephe hohenackeri</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Ornithofauna in the Central Caucasus**

<table>
<thead>
<tr>
<th>Forests</th>
<th>Gorges, rocks and Anthropogenic landscape</th>
<th>Subalpine and alpine zones</th>
<th>River and lake banks</th>
<th>Throughout the whole Lab Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accipiter gentiles</td>
<td>Columba livia</td>
<td>Gypaetus barbatus</td>
<td>Podiceps ruficollis</td>
<td>Milvus migrans</td>
</tr>
<tr>
<td>Accipiter nisus</td>
<td>Athene noctua</td>
<td>Neophron percnopterus</td>
<td>Podiceps grisegea</td>
<td>Falco tinnunculus</td>
</tr>
<tr>
<td>Buteo buteo</td>
<td>Apus apus</td>
<td>Aquila chrysaetos</td>
<td>Podiceps nigrlicollis</td>
<td>Troglodytes troglodytes</td>
</tr>
<tr>
<td>Hieraaetus pennatus</td>
<td>Apus melba</td>
<td>Tetraogallus caucasicus</td>
<td>Botaurus stellaris</td>
<td>Phoenicurus ochruros</td>
</tr>
<tr>
<td>Aguila pomarina</td>
<td>Merops apiaster</td>
<td>Tetrao mlokosiewiczi</td>
<td>Ixobrychus minutus</td>
<td>Saxicola rubetra</td>
</tr>
<tr>
<td>(Deciduous forest)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Falco subbuteo</td>
<td>Upupa epops</td>
<td>Eremophila alpestris</td>
<td>Nycticorax nycticorax</td>
<td>Saxicola torquate</td>
</tr>
<tr>
<td>Falco peregrinus</td>
<td>Ptronoprogne rupestris</td>
<td>Anthus spinoletta</td>
<td>Egretta garzzetta</td>
<td>Oenanthe oenanthe</td>
</tr>
<tr>
<td>Crex crex</td>
<td>Delichon urbica</td>
<td>Prunella collaris</td>
<td>Ardea cinerea</td>
<td>Turdus merula</td>
</tr>
<tr>
<td>(fields in forest zone)</td>
<td>(anthropogenic landscape)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Columba oenas</td>
<td>Hirundo rustica</td>
<td>Phoenicurus erythrogaster</td>
<td>Anas penelope</td>
<td>Sylvia hortensis</td>
</tr>
</tbody>
</table>

(W) - Inhabits near water.
<table>
<thead>
<tr>
<th>ACTA Consultants</th>
<th>National Forests Development Project</th>
</tr>
</thead>
</table>
| **Columba palumbus** | *Alauda arvensis*  
(light forest, anthropogenic landscape) | *Oenanthe hispanica*  
*Anas platyrhinchos*  
*Sylvia nisoria* |
| **Streptopelia turtur** | *Lullula arborea*  
(anthropogenic landscape) | *Turdus torquatus*  
*Rallus aquaticus*  
*Muscicapa striata*  
*Spotted Flycatcher* |
| **Cuculus canorus** | *Sylvia communis*  
(anthropogenic landscape) | *Acrocephalus schoenobaenus*  
*Porzana parva*  
*Tichodroma muraria* |
| **Otus scops** | *Sylvia borin*  
(anthropogenic landscape) | *Pyrhocorax pyrrhocorax*  
*Haematopus ostralegus*  
*Eurasian Oystercatcher*  
*(Rioni gorge)*  
*Lanius collurio* |
| **Bubo bubo** | *Sitta neumayer*  
(gorges) | *Pyrhocorax graculus*  
*Charadrius dubius*  
*(water in forest zone)*  
*Garrulus glandarius* |
| **Strix aluco** | *Carduelis cannabina* | *Montifringilla nivalis*  
*Tringa ochropus*  
*(water in forest zone)*  
*Pica pica* |
| **Asio otus** | *Serinus pusillus*  
*Carduelis flavirostris*  
*Actitis hypoleucos*  
*(water in forest zone)*  
*Corvus cornix*  
*Corvus corax*  
*Sturnus vulgaris* |
| **Aegolius funereus** | *Carpodacus rubicilla*  
*Riparia riparia*  
*Gallinula chloropus*  
*Passer domesticus*  
*(anthropogenic landscape)*  
*Carduelis carduelis*  
*Emberiza cia* |
| **Caprimulgus europaeus** | *Jynx torquilla*  
(light forest) | *Fulica atra*  
*Alcedo atthis*  
*Motacilla flava*  
*(anthropogenic landscape)*  
*Motacilla cinerea*  
*(anthropogenic landscape)*  
*Motacilla alba*  
*(anthropogenic landscape)*  
*Cinclus cinculus*  
*Acrocephalus melanopogon* |
| **Dryocopus martius** | *Picus viridis*  
*(Deciduous forest)*  
*Dendrocopos major*  
*(Deciduous and mixed forest)*  
*Dendrocopos syriacus*  
*(Deciduous and mixed forest)*  
*Dendrocopos medius*  
*(Deciduous and mixed forest)*  
*Dendrocopos leucotos*  
*(Deciduous and mixed forest)*  
*Corvus corax*  
*Passer domesticus*  
*(anthropogenic landscape)*  
*Carduelis carduelis*  
*Emberiza cia* |
<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Dendrocopos minor</em></td>
<td>Deciduous and mixed forest</td>
</tr>
<tr>
<td><em>Luscinia megarhynchos</em></td>
<td>Deciduous forest</td>
</tr>
<tr>
<td><em>Phoenicurus phoenicurus</em></td>
<td>Deciduous forest</td>
</tr>
<tr>
<td><em>Ficedula parva</em></td>
<td>Anthropogenic landscape Deciduous forest</td>
</tr>
<tr>
<td><em>Anthus campestris</em></td>
<td></td>
</tr>
<tr>
<td><em>Anthus trivialis</em></td>
<td></td>
</tr>
<tr>
<td><em>Certhia familiaris</em></td>
<td>Forest</td>
</tr>
<tr>
<td><em>Prunella modularis</em></td>
<td></td>
</tr>
<tr>
<td><em>Erithacus rubecula</em></td>
<td></td>
</tr>
<tr>
<td><em>Turdus philomelos</em></td>
<td></td>
</tr>
<tr>
<td><em>Turdus viscivorus</em></td>
<td></td>
</tr>
<tr>
<td><em>Locustella naevia</em></td>
<td></td>
</tr>
<tr>
<td><em>Sylvia curruca</em></td>
<td>Anthropogenic landscape</td>
</tr>
<tr>
<td><em>Sylvia atricapilla</em></td>
<td>Anthropogenic landscape</td>
</tr>
<tr>
<td><em>Phylloscopus trochiloides</em></td>
<td>Gorges</td>
</tr>
<tr>
<td><em>Phylloscopus sibilatrix</em></td>
<td></td>
</tr>
<tr>
<td><em>Phylloscopus collybita</em></td>
<td>Anthropogenic landscape</td>
</tr>
<tr>
<td><em>Phylloscopus trochilus</em></td>
<td></td>
</tr>
<tr>
<td><em>Phylloscopus lorenzii</em></td>
<td></td>
</tr>
</tbody>
</table>
Regulus regulus  
(coniferous forest)

Ficedula semitorquata  
(anthropogenic landscape)

Aegithalos caudatus

Parus ater

Parus caeruleus

Parus major

Sitta europea

Sitta krueperi

Oriolus oriolus

Fringilla coelebs  
(anthropogenic landscape)

Carduelis chloris

Carduelis spinus  
(coniferous forest)

Loxia curvirostra  
(Coniferous forest)

Carpodacus erythrinus

Pyrrhula pyrrhula
Protected Areas

In 1996, the Parliament adopted a Law "On Protected Areas System". The Law determines the following categories for Protected Areas: State Nature Reserve, National Park with different zones, Nature Monument, Managed Nature Reserve, Protected Landscape, and Multiple Use Protected Area. According to this Law, Georgia is admissible for the existence of protected areas included in international network - biosphere reserve, world heritage unit, international importance wetland Protected Areas. The references from the legislation dealing with categories of protected territories with brief comments are shown below:

Article 4. State Nature Reserve

1. "The State Nature Reserve can be established in order to conserve nature, natural processes and genetic resources in a dynamic and untouched condition, and to carry out scientific research, education work, and bio-monitoring" (Zazanashvili, 1997).

The first Natural Reserve in Georgia was founded in 1912 on the southeastern slope of the Great Caucasus - in the Lagodekh gorge. Subsequently, the establishment of strict Nature Reserves became key process in nature conservation activities. According to the Law, only nature protection work and scientific research are permitted in the existing reserves. Georgia has fifteen Nature Reserves established under fSU Law and administrated by the State Department of Protected Areas, Nature Reserves and Hunting Farms. They comprise mostly forest habitats, and are managed for strict nature conservation objectives. The total area of Nature Reserves is over 168,800 ha - approximately 2.4% of the country's territory. Thirteen relatively large Nature Reserves are included in the general list of National Parks and Protected Territories, published by the World Conservation Union (IUCN) in 1990.

The list of Nature Reserves is shown below indicating the area, year of establishment, location, and main objects of protection (see Table 2.4.1):

<table>
<thead>
<tr>
<th>Nature Reserves</th>
<th>Area (ha)</th>
<th>Year of Establishment</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ajameti</td>
<td>4,845</td>
<td>1946</td>
<td>Located in Bagdadi region, at 100-200 m asl. It covers the canyon of the r. Rioni. The reserve includes forest track with presentation of rare relics (Imereti oak, Aser platanoides).</td>
</tr>
<tr>
<td>Akhmeta</td>
<td>16,297</td>
<td>1980</td>
<td>Located in Akhmeta region, at 2,500 m asl. It covers south and north ridges of the Caucasus mountain. Forests with rare relics - with yew and Aser platanoides presentation, high-mountain pinewoods and birch groves are found here.</td>
</tr>
<tr>
<td>Algeti</td>
<td>6,822</td>
<td>1965</td>
<td>Located in Tetritskaro region, at 1,000 m asl. It covers the east ridges of the Trialeti mountain, and the canyon of r. Algeti. Fir-woods and fir-tree forests are spread in the eastern part of the reserve; dear, bear, etc. are found here.</td>
</tr>
<tr>
<td>Bichvinta-Musera</td>
<td>3,645</td>
<td>1965</td>
<td>Located in the Gagra and Gudauta regions, at 0-50 m asl. It covers the Black Sea coast, and comprises Bichvinta's relic pinewood and Kolkheti deciduous forests.</td>
</tr>
<tr>
<td>Borjomi</td>
<td>17,948</td>
<td>1935</td>
<td>Located in the Borjomi region, at 600-2,200 m asl. It covers the Meskheti mountain ridge and comprises deciduous-coniferous forests. Dear, bear, etc. are found here.</td>
</tr>
<tr>
<td>Kazbegi</td>
<td>8,707</td>
<td>1976</td>
<td>Located in Kazbegi region, at 1,500-5,000 m asl. It covers the Central Caucasus mountains, the riverheads of r. Aragvi and Tergi. The reserve comprises sub-alpine, alpine, and sub-nival vegetation; Caucasian goat, Bear, etc. are found here.</td>
</tr>
<tr>
<td>Reserve</td>
<td>Area</td>
<td>Year</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------</td>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>Kintrishi</td>
<td>13,893</td>
<td>1959</td>
<td>Located in the Kobuleti region, at 450-2,600 m asl. It covers the canyon of the r. Kintrishi. The reserve is noted as greatly rich in relics (Ponto oak, Medvedev birch) Kolkheti forests.</td>
</tr>
<tr>
<td>Lagodekhi</td>
<td>17,932</td>
<td>1912</td>
<td>Located in the Lagodekhi region, at 450-3,500 m asl. It covers narrow canyons on the southern part of the Caucasus mountain. The reserve comprises lower, middle, and upper zones of the mountain, sub-alpine forests and meadows; Caucasian goat, Chamois, Red deer, Brown bear, Caucasian heat-cock are found here.</td>
</tr>
<tr>
<td>Liakhvi</td>
<td>6,388</td>
<td>1977</td>
<td>Located in the Tskhinvali region, at 1,200-2,300 m asl. It covers canyon of the r. Liakhvi. The reserve comprises middle and upper zones of mountains and sub-alpine forests.</td>
</tr>
<tr>
<td>Mariamjvari</td>
<td>1,040</td>
<td>1939</td>
<td>Located in the Sagarejo region, at 1,200 m asl. It covers the ridge of Tsiv-Gombori, and includes the pine-forests.</td>
</tr>
<tr>
<td>Pskhu-Gumista</td>
<td>40,819</td>
<td>1976</td>
<td>Located in Sokhumi region at 300-2,850 m asl. It covers the canyon of the r. Gumista and part of the r. Bzipi. The reserve comprises black coniferous-deciduous forests.</td>
</tr>
<tr>
<td>Ritsa</td>
<td>16,289</td>
<td>1957</td>
<td>Located in the Gudauta region, at 2,200 m asl. It covers the adjacent areas of Ritsa lake. The reserve comprises deciduous and black-coniferous forests, and sub-alpine meadows.</td>
</tr>
<tr>
<td>Saguramo</td>
<td>5,359</td>
<td>1946</td>
<td>Located in Mtkskheti region, at 500-1,400 m asl. It covers the ridge of Saguramo Mountain. Deciduous forests with Kolkhetian elements are found here.</td>
</tr>
<tr>
<td>Sataplia-Kolkheti</td>
<td>854</td>
<td>1935</td>
<td>Located in Tsqaltubo region, at 0-50 m asl. It covers Kolkheti wetlands. Paliastomi lake, canyon of r. Pichora. The reserve comprises karst caves, traces of dinosaurs, Kolkheti forests (relict), and wetlands.</td>
</tr>
<tr>
<td>Vashlovani</td>
<td>8,034</td>
<td>1935</td>
<td>Located in the Dedoplistskaro region, at 100-800 m asl. It covers the eastern part of the Lori mountain plateau. The reserve comprises and sparse woods with presentation of different relics. Rich fauna of reptiles is characterized to this reserve.</td>
</tr>
</tbody>
</table>


Besides, there are other types of protected territories: Resort Zones (115,100 ha), Green Zones (265,700 ha), Managed Nature Reserves, State Forests and Hunting Farms, where a certain protection regime operates (Zazanashvili, 1996). In most cases the status of Protected Areas does not comply with legislative norms and definitions defined in accordance with international criteria. This is one of the circumstances creating the importance of the establishment of a New System of Protected Areas.

The existing reserves do not comply with the requirements enforced upon this category: a number of care activities in Georgian reserves such as: sanitary cutting, mowing, making saltcellars for animals, and etc., are allowed. In order to bring the actual situation into accordance with the legislation, it is necessary to make the protection regime stricter, or revise the status of nature reserves.

In 1992, State Council approved a plan to protect seven national parks. The Borjomi-Kharagauli National Park and Kolkheti National Park have already been drawn up and established.

Article 5. National Park

1. "A National Park is established in order to protect relatively huge and pronounced with natural beauty ecosystems of international importance, conserve habitats, and carry out scientific, educational, and recreational activities" (Zazanashvili, 1997).
The following main zones may be arranged in the National Park:
   a) strictly protected zones;
   b) managed reserved zone;
   c) visitors zone;
   d) restoration zone;
   e) historical-cultural zone;
   f) administration zone;
   g) traditional use zone.

A National Park in contrast to a Nature Reserve is multiple use reserved territory. The use of
the tourist-recreation potential of the territory is of greater importance in comparison to
protection and conservation of nature in a National Park.

Article 6. **Natural Monument**

The category of Natural Monument can be a given waterfall, lake, wood massif, even a tree,
if this kind of small object is unique.

Article 7. **Managed Nature Reserve**

There are no ecosystem level units in the definition of Managed Nature Reserve. They in
general are established in order to protect separate species of plants and animals, using
essential care and restoration activities.

Article 8. **Protected Landscape**

Although, there are many unique landscapes in Georgia where natural components and
historical-cultural monuments harmonize with each other, the category of Protected
Landscapes is not established yet in the country.

Article 9. **Multiple Use Protected Area**

This category of protected areas is often known as “support zones”.

Article 10. **Biosphere Reserve**

Biosphere reserve may consist of the following main zones:

   a) strictly nature protected zone;
   b) managed nature protected (for manipulations) or buffer zone;
   c) restoration zone;
   d) traditional-cultural landscape zone.

This category may be given to a territory only after the conclusion of the International
Coordinating Council of UNESCO program - “Man and Biosphere”.

Article 11. **World Heritage Unit**

Like biosphere reserve, the establishment of this category is possible only after the
recognition of UNESCO World Heritage Convention Committee and including in the list of
World Heritage. Only several architectural monuments have the status of World Heritage Unit
in Georgia (Ushguli, Mtskheta) (Zazanashvili, 1996).
In order to expand the System of Protected Areas, establishment of the Tusheti National Park and Protected Landscape, the Vashlovani National Park and development of the oldest Lagodekhi Reserve is under preparation with the support of GEF and World Bank.

Protected territories are likely to play one of the main roles in the development of ecotourism since they comprise all elements interesting for nature loving tourists. Proposed management plans of protected areas imply tourism activity in these areas. In order to achieve the conservation of natural and historic-cultural heritage and sustainable social-economic development of the regions, a proper planning and management of protected areas is necessary.

Planning a New System of Protected Areas

A New System of Protected Areas is actually in the process of creation. In order to carry out the planning of a new system relatively large territories (preferable with distinguished physical-geographical boundaries) are selected for protected territories, where correspondingly with the scientific information unique ecosystems are conserved, rare species of animals and plants are spread, aesthetically attractive natural landscapes, separate unique natural objects, and historical-cultural heritage are saved. Such ten regions have been selected:

1. Borjomi-Kharagauli;
2. Eastern Caucasus;
3. Iori plateau;
4. Erusheti;
5. Ajara-Imereti;
6. Kolkheti;
7. Central Caucasus;
8. Shavsheti;
9. Apkhazeti;
10. Kolkheti proposed (in perspective) protected areas region.

The work on the establishment of a New System of Protected Areas is carried out under the leadership of the Protected Areas Development Center in cooperation with the World Wide Fund of Georgia, the Ministry of Environment, State Department of Protected Areas, Nature Reserves and Hunting Farms, and State Department of Forest Management.

Law on Protected Areas adopted in 1996 governs the creation and extension of protected areas, in addition in giving parliament the right to create other types of protected areas. Separate legislation is enacted for each protected area and defines the boundaries of the area, the boundaries of zones within the overall area, the activities, which are permitted in each zone, and details of the administrative structure and the management regime.

The planning work began several years ago. In the first stage the Borjomi-Kharagauli protected areas region has been planned and National Park has been established. The Cabinet of Ministry adopted sound regulation “About Development of Assisting Measures for the System of Protected Areas and Establishment of Borjomi-Kharagauli National Park” (№ 447, July 28, 1995), which was practically fundamental for the creation of a New System of Protected Areas.

The Law on Creation and Management of the Kolkheti Protected Areas came into force on January 1, 1999 (and was amended in September 1999). It aims to provide for the creation of the Kolkheti protected areas in Western Georgia and to regulate the management of these areas, which include the Kolkheti National Park, the Kobuleti State Reserve and the Kolkheti Multiple Use Area.

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6 Kolkheti proposed protected areas region (which extends from the Engun River to the North) is considered to be perspective area for protection in the future, however, it is not exactly designated yet.
At present, Protected Areas Development Center, who is in charge of the Protected Areas Development Project prepared with assistance the World Bank, is working in the Central Caucasus region on development of protected areas. GEF-funded Protected Areas Development Project is expected to be implemented in parallel with the NFDP and to complement its activities, specially in the program's Laboratory Zone composed of four districts (Ambrolauri, Lentekni, Oni and Tsageri) located in the Central Caucasus Mountains (see figure 1).

The objectives of Protected Areas Development Project are to: "(i) establish ecologically effective protected areas, (ii) integrate biodiversity conservation into forestry and range management, (iii) strengthen the institutions responsible for biodiversity conservation programs, (iv) improve the ecological basis for landscape planning, (v) improve the public awareness of Georgian biodiversity, and (vi) promote international cooperation in Transcaucasus biodiversity conservation".
2.5 Cultural Heritage

Racha Region

Historical province Racha, is old cultural region of the West Georgia's highlands. Racha is rich in monuments of the cultural heritage, chronological range of which is quite wide from IX to XX centuries. Racha is the only region within Georgia where the typical Svaneti dwelling-defensive type of architecture - "tower-house" existing only in the temi (community) is used, namely in the village of Geba that borders Svaneti.

The 1991 earthquake caused a great damage to Racha. Many monuments of high artistic value were destroyed.

Lechkhumi Region

Lechkhumi, one of the magnificent historical provinces of Georgia, is situated on the middle section of the Tskhenistskali and Rioni Rivers. Lechkhumi was populated from the ancient times. Churches of early feudal period are less preserved in Lechkhumi, but fortresses and towers are in abundance, giving the region a distinctive appearance.

Lechkhumi had been one of the significant regions of Georgia for centuries that was adequately reflected in the architectural monuments, main features of which, despite some peculiarities, follow the common course of development of general Georgian architecture.

Jurisdiction of historical sites and over the forests adjacent to the historical sites

Department of Preservation of Historic Monuments has the jurisdiction of historical sites within the Forest Fund. Forests adjacent to the historical sites are managed by the State Department of Forest Management. Historical sites are indicated on the map. There is no special provision in the Forest Code regarding the cultural heritage sites, however, in practice, the SDFM always tries to avoid issuance of licenses close to historic sites due to respect to both the cultural heritage and local population. In case of accidental find of cultural sites while forest activities, the Department of Preservation of Historic Monuments must be notified.

See Figure 15
Cultural and natural heritage scheme
3. LEGISLATION

3.1 Existing conditions

The Georgian legislation in the field of protection, rehabilitation and use of forests consists of the Constitution, international agreements, laws on Environmental Protection, System of Protected Territories, Fauna, Water Resources, land legislation, the Forest Code and other regulations (see Chapter 15, References and Bibliography). Regulations currently in force have the following hierarchy according to their legal effect:

1. The Constitution;
2. International agreements signed by Georgia;
3. Organic Law: Decree of the President of Georgia which deals with issues considered by the Article 46 of the Constitution. This includes the Organic Law on Local Governments and Self-Governments;
4. Law: Decree of the President, which does not deal with issues considered by the Article 46 of the Constitution. This includes all other laws and codes discussed below;
5. Order of the President;
6. Resolution of the Parliament;
7. Order of the State Minister;
8. Resolution of the National Regulating Commission on Energy; resolution of the National Regulating Commission on Communications; order of the minister and the head of the other central body of executive power; resolution of the Commission on Accounting Standards; resolution of the Board of Auditors; resolution of the Central Election Committee;
9. Order of the Chairman of the Antimonopoly Service;

This list can be extended with the regulations of the National Bank. Regulations issued by the National Bank and the Chamber of Control, within the framework established by the Georgian legislation, have priority over other regulations; resolution of the Council of the National Bank has a priority over the order of the President of the National Bank.

Georgian laws related to the environment (as of May, 2001) are set out in Table 3.1.1.

Table 3.1.1. Main Georgian Laws and legal acts relating to the environment

<table>
<thead>
<tr>
<th>Legal Acts</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Constitution of Georgia</td>
<td>24.08.1995</td>
</tr>
<tr>
<td>Law on Environmental Protection</td>
<td>10.12.1996</td>
</tr>
<tr>
<td>Law on State Ecological Expertise</td>
<td>01.01.1997</td>
</tr>
<tr>
<td>Law on Environmental Permits</td>
<td>01.01.1997</td>
</tr>
<tr>
<td>Law on Normative Acts</td>
<td>29.10.1996</td>
</tr>
<tr>
<td>Law on Protected Area System</td>
<td>07.01.1996</td>
</tr>
<tr>
<td>Law on Creation and Management of the Kolkheti Protected Areas</td>
<td>09.12.1998</td>
</tr>
<tr>
<td>Law on Protection of Flora from Harmful Organisms</td>
<td>12.10.1994</td>
</tr>
<tr>
<td>Law on Changes and Amendments into the Law on Protection of Flora from Harmful Organisms.</td>
<td>16.04.1999</td>
</tr>
<tr>
<td>Law on Privatization of State Forest</td>
<td>expected 02.01.2002</td>
</tr>
<tr>
<td>Law on Pesticides and Agricultural Chemicals</td>
<td>25.11.1998</td>
</tr>
<tr>
<td>The Forest Code</td>
<td>22.06.1999</td>
</tr>
<tr>
<td>Law on Special Preservation of State Forest Fund and the Plantation within the Tbilisi City and Neighboring Territories</td>
<td>10.11.2000</td>
</tr>
<tr>
<td>Law on Changes and Amendments to the Forest Code</td>
<td>10.11.2000</td>
</tr>
<tr>
<td>Law on Protected Areas System</td>
<td>07.03.1996</td>
</tr>
<tr>
<td>Law on Soil Protection</td>
<td>01.05.1995</td>
</tr>
<tr>
<td>The Tax Code</td>
<td>13.06.1997</td>
</tr>
<tr>
<td>The Customs Code</td>
<td>01.01.1998</td>
</tr>
<tr>
<td>Law on Customs Tariffs and Tax</td>
<td>18.02.1998</td>
</tr>
<tr>
<td>The Law on Customs Fees</td>
<td>20.03.1998</td>
</tr>
<tr>
<td>The Criminal Code</td>
<td>22.07.1999</td>
</tr>
<tr>
<td>The Code on Administrative Offences</td>
<td>01.01.1985</td>
</tr>
<tr>
<td>Law on Regulation and Engineering Protection of the Georgian Coastal Zone and Riverbanks</td>
<td>27.10.2000</td>
</tr>
<tr>
<td>The General Administrative Code</td>
<td>25.06.1999</td>
</tr>
<tr>
<td>Law on Melioration of Lands</td>
<td>16.10.2000</td>
</tr>
<tr>
<td>Law on Export License Tax for Wood Materials</td>
<td>31.03.1998</td>
</tr>
<tr>
<td>Law on Land Registration</td>
<td>14.11.1996</td>
</tr>
<tr>
<td>Law on Ownership of Agricultural Lands</td>
<td>22.03.1996</td>
</tr>
<tr>
<td>Law on Management and Disposal of Agricultural Lands Owned by State</td>
<td>28.10.1998</td>
</tr>
<tr>
<td>The Civil Code</td>
<td>26.06.1997</td>
</tr>
<tr>
<td>Law on Creation of the State Department of Land Management</td>
<td>13.11.1996</td>
</tr>
<tr>
<td>Law on Entrepreneurs</td>
<td>28.10.1994</td>
</tr>
<tr>
<td>National Environmental Action Plan of Georgia</td>
<td>19.06.2000</td>
</tr>
<tr>
<td>Orders and resolutions of the President of Georgia dated: # 191; # 404; #782; # 403; # 469; # 282; # 1172; # 6</td>
<td>20.05.00, 12.09.00, 31.12.97, 12.09.00, 29.10.00, 30.06.00, 29.10.00, 10.01.00</td>
</tr>
<tr>
<td>Orders of the Chairman of the State Department of Forest Management: # 10/63; 10/03; # 10/09; 10/24; # 10/53; # 10/61; # 10/161</td>
<td>29.09.00, 10.01.01; 17.01.01; 08.05.00; 23.08.00; 13.09.00; 07.12.99</td>
</tr>
<tr>
<td>Regulations of the Ministry of Environment of Georgia (Order #198 of the President of Georgia)</td>
<td>28.03.1998</td>
</tr>
<tr>
<td>Regulations of the State Department of Forest Management of Georgia (Order #518 of the President of Georgia)</td>
<td>15.09.1997</td>
</tr>
</tbody>
</table>
Constitution

The existing Constitution has been adopted on August 24, 1995. It is the supreme law and has the highest level in the hierarchy of the Georgian laws. The Article 37 of the Constitution served as a basis both for development of the present environmental policy and creation of existing environmental legislation: Citizens are entitled to live in a healthy environment and to use natural and cultural resources of the country as well as are obliged to protect them. The State provides environmental protection and rational use of natural resources to ensure a healthy environment for the well being of individuals, according to the environmental and economical interest of the public, taking into account the interests of current and future generations. Every person has the right to obtain complete, reliable and timely information regarding the environmental situation of his/her place of residence and work.

Environmental Legislation

In accordance with the Constitution, Georgia assumed quite serious commitments in the field of environmental protection and started development of new environmental legislation and bringing existing legislation to comply with the Constitution for the purpose of fulfillment of these commitments. The sources for the environmental legislation are: The Constitution, international agreements in the fields of environmental protection signed by Georgia, environmental laws and other regulations.

Law on Environmental Protection

The framework Law on Environmental Protection, which came into force on December 10, 1996 is the most important environmental law adopted by the Parliament since enactment of the Constitution. It regulates legal relationships between State authorities and physical and legal entities in the field of environmental protection and use of natural resources on the whole territory of the country (including territorial waters, airspace, continental shelf and the special economic areas).

The Law sets overall objectives for environmental protection and provides the guiding principles, trends and mechanisms to be used in achieving such objectives. Special articles are dedicated to the following issues:

- Environmental rights and obligations of individuals;
- Competence of governing bodies;
- Environmental education and research;
- State environmental management;
- Environmental economic mechanisms;
- Licensing for environmental activities;
- Provision of environmental information;
- Environmental standards;
- Environmental requirements on wastes;
- Environmental requirements in decision making and implementation of activities;
- Extreme environmental conditions;
- Protection of natural ecosystems; protected areas;
- Global and regional environmental management;
- International cooperation in environmental protection; etc.

Article 14 deals with National Report on the State of the Environment. In order to make the information public, the Ministry of Environment annually submits a national report on the State of the Environment to the President. The President issued the order on June 25, 1999 establishing the rules for drafting the National Report on the State of the Environment. Notwithstanding of the Law requirement, no report has been published yet.

The Law on Environmental Protection defines qualitative environmental standards. According to the Law, these standards are to be defined every five years by the regulations on Qualitative Environmental Standards developed and approved by the Ministry of Health in coordination with the Ministry of Environment. Unfortunately, no regulation has been enacted yet. At present, the old Soviet outdated regulations are still effective. Water quality is regulated by the Rules for Protection of Surface Waters from Pollution with Wastewater issued by the Ministry of Health, Ministry of Water Industry and Ministry of Fishery of former USSR in 1974, and modified in 1974 and 1990. The qualitative standards of water are given in the annex of these regulations. According to the information of the Ministry of Environment, new regulations will be developed in 2001.

As required by the Law on Environment Protection, any industrial or commercial activity requires an Environmental Permit issued by the relevant governmental body, and licenses for the use of natural resources (land, water, forest, flora, fauna, mineral resources). The 12th Chapter of the Law is dedicated to the protection of ecosystems. For the purpose of regeneration of wildlife and plants and conservation of ecosystems, their use shall be limited and are subject to licenses. Any kind of activity, which may threat flora and fauna, habitats, breeding places and migration routes, is prohibited. The Law on Environmental Protection says that rules for protection of flora and fauna and their use shall be established, which is still incompletely accomplished.

The frame Law on Environmental Protection introduces the following Principles:

**Risk Reduction:** a developer is obliged to take all relevant measures to minimize or eliminate the risk of damage to human health or the environment.

**Priority Setting:** activity potentially causing the negative impact on the environment and human health must be replaced with a less risky activity being it even more expensive. Preference should be given to the latter if its cost is lower than that for compensation of damage incurred to the environment by the lower cost option.

**Waste Minimization:** priority is to be given to technologies that minimize waste generation.

**Protection of Biodiversity:** activity should not lead to irreversible degradation of biodiversity;

**Restitution:** environment degraded by an operation should be restored to a state as close as possible to the original.
User Pays: business users must pay for the use of natural resources (land, water, forest, flora, fauna, mineral resources, etc).

Polluter Pays: polluters must bear the costs of the damage to the environment.

Sustainability: natural resources and the environment are to be used in ways that do not hamper society’s development nor cause irreversible quantitative or qualitative changes to the environment.

On June 30, 2000, the Parliament introduced amendments into the Law on Environmental Protection, which specified responsibilities of the State bodies in the field of environment. The following caused these amendments: according to the order of the President, done on February 24, 2000, the Department of Hydrometeorology parted from the Ministry of Environment and constitutes a separate governmental agency (The State Department of Hydrometeorology).

National Environmental Action Plan

Preparation of the first National Environmental Action Plan (NEAP) commenced in 1996 and was completed in 2000. The program has been developed with the financial assistance of the World Bank and involved key government organizations, academic bodies and NGOs. The NEAP has been adopted and approved by the Presidential Order # 191 issued on May 20, 2000. At present, NEAP has authority of a regulation.

Elaboration of NEAP was a milestone achievement on behalf of the Georgian Environment, and represents not only a broad statement of government policy, but also a framework for specific government actions and further policy. However, the document seeks to identify the key issues which need to be addressed in various sectors, and goes some way to outlining the measures necessary to allow correction of current environmental problems, it has been criticized by some for being too general and descriptive, and lacking in specific actions. As regards forest sector, the National Environmental Action Plan is rather general. It is more a description of existing situation of country’s forests rather than a program of activities. The NEAP envisions reforms in the following priority directions:

- preservation of the diversity of forest ecosystems;
- ensuring stable regeneration of forest resources;
- improvement of the relevant legal base;
- training of personnel in sustainable management; ensuring improvement of social and economic conditions of the staff;
- reform of the forestry system, by making it independent from entrepreneurial activity;
- providing conditions which will attract private investments into forestry.

The program is planned for the period 2000-2004, however, there is no specific activity planned, scheduled and responsibility assigned to forest related activities.

Environmental Permits, State Ecological Expertise and Environmental Impact Assessment

The Law requires issuance of appropriate environmental permits prior to the implementation of any activity on the territory. Two laws: the Law on Environmental Permits and the Law on State...
Ecological Expertise (see annex 5) establish the legal basis for providing the public with information and its participation in the decision making process on the matter of issuance of environmental permits, State ecological expertise and environmental impact assessment. These two laws came into force on January 1, 1997.

The Law on Environmental Permits divides activities into 4 categories, according to their size, importance and potential impact on the environment. The State Ecological Expertise shall be carried out for activities of all 4 categories (The rules for conducting State Ecological Expertise are established by the law).

According to the Section M of the Article 4 of the Law on Environmental Permits, project on forest management, long-term programs on rehabilitation of protected areas, as well as plans and projects on protection and use of water, land, mineral and other natural resources are activities classified in Category I. Conduction of Environmental Impact Assessment (EIA) is required prior to applying for environmental permits for implementation of activities of Category I.

It should be noted that the law considers exceptional cases when environmental impact assessment is not required:

1. The investor repeats or continues already started activity for which environmental impact assessment has already been done and the new assessment process will not contain additional data;
2. State interests require immediate decision-making and start of activities.

According to the Law on Environmental Permits, the procedure for issuance of Environmental Permits for activities of Category I is the following (Article 7):

1. Investor is required to carry out environmental impact assessment prior to apply for environmental permits for implementation of activities of Category I;
2. In order to carry out environmental impact assessment properly and to provide public participation in this process, investor has the right to:
   - conduct public discussion of the environmental impact assessment according to the Article 15 of this Law;
   - provide the public with the access to the materials of the research conducted during the environmental assessment process.
3. After submission of the application for activity, the Ministry of Environment shall follow the procedure described by this Article, which includes the State Ecological Expertise (the procedure for conducting the State Ecological Expertise is regulated by the relevant legislation) and public participation in decision-making in the process of issuance of environmental permit.
4. For the purpose of informing the public, within 10 days of submission of the application, the Ministry of Environment shall:
   - publish the application with attached short annotation in mass media with the indication of time and place of public discussion on the matter of implementation of activities.
   - receive and consider comments submitted in written form by the public within 45 days after publishing of information regarding activity.
5. The Ministry of Environment shall conduct the public discussion on the matter of implementation of activity with participation of the representatives of the investor, the Ministry of Environment, local authorities and the public within 2 months of submission of the application;
6. Documentation proving the validity of activities shall be considered in the Ministry of Environment within 3 months.

7. The copy of the application is to be stored in that Department of the Ministry of Environment where the public discussion of the documentation proving the validity of activity will be conducted. Representatives of the public have the right to examine the application (except the parts containing commercial, industrial and State secrets) within the period of consideration of the application on the basis of request.

8. During this period, the Ministry of Environment shall:
   - Conduct the State Ecological Expertise of the documentation proving the validity of activities;
   - Determine whether the activity or its components are in compliance with the Georgian legislation;
   - Determine whether the activity or its components are in compliance with the existing environmental standards effective in Georgia;
   - Determine measures which shall be carried out in case of implementation of activity for mitigation of the environmental impact;
   - Make a decision on issue of the environmental permit for a certain activity on the basis of the State Ecological Expertise taking into account the public opinion.

Activities of Category II do not require environmental impact assessment (Article 8), but will be subject to the application of State Ecological Expertise (SEE). Public participation is required. Procedure for issue of environmental permits for activities of Category III includes SEE and public notification about planned activities (Article 9). SEE of activities is required. Activities of Category IV also require SEE (Article 10), but in this case, public participation and notification are not required.

Forest Code of Georgia

The Law of Georgia – Forest Code has been adopted by the Parliament on June 22, 1999.

The Forest Code includes the following definitions of the forest area:

a) Georgian Forest Fund – integrity of forests and their resources owned by the State Forest Fund and forests under different types of ownership

b) State Forest Fund – integrity of State Forests of Georgia, as well as lands and resources attributed to these forests

c) State Forest – forest owned by the State.

The Code says that forests are in ownership of the State. According to the Section 1 of the Article 9, forests can be in ownership of the State, the Patriarchy of Georgia, a physical or legal entity. This article will come into force only after the enactment of the Law on Privatization of Forests owned by the State.

Legal and physical persons using forests and forest resources or engaged in forestry activities, as well as the Patriarchy of Georgia are deemed to be subjects of relationships along with the State.

Forests are divided into the following categories according their institutional management:
a) protected areas of State forests, covering territories of State forests and territories specified by the Law on Protected Area System;

b) State forestry (managed by the State Department of Forest Management), which includes local forests.

Protected areas of State Forests are regulated by the State Department of Protected Areas, Nature Reserves and Hunting Farms; the State forestry, except local forests - by the State Department of Forest Management, and the local forests - by local authorities through the relevant services.

Chapter X (Article 35) of the Forest Code defines participation of representatives of population and public organizations in management of the State Forest Fund. In cases described in the Article 35, organizations having right of management of the State Forest Fund shall consider comments and proposals made by representatives of population and public organizations prior to making a decision.

The SDFM, State Department of Protected Areas, Nature and Hunting Farms and other bodies authorized by the legislation shall ensure:

1. availability of information on the condition of the State Forest Fund, excluding pieces of information disallowed for disclosure by legislation;
2. promulgation of forest protection and forest resource protection measures; elaboration of training programs for raising of public awareness.
3. provision of moral and material incentives for conserving biodiversity.

At present, no detailed procedure for ensuring public participation in decision-making process exists. According to the Forest Code, the Law on Privatization of State Forests shall be adopted by January 1, 2002. Privatization issues are discussed in the chapter 5 Forest ownership.

For the purpose of enactment of the Forest Code, issuance of 11 orders of the President, 6 orders of the Minister of Environment and 18 orders of the Chairman of the State Department of Forest Management is considered. At the beginning of 2001, many of those orders have not been issued yet.

The Forest Code has been amended on November 10, 2000 as a result of adoption of the Law on Special Preservation of State Forest Fund and the Plantation within the Tbilisi City and Neighboring Territories (10.11.2000).

Law on Protected Areas

The Law on Protected Areas System, enacted on March 7, 1996 regulates creation and functioning of the system of protected areas. The Law defines the following categories of existing protected areas:

- State Nature Reserve;
- National Park;
- Natural Monument;
- Managed Nature Reserve;
- Protected Landscape; and
- Multiple Use Area.
Existence of categories included in the international network of Protected Areas is assumed: Biosphere Reserves; World Heritage Sites and Wetlands of international significance.

The Parliament makes decisions on creation, extension and increasing of protection category of Protected Areas. According to the Article 17 of the Law on Protected Areas System, maintenance of the cadastre of Protected Areas is required. The cadastre has to be maintained by the Protected Area Service.

**Law on Protection of Flora from Harmful Organisms**

A great extent of the issues of protection of flora are regulated by the Law on Protection of Flora from Harmful Organisms, adopted on October 12, 1994 and then complemented by the Law on Changes and Amendments into the Law on Protection of Flora from Harmful Organisms (16.04.1999). The main goals of the Law are to:

1. protect cultivated plants, pastures, hayfields and forests from harmful organisms (vermin, diseases, weeds);
2. prevent undesirable impact on human health, flora and fauna, overall biosphere caused by the use of flora protective means;
3. provide the means for protection of flora and phytogenic products from harmful organisms with legal basis;
4. ensure the implementation of international and national regulations in the field of protection of flora;
5. implement the State target programs on liquidation and prevention of spread and evolution of quarantine and especially dangerous harmful organisms.

**Law on Wildlife**

The Law on Wildlife came into force on December 26, 1996. The Law regulates all aspects of the protection of wild animals and their habitats. According to the Law, fauna is in the State ownership (with some exceptions) and any action encroaching the State's right of ownership is prohibited.

According to the Article 32 of the Law, when using and developing natural ecosystems, landscapes and other territories maximum allowable standards of stress on them (Environmental stress standards) shall be established.

Environmental stress standards include quotas on use of natural resources, which are to be established taking into account the principles of sustainable development at a governmental level. Quotas on use of certain types of natural resources are to be established at regional and local levels.

Environmental stress standards shall be developed and approved by the Ministry of Environment in every 5 years. Unfortunately, like a majority of regulations on wildlife, no such kind of regulations is effective (the Law considers adoption of 34 sets of regulations).

**Pesticides and Agricultural Chemicals**

The Law on Pesticides and Agricultural Chemicals has been adopted on November 25, 1998. The purpose of the Law is to provide the basis for effective use and environmentally safe consumption of pesticides and agricultural chemicals.
The Law regulates State management, production, registration, labeling, packing, distribution, storage, transportation, use, neutralization, disposal, information interchange, advertisement, import and export of pesticides and agricultural chemicals in the field of effective use and safe consumption of agricultural chemicals and biological means. The Law refers to FAO recommendation on use of pesticides and agricultural chemicals.

**Law on Water Resources**

*The Law on Water Resources* came into force on October 16, 1997. The purposes of the Law are:

1. implementation of a uniform State policy in the field of protection and use of water;
2. protection of water bodies (including the Black Sea) and rational use of water resources taking into account interests of present and future generations and the principles of sustainable development;
3. satisfaction of drinking water needs;
4. sustainability of water fauna and sustainable use;
5. prevention of harmful impact of water and effective elimination of results;
6. advocacy of State interests in the field of protection, use and international trade of water;
7. production of water commodity output according to the international principles and standards;
8. protection of legal rights and interests of natural and legal persons in the field of use and protection of water.

*The Law on Water Resources* is connected with the land legislation and legislation of forest and protected areas. Water resources on the national territory are in State ownership. A special license issued by the authorized State agency is required for obtaining the right for use of water.

For the actual enactment of the *Law on Water Resources*, the Law considers adoption of 37 regulations, out of which 12 have been developed by the Ministry of Environment, but only 10 of them have a legal force, only these ten have been published in the official printed media, as it is required by the *Law on Normative Acts*.

On June 30, 2000, the Parliament introduced amendments into the *Law on Water Resources*, which defined that the Ministry of Environment and the State Department of Hydrometeorology have to undertake the State monitoring of water within their competencies. These changes were caused by the order of the President done on February 24, 2000, according to which the Department of Hydrometeorology parted from the Ministry of Environment and formed as a separate governmental agency.

**Law on Regulation and Engineering Protection of the Georgian Coastal Zone and Riverbanks**

*The Law on Regulation and Engineering Protection of the Georgian Coastal Zone and Riverbanks* was enacted in November 2000. This Law establishes the legal status of the complex and rational use of the Georgian coastal zone and riverbanks and provides their sustainability; regulates legal relations between authorities, natural and legal persons active in this field; establishes the forms of responsibility and the State control over activities provoking erosive and abrasive processes.
According to this Law, the Ministry of Urbanization and Construction (in cooperation with various governmental agencies) shall:

1. Develop and approve the rules for regulation and engineering protection of the Georgian coastal zone and riverbanks within 6 months upon enactment of this Law;

**Tax Code and Customs Legislation**

*The Tax Code* has been adopted on June 13, 1997, effective since June 24, 1997. Many changes and addenda have been introduced into the Code during last years. Three chapters deal with the environmental issues:

1. Chapter 10 establishes tax rates on use of natural resources (including forest resources);
2. Chapter 11 establishes taxes on pollution of the environment with harmful substances;
3. Chapter 11 contains the list of harmful substances and taxes to be paid for pollution of natural resources with these substances of different concentration.

*The Customs Code* is effective since January 1, 1998. The Code establishes the legal, economical and organizational basis for implementation of the customs policy. It defines duties and responsibilities of customs and other governmental organizations, legal and physical persons in the process of implementation of customs policy.

*Law on Customs Tariffs and Tax* has been adopted on February 18, 1998. This law establishes types and rates of taxes for customs procedure set by the *Customs Code*, for issuance of licenses by customs bodies and rules and terms of payment of these taxes.

*The Law on the Customs Fees* has been adopted on March 20, 1998. The Law establishes the rule for introduction and use of customs duties, mechanisms of external economic policy and State regulation of commodity market after crossing the customs border and rules for taxation of goods when crossing the customs border.

**Code on Administrative Offences**

*The Code on Administrative Offences* is effective since January 1, 1985 with many amendments and addenda introduced during these years. This Code establishes activities to be qualified as an administrative offence, administrative sanctions to be imposed on the offender, the authorized body (authorized person) and rules for imposing such sanctions.

Chapter 7 defines administrative offences in the field of environmental protection, use of natural resources, protection of historic and cultural monuments. This Chapter contains the articles establishing administrative sanctions for the violation of rules set by the legislation on land, forest, air, water and protected areas. 6th Chapter of *the Code on Administrative Offences* provides articles, which regulate administrative charges (penalties) for violation of administrative rules of State properties including forest, water, mineral resources and wildlife.
Criminal Code

The Criminal Code (adopted on July 22, 1999) sets the basis for criminal responsibility, defines actions to be qualified as a crime and establishes appropriate penalties or other measures.

Chapter 36 specifies crimes in the field of environmental protection and use on natural resources. According to the Code the following actions are considered as a criminal offence and are subject for criminal prosecution:

1. violation of the environmental rules during industrial activities;
2. violation of rules of treatment of environmentally harmful substances and waste;
3. violation of veterinary and pest-control rules;
4. violation of water use rules; pollution of water;
5. pollution of the sea;
6. hiding of information about pollution of the sea with substances and waste harmful for the human health and sea fauna by the authorized person;
7. atmosphere air pollution;
8. violation of the legislation on the Georgian continental shelf, territorial waters and special economic area;
9. degradation of soil; violation of rules of extraction and protection of minerals;
10. illegal use of minerals;
11. illegal catching of fish and water fauna; illegal hunting; destruction of habitats and reproduction sites of endangered plants and animals included in the Red Data Book of Georgia;
12. illegal cut of wood and bushes;
13. damaging and destruction of forests and plantations;
14. violation of the order of protected areas;
15. conduction of Category I activity without environmental permits.

Land Legislation

Land-related issues are regulated by the Constitution, international agreements and other regulations and normative acts, including Legislation on Forest, Water Resources, Agricultural and Non-agricultural Land, Privatization, the Tax Code, Civil Code, Criminal Code, Code on Administrative Offences, Laws on Soil Protection, Melioration and other regulations.

The State registration of ownership on land is the essential part of the Georgian Land Cadastre and contains data on boundaries and qualitative-quantitative and legal status of land parcels and real estate attached to the land parcels. The Law on Land Registration states that the rights on land are to be registered in the Public Register. The State control of protection and purposeful use of lands, maintenance of the State cadastre and registration, as well as protection of soils are main responsibilities of the State Department of Land Management.

Land Legislation establishes different rules for agricultural and non-agricultural lands. Following laws regulate those issues:

1. Law on Ownership of Agricultural Lands;
2. Law on the Rule of Declaring Non-agricultural Lands Owned by Juridical and Private Persons as a Private Property;

3. Law on Management and Disposal of Agricultural Lands Owned by State;

4. Law on the Reimbursement of a Substitute Land Cultivation Costs and the Payment of Damages in Cases of Allocation of Agricultural Land for Non-agricultural Purposes;

5. The Civil Code;

6. The Tax Code;

7. The Code on Administrative Offences;

8. The Criminal Code.

**Law on Soil Protection** regulates the issues of soil protection. The problem of protection of soil is crucial, as having insufficient land, where soil erosion, pollution, secondary water logging, ponding and salinity, open-cut mining and improper industrial activities cause losses of soil. Taking into account all these problems, the Law on Soil Protection (adopted on May 1994) has to provide integrity of soil, growth and maintenance of prolificacy.

This Law regulates the norms and standards for maximum allowable concentration of harmful substances in the soil to ensure human well-being, protection of flora and fauna and the natural environment in general.

**Law on Melioration** regulates legal relationships between governmental structures and natural and legal persons in the field of melioration of lands. The Law has been adopted on October 16, 2000 and amended on March 7, 2000 by the Law on Changes and Amendments to the Law on Melioration. These changes deal with definition of the status and responsibilities of amelioration service associations, water users associations and drainage service associations.

**Prohibitions of Commercial Logging and Exportation and Results of these Bans**

The Cabinet of Ministers made the first step towards regulation of the export of wood on November 30, 1995, when the export of wood became a subject for licensing. The President raised this issue on April 11, 1996 with the order #270 on the regulation of export of scrap of ferrous and non-ferrous metals, manganese silicate (secondary) and wood and emphasized that the export of wood requires licensing.

The Law on Export License Tax for Wood Materials was adopted on March 31, 1998 and was shortly cancelled by the Law #1469 on Managed Use of Wood on the Territory of Georgia dated June 25, 1998. This Law cancelled also the Presidential Decree #270, however it better regulated the wood exportation issues. In addition, the Law on Managed Use of Wood on the Territory of Georgia prohibited forest felling on the territory of the State Forest Fund for the timber production purpose. The Law on Managed Use of Wood on the Territory of Georgia was cancelled after enactment of the Forest Code.

The export of wood has never been prohibited by Law. The last ban, based on the Decree, has been cancelled in November 1995. Lobbying of such prohibition in the Parliament in 1998-99 has not been successful, however, lobbying is being continuing.

### 3.2 Impact analysis and Mitigation Measures

Considering Georgia's legal, institutional and political situation, a major characteristic is the imperfect enforcement of existing laws. For instance, in the field of forest management, poaching and illegal cutting are widely observed. Legal requirements concerning forest
rehabilitation and protection are not met. Insufficient institutional capacity of enforcing the legislation is a decisive factor, discussed under Institutions.

Issue 1: improving the forest legislation

Given the situation of low institutional capacity, incomplete enforcement regulations constitute another important obstacle for the implementation of existing laws. This is particularly the case for following laws:

- **Law on Environmental Protection**: there are no rules for drawing of the Red List and the Red Data Book of Georgia. As a consequence, no updated Red List and no Red Data Book exist. A Red Data Book dating from the Soviet period is sometimes mentioned in reports, but its validity is doubtful.

- **Forest Code**: the Minister of Environment has not issued any of the orders mentioned in articles 116 and 117 of the Forest Code. The President issued 6 orders considered by the Forest Code, and the Chairman of the State Department of Forest Management issued only 6 orders (see chapter 15). It should be noted, that the President and the Chairman of the State Department of Forest Management have issued some forestry-related regulations, which are not considered by the Forest Code.

After its enactment, some old forestry-related regulations were cancelled, but the Forest Code is de facto not effective because more than half of regulations needed for its enactment have not been issued. The validity of regulations issued during the Soviet period is not clear. The law says nothing about abrogation of these regulations, however the use of these regulations is doubtful from the legislative point of view. The Forest Code does not offer alternatives to these regulations; for example, about long term planning of forest resources and new standards\(^\text{18}\) have not been established.

The Forest Code makes distinction between “types of cuts” in Articles 68, 70, 99 and following. Such a precise distinction would be interesting in a handbook. In a Law, such element complicates the text and is of no help for forest management. Generally speaking, the Forest Code is so intricate that its enforcement will be difficult. It might be not useful to mitigate negative environmental impacts and generate positive social benefits.

**Mitigation measures 1:**

1.1 To support the implementation of the 1999 Forest Code, a simplification of this Code should be considered. A streamlined Forest Code should be reduced to the principles, while enforcement issues will be handled in the regulations.

1.2 Rules that shall be declared void should be listed and be declared void as soon as possible.

1.3 Missing regulations shall be issued by the responsible authorities. Coherence with other rules shall be checked. For instance, regulations for long term planning of forest resources shall be created.

Issue 2: contradictions between Laws, especially overlapping of competences

The Forest Code contradicts with land legislation and often gives reason of serious violations. For example, according to the Law on Management and Disposal of Non-agricultural Land

\(^{18}\) Regarding standards it should be noted, that on the basis of the international agreement on coordinated policy in the field of standardization, meteorology and certification done in Moscow on March 13, 1992 Georgia did not cancel State standards of the former Soviet Union. Some governmental structures are still using these standards today.
owned by the State, lands of the State Forest Fund may be considered as a non-agricultural land parcel; thus, they might be privatized according to the existing legislation on privatization. The priority of the Forest Code in this case is doubtful. As a result of this conflict some cases of privatization of forestlands have occurred.

In many cases competences of governmental structures are duplicated which hampers their effective operation. The definition of duties and responsibilities of the State Department of Forest Management can be the cause of conflicts of interest; this is discussed under the Issue 9 “reorganization of the State Department of Forest Management” in the chapter 4 Institutions.

**Mitigation measure 2:**

2.1 Laws shall be analyzed and improved in order to clear overlapping competences and contradictions between laws. If necessary, the Forest Code shall be improved taking into account all comments and conclusions made by relevant governmental structures.

**Issue 3: tax system and local economic development**

The Tax Code and customs legislation do not establish any taxes for export of wood. On the other hand, wood processing arts, craft and industries are confronted with a set of high taxes. The local transformation of wood, which could generate employment opportunities and indirect local economic benefits in an economically severely damaged region, is thus discouraged.

**Mitigation measure 3:**

3.1 The Tax and Customs Code shall be amended to encourage development of alternative, environmentally safe industries based on the local use of forest resources.

**Issue 4: balance between sanctions for illegal cutting and taxes for legal cutting**

Illegal commercial cuts, even if their volume is not known, constitute a major problem because of their negative socio-economical and environmental impacts (see chapter on forest products). According to the Criminal Code, illegal cut of wood and bushes, illegal hunting, destruction of habitats and reproduction sites of endangered plants and animals included in the Red Data Book of Georgia, as well as damaging and destruction of forests are considered as a criminal offence and are subject to criminal prosecution. In fact, the penalties are often not applied, or at least not in their full extent, due to corruption and institutional incapacity to implement them.

On the other hand, legal and physical persons practicing commercial logging in a legal way are subject to relatively high taxes. If those legal taxes are higher than the risk of paying penalties, it will not encourage legal ways of commercial logging. International experiences in similar situation of corruption plead for pragmatic fees and taxes, that is to say for a balance between the taxes for commercial logging and the effectively applied penalties for illegal commercial logging. As a matter of fact, the effective implementation of the penalties deserves remains an objective, on the long run.

**Mitigation measures 4:**

4.1 Incentives shall be created for the law-enforcement agencies to implement sanctions on illegal actions.

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99 The Forest Code says: "in case of conflict between provisions of this Code and other forestry-related laws, provisions of this Code shall be used". However, the Law on Management and Disposat of Non-agricultural Land owned by State is a special law regarding land and might thus be accorded priority.
4.2 Regarding taxes and fees for commercial logging, the reform of the forestry financial system foreseen in the Forests Development Project must pragmatically take into consideration the balance between costs for legal and penalties on illegal logging.

**Issue 5: legal basis for environmental impact assessments (EIA) and environmental permits**

There is no specific law on environmental impact assessment in Georgia, though conduction of EIA is considered by the relevant articles of the *Law on Environmental Protection* (Article 37) and the *Law on Environmental Permits* (Articles 7, 14, 15, 16 and 17). According to the *Law on Environmental Permits*, the procedure for conducting EIA is to be determined by the Ministry of Environment.

In this regard, the MoE has developed a special regulation, which is registered in the Ministry of Justice (31.05.1999). The MoE follows this regulation while issuing environmental permits. Unfortunately, this regulation does not have a complete legal basis, since it has not been published in the *Georgian Legislative Bulletin* within 7 days after registration in the Ministry of Justice, as it is required by the *Law on Normative Acts*.

**Mitigation measure 5:**

5.1 The laws and regulations concerning EIA and environmental permits must be issued and legalized.

**3.3 Significance of impacts after implementation of mitigation measures**

The present situation in Georgia is characterized by a rather low level of enforcement of existing laws. In this situation, the impact of legal improvements will depend on the institutional capacity to enforce them, a decisive question discussed under Institutions.

Issuing the necessary regulations, eliminating the ones, which shall be declared void and the improvement of the *Forest Code* will have positive environmental and social impacts, as they make the enforcement of laws possible and controllable.

**International Agreements**

As outlined in the *Law on Conclusion, Ratification, Implementation and Denunciation of International Treaties*, once an international convention has been ratified it becomes a normative act, and takes priority over all other normative acts, unless it runs counter to the constitution. As regards the forest issues, the following international conventions could be named, which Georgia has ratified:

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<tr>
<th>Convention</th>
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<tr>
<td>UN Framework Convention on Climate Change (New-York)</td>
<td>1994</td>
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<td>Kyoto protocol of the UN Framework Convention on Climate Change</td>
<td>1999</td>
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<td>Convention for the Protection of the Ozone Layer (Vienna, 1985)</td>
<td>1996</td>
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<td>Montreal Protocol on Substances Depleting the Ozone Layer (Montreal, 1987)</td>
<td>1996</td>
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<td>Convention on Biological Diversity (Rio de Janeiro, 1992)</td>
<td>1994</td>
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<td>Convention on Wetlands of International Importance especially as a Waterfowl Habitat (Ramsar, 1971)</td>
<td>1994</td>
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<td>Treaty/Convention</td>
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<td>(CITES, Washington, 1973)</td>
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<td>Participation in Decision Making and Access to Justice in Environmental Matters</td>
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<td>Convention to Combat Desertification (Geneva)</td>
<td>1999</td>
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<td>Convention on the Conservation of Migratory Species of Wild Animals (Bonn)</td>
<td>2000</td>
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<td>Convention on Preservation of World Cultural and Natural Heritage</td>
<td>1993</td>
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<td>Agreement of Charter on Energy (Lisbon)</td>
<td>1998</td>
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<tr>
<td>Convention on Air Pollution in Far Distance (Geneva)</td>
<td>1999</td>
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4. INSTITUTIONS

A Coordinating Commission (the “Steering Committee”) of the Forests Development Project comprising representatives of all relevant ministries, agencies and NGOs, has been established.

The Forestry Commission, established by the President in 1996, manages important intergovernmental decision-making at the highest levels.

The Parliamentary Committee on Environmental Protection and Natural Resources is one of the main stakeholders.

4.1 Existing conditions

Environmental responsibilities of State Authorities, Autonomous Republics of Abkhazia and Adjara and local governments are determined by the Constitution, Law on Environmental Protection and other laws and regulations. According to the Constitution, the Meteorological service, the Environmental Observing System as well as Legislation on Land, Minerals and Natural Resources are in special jurisdiction of the supreme State authorities. The main criteria for delimitation of competences between the State Authorities, Autonomous Republics and local governments are the following:

1. funding sources for environmental activities (State budget, budgets of autonomous republics and territorial entities);
2. importance of natural resources (resources of State or local importance);
3. scale of environmental impact (impact of transboundary, interregional, regional and local importance);
4. level of jurisdiction of protected areas.

According to the Forest Code, (Article 7) in all legal affairs concerning the Forest Fund, the State is represented by the following entities:

- The Ministry of Environment,
- The State Department of Forest Management,
- The State Department of Protected Areas, Nature Reserves and Hunting Farms,
- Local governing and self-governing bodies.

The Ministry of Environment

The Ministry of Environment is a governmental body of executive power, which has wide rights in the field of environmental protection and use of natural resources. The Ministry is headed by the Minister, who has five deputies. The structure of the Ministry includes: the Institute of Environmental Protection; the Research-Scientific Institute of Fishery and the Sea Ecology; the Center of Environmental Monitoring; the Center for Inventory of Rare and Endangered Species of Fish.

The Ministry has 16 structural sub-units and a State agency: The State Coordination Agency for Providing Forecasts of Natural and Manmade Disasters, Mitigation its Consequences and Environmental Safety of Population. The Ministry has 12 regional offices (see organization chart).
The primary functions of the Ministry are as follows:

- execution of intersectoral management;
- state management of environmental protection and rational, sustainable use of natural resources;
- management of meteorological service;
- management of environment quality monitoring;
- other activities set out by environmental legislation.

Development of Environmental Policy is the responsibility of the Department of Environmental Policy, supported by the Department of Environmental Economics. The main function of the latter is to develop economic instruments and financing mechanisms for environmental policy and to facilitate their application.

Nature Resource Management and Environmental Control is carried out jointly by the Departments of Air, Water and Land Protection; Protection of Mineral Resources and Mining, Biodiversity, etc., in association with the the 12 Regional Departments of the Ministry.

Examination of EIA and Issuance of Environmental Permits is the responsibility of the Department of Ecological Examination and Environmental Permitting.

Enforcement of Environmental Law is the responsibility of Environmental Inspectors of the Ministry. The Inspectors act through the local structures of the Ministry and report to Regional Departments. However they are under the ultimate control of the Department of Environmental Management based in the central office of the Ministry.

According to the Law on Environmental Protection, the Ministry of Environment is authorized to issue the following licenses:

- **License for environmental protection activities** in particular such as environmental audit, hydro-meteorological studies and other environmental protection activities, which requires specific skills.

- **License for negative impact on the environmental**, which is given to facility emitting/discharging harmful waste or having any negative physical impact on the environment.

- **License for use of natural resources**: use of water, forest, flora, fauna, mineral resources is subjected to licensing. The license is issued with consideration of quotas fixed for the use of the natural resources.

However, according to the Forest Code the SDFM is authorized to issue license on forest use. Therefore, there is a discrepancy between the Law on Environmental Protection and the Forest Code on distribution of authorities on the issuance of a license on forest use.

As it was mentioned above, the MoE is one of the main representatives of the State in relation of the Forest Fund. Concerning forest resources, according to the Forest Code, MoE is responsible for the following activities:

- Preparation and submission to the Presidential approval of the "Regulations for Establishing Special Requirements for the System of Registry for the Protected Areas of the State Forest Fund" in agreement with the State Department of Protected Areas, Natural Reserves and Hunting Farms.
• Preparation of the regulations for the use, protection, and rehabilitation of lands under the State Forest Fund and lands adjacent to the State Forest Fund based on the categories and biodiversity of the State Forest Fund.

• Submission of the request to the President for establishing a special protection regime for forest areas with special soil protection and water regulation functions based on the State Forest Fund Cadastre, registry, and other research data.

• Authorization of bodies for using biological and chemical means of forest protection.

• Monitoring and control of the use of biological and chemical means of forest protection.

• Preparation and approval of the “Regulations for Authorizing Physical and Legal Bodies for Using Biological and Chemical Measures of Fire Protection in Forests”.

• Preparation and approval of the “Regulations for Compiling a List of Biological, Chemical, and Genetic Selection Measures Allowed for Forest Protection”.

• Implementation of inventory of animal wildlife within the territories under its jurisdiction or within specific areas of these territories with the purpose of allocating a hunting farm if such inventory has not been carried out.

• Preparation and approval of the “Regulations and Methodology for Inventory of Animal Wildlife in the Territory of the State Forest Fund” in agreement with the State Department of Protected Areas, Natural Reserves and Hunting Farms.

• Preparation and approval of the “Regulations for Selection and Use of Plant Species for Restoration and Afforestation of the State Forest Fund”.

• State monitoring and supervision of forest tending, sanitary condition, protection, restoration and afforestation of the State Forest Fund together with the State Department of Forestry, and State Department of Protected Areas, Natural Reserves and Hunting Farms.

• Preparation and approval of the “Regulations for Calculating and Recovering Losses Caused to the State Forest Fund as a Result of Illegal Forest Use” together with the Ministry of Finance, the Ministry of Economy and the State Department of Forest Management.

The Ministry of Environment should be consulted and considered while making decision on the following issues:

• establishment of boundaries for the Usable State Forest Fund and the Local Forest Fund;

• categorization of the State Forest Fund;

• System of State Forest Fund Registry;

• changes leading to the reduction of lands under the State forests and the State Forest Fund;

• Regulations for Establishing Special Protection Regimes for the Usable State Forest Fund and Carrying out Forest Management in the Areas under this Regime;

• Regulations for Fire Protection of Forests;
- Regulations for Special Cuts and Establishing Rules for Carrying out Special Cuts;
- Biological, quantitative, technical and other types of maturity and optimal age for final cutting for trees of the main forest species;
- annual allowable cut;
- Regulations for the Final Cuts;
- Regulations for Restricting, Banning, and Restoring the Right for Forest Use;
- Regulations for Producing Wood Products and Secondary Wood Materials;
- Regulations for Use of Non-Wood Resources of the State Forest Fund.

The State Department of Forest Management

The State Department of Forest Management is a governmental body of executive power, through which the President of Georgia is carrying out the State executive power in forestry. The SDFM reports to the President for fulfillment of its obligations. Decisions, norms, standards and instructions adopted by the Department within its competence and in accordance with and Presidential decrees are obligatory for physical and legal persons on the whole territory. The main source of financing of the Department is the State Budget, however, according to the existing legislation, the Department has right to have other income i.e. grants, income from commercial organizations created by the Department, from auctions, selling of license and tickets, seed production, nursery, etc.

The Department is headed by the Chairman who is assigned and dismissed by the President. The Chairman has 4 deputies. The Department issues orders (instructions and methodological directives having a regulatory nature are to be issued in a form of order) within its competency. The advisory body of the Chairman is the Board of the Department.

The Department has the following structure (see organization chart):

1. Administration;
2. Office of forest management and use;
3. Office of forest protection;
4. Office of forest rehabilitation;
5. Office of economic and finance;
7. Office of marketing and international relations.

Furthermore, the State Department of Forest Management has 85 various organizations and institutions. The Departments of Forestry of Abkhazia and Adjara are under the jurisdiction both of Council of Ministers of Autonomous Republics and the State Department of Forest Management of Georgia. The Regulations of the Department are approved by the Presidential order #518 dated September 15, 1997.
As it was mentioned above, the SDFM is one of the main representatives of the State in relation of the Forest Fund. According to the Forest Code, SDFM is responsible for the following activities:

- Management of the Usable State Forest Fund, excluding the Local Forest Fund;
- Preparation and approval of the "Regulations for Allocating Territories and Assigning Categories of Special Functions and Landscape Areas";
- Preparation and approval of the requests and projections for assigning categories to the areas of the Usable State Forest Fund;
- Assigning categories of areas with special functions and landscape areas to the areas of the Usable State Forest Fund and establishment of a forest management regime for these areas;
- Maintenance of the State Forest Fund Cadastre;
- Preparation and approval of the "Regulations for Establishing Rules for Maintenance of the State Forest Fund Registry";
- Allocation of lands under the State forests and the State Forest Fund for forest management to a forest user;
- Establishment of the special regulations for restricting forest management and forest use in the territories of the usable State forests and lands under special protection regime;
• Establishment of the special protection regime for the plant species listed in the Red Data Book of Georgia, relic, indigenous, and other valuable plant species as well as forest areas of special functions;

• Preparation and approval of the "Regulations for Establishing Special Protection Regimes for the Usable State Forest Fund and Carrying out Forest Management in the Areas under This Regime";

• Monitoring and control of the use of biological and chemical means of forest protection;

• Preparation and approval of the "Regulations for Fire Protection of Forests";

• Preparation and approval of the "Regulations for Planning and Implementing Measures for Fire Protection of Forests";

• Implementation of tending, protection, restoration, and afforestation of the State Forest Fund on a non-profit principle;

• Issuance of a license for forest use within the territory of the State Forest Fund\(^20\);

• Signature of a contract with a tender or auction winner for long-term forest use\(^21\);

• Preparation and approval of the "Regulations for Conducting Competitive Bidding and Holding Auctions with the Purpose of Identifying Prospective License Holders and Contractors".

Rules for conducting competitive bidding and holding auctions with the purpose of identifying prospective license holders and contractors are set by the President of Georgia.

An auction is held if the submitted bids are equally well complying with specifications included in tender and the winner cannot be identified. The auction is won by the participant that conforms to conditions suggested by auction and is willing to pay highest amount for acquiring right for forest use.

Competitive bidding and auctions are prepared and held by the entities authorized for issuing forest use license. These entities are responsible for transparency of competitive bidding and auctioning.

• Issuance of a forest use ticket\(^22\);

• Preparation and approval of the "Regulations for Special Cuts and Establishing Rules for Carrying out Special Cuts";

• Approval of the biological, quantitative, technical and other types of maturity and optimal age for final cutting for trees of the main forest species;

• Determination of optimal amount of timber allowed for extraction through final cuts per year (annual allowable cut) within territories under jurisdiction of the SDFM's each regional office;

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\(^20\) License for forest use within the territory of the State Forest Fund is issued by the SDFM, and license for forest use within the territory of an Autonomous Republic is issued by the Department of Forestry of this Autonomous Republic.

\(^21\) In the territory of an Autonomous Republic contract is signed with a tender or auction winner by the SDFM of the Autonomous Republic.

\(^22\) A forest use ticket is issued by the regional offices of the SDFM
• Preparation and approval of the "Regulations for the Final Cuts", "Regulations for Defining Annual Allowable Cut", "Regulations for Restricting, Banning, and Restoring the Right for Forest Use", "Regulations on Allocation of Standing Timber"; "Regulations for Allocation of Cutting Areas";

• Determination of the rules of for management of forest plantations through development of the "Regulations for Managing Forest Plantations";

• Preparation and approval of the "Regulations for Producing Wood Products and Secondary Wood Materials";

• Development of the regulations for special use of the State Forest Fund on case-by-case basis in accordance with the Forest Code and considering interests of the forest user;

• Preparation and approval of the "Regulations for General Framework for Carrying out Scientific Research and Education in the Territory of the State Forest Fund";

• Preparation and approval of the "Regulations for Preparing Documents Permitting Forest Use, Expenses for Allocating Cutting Areas and Charging Payment for Recovering Costs for Allocation of Cutting Areas";

• Issuance of a timber-harvesting certificate23.

In 1996, the Head of the SDFM issued Decree # 03-5/16 "On Retail Prices of Wood Species of Georgia's Forests", which established base prices for different wood species.

The State Department of Protected Areas, Nature Reserves and Hunting Farms

The State Department of Protected Areas, Nature Reserves and Hunting Farms is a governmental body of the executive power acting independently according to the law, which has managerial functions, carries out State supervision and takes State compulsory measures in cases defined by the law. The Regulations of the Department is to be approved by the President. The Department is financed from the State Budget. The Department is headed by a Chairman, who is assigned and dismissed by the President. The Chairman has two deputies. The structure of the central department is the following:

1. Administration;
2. Office of State Reserves;
3. Office of fauna;
4. Book-keeping office;
5. Office of general matters.

Fourteen (14) State reserves, the National Park, five (5) State Protected Areas and five (5) Reserve Supervising Services (services of Abkhazia and Adjara Autonomous Republics, western Georgia, eastern Georgia and Shida Kartli) belong to the Department.

As it was mentioned above, the SDPA is one of the main representatives of the State in relation of the Forest Fund. Concerning forest resources, according to the Forest Code, SDPA is responsible for the following activities:

23 Timber harvesting certificate is issued by the authorized forest protection personnel of the regional offices of the SDFM
Management of the protected areas of the State Forest Fund in accordance with the law "On the System of Protected Areas", Forest Code, and other normative acts;

Monitoring and control of the use of biological and chemical means of forest protection;

Implementation of tending, protection, restoration, and afforestation of the State Forest Fund on a non-profit principle;

Signature of the contract with a tender or auction winner for forest use within protected areas in accordance with the law "On the System of Protected Areas".

The following activities could be done by the SDPA together with the SDPM:

- Issuance of the forest use ticket
- Issuance of the timber harvesting certificate
- Approval of the forest restoration plan and monitoring its implementation;
- Execution of the lighting cuts without forest use document;
- Planning and implementing forest tending in the State Forest Fund;
- Cleaning, thinning, and reconstruction cuts;
- State monitoring and supervision of forest tending, sanitary condition, protection, restoration and afforestation of the State Forest Fund.

The SDPA should be consulted and considered while making decision on the following issues:

- Regulations for Establishing Special Requirements for the System of Registry for the Protected Areas of the State Forest Fund;
- Allocation of lands under the State forests and the State Forest Fund for forest management to a forest user;
- Regulations for Establishing Special Protection Regimes for the Usable State Forest Fund and Carrying out Forest Management in the Areas under this Regime;
- Regulations for Fire Protection of Forests;
- Regulations and Methodology for Inventory of Animal Wildlife in the Territory of the State Forest Fund;
- Regulations for Restoration and Afforestation of the State Forest Fund;
- Regulations on Carrying out Thinning.

The Georgian Forest Sector Development Center

For the purpose of development and implementation of the "Georgia Forests Development Project" determined by the agreement #IDA Q212-OGE between Georgia and IDA done on April 19, 2000 and on the basis of the order #469 of the President of Georgia dated October 29, 2000 the Georgian Forest Sector Development Center has been established with a status of a legal entity under civil law. This Center is a successor of the Forestry Development Foundation.
Local Governmental Authorities

The Organic Law on Local Governments and Self-Governments (16.10.1997) regulates the basis for establishing and functioning of local governments and self-governments. A special law applies for Tbilisi. According to the Organic Law on Local Governments and Self-Government, a local government is to be established in villages, communities, settlements and cities (in villages forming community only communal authorities are to be elected). Local governments are to be established in regions and cities, which do not fall under the regional jurisdiction: cities of Batumi, Rustavi, Sokhumi, Poti, Kutaisi and Tskhinvali. The representative body of village, community, settlement and city is the "sakrebulo" (assembly) of village, community, settlement and city, which consists of members elected through direct, universal elections by secret ballot.

Officials of assemblies of villages, communities, settlements and cities are:

a) Chairman of the assembly;
b) Secretary of the assembly;
c) Chairmen of commissions of the assembly.

The board is the executive body of the assembly. In villages and communities, where the population does not exceed 3,000 persons, no board is foreseen; responsibilities of the board are carried out by the "gamgebeli" (governor). The Governor is the head of the board of the assembly, which is elected by the relevant assembly among its members. At the same time, the governor of a village, community, settlement and city is head of the assembly.

The representative body of the cities, which do not fall under a regional jurisdiction, is the assembly. It consists of elected members. The executive authority of such cities is the municipality. The municipality is a body of the State administration, which at the same time has executive functions of the assembly. The mayor of the city is to be assigned and dismissed by the President of Georgia.

The representative body of the region is the assembly of the region, which consists of elected members. The executive authority of the region is the board. The board is a body of State administration, which at the same time has executive functions of the assembly. The board of the region is headed by the governor of the region, which is to be assigned and dismissed by the President of Georgia. In autonomous republics of Abkhazia and Adjara governors are to be assigned and dismissed by the supreme representative body with the consent of the President of Georgia.

As it was mentioned above, local governing and self-governing bodies are one of the main representatives of the State in relation of the Forest Fund. Competence of the local governing and self-governing bodies in managing the Local Forest Fund covers the following:

- supporting forest tending, protection, restoration, and forest fire fighting activities;
- developing programs for conducting forest tending, protection, and restoration in agreement with the authorized State entities and providing support in implementation of these programs;
- participating in financing of programs for conducting forest tending, protection, and restoration, as well as monitoring expenditures for these activities;
- issuing permit for the local forest use;
- issuing timber harvesting certificate if timber is produced in the Local Forest Fund;
- management of agricultural lands under the State Forest Fund in agreement with other relevant bodies;
- execution of the lighting cuts in the areas under their jurisdiction without forest use document;
- submitting requests for restricting, suspending, or terminating rights for forest use to the authorized State entities;
- participating in emergency response measures against the natural disasters;
- ensuring public environmental education;
- submitting requests for changing boundaries of the State Forest Fund to the relevant authorized State entities;
- application of other rights granted by the Georgian legislation.

Local governing and self-governing bodies manage Local Forest Fund through the appropriate services. The rights of local governing and self-governing bodies for managing the Local Forest Fund as well as rules for separating the Local Forest Fund out from the State Forest Fund are defined in the Presidential decree "On the Rights of Local Governing and Self Governing Bodies for Managing the Local Forest Fund and the Rules for Separating the Local Forest Fund from the State Forest Fund".

**Ministry of Internal Affairs - Ecopolicе**

Although, according to the forest related legislation there is no specific authority assigned to the Ministry of Internal Affairs, responsibilities for environmental control together with regional and local units of the Ministry of Environment and the State Department of Forest Management rests with the ecological police subordinated to the Ministry of Internal Affairs.

The Ecopolicе is responsible for revealing and preventing illegal wood harvesting, fishing or hunting. They also have the right to take steps for preventing outbreaks of epidemic diseases and to expose violations of environmental regulations. However, in general, they are not well trained for such diverse tasks. Division of responsibilities and obligations between the Ecopolicе and other bodies within the Ministry of Environment is not always clear.

**Other governmental agencies related to the forest management**

- **Ministry of Agriculture and Food;**
  According to the Forest Code, there is no specific authority assigned to the Ministry of Agriculture and Food, however, based on the Presidential Decree # 404, it is to be involved in the commission in charge of coordinating the process of transferring land plots of the former collective farms and state farms to the State forestry entities, and establishing timeframe for transfer.

- **Ministry of Finance;**
  According to the Forest Code, the Ministry of Finance should be consulted and considered while making decision on the following issues:
  - Preparation of the "Regulations for the System of State Forest Fund Registry"
  - Preparation of the "Regulations for Preparing Documents Permitting Forest Use, Expenses for Allocating Cutting Areas and Charging Payment for Recovering Costs for Allocation of Cutting Areas"
• Preparation of the "Regulations for Calculating and Recovering Losses Caused to the State Forest Fund as a Result of Illegal Forest Use"

• Ministry of Economy, Industry and Trade;
  According to the Forest Code, Ministry of Economy has the same authority concerning the forest fund as the Ministry of Finance with difference that the Ministry of Economy should be consulted and considered in the preparation of the "Regulations for Conducting Competitive Bidding and Holding Auctions with the Purpose of Identifying Prospective License Holders and Contractors".

• Ministry of Income and Tax;
• Ministry of Construction and Urbanization;
• Ministry of Education
  • State Agrarian University
  • Tbilisi State University: Department of Ecology, Department of Geography and Geo-information; Department of Geomorphology and Geo-ecology, Distant Sensing and Environmental State Research Laboratories.

• State Department of Land Management
  According to the Forest Code, SDLM is responsible for:
  • preparation of the "Regulations for Establishing Boundaries of the Usable State Forest Fund";
  • preparation of the "Regulations and Timeframe for Transferring Forest Fund Previously Owned by Collective Farms and State Farms to the State Forestry Entities".

The SDLM should be consulted and considered while making decision on the following issues:
  • establishing boundaries for the Usable State Forest Fund and the Local Forest Fund;
  • Regulations for Establishing Boundaries of the State Forest and the State Forest Fund;
  • requests and projections for assigning categories to the areas of the Usable State Forest Fund;
  • Regulations for the System of State Forest Fund Registry.

• State Department of Tourism and Resorts;

Scientific and Academic Institutions
  The following scientific and research institutions could be considered as stakeholders:
  • Georgian Academy of Sciences: Mountain Forestry Research Institute (MFRI), Institute of Plant Protection, Institute of Zoology, Institute of Geology, etc.;
- Scientific Research Institutes of Soil Science, Agrochemistry and Reclamation; etc.;
- State Enterprise Lesoproject.

Non-Governmental Organizations

There are more than 300 environmental NGOs operating in Georgia. However, out of them there are around 10 organizations, which are actively involved in the environmental field. NGOs are mainly concerned with national environmental problems: sustainable development, conservation of biodiversity, environmental education and awareness raising, development of environmental legislation, etc. Some of them are involved in the projects funded by international financial institutions (World Bank, UN, GEF) and the donor countries. NGOs participated in development of the documents of the national importance like: the National Environmental Action Plan, the Biodiversity Strategy and Action Plan; the Strategic Action Plan for Rehabilitation and Protection of the Black Sea. Considering forestry, there are 4-5 NGOs specialized in this field. Generally, due to the lack of information and communication with the SDFM, their attitude to the forestry issues is quite critical.
Institutions related with the Forest Sector

**STATE ORGANIZATIONS**
- Parliamentary Committees
  - Committee on Environment
  - Committee on Agrarian Issues
  - Committee on Economy
- Executive Bodies
  - Ministry of Environment
  - Ministry of Agriculture
  - Ministry of Internal Affairs
    - Department of Ecopolicе
  - Ministry of Economy, Industry and Trade
  - Ministry of Finance
  - Ministry of Income and Taxes
    - Ministry of Education
      - State Agrarian University
      - Tbilisi State University
- State Department of Forest Management
- State Department of Land Management
- State Department of Protected Areas, Nature Reserves and Hunting Farms
- State Department of Tourism and Resorts
- State Department of Geology

**NON-GOVERNMENTAL ORGANIZATIONS**
- Academy of Science (Research Institutes)
  - Mountain Forestry Research Institute
  - Institute of Plant Protection
  - Institute of Zoology
  - Institute of Geology, etc.
- State Enterprise Leoapjrject
- Protected Areas Development Center

**PRIVATE COMPANIES**
4.2 Impact analysis and Mitigation measures

Issue 6: institutional capacity for enforcing legislation

As mentioned in the Chapter 3 Legislation, in short and medium term, legal improvements must take into account the present low institutional capacity of implementing laws. In the long run, nevertheless, to manage sustainably its forest, Georgia needs an effective governing body, which is able to implement its own rules. Many related factors heavily hamper the administration in the fulfillment of its duties: State Budgets are generally insufficient, officials spend time and energy trying to compensate for extremely insufficient salaries (if paid), corruption can be found from the top to the bottom of the hierarchies, etc.

As this problem is not particular to Georgia, the exchange of experiences with other countries to search for pragmatic and effective solutions will be useful. One must keep in mind that setting a cohesive system of implementing regulations will need time. The present study will not give more details on mitigation measures, as a global analysis including international experiences is needed.

Mitigation measure 6:

6.1 A cohesive system of implementing regulations shall be elaborated.

Issue 7: overlapping geographic and functional competences

Conflict of interests between different Ministries and Departments has important consequences on Georgia's forests. This involves specifically the Ministry of Environment, the State Department of Forest Management and the State Department of Protected Areas, Nature Reserves and Hunting Farms. Indirectly, Customs authorities are involved in the matters of timber exports. The Paragraph 2.4 Protected Areas discusses the specific conflict of interests regarding establishment of protected areas in the Laboratory Zone.

Some competence conflicts are caused by contradicting regulations. Corresponding legal adaptations are discussed in the chapter 3 Legislation.

Mitigation measure 7:

7.1 In order to clarify geographic and functional competences overlapping competencies shall be put in evidence, discussed and eliminated through transparent and formal agreements.

Issue 8: implementation of the Law on Local Governments and Self-Governments

Most of the implementation of the Law on Local Governments and Self-Governments remains to be done. Existence of legitimate local authorities will be an asset for local socioeconomic development in the Lab Zone. Furthermore, democratically elected local authorities might be more concerned to sustainable forest management, including the protective function against natural hazards, than distant Ministries or Departments. Central administration remains nevertheless important, for instance, for the overall control on legal implementation. In the long run, a balanced coordination between central and local authorities adapted to Georgia's situation must be found.

According to regulations in case of captured contraband, illegal wood must be confiscated and sold at the auctions by the SDFM.
Mitigation measure 8: no mitigation measure is needed.

Additional measure 8:

8.1 Local communities shall receive an adequate legal status to assume rights and responsibilities in local forest management.

Issue 9: reorganization of the State Department of Forest Management

An important issue will be the separation between two functions subject to conflict of interests: implementation control and economic production. In the present situation, the same Department is in charge of establishing and controlling restrictions on resource use while having financial interests in logging. Decision-making is thus difficult and does not guarantee a sustainable forest use with low environmental impact.

Under one set of reform proposals, one organization would be responsible for the development of policy and strategy as well as the supervision of the legal implementation. Other organizations would carry out commercial activities, which would be controlled by the first structure.

Mitigation measure 9: No mitigation measure is needed.

Additional measures 9:

9.1 An institutional reorganization plan will be prepared for strengthening the regulatory functions of the SDFM, streamlining central and local planning and supervising capacities, and ensuring coordination with other line agencies.

9.1 The Forest Service must be trained on the implementation of updated legislation. It will be opportunity to disentangle the net of valid and void regulations. Innovative and participative training methods will be useful.

Issue 10: improved capacity for environmental management in the forest sector

The evolution of a forestry sector based on a pure mining-style use of wood to an integrated resource management may be achieved through the implementation of the Sustainable Forest Management (SFM) concept.

Sustainable Forest Management is a general approach enabling the integration of long-term considerations and social and environmental aspects in the forest management. This incorporates issues as biodiversity management, ecosystem health, socioeconomic benefits and institutional issues; it is discussed in the Chapter 6 Forests Management Planning. The introduction of Sustainable Forestry Management concept and criteria will require training of personnel involved. Training should be accomplished with the participation of international experts. Discussions around Sustainable Forest Management, and especially the definition of Criteria and Indicators for SFM adapted to Georgia, would constitute an interesting training opportunity and consensus building process for forestry related actors. Generally speaking, training in the field with case studies should be promoted.

The inland capacity for Environmental Impact Assessments (EIA) is not inexistent if the know-how of inland consultants in industrial and agricultural sectors is considered. This needs nevertheless some improvement, especially in the adaptation of analysis schemes to
the specificities of the multifunctional forestry sector. Therefore, staff of the Department of State Ecological Examination and Environmental Permitting of the MoE and independent experts reviewing the EIAs must be adequately trained in the assessment of activities proposed and carried out in the field of forestry. A database should be created in order to give experts access to information on methods and techniques used in European countries.

**Mitigation measures 10:**

10.1 Participative training sessions and excursions on the issue of Sustainable forest management shall be organized. Sharing of experiences with selected countries might be useful.

10.2 Staff at key positions in the SDFM shall be trained in matters of EIA. For most of the staff, detail know-how on all aspects of EIA is probably not necessary.

10.3 Staff of the Department of State Ecological Examination and Environmental Permitting of the MoE and independent experts reviewing the EIAs must be adequately trained in the assessment of activities proposed and carried out in the field of forestry.

10.4 A database should be created in order to give experts access to information on methods and techniques used in European countries.

**Additional measures 10:**

10.5 The know-how of local consulting companies in the field of EIA shall be recognized and improved for use in the forest sector.

4.3 **Significance of impacts after implementation of mitigation measures**

Institutional changes and in particular improvement of the legal enforcement capacity belong to the most important challenges for Georgia's forest sector. They will have positive environmental and social impacts if made in direction of a sustainable use of forest resources.

If institutional reforms fail, the potential for sustainable forest management might be tenuous, as most components of improvement strategies rely on functioning institutions. Professional training in forest management, planning and environmental impact analysis will support elaboration of EIAs on forestry activities.

Institutional improvements are necessary, but they will take considerable time. That is why any support project should take in consideration that capacity of legal enforcement might remain relatively low for the next years.
5. FOREST OWNERSHIP AND LIABILITY

5.1 Existing conditions

*Forest Code*

Forests belong currently to the State and are administrated mainly by the State Department of Forest Management.

According to Article 9 of the *Forest Code*:

- Property rights to the Georgian Forest Fund may be held by the State, by the Patriarchy of Georgia, by a physical or legal entity of the private law.

- The Georgian State Forest Fund is a State property and its privatization is regulated by the law "On the privatization of Georgian Forests".

- The State Forest Fund and its resources (excluding forests privatized in accordance with legislation) are allocated for ownership and use in accordance with legislation.

As already said in Chapter 3, this article will come into force after the enactment of the *Law on Privatization of Forests owned by the State*.

Legal entities of private law are divided into entrepreneurial (commercial) and non-entrepreneurial (non-commercial) legal entities. A non-entrepreneurial legal entity may be founded in the form of a union (association) or a fund. The *Civil Code* defines the status of non-entrepreneurial legal entities, as well as rules for its establishing and functioning. An individual enterprise has the status of physical entity. All other enterprises are organizations and they are legal entity.

According to the *Forest Code*, the Patriarchy of Georgia has a special status; this is probably conditioned by the fact that a certain part of forests belonged to the Patriarchy of Georgia until nationalization of forest by communists. Very likely, that according to the *Law on Privatization of Georgian Forests* the Patriarchy will be given preferences in the process of privatization.

In a coherent application of legal principles, privatization of forests before the enactment of the *Law on Privatization of Georgian Forests* is not legal.

*Former collective farms and state farms*

According to the Parliament Resolution # 671-11 "On Forests of collective farms and Municipality of the Republic of Georgia" made on 07.03.1995, Kolkhoz and municipal forests should have been transferred to the State Department of Forest Management within two months. Resolution envisaged inventory of infrastructure located on Kolkhoz and municipal forests and their transfer to the SDFM.

Since that time, due to various problems (no financing, no clear definition and boundaries of Kolkhoz and municipal forests, no technical methodology, etc.) only part of these forests have been transferred to the SDFM. Forests to be transferred were not determined based on

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25 SDFM administers around 2,24 million ha of forests. Mountain Forestry Research Institute administers around 43,400 ha. Ministry of Agriculture used to administrate former Kolkhoz forests in the past, but not any more.
any criteria or rationale. The only rationale during the transfers depended on complexity of the case and willingness and readiness of key people on site.

At present, there is no clear and reliable data on territories of former Kolkhoz lands transferred to the SDFM and those of non-transferred. Therefore, on September 12, 2000, the President issued a Decree # 404 "On Regulations and Timeframe for Transferring Forest Fund Previously Owned by Collective Farms and State Farms to the State Forestry Entities". The main tasks of the Decree are:

1. Determination of territories of former collective farms and State farms;

2. Determination of territories of former collective farms and State farms transferred to the State forestry entities based on the Parliament Resolution # 671-11;

3. Determination of rules and timeframe for transferring of forest fund previously owned by collective farms and State farms to the State forestry entities.

The Decree determines State bodies to be involved in the coordination of the transfer process; these bodies are:

- Local governing bodies;
- Ministry of Agriculture and Food through its regional department;
- State Department of Land Management

Local governing and self-governing bodies should create the Commission together with representatives of the Ministry of Agriculture and Food, State Department of Land Management, Ministry of Environment, Ministry of Urbanization and Construction, regional agencies. The Commission is in charge of coordinating the process and establishing timeframe for transfer.

The transfer process should have been started after allocation of financing the State budget to the State Department of Land Management.

The deadline for the transfer of the former collective farms and State farms by the Decree is 1 January, 2002.

**Land Registration**

Another problem related to the ownership of the forest in particular in case of a privatization is the land registration of the forest area.

According to the information received from the State Department of Land Management, responsible for the Land Cadastre, it appears that rural regions and forest territories have not yet been registered. This situation is caused probably due to the recent introduction of the Law on Land Registration (Nov. 1996) and the priority given to secure the land property in urbanized regions of the country.

Actually, a project on the Cadastre and Land Registration of the Rural Regions is being implemented.

As long as the land cadastre of the forest territory has not been registered according to the Law on Land Registration, the privatization of the forest, which is a transfer of property of the
Forest Fund to a private person or entity cannot take place with enough guarantee to all the parties concerned.

Land Information on Georgian Forest Fund

Other projects financed by the World Bank (the Project of Agriculture Development, Component of Cadastre and Land Registration) are collecting and digitalizing data concerning the territory of Georgia, like Protected Areas for example.

On the other hand, a lot of geographical information about forest districts and sub-districts (see Figure 14) -- like natural delimitations, zone with the same specie, as well as practical information on forest exploitation and use are reported on old maps or perhaps only known from local forest authorities. This information is surely not complete and homogeneous, and they would not be sufficient for an up-to-date forest management planning.

However, if integrated and coordinated, all this information could be a very useful basis for developing the Forest Management Information System (FMIS) described in the next chapter 6 Forest Management Planning (see Issues 13 and 16).

5.2 Impact analysis and Mitigation measures

Issue 11: privatization of forests

The issue on privatization of forests is highly controversial. When privatization of industrial concerns occurred, in the early 90s, many Georgian hoped that new owners would develop these enterprises. This did not happen often, functioning enterprises were shut down, and many privatized industries were devastated and destroyed. There is a risk, that forests will suffer the same fate during the privatization; several reasons speak for a cautious progression:

- As mentioned in the Chapter 4 Institutions, law enforcement in Georgia is quite incomplete nowadays. Level of corruption in many governmental structures and local governments is high. In this situation, control of the regulations concerning forest protection during the privatization process is not guaranteed and therefore illegal logging might occur;

- As a legal status for local communities does not exist, interests of local communities might not be protected;

- Under existing legislative (no limitation of wood export), socioeconomic (uncompetitive wood-processing capacity) and infrastructure conditions (degraded roads, unstable electricity supply) prevailing in the Lab Zone, the sole objective of private entrepreneurs might be the export of raw timber. In this situation, privatization would not generate much regional socioeconomic benefits;

- Interests of the majority of population might not be considered during privatization. 70% of Georgians are on the verge of poverty and will have difficulty to take part actively in the privatization process;

- Privatization of forests areas used for fuel wood by local people might create conflicts. In the Lab Zone, a majority of the population is using wood for heating;

- Lack of land cadastre and registration of the forest territory could be another reason of conflicts between the different parties concerned.
Forest districts scheme

Figure 94

1:450,000
According to available information, public opinion in Georgia is predominantly against privatization of forests, most probably due to the previous disastrous experiences in the industrial sector. The majority of NGOs and some governmental structures share the same position.

On the other hand, the State might receive significant income from privatization, which would help in the budgetary crisis. As mentioned earlier in the present study, according to some information, State forests have been privatized in eastern Georgia, arguing that the State Forest Fund can be considered as a non-agricultural land parcel on the basis of the Law on Management and Disposal of Non-agricultural Land owned by the State. No information is available on the environmental and social impacts in those cases.

On the basis of available reports, the Forests Development Project does not foresee the support to privatization of forests in the next 5 years; it merely mentions the preparation and discussion of the Law on Privatization of State Forests in Georgia.

Mitigation measures 11:

11.1 Existence of recent forest privatizations in Georgia shall be verified and documented. It will be important and interesting to analyze them and discuss which are the "lessons learnt".

11.2 In a later phase, at most 1 or 2 tests could be implemented in low-conflict areas. Documentation and transparency in all activities and decisions will be essential. Strict conditions for the realization of the tests shall be defined, regarding, for instance, protective forests and biodiversity conservation. Reliabilities and penalties in case of legal violations shall be clearly stated before the beginning of forest use.

11.3 The clarification of regulations defined for State Forests, which will remain valid in privatized forests, must be done. State bodies will have the competence and duty to control their enforcement. It will then be necessary to underline that, against common understanding in Georgia, private ownership does not imply that the owner can do anything he wants in his forest. Given this clarification and its implementation, the environmental situation might not be worse in privatized test plots than it is the case presently.

Issue 12: transfer of rights and liability on forests to local communities

Community forestry is an alternative to a pure State or a pure private forestry. International experiences show that transfer of some rights and responsibilities to well defined local structures can be a very efficient way to improve forest protection and to enhance the local benefits of forest use.

In several countries where the Forest Service is not able to control the forest management (in conditions very similar with Georgia), local communities have been able to protect forests against illegal logging and deforestation. On the base of a negotiated contract, a local community can help the Forest Department to extend its control in areas where budget limits hamper the activity of the SDFM now.

Well-documented experiences abroad illustrate how the mutual relations between Forest Service and local communities evolve gradually into a negotiated partnership. The process
from a centralized, directive forest management to a partnership management may first generate negative reactions from the Forest Service and a dubitative attitude from the communities. As their mutual relations change, the understanding of their own role evolves, and old reflexes are abandoned. It is interesting to notice how the Forest Service, which is at the beginning afraid of losing power (which is quite virtual because of missing finances), gradually wins the acceptance of the population and, finally, gains in effectiveness through the cooperation with local communities.

**Mitigation measures 12:**

12.1 The definition of a legal status for local communities will be necessary.

**Additional measures 12:**

12.2 International experiences in community forestry will be analyzed. Adaptation to Georgian post-soviet and mountainous conditions is needed.

12.3 1 or 2 tests shall be studied in a well-chosen, “low-conflict” area. An essential condition of success is a careful support to the internal community organization and to the discussions between local communities and Forest service. Much time and energy will be gained by taking international experiences in community forestry into account.

12.4 The information activities foreseen for promoting public awareness in sustainable forest management should be expanded to include information on the experiments in forest privatization and community forestry.

**5.3 Significance of impacts after implementation of mitigation measures**

The present situation in Georgia is not mature – legally and politically - for the privatization of forests. Before the implementation of 1 or 2 tests, the validity of legal restrictions to forest use in privatized plots shall be clarified and widely publicized. In the future, provided this clarification and the control of legal enforcement by competent State bodies, impact on the environment might not be more negative in privatized test plots than under the present State ownership.

Trials on community forestry, on the other hand, could be tested as soon as solutions are found for the legal status of communities. Rights and responsibility can be conferred to 1 or 2 test communities. Adequate, Georgian-born solutions shall take in consideration the experiences made abroad for 3 decades. The environmental impact of those trials will be lower than the present system if socio-organizational specialists carefully follow and support the internal organization of local structures, change of role of local Forest Service and establishment of new, transparent relations between them.
6. FOREST MANAGEMENT PLANNING

6.1 Existing conditions

Traditional soviet-type forest management plans have been elaborated in the past for a period of validity of 10 years (Oni in 1991-92, Ambrolauri in 1995-96, Tsageri and Lentekhi in 1996-97). For a variety of reasons (but mainly because of budgetary restrictions), they have not been fully carried out. They cannot be used for environmental monitoring and it will be difficult to trace changes in the forests. They do not provide socioeconomic and environmental information in a form suitable for integrating socioeconomic considerations in the planning process and for demonstrating how environmental considerations are integrated in the plans.

Existing plans also show a number of technical weaknesses. Maps of species composition do not show species mixture, stands are assumed to be even-aged, standing volume is estimated on the basis of a limited and subjective choice of samples, and growth estimates do not appear reliable. Harvesting operations are not recorded in the management plans or on accurate maps, etc.

The need to provide up-to-date forest statistics, improve forest management planning and to renew management plans is recognized as a priority by the authorities. The new Forest Code sets general guidelines for forest management planning (art. 27) and requires that management plans are revised in every 10 years. On the other hand, the forest inventory and management planning unit "Lesoproject" (Forest Project Institute) does not have the financial and technical means to carry out its work. Due to low salaries, staff lacks motivation. Cars, mapping equipment and computers are outdated.

In order to remedy this situation and provide the necessary planning and management conditions for the future, the Forests Development Project will provide finances to support:

- "the Setting Up of a Forest Management Information System" (see Preparation report, annex 4, appendix 7) to help forest managers make long term (strategic) and short term (operational) decisions at the national as well as at the local level, including socioeconomic and environmental considerations,

- "Forest Management Planning and Protection" activities (see Preparation report, annex 5), needed to prepare model land-use and forest management plans for the four districts of the Laboratory Zone (to be replicated later in other regions of Georgia). Regional land use plans should first be elaborated (on a total area of 460'000 ha), followed by forest inventory and the preparation of multiple use forest management plans (on 260'000 ha of forests in the Laboratory Zone).

The support will not be limited to technical assistance. Promotion of public awareness in sustainable forest management through participatory management planning will be included in the Forests Development Project. This would contribute to a better understanding of the forest management process, its issues and its socioeconomic and ecological implications.
6.2 Impact analysis and Mitigation measures

Issue 13: Scope of the forest management plans

Forest management plans in the broad sense (including periodic forest inventory, classification of forest functions based on comprehensive assessment of needs and values of the forest resources, determination of management objectives on the basis of multiple-use strategies, monitoring of ongoing operations and periodic updating of the plans) are indeed needed for the preservation of the forests and the successful development of the forest sector.

The development of a Forest Management Information System (FMIS) incorporating socioeconomic and environmental information will contribute to the inclusion of socioeconomic and ecological considerations in the planning process. This will have positive a beneficial environment impact, if used properly. Possible land use conflicts could nevertheless arise with the Protected Areas Development Project, if their activities are not properly coordinated.

No mitigation measure is needed.

Additional measure 13:

13. The Forest Management Information System (FMIS) should incorporate information on protected areas and vice-versa, so that data can be exchanged between the Forests and the Protected Areas Development Projects, in order to facilitate the coordination and the resolution of conflicts. In particular, the same Geographical Information System (GIS) should be used by both projects.

Issue 14: Land use planning

Prior to the elaboration of the multiple use forest management plans, "consensus" land use planning at the district level involving all stakeholders should take place in order to (among other things) delineate forest areas for sustainable utilization, protection and conservation.

To gain experience prior to program implementation, such a land use planning exercise was accomplished in 1998-99 in the Oni district (135,900 ha) in the Laboratory Zone by a multidisciplinary team. Among other recommendations, it proposed to designate 73,000 ha (or 54% of the total area) for protection to be managed by the State Department of Protected Areas, Nature Reserves and Hunting Farms.

In the meantime, these proposals and approaches (see the report "Over-all forest utilization program for the Oni district") have not been accepted by the staff of the Protected Areas Development Project. The Central Caucasus Commission, a steering committee appointed to guide and resolve such conflicts, may have to intervene to break the deadlock. In the meantime, illegal cutting activities continue in the region.

Mitigation measures 14:

14.1 The Forests and the Protected Areas Development Projects shall agree on a common methodology for land use planning, using the same classification criteria for allocating land to defined land uses, taking into account the principles of multiple use of forests and agriculture and an evaluation of the ecological and economic values of the various ecosystems, using the notion of prevailing function (see chapter 7 Protective, Tourist and Cultural Uses).
The same guidelines for land use planning should be used for the two projects.

14.2 The resulting land-use plans should be submitted to an Environmental Impact Assessment. Representatives of the local population should be able to express their views at that stage. Remaining conflicts would have to be resolved by the Central Caucasus Commission.

**Issue 15: need of EIA for forest management plans**

According to existing legislation, forest management plans are subject to an EIA. On the other hand, forest management plans will be prepared after land-use plans have been submitted to an EIA. The long-range decisions will have been taken at this stage (allocation of land and forests, decisions on the protection of virgin forests, species choice, choice of the cutting regime, etc.), so that an additional EIA would be superfluous (Infrastructure and harvesting systems: see Chapter 9, *Infrastructure*).

**Mitigation measures 15:** no mitigation measures are needed.

**Substitution measure 15:**

15.1 The consistency of management plans with multiple use and sustainable forestry could be evaluated by the Ministry of Environment without carrying out a full EIA. (This simplification could be possible by adapting and amending the existing legislation on EIA).

**Issue 16: Technical requirements for updating forest management plans**

The quality of the management plans will depend on use of appropriate planning methods (to be addressed by the proposed Forest Management Information System) and on the reliability of the results of the forest inventories. It is essential to have accurate data on forest areas, timber volume and growth estimates for the calculation of annual allowable cuts and the planning of harvesting operations and road construction.

Improved forest inventory methods (including statistical sampling and remote sensing methods) will be introduced and training will be provided for a number of foresters and technicians. Data collected will be expanded to include information on ecological conditions (slope, elevation, etc., as well as pertinent floristic and faunistic data). Model forest inventories will be carried out in the Oni district, based on the results of the land-use plan, and later expanded to the other districts of the Laboratory Zone.

Updating forest management plans using the proposed FMIS (based on improved forest inventory methods and incorporating a Geographical Information System) will have a beneficial environmental impact.

No mitigation measure is needed.

**Additional measure 16:**

16.1 In addition to temporary sample plots, a sub-sample of permanent plots should be laid out in the whole Laboratory Zone, as the starting basis for modern type of National Forest Inventory for the whole of Georgia. This National Forest Inventory will eventually provide reliable statistical
information on the forest resources (such as changes in the forest cover, volume trends, balance between growth and wood harvests), which are presently lacking and badly needed for policy decisions at the State and regional levels.

16.2 Permanent sample plots and other monitoring means (such as GIS, see Paragraph 1.6) will also be used for periodic monitoring (on a 5- to 10-year rotation) of environmental changes in the forest (and could be expanded to the protected areas).

6.3 Significance of impacts after implementation of mitigation measures

The adoption of a Forest Management Information System, the elaboration of land-use plans on a district basis and of multiple use and sustainable forest management plans will provide a much improved management basis, where environmental considerations can be accounted for. Mitigation measures are proposed to improve land-use planning. Forest management planning (and control) will have positive environmental impacts, if its objectives are adhered to and its results are implemented correctly. Additional measures are proposed to further improve the environmental impact of forest management planning.
7. PROTECTIVE, TOURIST AND CULTURAL USE OF FOREST

7.1 Existing conditions

Mountain forests, such as the forests of the Laboratory Zone, exert a protective function against natural hazards (such as avalanches, landslides, rock falls, erosion, etc.) and this was recognized in the traditional forest management plans, according to which all forests were classified as protective forests of some kind. Cutting restrictions were imposed depending on the forest conditions, but these limitations have not been stated explicitly, which is one of the main reasons why the traditional management plans have been criticized by opponents.

In the model land-use plan for the Oni district (1998-99), forests have also been classified according to 3 types of protection zones:

Table 7.1 Surface of forest according to types of protection zones

<table>
<thead>
<tr>
<th>Type of protection</th>
<th>Area (ha)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close resort forest</td>
<td>11.638</td>
<td>16.7</td>
</tr>
<tr>
<td>Distant resort forest</td>
<td>56.543</td>
<td>81.1</td>
</tr>
<tr>
<td>Green belt around the town of Oni</td>
<td>1.508</td>
<td>2.2</td>
</tr>
<tr>
<td>Total</td>
<td>69.689</td>
<td>100.0</td>
</tr>
</tbody>
</table>

In relation with these types of protection, a number of cutting restrictions have been listed depending on the present legislation and technical norms. No forest with soil protection and water regulation functions was identified. This data do not give any indication on the area where the protective function is the prevailing function of a forest.

As for the tourist and cultural uses related to the forests, they are enumerated and described in more or less details and their potential value is recognized in relation with the revival of tourism in the region (see Figure 16).

The non-monetary value of the role of forests for the protection against natural hazards of the existing infrastructure (roads, bridges, buildings) and for tourist and cultural uses has not been evaluated. It is probably much higher than the timber revenues.

7.2 Impact analysis and mitigation measures

Issue 17: Notion of prevailing functions

Forests exert different functions at the same time and place. According to the concept of multiple uses, forests should be managed in such way that all functions are maintained and, at best, maximized. Only in special cases a function is exclusive (examples are Protected Areas dedicated only to the protection of some ecosystem, or a forest protecting directly a road against avalanches).

Mountain forests, such as the forests of the Laboratory Zone, exert protective, production and social functions to a different extent. It is the task of land-use planning to determine the
Recreation scheme
Figure 10
prevailing function of a particular forest and to decide the measures to be taken to enhance the prevailing function and to take into account the secondary functions.

**Mitigation measures 17:**

17.1 The notions of multiple uses and of prevailing functions should be incorporated in the *Forest Code* and, particularly, in the Regulations for Allocating Territories (art. 21 al. 7).

**Additional measure 17:**

17.2 As an example, the Oni land-use plan should be complemented, incorporating the notions of multiple use and prevailing functions. Forests should be classified according to their prevailing function. For instance, the location and extend of protective forests (forests with a prevailing protective function) would be determined. The resulting "Multifunctional plan" would be of great help for resolution of land-use conflicts and would also be used as a planning tool for the forest management plan.

**Issue 18: Management of protective forests**

The management of protective forests is not defined in the *Forest Code*. It only specifies activities that are forbidden under certain conditions.

In order to avoid erosion the normative acts prohibit the following activities:

- final felling on the slopes with an inclination of more than $35^\circ$;
- logging with skidders on the slopes with an inclination of more than $30^\circ$;
- damaging more than 15% of upper soil layer of entire cutting area.

The normative act forbids final felling in forests with soil protection and water regulation functions, such as:

- sub-alpine zone's natural habitat having the width of 300 m;
- forest line located within 200 m from permanent snow beds, avalanches and flooding;
- protective forest areas located within 300 m from the banks of rivers, seas, lakes, water reservoir and water canals;
- protective forest lines located within 100 m from steep slopes, landslides, and Karst objects; and in forest areas located within 1 km radius of mineral springs.

Some of these interdictions will have negative impacts. For instance, it should be possible to cut trees on river banks, in order to reduce the volume of wood that will be washed away during floods and that may damage bridges and river works.

In order to mountain or enhance the various functions of the forests, they must be treated accordingly. Trails and roads must be maintained, and, in case of danger, works to prevent natural hazards or to repair damages must be undertaken. For example, in forests, which directly protect a road against snow avalanches, particular silvicultural measures (such as selective cutting to improve the stability of the forest stands) must be taken at a cost to be
supported by the State. Cost estimates do not exist for these protective measures at the regional level.

Forest improvement activities (including sanitary felling and "reconstructive" felling) are used (or are viewed by outsiders) as a means to carry out illegal felling in protection forests.

**Mitigation measures 18:**

18.1 The definition of forests with prevailing protective function is to be included in the *Forest Code* and in normative acts.

18.2 Normative acts must be developed to better define and incorporate silvicultural measures and maintenance activities in protective forests (so called forest improvement activities).

18.3 The planning and implementation of protective measures must be incorporated in the Forest Management Information System.

18.4 Training in forest management planning should be extended to training in silviculture of mountain forests, including the planning of silvicultural measures for protective forests. Such training could rely on experiences from Europe (Austria, Bavaria, Italy, Switzerland).

**Issue 19: Management of forests with tourist or cultural functions**

Forests with prevailing tourist or cultural functions must be managed according to these goals and appropriate measures must be taken. For instance, in forests surrounding a historic building, trees may have to be cut to protect the building from tree shade or to prevent the risk of accidents (such as falling of branches) for visitors. Such measures (and their funding by the State) may be accounted for in the new *Forest Code* and in existing norms, but no State funds have been allocated for such measures.

**Mitigation measures 19:**

19.1 Forests with prevailing tourist or cultural functions will have to be determined and incorporated in the planning process.

19.2 Tourist and cultural uses in the forests will have to be coordinated with those to be implemented in the protected areas.

19.3 Maintenance of trails and other tourist and cultural infrastructure is to be financed on cost-sharing basis with the Protected Areas Development Project.

**7.3 Significance of impacts after implementation of mitigation measures**

Inclusion of the notions of multiple uses and of prevailing functions can only improve the quality of planning and of management of the forests.

Addition of considerations of protective measures and maintenance of tourist and cultural infrastructures (to be financed on a cost-sharing basis with the PADP) will provide an additional dimension to the FDP.
8. FOREST PRODUCTS INCLUDING ILLEGAL WOOD CUTS

8.1 Existing conditions

Forests cover most of the Laboratory Zone below the alpine zone up to 80% of the territory (56% on the whole).

Table 8.1.1: Summary of the area statistics of the Laboratory Zone:

<table>
<thead>
<tr>
<th>Territory</th>
<th>Area (ha)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total area</td>
<td>462'000</td>
<td>100</td>
</tr>
<tr>
<td>State forest fund</td>
<td>276'000</td>
<td>60</td>
</tr>
<tr>
<td>of which: forests</td>
<td>259'000</td>
<td>56</td>
</tr>
</tbody>
</table>

Mountain forests are presently exploited (as a green mine) in an extensive way for the extraction of various wood and non-wood products. Defective or dying trees are harvested in small quantities and scattered places (so called sanitary cuts) in forests accessible by tractors. Firewood is collected by individuals near villages and roads. Commercial harvesting operations make up officially less than 10% of the wood harvested.

Table 8.1.2: Statistics of wood harvested by district and types of cutting for year 2000 (in m$^3$):

<table>
<thead>
<tr>
<th>Type of cutting</th>
<th>District</th>
<th>Total</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lentheki</td>
<td>Tsageri</td>
<td>Oni</td>
</tr>
<tr>
<td>Sanitary (+ thinning)</td>
<td>4'115</td>
<td>3'732</td>
<td>6'143</td>
</tr>
<tr>
<td>Local use</td>
<td>1'786</td>
<td>10'324</td>
<td>2'616</td>
</tr>
<tr>
<td>Commercial</td>
<td>1'663</td>
<td>492</td>
<td>463</td>
</tr>
<tr>
<td>Total</td>
<td>7'564</td>
<td>14'548</td>
<td>9'222</td>
</tr>
<tr>
<td>of which: timber</td>
<td>2'837</td>
<td>3'714</td>
<td>3'101</td>
</tr>
<tr>
<td>firewood</td>
<td>4'727</td>
<td>10'834</td>
<td>6'121</td>
</tr>
</tbody>
</table>

The official figures of harvested wood in the Laboratory Zone as a whole (44'043 m$^3$ in year 2000, or less than 0.2 m$^3$/ha/year) are low and much inferior to the allowable cut (by 57%) and represent less than a tenth of the volume growth, as calculated in the forest management plans (481'000 m$^3$ or 1.8 m$^3$/ha/year, itself a conservative growth estimate).
Table 8.1.3: Official statistics of the Laboratory Zone for year 2000 (259'000 ha forests):

<table>
<thead>
<tr>
<th>Statistical data</th>
<th>Estimate</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growing stock (standing volume)</td>
<td>47'000'000 m³</td>
<td>184.00 m³/ha</td>
</tr>
<tr>
<td>Volume growth</td>
<td>481'000 m³</td>
<td>1.80 m³/ha/year</td>
</tr>
<tr>
<td>Allowable annual cut</td>
<td>110'000 m³</td>
<td>0.40 m³/ha/year</td>
</tr>
<tr>
<td>Volume cut in year 2000 (official permits)</td>
<td>44'000 m³</td>
<td>0.17 m³/ha/year</td>
</tr>
</tbody>
</table>

Contrary to the popular belief, according to these figures, the forests are underused with regard to wood harvesting and the growing stock should be on the increase. Poor harvesting techniques are to be blamed for the local degradation of forest conditions, for soil erosion on steep slopes and for soil compaction. In addition, illegal wood cutting (wood harvested without official permit) occurs in various ways and places. Extent of these illegal activities is not officially documented (with estimates for the Laboratory Zone varying from a low 3'500 m³ to unsubstantiated claims as high as 100'000 m³ per year)\(^\text{26}\).

Non-wood forest products are varied and abundant in the Laboratory Zone.

Table 8.1.4: Production potential of the most important non-wood forest products of the Laboratory Zone (based on Soviet period production quotas):

<table>
<thead>
<tr>
<th>Product</th>
<th>Production (to/year)</th>
<th>Botanical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fungi</td>
<td>30</td>
<td>Armillaria mellea, Agaricus campestrae, (\text{etc.})</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lactarius deliciosus, Lactarius piperatus, (\text{etc.})</td>
</tr>
<tr>
<td>Fruits of wild rose</td>
<td>30</td>
<td>Rosa canina</td>
</tr>
<tr>
<td>Cornus fruits</td>
<td>15</td>
<td>Cornus mas</td>
</tr>
<tr>
<td>Blueberries</td>
<td>4</td>
<td>Vaccinium myrtillus</td>
</tr>
<tr>
<td>Staphylea fruits</td>
<td>50</td>
<td>Staphylea pinnata</td>
</tr>
<tr>
<td>Medicinal herbs</td>
<td>0.5</td>
<td>Species not specified</td>
</tr>
</tbody>
</table>

Figures on actual harvests of non-wood forest products are not available. No noteworthy decrease of their abundance has been claimed.

8.2 Impact analysis and mitigation measures

Issue 20: Illegal cutting operations

Although it is presently impossible to quantify the ongoing illegal cutting operations, they certainly have a negative economic incidence (in terms of lost revenues for the State and lost income for the local wood industry) and a devastating impact on the image of State institutions. Their environmental impacts are difficult to assess since these operations are of clandestine nature. The main risk consists in the haphazard way the illegal logging operations are carried out, the damage they may cause to the remaining stands and soil

\(^{26}\) Sources of information are: SDFM, MoE, NGOs, locals.
erosion that may be started by the uncontrolled rolling and slipping of stems on steep slopes and by the skidding spurs left by tractors.

**Mitigation measures 20:**

20.1 Monitoring of illegal cutting operations (see Chapter 13, Monitoring) must be an integral part of the Forest Management Information System and its application should have a first priority.

20.2 Penalties (fines) imposed on trespassers should be collected and the revenues should be used for the restoration of forests damaged by illegal cutting operations.

20.3 Eradication of large-scale illegal cutting operations has to be made a condition of compliance for the IDA credit.

**Issue 21: "Creaming" the forest**

According to the law, all trees to be cut should be selected and marked by a forester with a university degree. Due to financial restrictions, local foresters are often unable to check that only the marked trees are harvested and that the best trees are not removed in the place of their competitors. Creaming the forest of its best elements is the cause of a financial loss for the forest owner and genetic impoverishment in the long run. If it is coupled with a weakening of the stand stability, it may also diminish its protective functions.

**Mitigation measure 21:**

21.1 The State must pay correctly its personnel and give them the means to carry out their supervisory duties.

**Issue 22: Sanitary cuts**

Sanitary cuts, removal of defective, dead or weakened trees, make up half of the volume of the wood harvested in the Laboratory Zone. In managed forests, sanitary wood removals usually amount to less than 20% of the total volume cut. Some of the sanitary cuts may be disguised commercial cuts in zones where they are forbidden.

**Mitigation measure 22:**

As for issue 21.

**Issue 23: Enhancement of biodiversity through silvicultural measures**

Most of cutting activities takes place in accessible locations, which make up only a very small proportion of the forests. In addition, according to the Forest Code, woodcutting is prohibited in different zones, according to a number of criteria (such as slope of more than 35°) and in protected areas. The forest area that could be sustainably managed could be rather limited (between 10 and 30 % of the forest area).

Experience elsewhere in Europe has shown that specific measures (including wood cutting) should be taken to maintain or enhance the presence of light demanding species and species with particular ecological needs (such as pioneer species). Further discussion on the
interactions between logging, biodiversity and landscape is given in Paragraph 2.4 Biodiversity.

**Mitigation measure 23:**

23.1 The provision of wood cutting measures for biodiversity enhancement must be incorporated in the forest and in the protected areas management plans.

**Issue 24: Improved economic utilization of forest resources and improved supply of forest products to the regional economy**

Improved forest management, opening-up of hitherto inaccessible forests thanks to the construction of new access roads and the use of skyline transport systems will improve the economic utilization of the forests of the Laboratory Zone by increasing harvest levels in a sustained way and reducing wood wastage.

Different investment strategies (based on low-impact road construction and logging systems and appropriate silvicultural measures) can be devised to utilize the growth potential of the forests in a sustainable way (see table 8.5).

**Table 8.5:** Preliminary estimates of sustainable forestry for the Laboratory Zone (259'000 ha forests) based on 3 different road investment and silvicultural strategies

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Assumed proportion of productive forests</td>
<td>%</td>
<td>10</td>
</tr>
<tr>
<td>under sustainable forestry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resulting area of productive forests under</td>
<td>ha</td>
<td>26'000</td>
</tr>
<tr>
<td>sustainable forestry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Growth potential (mean)</td>
<td>m³/ha*year</td>
<td>6.0</td>
</tr>
<tr>
<td>Growth potential (total)</td>
<td>m³/year</td>
<td>156'000</td>
</tr>
<tr>
<td>Growth potential (rounded)</td>
<td>m³/year</td>
<td>160'000</td>
</tr>
</tbody>
</table>

Short definition of the 3 roads investment and silvicultural strategies:

(1) Concentration of road investments and silvicultural activities on the sites with the best growth potential (10% of the forest area), using skidding and skyline systems;

(2) An additional 10% of the productive forests is brought under sustainable management using skyline systems;

(3) Road investments are extended to forests of lesser fertility to open-up 30% of the forests (in combination with long range skyline systems).

These figures illustrate the gap between present official harvest level (44'000 m³ in year 2000), the annual allowable cut (110'000 m³ for the Laboratory Zone) and the growth potential of the more productive forests under sustainable forest management (between 160'000 and 230'000 m³ depending on the assumptions).

The forest management plans to be prepared for the four districts of the Laboratory Zone will serve as a basis to determine the growth potential of the forests more precisely and fix the annual allowable cut under sustained forest management. Assuming that illegal cutting was
brought under control, total wood harvest could be increased manifolds on a sustained basis (from a volume of 44'000 m$^3$ in year 2000).

The increased wood supply could benefit the local and regional economy in the form of additional employment on the forests and in the wood industry and thanks to additional profits from the sales of wood and wood products. These benefits are especially important for an economically weak region with limited employment possibilities.

**Mitigation measures 24:** No mitigation measure is needed.

**Additional measures 24:**

- **24.1** A substantial part of the additional forest revenues should be allocated to the local communities for their own use (subject to controls by the central State).

- **24.2** Another portion of the additional revenues shall be dedicated to financing of local forest activities as prescribed in the management plans (tree plantations, cleaning and tending operations, road and trail maintenance, etc.).

8.3 **Significance of impacts after implementation of mitigation measures**

Negative impacts will be eliminated, if the mitigation measures are implemented.

A positive impact on the biodiversity can be achieved thanks to specific silvicultural measures. In addition, an improved utilization of the forest resources will have positive impact.
9. INFRASTRUCTURE AND WOOD HARVESTING SYSTEMS

9.1 Existing conditions

Infrastructure (roads, buildings) and wood harvesting systems (skidders, skyline ropeways, trucks, chainsaws, etc.) used for tending and harvesting the forest resources of the Laboratory Zone are rudimentary and in acute need of repair and maintenance. The same is true for the main district roads connecting towns in the valleys. Some buildings have not been repaired since the earthquake of 1991 in Oni.

The basic road network consists of access roads in the valleys and secondary roads connecting villages and hamlets in the hills. Total length of existing forest roads is estimated as 750 km, corresponding to a very low road density (2.7 m/ha forests on the average). No detailed road inventory is available and road distribution over the area is very uneven. Many lateral valleys are road less and large forest blocks have no road access. In final felling areas, a dense network of skidding roads and trails exists with an estimated density of 50 m/ha. Most of the roads in the final felling areas are not maintained after completion of the final cuts. Skidding trails often have not been laid out systematically and are often only temporary, erosion prone tracks. There are no long (more than 100 m) skidrows in Lab Zone. Existing skidrows cause new erosion processes or increase already existing ones. Trade-off between more roads and shorter skidrows depends on relief, access and particular case.

Trees are felled with chainsaws, with little regard for the safety of the forest workers. No statistics are available on injuries and casualties in the forest sector. Old agricultural tractors are used for skidding. No skyline ropeways are available and logs are rolled or left sliding on steep slopes, damaging the soil and standing trees, and causing an important wood wastage.

The Forests Development Project would finance a demonstration program of low-impact harvesting and transportation systems, as well as a forest road rehabilitation (190 km in the Laboratory Zone) and construction (40 km) program, using equipment and construction methods minimizing the impact on sensitive landscapes and ecotypes. Training in use of environment-friendly road construction equipment and of harvesting systems will be financed.

9.2 Impact analysis and mitigation measures

*Issue 25: Need for a general plan and detailed plans of road rehabilitation and construction activities*

Rehabilitation of existing roads in the Laboratory Zone and construction of new forest roads is a precondition for the sustained management of mountain forests. Without a minimum network of access roads, forest management cannot be sustained: supervision activities cannot be carried out efficiently, forest tending operations remain restricted to a small proportion of forests and harvesting operations limited to the few accessible forests. The use of skyline ropeways for wood transport may well enlarge the area where logging may be carried out periodically (replacing secondary roads and skidding trails), nevertheless a minimum of additional access roads and log landings will be needed.

Mountain road construction may have negative impacts on sensitive mountain sites, on the fauna and landscape. It requires therefore coordination with other activities, careful planning and appropriate construction methods. The impact of road construction on biodiversity and landscape is discussed in Chapter 10, *Biodiversity and Landscape*. Other potentially damaging impacts are discussed below.
Mitigation measures 25:

25.1 Before laying out new roads, a Regional Road and Harvesting System Plan must be designed, incorporating the results of the land-use and of forest management plans (in addition to other pertinent data, such as geotechnical maps, maps of natural hazards and of protected areas). The regional plan will indicate where new access roads can be built, where harvesting with skyline systems is feasible and which zones should be left road less. Preliminary cost estimates will be used for cost/benefit analysis. Investment priorities will be determined for different forests according to their growth potential, value of forest products and harvesting costs. The Regional Plan would be subject to an EIA.

25.2 Road stretches that have been included in the regional plan will have to be laid out in details on both map and ground. A detailed road project will be prepared, including proposals for alternative designs and layouts. Detail planning will take into account all factors having an incidence on risks of erosion and visual impact on the landscape (slope of the terrain and road inclination, geotechnical characteristics, problems of stream crossings, management of surface, water, etc.). Total road costs (construction costs plus maintenance costs) will be computed. The best proposal would show the lowest cost/benefit ratio and the smallest risks. According to law, for each road project (renewing, rehabilitation or creation) an EIA shall be submitted to the Ministry of Environment.

25.2 Construction standards will be adapted to the severe weather conditions of the Central Caucasus, in order to minimize future maintenance costs and risks of damages to roads and the environment.

Issue 26: need for environmentally friendly equipment and construction methods

The most important causes of environmental concern are:

- tipping excess cut material down the slope and dumping it on ecologically sensitive sites such as swamps, riversides, etc.;
- careless rock blasting: damages to the vegetation, risk of subsequent rock falls;
- risk of soil erosion: often due to uncontrolled release of surface waters on unstable slopes;
- impacts on downstream water quality;
- destruction of nesting and reproduction grounds.

In extreme cases, careless road construction activities in Georgia and elsewhere have provoked irreversible damages such as landslides, flush floods, etc. On the other hand, assuming that roads have been properly planned and laid out, adverse environmental impacts of road construction can be minimized by using equipment and construction methods adapted to the particular conditions, at an additional cost that must be included in the economic analysis of the projected road.

Mitigation measures 26:

26.1 In zones with too steep slopes or/and instable geological conditions, no roads shall be built.
26.2 Use of explosives shall be restricted. Conditions such as specialized staff with permits to use explosive will be defined. Training on the adequate explosive quantities will be useful.

26.3 The management of cut material will be planned and optimized at the detailed planning phase of a road. During detailed planning, several alternative road locations are studied to look for the best adaptation to the relief and geology.

26.4 Excess cut material must be transported to the planned earth dumps located on safe grounds.

26.5 Low impact construction equipment, such as backhoe shovels and percussion hammers (Montabert hammers) will be required. Bulldozers shall not be used and traxcavators shall be restricted to truck loading. Earthworks are to be performed by backhoe shovels (shovel excavators).

26.6 Environmentally conscious contractors using skilled machine operators will be given preference.

26.7 Best management practices for environmental impacts from road construction will be incorporated in the technical specifications for the request of bids and for road construction contracts.

26.8 Road construction will be supervised by qualified engineers trained in environmentally friendly road construction methods.

26.9 The State Department of Forest Management shall periodically inspect the construction sites and report to the FSDC if important project modifications occur and if recommended mitigation measures have not been carried out.

**Issue 27: Need for the proper use of harvesting systems**

Construction (40 km) and rehabilitation (190 km) of forest roads in the Laboratory Zone, together with the use of skyline harvesting systems will make possible to harvest increased volume of wood, thereby increasing the risk of adverse environmental impacts (increased soil compaction, increased soil erosion and sedimentation, damages to standing trees, etc.). It is presently not known where increased harvesting will take place and therefore impossible to make specific site recommendations. On the other hand, mobile and semi-mobile skyline systems, if properly used, can contribute to reduction of soil compaction and soil erosion, since wood can be transported off the ground and wood wastage can be diminished.

**Mitigation measures 27:**

27.1 Best management practices for minimizing environmental impacts of harvesting systems will be incorporated in the technical specifications of a wood permit. They shall include, among others, the following conditions:

- Harvesting operations must be planned in details (choice of cutting area, observance of felling direction, distance between cable lines, location of landings, etc.). They should be coordinated with wood marking and subsequent log transport.

- Skidding operations shall be stopped under adverse atmospheric conditions to avoid soil compaction and waterlogging. Deep skidding spurs must be leveled out.
27.2. The local Forestry Department shall periodically inspect harvesting sites and report irregularities.

*Issue 28: Improved economic utilization of forest resources and improved supply of forest products to the regional economy*

The improved road infrastructure and use of low-impact harvesting systems will have positive impacts on the economic utilization of the forest resources of the Laboratory Zone and supply of forest products to the regional economy. Additional employment opportunities and profits would result. These benefits are especially important for an economically depressed region with limited employment possibilities. For further discussion, refer to Chapter 8, *Forest products*.

**9.3 Significance of impacts after implementation of mitigation measures**

Construction of forest roads in the mountainous conditions of the Laboratory Zone constitutes the largest risk of negative impacts on the environment that could be caused by the project. However, the construction of 40 km of roads can be achieved with a minimum of short-term nuisances and long-term negative impacts, if the planned activities and the recommended mitigation measures are implemented. The positive socioeconomic benefits are large enough to justify the investment in road construction, in conjunction with the rehabilitation of 190 km of existing forest roads and the operation of low-impact harvesting systems.

Remaining negative impacts (on the scenery for instance) will have to be explained to the public in the broader context of sustained regional development.
10. BIODIVERSITY AND LANDSCAPE

10.1 Existing conditions

Biodiversity

Thanks to the diversity of the natural conditions (altitude, exposition, soils, water availability) characteristic to this mountainous region, the Central Caucasus represents home for many species of flora and fauna. Its intermediary position between the Black Sea climate and dry continental climate confers a particularly interesting ecological value to the region. According to previous studies, flora of the Racha-Lechkhumi region includes about 1'200 species of 490 genus and 106 families. 272 species are endemic, out of which 110 are endemic to the Caucasus. 54 are endemic species to Georgia and 9 are endemic to the Racha-Lechkhumi. Considering the complexity of the micro-relief, it can be assumed that the intraspecific diversity is high, but no data is available. The area of virgin forests in the Oni district can be estimated at 9'000 ha. In total, in 4 districts, it may range at about 30'000 ha (see previous reports).

Biodiversity is an important asset for the development of tourism in the Laboratory Zone.

Existing reports shows lack of solid data on fauna. Nevertheless, indices show decreases in large mammals populations due to poachers, and some of them must now be considered as endangered. Considering plant species used for "non-wood products" (fungi, berries, medicinal plants, etc.) evaluation of human pressure is not possible on the basis of available information.

The present forest use patterns have complex, both positive and negative impacts on the biodiversity. It is hereby important to underline the difference between deforestation and logging (see List of Acronyms and Terminology). Deforestation, a process that would constitute one of the severest threats to biodiversity, is nowadays hardly to be found in the Laboratory Zone. In the contrary, the total forest area is probably increasing in the region.

In comparison to forests where no logging would take place, the woodcuts (legal and illegal) contribute to create a higher diversity of habitats. Through the felling of appropriate trees, solar light and heat reaches the soil, which enables pioneer and light dependant plants to develop. A higher diversity of insect species can be found on open areas (e.g. after a larger cut) than in a closed forest. Generally speaking, the present woodcuts probably contribute to a higher level of biodiversity than a "no cut" alternative. This might be called in question if the woodcuts were followed by increased grazing or agriculture.

On the other hand, logging and logging related activities may have negative impacts on biodiversity, depending on their extent, location and the techniques used. The present precise impact is difficult to evaluate. The present use of firewood probably does not significantly contribute to a loss a biodiversity, since its level is not excessive and is concentrated around settlements. At the utmost, a change of the habitat can be feared if selected tree species are systematically cut or promoted. Felling of old, dry trees has a negative impact on some insect, fungus and bird species. Concerning the commercial timber extracting activities, more important impact can be assumed, due to the fact that those activities sometimes happen in relatively untouched areas and often induce severe soil damages.
Landscape

Landscape\textsuperscript{27} is another important asset for tourism and the forests constitute an essential element of it in the Laboratory Zone. Important here are the evolution of the forest area (deforestation versus forest increase), the species composition, the structure of edges and the presence of small woodlands (hedges, tree lines, etc.).

Generally speaking, any logging of significant extent will leave visible marks, if temporary. Even if conducted in a most careful way, a wood cut cannot let the picture unchanged. However, visible changes in the landscape occur in a natural evolution too, sometimes even dramatically in case of storms or avalanches. In mountain areas, human activities have the most visible impacts on steep slopes, since they can be seen from the distance, and in winter, when snow accumulates in skyline trenches, in clear cuts and on road banks.

Nowadays, as far as it could be observed in the field trips, wood-extracting activities have a small impact on the landscape. Commercial logging can hardly be seen around tourist resorts and main roads.

In the Laboratory Zone, the Forests Development Project will support the implementation of forestry regulations, support efficient and participatory planning and promote private sector participation in sustainable forest management. The latest component includes a "privately-run demonstration program of improved, low-impact harvesting and transportation systems" as well as forest road construction.

The previous study "Over-all Forest Utilization Program for the Oni District" implemented in the framework of the FDP has already addressed landscape related issues and created "Landscape-Ecological Carcass for the region". It is planned to implement similar studies in other regions of the Lab Zone. Therefore, SEA does not duplicate already existing information.

10.2 Impact Analysis and Mitigation Measures

\textit{Issue 29: biodiversity, landscape and planning, legal and enforcement improvements}

The development of improved inventory techniques and adequate participatory planning can have a positive indirect impact on biodiversity and landscape. The improvements of laws and their enforcement will have a positive indirect impact on biodiversity and landscape (see corresponding Chapters 3 and 4).

\textit{Mitigation measure 29:}

No supplementary mitigation measure is needed

\textit{Issue 30: road construction and poaching}

According to the baseline information existing in draft reports, some large mammal species are now concentrated in remote areas or sanctuaries. Road building for the purpose of logging will create an easier access for poachers to habitats protected by their remoteness. Road construction will thus increase the risk of poaching of large mammals, some of which are endangered. Could, on the other hand, new roads allow a better control and protection by the Hunting Service? Probably not in a large extent, as difficulty to access to remote habitats protected by their remoteness.

\textsuperscript{27} "landscape" is used here in its narrow sense, meaning the visible, aesthetic dimensions of natural and human formations (it is not used in its broad sense which would include the biodiversity dimension)
sanctuaries may not be the main factor hindering the Hunting Service from enforcing hunting laws.

**Mitigation measures 30:**

30.1 During the regional forest road planning phase, which shall precede any particular construction (or/and during the EIA, see Chapter 9, *Infrastructure*), places which serve as sanctuary for large mammals must be situated. They shall be avoided by future road construction.

30.2 The opportunity to close forest roads to non-authorized persons will be evaluated.

**Issue 31: road construction and change of habitats**

Road construction may disturb habitats through drainage of humid zones and improper disposal of excavation materials. Crossing humid zones does not only make road construction hazardous, but also very expensive. Drainage, which is necessary to a certain extent, will disturb the habitat. Vegetation specialized on sphagnum-swamps, for example, is particularly sensitive to changes in the water level. Changes in the vegetation and in the soil structure will eventually change the habitat quality for insects and birds. The use of low-impact construction standards is not yet guaranteed (see Chapter 9, *Infrastructure*).

**Mitigation measures 31:**

31.1 At the stage of detailed planning of a new road, different locations must be evaluated on the basis of the impact on humid biotopes. This may be part of the EIA of construction projects.

31.2 Prescriptions about drainage in humid biotopes must be defined.

31.3 Road construction standards will be established. They will include guidelines about the equipment to be used for road building.

**Issue 32: road construction, skylines and landscape**

Due to the geological and topographical conditions found in the Laboratory Zone, landscape protection will be very sensitive issue for road building. Visible impact of road construction can hardly be avoided in mountainous areas; it can nevertheless be more or less severe and long lasting. The tipping of excavation material down the slopes would have the most severe impact on the landscape. This risk will be high if bulldozers are used instead of modern backhoe shovel excavators and if explosives are improperly used.

The impact of skyline harvesting on the landscape depends on several factors:

- the type of wood cut: a clear cut will be more visible than a passage cut; the latest can remain nearly unnoticed in good conditions. Skylines enable passage cuts, the question is whether the logging company is ready to preserve the remaining stand.
- the width of skyline trenches; a high precision during the tracing in the field is necessary. If layout is approximate, many trees should be felled to be able to install the cable; it will cause appearance of a large trench.

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28 Nowadays, there is a practice of closing forest roads by means of tumpike and trenches.
- the direction of the skyline: skyline following the biggest slope are more visible than oblique lines. Furthermore, oblique lines generate fewer damages to the remaining trees.

- the combination of line height and log length: in the Laboratory Zone, downhill harvesting will be most frequent, since existing and new roads will probably lay at the bottom of the valleys. If the logs are longer than the line height, downhill harvesting will generate high damages to the trees along the trench, since they will be knocked by harvested logs. To minimize impact on the landscape, harvesting of relatively short logs is recommended.

**Mitigation measures 32:**

See under the issue Need for environmentally friendly equipment and construction methods in Chapter 9 *Infrastructure*.

The impacts of potential wood extracting activities made possible by the construction of new roads are discussed in the Chapter 8, *Forest products*.

**Table 10.2.1. Main potential impacts of forestry related activities on biodiversity**

<table>
<thead>
<tr>
<th>Type of activity</th>
<th>Description of impact</th>
<th>Concerned animal and plant species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of new roads</td>
<td>+ creation of raw soil and exposition to the sun</td>
<td>pioneer species</td>
</tr>
<tr>
<td>Construction of new roads</td>
<td>- better access for poachers</td>
<td>large mammals, birds</td>
</tr>
<tr>
<td>Construction of new roads</td>
<td>- improved access for villagers and tourists, increasing thereby disturbance to fauna</td>
<td>animal species sensitive to human disturbances</td>
</tr>
<tr>
<td>Construction of new roads</td>
<td>- drainage of humid habitats</td>
<td>species dependent on humid habitats</td>
</tr>
<tr>
<td>Logging (generally)</td>
<td>+ increased light and temperature on the ground</td>
<td>light depending species, pioneer species</td>
</tr>
<tr>
<td>Felling of old trees</td>
<td>- destruction of cavity trees</td>
<td>cavity nesting birds</td>
</tr>
<tr>
<td>Felling of dead trees</td>
<td>- destruction of species dependent on dead trees</td>
<td>insects, fungus, birds</td>
</tr>
<tr>
<td>Creaming: felling of the best trees</td>
<td>- progressive genetic degradation of the tree specie</td>
<td>fagus</td>
</tr>
</tbody>
</table>
Table 10.2.2. Main potential impacts of forestry related activities on landscape

<table>
<thead>
<tr>
<th>Type of activity</th>
<th>Description of impact</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction of new roads</td>
<td>destruction of the vegetation along the road trench through excavation</td>
<td>long time needed for re-greening of scarce needs at high altitudes and on south oriented slopes</td>
</tr>
<tr>
<td>Construction of new roads</td>
<td>disturbance of downhill slopes through tipping of excavation material or by inadequate dynamite use</td>
<td>would have a severe and long lasting impact</td>
</tr>
<tr>
<td>Logging (generally)</td>
<td>change in the composition and structure of forest stands</td>
<td>can not be avoided, depends on the area, not necessarily negative</td>
</tr>
</tbody>
</table>

10.3 Significance of Impacts after Implementation of Mitigation poaching

Generally speaking, landscape, in its esthetical dimension, will be more sensitive than biodiversity to forestry activities (logging, road construction, use of new harvesting system). During management and construction planning, zones with prevailing landscape-protection function, such as stands around villages and resorts, will deserve a particular attention. Logging will anyway change the landscape in some extent, even if only in the short run. Authorities will have to decide what is the acceptable immediate impact on the landscape, depending on the prevailing forest function.

An increase in the logging volume, with the present harvesting techniques, would have the worse impact on the landscape. The multiplication of hazardous skidding trails constructed by logging companies for one particular cutting area would furthermore promote erosion.

Logging in a sustainable extent might increase habitat diversity and, indirectly, potentially increase the diversity of animal and plant species.

Considering the present situation, poaching will probably continue and the construction of roads in remote areas will increase the pressure on hunted species. Biodiversity would be severely affected by forestry activities if they induce deforestation, but this eventuality is unlikely to take place in the Laboratory Zone.
11. SUSTAINABLE FOREST MANAGEMENT

11.1 Existing conditions

The concept of "Sustainable Development" has become widely accepted on the international policy level. Some definitions put the emphasis rather on its growth aspect, such as: economic growth that benefits present and future generations without adversely affecting biological and other natural resources. Others rather underline the social and environmental dimensions: improving the quality of human life while living within the carrying capacity of supporting ecosystem. The concept of "Sustainable Forest Management" enjoys similarly a global consensus on the general policy level.

It appeared quite soon that more precise definitions are necessary, which take into account the diversity of situations. Different international processes are attempting to settle precise "criteria and indicators" to assess the country's own situation and improvements. The discussions lead in the Montreal Process, which dealt with temperate and boreal forests, may be of interest for Georgia. The 7 criteria used in the Montreal Process were used as a framework to gather the data on which the present study is based. Indicators, taking into account the World Bank references, have been defined (table 11.1.1).

Table 11.1.1: SEA criteria and indicators for sustainable forest management (defined for the present study)

<table>
<thead>
<tr>
<th>Conservation of biological diversity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Endangered plant and animal species are effectively protected</td>
</tr>
<tr>
<td>2. Representative areas, especially sites of ecological importance, are protected and appropriately managed</td>
</tr>
<tr>
<td>3. Planting, if carried out, should be based on locally adapted species and varieties</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintenance of productive capacity of forest ecosystems</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Silvicultural systems are prescribed and appropriate to forest type, and produce grown</td>
</tr>
<tr>
<td>5. Harvesting systems and equipment are prescribed to match forest conditions in order to reduce impacts</td>
</tr>
<tr>
<td>6. Infrastructure is laid out prior to harvesting and in accordance with prescription</td>
</tr>
<tr>
<td>7. Annual cut is prescribed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maintenance of forest ecosystem health, vitality and protective function</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. The capacity of the forest to regenerate naturally is ensured</td>
</tr>
<tr>
<td>9. Skidding damage to trees and soil is minimized</td>
</tr>
<tr>
<td>10. Air pollution does not affect forest vitality on the long run</td>
</tr>
<tr>
<td>11. Mining activities do not affect forest vitality</td>
</tr>
<tr>
<td>12. Risk of flooding and erosion for downstream areas is minimized</td>
</tr>
<tr>
<td>13. Landslide danger is minimized</td>
</tr>
<tr>
<td>14. Avalanche danger is minimized</td>
</tr>
<tr>
<td>15. Protection forests are adequately tended</td>
</tr>
</tbody>
</table>

Conservation and maintenance of soil and water resources

16. Forest management does not result in any ponding or waterlogging
17. Soil erosion is minimized
18. Groundwater and mineral springs are not affected by forest related activities
19. Food chains and ecosystem are not polluted by forest related activities

Maintenance and enhancement of long-term multiple socioeconomic benefits to meet needs of societies

20. Forest-dependant people share the economic benefits of forest utilization. They can get employment and training from forest companies and agencies
21. Stakeholders/local populations participate in the definition of objectives
22. Non wood products are sustainably used
23. Impact on the landscape is minimized
24. Impact on cultural heritage is positive

Legal, institutional and economic framework for forest conservation and sustainable management

25. Policy and planning are based on recent and accurate information
26. Effective instruments for intersectoral coordination of land use and land management exist
27. A permanent forest estate (PFE) is adequately protected by law
28. Management objectives are clearly and precisely described, documented and realistic. They are clearly stated in terms of the major functions of the forest with due respect to their spatial distribution
29. Comprehensive forest management plans are available. They include management objectives and prescriptions, maps of resources, ownership and survey results
30. Management conformity with planning can be controlled thanks to an affective monitoring system
31. There is sustained and adequate regional funding for the management of forests
32. Forest revenues are distributed to regional and local communities in a fair proportion
33. Stakeholders/forest actors tenure and user rights are well defined and secure
34. Adequate conflict resolution mechanisms exist and are in use
35. Forest Department staff is paid correctly and regularly

For an overall sustainability of forest management, balance between growth and volume cut remains one of the important elements of sustainable forest management, but biodiversity, maintenance of the ecosystem health, protective and socioeconomic benefits deserve as much importance as the wood production data. The legal and institutional framework is very important too. A detailed definition and analysis of all potential indicators for each criterion could be the aim of further studies.
11.2 Impact Analysis and Mitigation Measures

For the Laboratory Zone, data discussed in other chapters of the present study give clues for most of the criteria. The issues representing the main challenges for sustainable forest management have been explained in those chapters and are not repeated here, except one additional issue:

**Issue 33: definition of sustainable forest management**

Elaborating an operational definition of sustainable forest management would be interesting. The elaboration of a set of criteria and indicators adapted to Georgia's specificities will help to define which are the key data necessary for assessing the evolution of Georgia's forests over several decades. To enable international comparativeness, adequate reference "criteria and indicators" should be selected. The criteria and indicators defined for the present study are given as an example.

The elaboration of a set of criteria and indicators for sustainable forest management, involving representative of the civil society, could be integrated in the process of elaboration of a global national forest monitoring system.

11.3 Significance of Impacts after Implementation of Mitigation Measures

A transparent policy dialogue on criteria and indicators suited to assess sustainable forest management in Georgia would promote public awareness in a sustainable valorization of natural resources.
12. **PUBLIC PARTICIPATION IN FOREST MANAGEMENT AND GENDER ISSUES**

12.1 **Existing conditions**

As it was mentioned above, *the Law on Environmental Protection* states that everyone is entitled to get in-time and precise information on the environment and to take part in the environmental decision-making process. *The Law on Environmental Permits* establishes a right of society to obtain information on the planned activity and its potential impact on the environment.

Georgia ratified the Aarhus (Denmark, June 24, 1998) *Convention Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters*.

According to the Chapter X of the *Forest Code*, representatives of population and public organizations have a right to:

a) receive full, reliable and timely information on current condition of the State Forest Fund;

b) fully participate in the planning of forest management of the State Forest Fund (Article 35.1).

Furthermore, State bodies competent for the management of State Forests shall publish the following information before making a decision on forest use:

a) Forest Management Plan;

b) categories established for the State Forest Fund;

c) protection regime established for the State Forest Fund;

d) allocation of areas of the State Forest Fund for forest use for a period of five years or longer (Article 35.2).

At present, no detailed procedure for ensuring public participation in decision-making process exists.

Available reports do not mention any participation in the forest management planning which occurred in the 90s in the Laboratory Zone. According to the social assessment, respondents in Oni want to participate in forest management, but few had the opportunity to do so. Almost all residents claimed that no one from the national, State or commercial forest management authorities had asked them for help or for their opinion. Although they believe that they must participate in forest management, many do not know what could be their contribution. In Lentekhi, 99.3% of population thinks that forest management authorities are not encouraging their participation in forest management.

According to the social assessment, the people in the laboratory zone do not trust the information received through official sources. Similarly, non-governmental organizations (NGOs) mostly do not trust the State bodies and official information. NGOs are quite skeptical regarding government's ability to manage forests. In relation with NGOs activities resulting in the destruction of job opportunities, part of the local population are quite aggressive towards NGOs.

NGOs in Georgia cover a large variety of groups: local informal groups, semi-private consultant offices belonging to officials, opportunist multi-active groups, well donated offices of internationally active NGOs, etc. Organization related with the Church might be quite powerful in some areas.
Many male habitants of the Laboratory Zone collect fuel wood in the neighboring forests. Wood constitutes nearly 100% of the energy consumption for cooking and heating. Access to fuel wood is particularly important for the 50% of the population belonging to poor and middle poor categories. Data on gender aspects are not available.

**Environmental education**

Despite the existing legal rights, public awareness, interest and participation of the community in decision-making are not yet on a desirable level. One of the main reasons for this is a poor system of environmental education as well as restricted access to environmental information in the recent past. At present, there is no system of environmental education in primary and secondary schools. Environmental disciplines are in the curricula of some high and private secondary schools, however neither proper textbooks nor appropriately trained trainers are available. There is no faculty of environmental legislation at any high school, subsequently, no highly skilled lawyers trained in this field could be found.

**Public Awareness**

In conditions of limited funds, the government cannot provide systematic distribution of environmental information through mass media and periodicals. The coverage of environmental issues is limited and fragmented. There is more activity of NGOs in this direction; however, since they rely mainly on foreign aid their activities are not stable.

- **Public relations**

Public Relation (PR) is a tool for public awareness. PR works best when an organization commits to achieving specific several-year, annual, and shorter-term communication goals.

Aims of PR for the Forests Development Project should be the following:

- to coordinate the internal and external two way communication concerning forestry related issues;
- to detect problems and address them adequately in early stage for crisis avoidance in the future;
- to ensure fulfillment of Project objectives in the long term;
- to be sure to keep everyone informed every step of the way and ensure transparency of actions;
- to ensure participating on ground;
- to enhance the credibility of the Project.

In order to ensure sustainability and effectiveness of the Forests Development Project in long term, considerable attention should be paid to public relation issues. Particularly:

- FSDC together with the State Department of Forest Management must be in charge of PR to ensure transparency of the project and easy access to the public information.
- FSDC together with the SDFM must identify PR objectives and develop a strategy for PR. It should be considered that the best PR takes months to develop and then improves over the years.
- Based on strategy, FSDC and SDFM should develop detailed plan for PR and identify committed staff to do the job.
• PR staff together with SDFM and FSDC should identify audience and develop actions to involve them into the dialog.

FSDC and SDFM

Relevant Agencies dealing with forestry issues

General public

NGOs, CBOs

Local population and communities

Integrating all participants and opinions

• FSDC together with SDFM should develop plan for ensuring two-way communication to let the audience talk back (feedback).

• FSDC together with SDFM should organize public meetings on the progress of the Project twice a year.

• FSDC together with local office of the SDFM should set up and implement local complaints procedure for farmers and local residents.

Ways of PR:

• Face-to-face meetings and interviews (most productive);
• Phone interviews;
• Mass mailings of releases;
• Opinion research to learn what the audience is really up against and where their niche may be;
• Mass media (TV, radio, newspapers, magazines, etc.)
As it was mentioned above, the Chapter X of the *Forest Code* provides articles regarding public participation in the governance of the State Forest Fund. Article 36 provides the basis for consideration of public comments prior to the decision-making:

"Under conditions specified in Article 35, bodies authorized for managing the State Forest Fund shall consider comments and suggestions made by citizens and representatives of public organizations prior to making decisions."

- **Public education and awareness**

Recognizing the need for capacity building in the field of sustainable forest management, public education and awareness are critical and central instruments to achieve the Project's goals and to ensure effective implementation of the Project at the national and local levels.

Component B of the NFDP consists of strengthening forestry institutions and is composed of:

1. restructuring / strengthening the SDFM and
2. carrying out priority research, education and public awareness programs.

Under the base-case scenario used in this report, the SDFM would retain normative and regulatory functions as well as carrying out forest management responsibilities/plans. After the preparation of a reorganization plan, the NFDP would provide all the necessary technical assistance, training and incremental logistical means (mainly building rehabilitation, transportation, equipment/materials) for carrying out the plan over the remaining three years. Priority research and education programs will be formulated on the basis of specific studies conducted in the first year of the NFDP.

A separate study will be undertaken to design a promotion campaign aimed at raising public awareness/knowledge about forestry matters – for instance, through the setting up of seminars/workshops and the production/release of statistics, bulletins and posters. The carrying out of the programs and campaign will be contracted to governmental and/or non-governmental organizations selected through national bidding (possibly the MFRI, the State Agrarian University and NGOs).

The applied research program will result in improved and more cost-efficient techniques/methods for carrying out forestry operations. The education program will result in a better supply of forestry professionals and technicians for hiring by the private and public sectors. The public awareness campaign will result in improved knowledge/awareness by the general public (particularly the decision-makers) about the economic and environmental importance of the Georgian forests.

It should be considered that conservation and sustainable use of forest resources includes social and economical issues which require cultural understanding and sensitivity, and efforts to promote the goals of the Project entail recognition of the diverse needs of people and their differing perceptions, knowledge, attitudes, interests, values and understanding. Public education and awareness on sustainable forestry and biological diversity is most effective when it occurs in a social context that is meaningful to a specific audience.

Public education and awareness issues should be integrated into and become an integral component of all sectoral and thematic items under the program of work of the Project. For these purposes, the FSDC together with the SDFM should:

- promote education on forestry and biodiversity matters through relevant institutions, including non-governmental organizations;
• allocate appropriate resources for the strategic use of education and communication instruments at each phase of policy formulation, planning, implementation and evaluation, including the identification of relevant target groups seeking to provide these with relevant, timely, reliable and understandable information;

• promote integration of sustainable forestry and biological diversity concerns into education strategies, recognizing the particular needs of local communities; and

• support initiatives by major groups that foster stakeholder participation in sustainable use and that forest conservation matters into their practices and educational programs.

• engage themselves to share experiences on initiatives on public education and awareness and public participation relevant to the Project, particularly on a sectoral and thematic basis, and to make relevant case studies as well as lessons learned in the preparation of forestry management policies, strategies and plans and for the exchange of information among other organizations and public through the clearing-house mechanism and to consider how to organize assistance for audience who may be keen to develop public awareness and education strategies, but lack the ability to do so.

It is recommended that the SDFM makes use of the media, including print and electronic media, to promote public education and awareness about the importance and appropriate methods for the sustainable use and conservation of forests;

NGOs have an important role in developing and disseminating information on modern forestry and environmental practices, especially in reaching out to the broad audience who have a significant role to play in the forest conservation and sustainable use of natural resources.

As it was written above, the WB is presently preparing the Protected Areas Development Project, whose objectives, among others, are to: strengthen the institutions responsible for biodiversity conservation programs, improve the public awareness of Georgian biodiversity, and promote international cooperation in Transcaucasus biodiversity conservation. Since project will interface with the NFDP in the Laboratory Zone, it is strongly recommended that two World Bank Projects: NFDP and Protected Areas Development Project strongly communicate and implement public environmental awareness campaigns with combined efforts.

12.2 Impact Analysis and Mitigation Measures

Issue 34: promotion of public awareness in sustainable forest management through participatory management planning for community and local forests.

The activity suggested for the Forests Development Project underlines that participation is a way to shape public awareness. The community forestry issue is discussed in Chapter 5 Forest Ownership.

Mitigation measure 34: see Chapter 5.
Issue 35: participatory management planning for all forests

It must be noticed that participation responds to objectives, which go beyond the promotion of public awareness. First, public participation to public decisions is in itself a fundamental principle in a democracy. Participation in forest planning could thus be an interesting empowerment exercise for a population whose comprehension of public management has been strongly influenced by 8 communist decades and 1 near-anarchy decade. It would have a didactic impact on officials and politicians too. Secondly, participation improves the general planning efficiency. Conflicts can be managed or even prevented. Planning results are easier to implement if stakeholders have taken part to the decisions.

Public participation is particularly necessary in the forest where fuel wood is collected.

Additional measures 35:

35.1 the management-planning model shall be completed with a participation model. The opportunity and the forms of public participation to different land-use and/or forest levels (local, regional, national) shall be studied.

35.2 the role of different NGOs shall be further analyzed. Experience shows that the exclusion of powerful NGOs in the planning processes may facilitate the planning activities but does not mitigate conflicts during implementation.

35.3 the participation model(s) shall take in account the public mistrust regarding officials and NGOs.

Issue 36: forest management and gender issues

Gender issues shall be integrated in the Forests Development Project. The participation of women to forest discussion might have positive social and environmental impacts.

Mitigation measures 36:

37.1 Gender issues shall be integrated in adequate form in policies and activities.

12.3 Significance of Impacts after Implementation of Mitigation Measures

Public participation in forest decisions must be addressed for democratic and efficiency reasons, even if it represents a challenge in post-Soviet period. Public participation will have positive socioeconomic and environmental impacts if implemented with adequate approach and instruments.
13 Monitoring and Management Plans Guidelines

13.1 Environmental Management Plan and Monitoring Guidelines

This chapter presents the environmental management plan guidelines, which have been developed in response to the analysis of impacts given in the following Table 13.1.1. These guidelines incorporate revealed ecological, social, geological, etc. cumulative impacts, propose mitigation and monitoring measures to each of them and propose institutional roles and responsibilities in relation to each of the mitigation and monitoring measures.

The environmental management plan guidelines developed for the different components of the proposed Project are presented in the following tables. The following should be noted in relation to each of the tables:

- The listed mitigation and monitoring activities are all discussed in details in the relevant sections. All of the measures presented are considered essential for the effective mitigation of potential environmental impacts from the proposed Project.

- Although responsibility for many of the monitoring and mitigation measures are assigned to the FSDC, it is considered that overall responsibility for the overseeing and monitoring of implementation of the environmental management plan of the Forests Development Project and compliance of activities carried out in the framework of the Project with national environmental standards and guidelines should lie with the MoE. A discussion of how this could be effectively achieved by using the resources of the Project to support and develop the capacity of the MoE to carry out its role in this respect, should be discussed and considered in the future.

13.2 Environmental and Forest Monitoring

Since forest management planning already deals with the environmental matters related to the forests and their use, it is proposed to renounce to a separate environmental management plans for the Forests Development Project and integrate them in the Forest Management Information System that will be developed by the project.

A monitoring system of Sustainable Forest Management consists of the collection and analysis of data to assess the evolution of the overall forest situation, including environmental and social aspects. A set of indicators shall be defined to monitor (i.e. to measure) the state and evolution of the environment. As discussed in Chapter 11, elaboration of a Georgian set of criteria and indicators for sustainable forest management based on internationally recognized criteria and indicators is suggested. The Criteria of the so-called Montreal Process might be used as references; they include following topics, or criteria:

A. Conservation of biological diversity;
B. Maintenance of productive capacity of forest ecosystems;
C. Maintenance of forest ecosystem health, vitality and protective function;
D. Conservation and maintenance of soil and water resources;
E. Maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies;
F. Legal, institutional and economic framework for forest conservation and sustainable management.
Data collection

Data shall be collected through the combination of different methods:

- forest inventories: periodic collection of data in the field on temporary or permanent sample plots;
- forest statistics: statistics on effective yields, regeneration areas, silvicultural measures, finances;
- aerial and satellite imagery.

Data management system

Collected data will be part of the FMIS, which will allow the simultaneous monitoring of social, economic and environmental impacts of forest use on a large scale (for instance in the complete district). It is recommended to apply the GIS, prepared in the framework of the present study for different kind of information (forest species, fauna, geology, etc.), in the future as the basis for the implementation of the FDP.

With the application of above-mentioned set of Criteria and Indicators for sustainable forest management, the required remedial measures could also be evaluated and the timing of their implementation could be planned.

Monitoring of illegal wood cuts

After breakdown of the Soviet Union, due to economical and financial problems, no regular forest monitoring was carried out. However, there is a past experience of monitoring, when forest was monitored by rangers, foresters and hunters engaged by the State for control over poaching. They had their routs, which was checked regularly. Methods of monitoring were: log tracking, visual inspection, noise, etc.

Due to the controversy on illegal woodcuts and their potential damages to the environment, economy and the image of the State, illegal cuts should be identified and quantified so that trespassers can be prosecuted. In a first trial phase, reconnaissance flights with helicopters, followed by field checks, should be used.

Since most of illegal woodcuts are of a diffuse nature (not typical clear cuts), an appropriate monitoring technique should be devised. The results will be used to determine if satellite imagery can be used later to monitor the illegal woodcuts. Remote Sensing could be the viable tool for monitoring of forest resources.

Guidelines for integration of EIA into the Forest Management Planning System

Various Environmental Impact Assessments (EIA) will be required at different planning levels and at different project stages. In order to minimize costs and time delays and to avoid duplication of efforts, it is essential that they are properly coordinated with forest planning activities. The Forest Management Information System should be created and maintained in such way that data needed for the implementation of particular EIA will be available in a suitable format (for instance with the use of a GIS).

Land use and forest management planning
Land use plans will be prepared at the district level to deal with issues related with land uses and their harmonization in a long-term basis. They should be subject to a complete EIA and thorough public participation. Obviously, contents of EIA will depend on the particular study issues. The authority responsible for the approval of land use plans should be composed of representatives of various ministries and local authorities involved in land management and protection.

Forest management plans will deal mainly with forest issues at the district level. They will be based on the results of the land use plans. Therefore, a complete EIA should not be necessary. The consistency of the forest management plan with the land use plan and principles of multiple-use and sustained forest management will be the main issues to be dealt by the EIA of the forest management plan.

General and detailed road planning

A general road plan should be prepared at the district level to decide where roads can be constructed (or rehabilitated), with which priority and standards. This will be based on the land use plans and, if available, on the forest management plans. The general road plan would be subject to a complete road EIA and full public participation.

A detailed road project (dealing with one particular road stretch) would be subject to a partial EIA, where the consistency with the general road plan will be checked and impacts, specific to the particular road, will be assessed. A checklist of impacts to be assessed for this type of road projects should be prepared in close collaboration with the Ministry of Environment.

Cutting permit

The delivery of a cutting permit should not be subject to an EIA. The Ministry of Environment would check the consistency of the cutting permit with the indications of the forest management plan.

Table 13.2.1: Tentative integration of EIA in planning activities

<table>
<thead>
<tr>
<th>Planning level</th>
<th>Type of EIA</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use Plans (LUP)</td>
<td>Intersectoral, integrated</td>
<td>Full public participation</td>
</tr>
<tr>
<td>Forest Management Plan (FMP)</td>
<td>Sectoral</td>
<td>Compliance with LUP, sectoral public participation</td>
</tr>
<tr>
<td>Cutting permit</td>
<td>Not necessary</td>
<td>Compliance with FMP</td>
</tr>
<tr>
<td>General Road Planning (GRP)</td>
<td>Integrated, detailed</td>
<td>Compliance with LUP and FMP, full public participation</td>
</tr>
<tr>
<td>Detailed road planning</td>
<td>If necessary: partial</td>
<td>Strict compliance with GRP</td>
</tr>
</tbody>
</table>

In practice, it might occur that planning at the lower level (e.g. GRP) is realized before the planning at higher level (e.g. LUP) is accomplished. In this case, it might be appropriate to realize the environmental studies and the participatory procedures.
Table 13.2.2 Summary of the Indicators of Sustainable Forest Management in the Laboratory Zone

Key:  **S** = Significant Issue  **M** = Moderate Issue  **I** = Insignificant Issue

To be completed during the EIA process itself.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Conservation of biological diversity</strong></td>
<td></td>
</tr>
<tr>
<td>Protection of endangered plant and animal species</td>
<td></td>
</tr>
<tr>
<td>Protection and management of representative areas, especially sites of ecological importance</td>
<td></td>
</tr>
<tr>
<td>Planting based on locally adapted species and varieties</td>
<td></td>
</tr>
<tr>
<td><strong>B. Maintenance of productive capacity of forest ecosystems</strong></td>
<td></td>
</tr>
<tr>
<td>Silvicultural systems are appropriate to forest type and produce growth</td>
<td></td>
</tr>
<tr>
<td>Harvesting systems and equipment matching forest conditions</td>
<td></td>
</tr>
<tr>
<td>Infrastructure is laid out prior to harvesting and is adequate to prescription</td>
<td></td>
</tr>
<tr>
<td>Annual cut prescription and enforcement</td>
<td></td>
</tr>
<tr>
<td><strong>C. Maintenance of forest ecosystem health, vitality and protective function</strong></td>
<td></td>
</tr>
<tr>
<td>Insurance of the forest capacity for natural regeneration</td>
<td></td>
</tr>
<tr>
<td>Skidding damages trees and soil</td>
<td></td>
</tr>
<tr>
<td>Air pollution impact on forest vitality on the long run</td>
<td></td>
</tr>
<tr>
<td>Mining activities impact on forest vitality</td>
<td></td>
</tr>
<tr>
<td>Risk of flooding and erosion for downstream areas</td>
<td></td>
</tr>
<tr>
<td>Landslide danger</td>
<td></td>
</tr>
<tr>
<td>Avalanche danger</td>
<td></td>
</tr>
<tr>
<td><strong>D. Conservation and maintenance of soil and water resources</strong></td>
<td></td>
</tr>
<tr>
<td>Forest management resulting in ponding or waterlogging</td>
<td></td>
</tr>
<tr>
<td>Soil erosion</td>
<td></td>
</tr>
<tr>
<td>Influence of forest related activities to groundwater and mineral springs</td>
<td></td>
</tr>
<tr>
<td>Pollution of food chains and ecosystem by forest related activities</td>
<td></td>
</tr>
</tbody>
</table>
E. Maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies

- Distribution of the economic benefits of forest utilization among forest-dependant local population
- Participation of stakeholders/local populations in the definition of objectives
- Sustainable use of non-wood products
- Impact on landscape
- Impact on cultural heritage

F. Legal, institutional and economic framework for forest conservation and sustainable management

- Policy and planning based on recent and accurate information
- Application of effective instruments for intersectoral coordination of land use and land management
- Adequate protection by law of the Permanent Forest Estate (PFE)

- Social conflicts between locals and migrant workforce
- Mistrust of the locals towards officials and NGOs
- Danger of forest appropriation
- Disruption of agricultural activity caused by road building
- Grazing
- Road construction
- Pollution of cutting sites
- Saw dust removal
### Table 13.2.3: Summary of Sectoral Issues and Mitigation Measures - Forestry

<table>
<thead>
<tr>
<th>Issues</th>
<th>Mitigation and additional measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Laws</strong></td>
<td></td>
</tr>
<tr>
<td>1. Improving the forest legislation</td>
<td>1.1 To support the implementation of the 1999 <em>Forest Code of Georgia</em>, a simplification of this Code must be considered. A streamlined <em>Forest Code</em> should be reduced to the principles, while enforcement issues will be handled in the regulations.</td>
</tr>
<tr>
<td></td>
<td>1.2 Rules, which shall be declared void, should be listed and be declared annulled as soon as possible.</td>
</tr>
<tr>
<td></td>
<td>1.3 Missing regulations shall be issued by the responsible authorities. The coherence with other rules shall be checked. For instance, regulations for long term planning of forest resources shall be created.</td>
</tr>
<tr>
<td>2. Contradictions between Laws, especially overlapping of competences</td>
<td>2.1 Laws shall be analyzed and improved in order to clear overlapping competences and contradictions between laws. If necessary, the <em>Forest Code</em> shall be improved taking into account all comments and conclusions made by relevant governmental structures.</td>
</tr>
<tr>
<td>3. Tax system and local economic development</td>
<td>3.1 The <em>Tax and Customs Code</em> shall be changed to encourage development of alternative, environmentally safe industries based on the local use of forest resources.</td>
</tr>
<tr>
<td>4. Balance between sanctions for illegal cutting and taxes for legal cutting</td>
<td>4.1 Incentives shall be created for the law-enforcement agencies to implement sanctions on illegal actions.</td>
</tr>
<tr>
<td></td>
<td>4.2 Regarding taxes and fees for commercial logging, the foreseen reform of the forestry financial system must pragmatically take in consideration the balance between costs for legal and penalties on illegal logging.</td>
</tr>
<tr>
<td>5. Legal basis for Environmental Impact Assessments (EIA) and environmental permits</td>
<td>5.1 The laws and regulations concerning EIA and environmental permits must be issued and legalized.</td>
</tr>
<tr>
<td><strong>Institutions</strong></td>
<td></td>
</tr>
<tr>
<td>6. Institutional capacity for enforcing legislation</td>
<td>6.1 A cohesive system of implementing regulations shall be elaborated.</td>
</tr>
<tr>
<td>7. Overlapping geographic and functional competences</td>
<td>7.1 In order to clarify geographic and functional competences, overlapping competences shall be put in evidence, discussed and eliminated through transparent and formal agreements.</td>
</tr>
<tr>
<td>8. Implementation of the Law on Local Governments and Self-Governments</td>
<td>8.1 Local communities shall receive an adequate legal status to be able to assume rights and responsibilities in local forest management.</td>
</tr>
</tbody>
</table>
9. Reorganization of the State Department of Forest Management of Georgia

9.1 An institutional reorganization plan will be prepared for strengthening the regulatory functions of the State Department of Forest Management, streamlining central and local planning and supervising capacities, and ensuring coordination with other line agencies.

10. Improved capacity for environmental management in the forest sector

10.6 Participative training sessions and excursions on the issue of sustainable forest management shall be organized. Sharing of experiences with selected countries might be useful.

11. Privatization of forests

11.1 Existence of recent forest privatizations in Georgia shall be verified and documented. It will be important to analyze them and to discuss which are the "lessons learnt".

11.2 In a later phase, at most 1 or 2 tests could be implemented in low-conflict areas. Documentation and transparency in all activities and decisions will be essential. Strict conditions for the realization of the tests shall be defined, regarding, for instance, protective forests and biodiversity conservation. Liabilities and penalties in case of legal violations shall be clearly stated before the beginning of forest use.

11.3 The clarification of the regulations defined for the State forests and which will remain valid in privatized forests must be done. State bodies will have the competence and the duty to control their enforcement. It will be necessary to underline that, against common understanding in Georgia, private ownership does not imply that the owner can do anything he wants in his forests. Given this clarification and its implementation, the environmental situation might not be worse in privatized test plots than it is the case presently.

12. Transfer of rights and liability on forests to local communities

12.1 Definition of a legal status for local communities will be necessary.

12.2 International experiences in community forestry will be analyzed. Adaptation to Georgian post-soviet and mountainous conditions is needed.

12.3 1 or 2 tests shall be studied in a well-chosen, "low-conflict" area. An essential condition of success is a careful
support to the internal community organization and to the discussions between local communities and Forest service. Much time and energy will be gained by taking international experiences in community forestry into account.

12.5 The information activities foreseen for promoting public awareness in sustainable forest management should be expanded to include information on the experiments in forest privatization and community forestry.

### Forest Management planning

| 13. Scope of the forest management plans | 13.1 The forest management information system should incorporate information on protected areas and vice-versa, so that data can be exchanged between the Forests Development and the Protected Areas Development Projects, in order to facilitate coordination of two parallel projects and resolution of conflicts. In particular, the same Geographical Information System (GIS) should be used by both projects. |
| 14. Land use planning | 14.1 The Forests Development Project and the Protected Areas Development Project shall agree on a common methodology for land use planning, using the same classification criteria for allocating land to defined land uses, taking into account the principles of multiple use of forests and agriculture and evaluation of the ecological and economic values of the various ecosystems, using the notion of prevailing function (see chapter on "Protective uses"). The same guidelines for land use planning should be used for these two projects. |
| 15. Need of EIA for forest management plans | 15.1 The consistency of management plans with multiple use and sustainable forestry could be evaluated by the Ministry of Environment without carrying out a full EIA. This simplification would be made possible by adapting the legislation on EIA. |
| 16. Technical requirements for updating forest management plans | 16.3 In addition to temporary sample plots, a sub-sample of permanent plots should be laid out in the whole Laboratory Zone, as the starting basis for a modern National forest inventory for the whole country. This National forest inventory will eventually provide reliable statistical information on the forest resources (such as changes in the forest cover, volume trends, balance between growth and wood harvests), which are presently lacking and badly needed for policy decisions at the State and regional levels. |

### Protective, tourist and cultural use

| 17. Notion of prevailing function | 17.2 The notions of multiple use and of prevailing functions should be incorporated in the Forest Code and in particular in the Regulations for Allocating Territories (art. 21 al. 7). |
| 17.3 As an example, the Oni land-use plan should be complemented, incorporating the notions of multiple use and |
prevailing functions. Forests should be classified according to their prevailing function. For instance, the location and extent of protective forests (forests with a prevailing protective function) would be determined. The resulting "Multifunctional plan" would be of great help for the resolution of land-use conflicts and would also be used as a planning tool for the forest management plan.

18. Management of protective forests

18.1 The definition of forests with prevailing protective function is to be included in the Forest Code and in normative acts.

18.2 Normative acts must be developed to better define and incorporate silvicultural measures and maintenance activities in protective forests (i.e. forest improvement activities).

18.3 The planning and implementation of protective measures must be incorporated in the Forest Management Information System (FMIS).

18.4 Training in forest management planning should be extended to training in silviculture of mountain forests, including the planning of silvicultural measures for protective forests. Such training could rely on experiences from Europe (Austria, Bavaria, Switzerland).

19. Management of forests with tourist or cultural functions

19.1 Forests with prevailing tourist or cultural functions will have to be determined and incorporated in the planning process.

19.2 Tourist and cultural uses in the forests will have to be coordinated with those to be implemented in the protected areas.

19.4 Maintenance of trails and other tourist and cultural infrastructures is to be financed on cost-sharing basis with the Protected Areas Development Project.

**Forest products including illegal wood cuts**

<table>
<thead>
<tr>
<th>20. Illegal cutting operations</th>
<th>20.1 The monitoring of illegal cutting operations (see Chapter 13, Monitoring) must be an integral part of the Forest Management Information System (FMIS) and have a first priority.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.2 Penalties (fines) imposed on trespassers and the revenues used for the restoration of forests damaged by illegal cutting operations should be collected.</td>
<td></td>
</tr>
<tr>
<td>20.3 Eradication of large-scale illegal cutting operations is to be made a condition of compliance for the IDA credit.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>21. &quot;Creaming&quot; the forest</th>
<th>21.1 The State must pay correctly to its personnel and give them means to carry out their supervisory duties.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>22. Sanitary cuts</th>
<th>22.1 As for &quot;Creaming&quot;: the State must pay correctly to its personnel and give them means to carry out their supervisory duties.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>23. Enhancement of biodiversity through silvicultural measures</th>
<th>23.1 The provision of wood cutting measures for biodiversity enhancement must be incorporated in the forest and in the protected areas management plans.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>24. Improved economic utilization</th>
<th>24.1 A substantial part of the additional forest revenues should be allocated to the local communities for their own use</th>
</tr>
</thead>
</table>
of forest resources and improved supply of forest products to the regional economy

24.2 Another portion of the additional revenues shall be dedicated to financing local forest activities as prescribed in the management plans (tree plantations, cleaning and tending operations, road and trail maintenance, etc.).

Infrastructure and wood harvesting systems

25. Need for a general plan and detailed plans of road rehabilitation and construction activities

25.1 Before laying out new roads, a regional road and harvesting system plan must be designed, incorporating results of the land-use and of forest management plans (in addition to other pertinent data, such as geotechnical maps, maps of natural hazards and of protected areas). The regional plan will indicate where new access roads can be built, where harvesting with skyline systems is feasible and which zones should be left road less. Preliminary cost estimates will be used for cost/benefit analysis. Investment priorities will be determined for different forests according to their growth potential, value of forest products and harvesting costs. The regional plan would be subject to an environmental impact assessment.

25.2 Road stretches that have been included in the regional plan should be laid out in details on a map and on the ground. A detailed road project will be prepared, including proposals for alternative designs and layouts. Detail planning will take into account all factors having an incidence on risks of erosion and visual impact on the landscape (slope of the terrain and road inclination, geotechnical characteristics, problems of stream crossings, management of surface, water, etc.). Total road costs (construction costs plus maintenance costs) will be computed. The best proposal would show the lowest cost/benefit ratio and the smallest risks. According to law, for each road project (renewing, rehabilitation or creation) an EIA shall be submitted to the Ministry of Environment.

25.3 Construction standards will be adapted to the severe weather conditions of the Central Caucasus, in order to minimize future maintenance costs and risks of damages to roads and the environment.

26. Need for environment-friendly equipment and construction methods

26.1 In zones with too steep slopes or/and instable geological conditions no roads shall be built.

26.2 The use of explosives shall be restricted. Conditions such as specialized staff with permits to use explosive will be defined. Training on the adequate explosive quantities will be useful.

26.3 The management of cut material should be planned and optimized at the detailed planning phase of a road. During detailed planning, several alternative road locations should be studied, to look for the best adaptation to the relief and to geology.

26.5 Excess cut material must be transported to the planned earth dumps located on safe grounds.

26.6 Environmentally conscious contractors using skilled machine operators should be given preference.

26.7 Best environmental management practices for road construction should be incorporated in the technical
specifications for the bidding and road construction contracts.

26.8 Road construction should be supervised by qualified engineers trained in environmentally friendly road construction methods.

26.9 The State Department of Forest Management shall periodically inspect the construction sites and report to the FSDC if important project modifications occur and if recommended mitigation measures have not been carried out.

27. Need for the proper use of harvesting systems

27.1 Best management practices for minimizing environmental impacts of harvesting systems should be incorporated in the technical specifications for the delivery of a wood permit. They shall include, among others, the following conditions:

- Harvesting operations must be planned in details (selection of cutting area, observance of felling direction, distance between cable lines, location of landings, etc.). They should be coordinated with wood marking and subsequent log transportation.

- Skidding operations should be stopped under adverse atmospheric conditions, to avoid soil compaction and water logging. Deep skidding spurts must be leveled out.

27.2 The local office of SDFM shall periodically inspect harvesting sites and report irregularities.

28. Improved economic utilization of forest resources and improved supply of forest products to the regional economy

28.1 Refer to point 24.

Biodiversity and landscape

29. Biodiversity & landscape, planning, legal and enforcement improvements

No supplementary mitigation measures are needed.

30. Road construction and poaching

30.1 During the regional forest road planning phase, which shall precede any particular construction (or/and during the EIA, see Chapter 9, Infrastructure), places which serve as sanctuary for large mammals must be situated. They shall be avoided during future road construction.

30.2 Opportunity to close forest roads to non-authorized persons will be evaluated.

31. Road construction and change of habitats

31.1 At the stage of detailed planning of a new road, different locations must be evaluated on the base of the impacts on humid biotopes. This may be part of the EIA of proposed construction projects. Prescriptions about drainage in humid biotopes must be defined.

31.2 Road construction standards should be established. They should include guidelines about the equipment to be
### 32. Road construction, skylines and landscape

See under the issue Need for environmentally friendly equipment and construction methods in Chapter 9, *Infrastructure*.

### Sustainable forest management

<table>
<thead>
<tr>
<th>33. Definition of sustainable forest management in Georgia</th>
<th>No mitigation measure is needed.</th>
</tr>
</thead>
</table>

### Public participation in Forest Management, Gender issues

<table>
<thead>
<tr>
<th>34. Promotion of public awareness in sustainable forest management through participatory management planning for community and local forests</th>
<th>See Chapter 5, <em>Forest Ownership</em>;</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>35. Participatory Management planning for all forest</th>
<th>35.1 The management planning model shall be completed with a participation model. Opportunity and forms of public participation to different land-use and/or forest levels (local, regional, national) shall be studied.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>35.2 Role of different NGOs shall be further analyzed. Experience shows that the exclusion of powerful NGOs in the planning processes may facilitate the planning activities but does not mitigate conflicts during implementation.</td>
</tr>
<tr>
<td></td>
<td>35.3 Participation model(s) shall take into account the public mistrust to officials and NGOs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>36. Forest management and gender issues</th>
<th>36.1 Gender issues shall be integrated in adequate form in policies and activities.</th>
</tr>
</thead>
</table>
### Table 13.2.4: Environmental Management Plan Guidelines – Sociology

<table>
<thead>
<tr>
<th>Issue</th>
<th>Mitigating/Monitoring Activity</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Training Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leasing of forest</strong></td>
<td>• Inform local population about project of leasing of forest plots (seminars, discussions, TV)</td>
<td>FSDC through PR and PA activities</td>
<td>Prior to project implementation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Facilitation of improvement of local residents economical condition (credit, facilitate market capacity)</td>
<td>Local and regional governmental institutions</td>
<td>Prior to and during project implementation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Inform locals about necessity of controllable wood cutting (seminars, discussions)</td>
<td>FSDC through PR and PA activities</td>
<td>Prior to and during launching of leasing</td>
<td></td>
</tr>
<tr>
<td><strong>Roads building and rehabilitation</strong></td>
<td>• Inform local population that controllable and well managed wood cutting will not cause forest degradation (seminars, discussions)</td>
<td>FSDC through PR and PA activities</td>
<td>Prior to and during project implementation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Information of locals about road development planning and rehabilitation</td>
<td>Local SDFM</td>
<td>During public hearings of specific EIA for road development projects</td>
<td></td>
</tr>
<tr>
<td><strong>Forest protection on local level</strong></td>
<td>• Information about optimization of energy use and possible alternative energies</td>
<td>FSDC / Energy Efficiency Center</td>
<td>Prior to and during project implementation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Information of locals about forest’s state, management plan progress, awarding about forest value (seminars, discussions, TV)</td>
<td>FSDC through PR and PA activities</td>
<td>Prior to road construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Involvement of local population in wood cutting controlling activities</td>
<td>FSDC / Contractor</td>
<td>During the project implementation</td>
<td>Contractor has to ensure that all site workers have undergone basic training</td>
</tr>
</tbody>
</table>


### Social conflicts between locals and migrant workforce

- Optimization of use of local workforce  
  Contractor (as condition of contract)  
  Contractor to ensure that all site workers have undergone basic training in adequate procedures

### Mistrust of the locals towards officials and NGOs

- Seminars, discussions, meetings with officials, NGOs and locals  
  FSDC through PR and PA activities  
  Prior to and during the project implementation  
  NGOs

### Danger of forest appropriation

- Improvement of local populations capacity to access leasing mechanisms  
  Prior to and during the project implementation

### Measures against poaching

- Seminars, face-to-face discussions about importance of forest ecosystem  
  FSDC through PR and PA activities  
  Prior to and during the project implementation  
  NGOs

### Disruption of agricultural activity caused by road building

- Timetable work to minimize disruption during sewing and harvest season  
  Contractor (as condition of contract)  
  During contractor mobilization
- Set up and implement local complaints procedure for farmers  
  LSDFM / FSDC
<table>
<thead>
<tr>
<th>Grazing in forest</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Information of the locals on effects of grazing in forest, and restriction of access</td>
<td>Local authorities / LSDFM</td>
</tr>
<tr>
<td>• Organization of public meetings on the progress of the Project</td>
<td>FSDC / SDFM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General Public Relations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ensure transparency of the project and easy access to the information</td>
<td>FSDC / SDFM</td>
</tr>
<tr>
<td>• Identification of PR objectives and develop a strategy for PR</td>
<td>FSDC / SDFM</td>
</tr>
<tr>
<td>• Based on strategy, development of a detailed plan for PR and identification of committed staff</td>
<td>PR staff together with FSDC / SDFM</td>
</tr>
<tr>
<td>• Identification of audience and develop actions to involve into the dialog</td>
<td>FSDC / SDFM</td>
</tr>
<tr>
<td>• Development of a plan to ensure two-way communication to let the audience talk back (feedback)</td>
<td>FSDC / SDFM</td>
</tr>
<tr>
<td>• Organization of public meetings on the progress of the Project twice a year</td>
<td>FSDC / L SDFM</td>
</tr>
<tr>
<td>• Set up and implement clearing-house mechanism</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public education and awareness</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Incorporation of public education and awareness as integral components of all sectoral and thematic projects and subprojects</td>
<td>FSDC / SDFM</td>
</tr>
<tr>
<td>• Promotion of education on forestry and biodiversity matters through relevant institutions, including NGOs</td>
<td>FSDC / SDFM</td>
</tr>
<tr>
<td>Matters through relevant institutions, including NGOs</td>
<td>FSDC / SDFM</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>• Allocation of appropriate resources for the strategic use of education and communication instruments at each phase of policy formulation, planning, implementation and evaluation</td>
<td>FSDC / SDFM</td>
</tr>
<tr>
<td>• Promotion of integration of sustainable forestry and biological diversity concerns into education strategies, recognizing the particular needs of local communities</td>
<td>FSDC / SDFM</td>
</tr>
</tbody>
</table>
### Table 13.2.5 Environmental Management Plan Guidelines – Geology

<table>
<thead>
<tr>
<th>Issue</th>
<th>Mitigating/Monitoring Activity</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Training Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planning Phase</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Determine sensitive areas in the laboratory zone: (i.e. landslides, erosions, etc.)</td>
<td>FSDC (geological survey of SDFM)</td>
<td>Prior to management plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Determine composition and type of soils within the laboratory zone</td>
<td>FSDC (geological survey of SDFM)</td>
<td>Prior to road planning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepare map of laboratory zone showing major landslides, mudflow hearts, erosion processes, danger of snow avalanches</td>
<td>FSDC (geological survey of SDFM)</td>
<td>Prior to road planning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Determine physical-mechanical characteristics of rocks within laboratory zone</td>
<td>FSDC (geological survey of SDFM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Inspect and assess all existing roads in the lab zone</td>
<td>Local SDFM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Evaluate impact on the environment of newly constructed roads</td>
<td>FSDC (geological survey of SDFM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Elaborate and determine future schemes of forest roads</td>
<td>FSDC / SDFM</td>
<td>Prior to road construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepare EIA for road constructions</td>
<td>MoE / Consultant</td>
<td>Prior to road construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Avoid construction of roads in sensitive areas</td>
<td>FSDC / SDFM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Determine appropriate engineering solutions for road constructions in sensitive sites (when avoidance of such areas is not possible)</td>
<td>FSDC (geological survey of SDFM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Road Construction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Monitor construction works</td>
<td>FSDC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### ACTA Consultants Sectoral Environmental Assessment

**National Forests Development Project**

- Develop appropriate design of roads  
  - FSDC
- Investigate and stabilize landslides  
  - FSDC (Geol. Survey of SDFM) Contractor
- Clear the site regularly  
  - Contractor (as a condition of contract)
- Control soil and slope erosion adequately  
  - FSDC / Contractor
- Inspect and make arrangements for repair all roads  
  - L SDFM

**Wood utilization**

- Monitor surface runoff, dynamics of runoff fluctuation  
  - L SDFM
- Determine necessary measures to avoid development of recent geodynamic processes  
  - FSDC / L SDFM
- Monitor cuttings on sensitive areas  
  - FSDC
- Maintain sensitive areas adequately in order to repair erosion damages, to prevent tree falling and provoking more erosion  
  - L SDFM
- Control removal of saw dust  
  - L SDFM
Table 13.2.6: Guidelines for Monitoring of Forest Sustainable Management

<table>
<thead>
<tr>
<th>Issue (Indicators)</th>
<th>Monitoring Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Conservation of biological diversity</strong></td>
<td></td>
</tr>
<tr>
<td>1. Endangered plant and animal species are effectively protected</td>
<td>1.1 elaboration and actualization of Red List of endangered species</td>
</tr>
<tr>
<td></td>
<td>1.2 population of endangered species</td>
</tr>
<tr>
<td>2. Representative areas, especially sites of ecological importance, are protected and appropriately managed</td>
<td>2.1 existence of prescriptions for selecting and managing sites of interest for biodiversity</td>
</tr>
<tr>
<td></td>
<td>2.2 areas (ha) of adequately managed sites of ecological importance</td>
</tr>
<tr>
<td></td>
<td>2.3 location and area of virgin forests, detailed by vegetation categories</td>
</tr>
<tr>
<td>3. Planting, if carried out, should be based on locally adapted species and varieties</td>
<td>3.1 number of planted species, detailed by species and varieties</td>
</tr>
<tr>
<td></td>
<td>3.2 existing guidelines and practice of plantations and natural regeneration</td>
</tr>
<tr>
<td><strong>B. Maintenance of productive capacity of forest ecosystems</strong></td>
<td></td>
</tr>
<tr>
<td>4. Silvicultural systems are prescribed and appropriate to forest type and produce grown</td>
<td>4.1 Description of silvicultural systems and actual practice</td>
</tr>
<tr>
<td></td>
<td>4.2 Area by forest type</td>
</tr>
<tr>
<td></td>
<td>- used for fuel wood</td>
</tr>
<tr>
<td></td>
<td>- used for timber</td>
</tr>
<tr>
<td></td>
<td>- unused</td>
</tr>
<tr>
<td></td>
<td>4.3 prescriptions and actual practice for &quot;sanitary cuts&quot;</td>
</tr>
<tr>
<td></td>
<td>- volume/year</td>
</tr>
<tr>
<td></td>
<td>- species</td>
</tr>
</tbody>
</table>
5. Harvesting systems and equipment are prescribed to match forest conditions in order to reduce impact

5.1 description of applied harvesting systems: equipment for felling, bringing and transport

5.2 importance of the harvesting system: %-age of the annual exploited volume, evolution in the last 10 years

5.3 education of workers employed in harvesting activities

6. Infrastructure is laid out prior to harvesting and in accordance with prescription

6.1 forest roads: standards (prescriptions) and practice regarding:
- length and density of roads and skidding trails
- equipment for construction
- width, slope, run-off control
- erosion problems on and off road

7. Annual cut is prescribed and enforced

7.1 existence of annual cut (m$^3$ by year for a forest district) with underlying assumptions about increment, accessibility, legally not exploitable forests

7.2 annual cut: details
- by species
- by zone

7.3 yield (volume of legal exploitations per year) by forest district, species, product and zones, evolution in the last 10 years

7.4 estimated volume of illegal exploitations (by species, product and zones), evolution in the last 10 years

7.5 annually regenerated area

C. Maintenance of forest ecosystem health, vitality and protective function

8. The capacity of the forest to regenerate naturally is ensured

8.1 availability of natural regeneration of adequate species

8.2 grazed forest area
- in the village zones
- in the summer pasture zone
9. Skidding damage to trees and soil is minimized

<table>
<thead>
<tr>
<th></th>
<th>8.3 area with high damages on young trees by wildlife</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>see harvesting systems, plus:</td>
</tr>
<tr>
<td>9.2</td>
<td>prescriptions and reports on</td>
</tr>
<tr>
<td></td>
<td>- damage by timber harvesting</td>
</tr>
<tr>
<td></td>
<td>- damage by fuel wood harvesting</td>
</tr>
</tbody>
</table>

10. Air pollution does not affect forest vitality in the long run

<table>
<thead>
<tr>
<th></th>
<th>10.1 concentration of polluting gas and aerosols in air</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.2</td>
<td>% -age of forest area damaged by air pollution</td>
</tr>
</tbody>
</table>

11. Mining activities do not affect forest vitality

|   | 11.1 % -age of forest area damaged by mining          |

12. Natural hazards, protective forests

|   | 12.1 existence and practice of maintenance measures in protective forest |

13. Risk of flooding and erosion for downstream areas is minimized

|   | 13.1 chronicles about floods, with estimation of damages: deaths, injuries, $ |

14. Landslide danger is minimized

|   | 14.1 chronicles about landslides, with estimation of damages: deaths, injuries, $ |

15. Avalanche danger is minimized

|   | 15.1 chronicles about avalanches, with estimation of damages: deaths, injuries, $ |

### D. Conservation and maintenance of soil and water resources

<table>
<thead>
<tr>
<th></th>
<th>16. see harvesting systems, plus:</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.1</td>
<td>see harvesting systems, plus:</td>
</tr>
<tr>
<td>16.2</td>
<td>reports on soil compaction by logging</td>
</tr>
<tr>
<td>17.1</td>
<td>see harvesting systems, plus:</td>
</tr>
<tr>
<td>17.2</td>
<td>prescriptions and reports on soil erosion caused by logging</td>
</tr>
<tr>
<td>18.1</td>
<td>existence of prescriptions regarding protection of groundwater and mineral springs</td>
</tr>
</tbody>
</table>
forest related activities

19. Food chains and ecosystem are not polluted by forest related activities

18.2 practice regarding protection of groundwater and mineral springs

19.1 pesticides and herbicides used in logging and silvicultural activities (e.g. for wood conservation, weed control, etc.):
- prescriptions and practice regarding soil-, surface

19.2 water- and groundwater protection
- kinds and amounts used

19.3 spills of harvesting equipment:
- kind of oil used for tractor-motors and chainsaws
- prescriptions and reports on accidental spills of oils and petrol

19.4 sawmills: prescriptions and practice regarding:
- construction site
- sawdust disposal
- use of chemicals for wood conservation

E. Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies

20. Forest-dependant people share the economic benefits of forest utilization. They can get employment and training from forest companies and agencies

20.1 prescriptions and practice regarding employment of local workers

20.2 prescriptions and practice regarding training of local workers

20.3 prescriptions and practice regarding access of locals to fuel wood

21. Stakeholders/local populations participate in the definition of objectives

21.1 prescriptions and practice regarding participation and communication, especially on a regional level

22. Non wood products are sustainably used

22.1 prescriptions and practice regarding non-wood products (mushrooms, berries, medicinal plants, etc.)

23. Impact on landscape is minimized

23.1 prescriptions and practice, especially regarding the impact of transport infrastructure

24. Impact on cultural heritage is positive

24.1 prescriptions and practice regarding protection and tending of traditions and cultural heritage
F. Legal, Institutional and economic framework for forest conservation and sustainable management

25. Policy and planning are based on recent and accurate information
25.1 prescriptions and practice regarding inventories and forest information systems

26. Effective instruments for intersectoral coordination of land use and land management exist
26.1 prescriptions and practice regarding intersectoral coordination on land use and land management

27. A permanent forest estate (PFE) is adequately protected by law
27.1 prescriptions and practice regarding areas, which can not be cleared (transformation in agricultural land and others in prohibited on the long run)

28. Management objectives are clearly and precisely described, documented and realistic. They are clearly stated in terms of the major functions of the forest, with due respect to their spatial distribution
28.1 prescriptions and practice regarding management objectives

29. Comprehensive forest management plans are available. They include management objectives and prescriptions, maps of resources, ownership and survey results
29.1 prescriptions and practice regarding forest management plans

30. Management conformity with planning can be controlled thanks to an affective monitoring system.
30.1 prescriptions and practice regarding record of activities and management ability to take them in consideration (documentation and records of all forest management activities are kept in a form that makes it possible for monitoring to occur ?)

31. There is sustained and adequate regional funding for the management of forests
31.1 prescriptions and practice regarding regional funding of forest management

32. Forest revenues are distributed to regional and local communities in a fair proportion
32.1 prescriptions and practice regarding local and regional distribution of forest revenues

33. Stakeholders/forest actors tenure and user rights are well defined and secure
33.1 prescriptions and practice regarding protection of user rights

34. Adequate conflict resolution mechanisms exist and are in use
34.1 prescriptions and practice regarding conflict resolution mechanisms

35. SDFM staff is paid correctly and regularly
35.1 prescriptions and practice regarding wages
14 Conclusions - Tentative Scenario Comparison

The Sectoral Environmental Assessment of the forest sector in the "Laboratory Zone" has brought to light that the presence of forests is overwhelming and forests are increasing area wise.

Forests are very diverse not only in their composition, structure and productivity (growth potential and timber quality), but also in their functions (roles) and represent a shelter for a rich biodiversity. If the forests were managed in an optimal way, they could have contributed much more to the regional development by providing local employment, revenues for local communities, wood energy for the local population, raw material for wood processing industries as well as an attractive environment for the tourism, habitat for the wildlife and protection from natural hazards.

As an example, more flexible management planning system concentrating wood production on the best sites (sites with high growth potential and easy access) would make it possible to increase greatly the allowable cut in a sustainable way, without impairing other functions of the forests.

The present situation differs from the optimum:

- forests are exploited in a haphazard way by the population for firewood and selectively "creamed" by poachers for exportation of high quality timber, mainly to Turkey. The extent of these illegal removals is unknown;
- the silvicultural operations scheduled in the management plans are not carried out;
- official forest revenues are sent to the central State Budget, without retaining a real benefit for the local economy. Due to the lack of finances, forests are left untended, buildings and roads are not adequately maintained, equipment is obsolete, salaries are very low and often not paid and, as a consequence, foresters have to find other means of subsistence.

ANALYSIS OF ALTERNATIVES

14.1 "Existing project" scenario

The project development objective is to "establish Sustainable Forest Management Systems, which would maximize the contribution of forests to economic development and rural poverty reduction on an environmentally sustainable basis".

The project would support many positive measures for reforming the legal system and financial and tax regulations. It would also support capacity-building of the State Department of Forest Management, and, in the Laboratory Zone, development of improved forest planning methods, improvement of silvicultural operations, rehabilitation, construction and maintenance of roads needed for the implementation of the management plans, use of low-impact cable-logging systems, plus various other useful measures such as: support to improved forest pest protection, private sector involvement in non-timber forest products, community forestry.

The "Existing project" addresses the right issues in the forest sector. It would contribute to significant improvements of the socio-economic and environmental conditions of the forest

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30 "Existing Project" as presented in the Project Summary (Project-Summary-010130 doc February 13, 2001)
sector if the general conditions prevailing in Georgia were favourable for the sustainable and fair management of renewable resources.

However, the severe economical crisis, the incapacity of State agencies to enforce laws and the "quick money" culture to be found at all levels in all sectors will probably continue for some years. In this context, improving the management of forests is important, but one must consider that:

- objectives must remain modest,
- project activities opening opportunities for increased logging might be misused to unsustainable exploitation what is perceived to be a "mine" of wood.

14.2 "No project" scenario

Under the "No project" scenario, the Government of Georgia would not receive the loan from the World Bank. As a result, it is assumed that none of the project components would be implemented as planned.

The State Department of Forest Management would continue to exert some control over forest uses with the limited means in its disposal. The forests would continue to expand area wise, despite illegal cutting of firewood for local consumption and timber for exportation.

The local economy would benefit very little from the surrounding forests and the existing infrastructure (roads, buildings, paths) would further deteriorate, making the region less attractive for tourists.

The "No project" scenario is environmentally inferior to the "Existing project", since illegal cutting will continue and the "creaming" of high value timber will cause a deterioration of the genetic stock. Risks of erosion will be greater, because skidding trails could be built without environmental considerations and maintenance. Damages to standing trees will be more significant, since trees will be cut in a haphazard way. The "No project" scenario could be considered as inferior due to the fact that in this case all the instruments for improving the sustainability of forest management (regional land use plans, forest inventories, forest management plans, general road plans, detailed road projects, EiAs, etc.) will not be available.

The "No project" scenario is socially and economically inferior to the "Existing project" since the potential contributions of the forest sector to the development of the regional economy would remain minimal in terms of employment, revenues and supply of raw material for the wood processing industries.

14.3 "Integrated Forest Development" scenario

The "Integrated Forest Development" scenario would take intersectoral relations into account and concentrate on activities which provide employment opportunities and do not open the doors to the misuse of the forest resources. A careful and participative land use planning would provide the initial development framework.

An "integrated Forest Development" as a tentative list of components would include:

1. reduced intensity support to the forest management system, with emphasis on the adequate tending of protective forests;
2. **support to local capacities for the rehabilitation of main roads and energy infrastructures**, since the difficult access to the valleys can be considered as one of the main obstacles to the valorization of the local wood resources. Electricity shortage makes local wood processing difficult;

3. **support to the tourism sector**, with priority on the rehabilitation of existing infrastructure and marketing in Georgia and abroad, since ecotourism could create local employment and added value with low negative environmental impact;

4. **selected support to livestock breeding**, since grazing around villages exerts some pressure on the forests and breeding concerns a high proportion of the population in terms of occupation and subsistence.

Such scenario would enable the development of interesting synergies: improvement of the road and electrical infrastructure can create employments and offer better conditions for the tourism development; adequate tending of protective forests can produce some wood which can be processed locally; protection of biodiversity, which would be supported by the Protected Areas Development Project, can protect this important asset for tourism.

Given the present situation in the Laboratory Zone, such scenario offers better chances for positive socio-economical and environmental conditions than a sectoral forestry approach. The implementation of an integrated regional development requires cooperation of different State agencies. The design and monitoring of the "Integrated land-use and forest development" support project would require analysis competences and tools, which can be provided by the World Bank.
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GEORGIA FORESTS DEVELOPMENT PROJECT
LABORATORY ZONE

SECTORAL ENVIRONMENTAL ASSESSMENT

FINAL REPORT
ANNEXES

May 2001

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# LIST OF ANNEXES

<table>
<thead>
<tr>
<th>Annex</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>List of preparers and individuals consulted</td>
</tr>
<tr>
<td>2</td>
<td>Forest Development Project (P044800) Project Summary (December 2000)</td>
</tr>
<tr>
<td>3</td>
<td>Forest Development Project (P044800) Project Summary (May 2001)</td>
</tr>
<tr>
<td>4</td>
<td>Forest Development Project (P044800) Budget Components (March 2001)</td>
</tr>
</tbody>
</table>
| 5     | Law on Environmental Permits and corresponding Resolution of the Parliament  
      | Law on the State Ecological Expertise and corresponding resolution of the Parliament |
| 6     | The World Bank Operational Policies: OP 4.01 on Environmental Assessment  
      | The World Bank Environmental Sourcebook: Sectoral Environmental Assessment |
| 7     | Montreal Process Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests |
| 8     | Public Consultation and Disclosure Plan Guidelines |
| 9     | SEA Terms of Reference – Tasks Breakdown |
ANNEX 1

LISTS OF PREPARERS AND INDIVIDUALS CONSULTED
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U. ZVIADADZE  Geologist, Professor of Engineering Geology and Hydrogeology
M. BARBAKADZE  Lawyer, Institutional capacity building, environmental legislation, institutional arrangement, legal reforms, environmental awareness
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S. BUKHNIKASHVILI  Zoologist

List of Stakeholders Interviewed to Date

The following is a list of all individuals and/or organizations, which were interviewed by members of the project team during December 2000 / March 2001.

Group meeting with FSDC representatives
Mr. Nukri ABASHIDZE - FSDC Director
Ms. Ketevan METREVELI
Mr. Leri CHOCHUA
Mr. Giorgi IMNADZE
Mr. Alexander URUSHADZE
Mr. Niko BERUCHASHVILI
Mr. Tim HICKEY

State Department of Forest Management
Mr. Merab DVALI
Mr. Irakli BABUKHADIA
Mr. Roman MAMALADZE – Head of Forest Protection Division
Mr. Gogi TARASASHVILI – Head of Forest Species Division
Mr. Tristan CHERKEZISHVILI – Deputy Head of Forest Species Division

Local offices of the State Department of Forest Management
Mr. Zurab TKEHELASHVILI – Head of Oni office of the SDFM
Mr. George MARGVELADZE – Head of Ambrolauri office of the SDFM
Staff of the offices in Oni and Ambrolauri

Mr. Vasil METREVELI – Gamgebeli (Governor) in Oni
Mr. David CHITALADZE - DBV saw mill
Mr. Nodar SHEREDAZISHVILI - NGO - Union for support development of socioeconomic of the Oni region

Lesoproject
Mr. Shota RUSADZE – Head of Lesoproject
Mr. Nodar RUKHADZE – Head of the Department of Aerial photos
Mr. Otar SHENGELIA – head of Division of Forest Inventory

Ministry of Environment
Mrs. Nino CHKHOBADZE – Minister
Mr. George CHKONIA – Deputy Minister
Mr. Zaal LOMTADZE – Deputy Minister
Mr. Revaz CHAGELISHVILI – Deputy Minister
Mr. Jemal DATESHIDZE – Head of Biodiversity Department
Mr. Joseph TSABADZE – Head of the Department of Environmental Permits and State Environmental Expertise
Mrs. Maia KAPANADZE – Head of Department of Public Relations
Mr. Tamaz CHOLOKAVA – Head of Department of Water Resources

State Department of Land Management
Mr. Temur BEKAURI – First Deputy Chairman of the Department
Mr. Joseph SALUKVADZE – Cadastre and Land Registration of the rural regions of Georgia
Mr. Iva KHITARIDZE – Deputy head, World Bank Project of Agriculture Development, Component of Cadastre and Land Registration;
Mr. Mamuka SAMAKASHVILI

State Department of Geology
Mr. Iveri TSULUKIDZE – Head of Department of Engineering Geology
Mr. Michael KVARATSKELIA – Geologist
Mr. George KERESELIDZE – Head of the State Geological Fund
Georgian Technical University
Mrs. Lia VARAZASHVILI – head of the Department of Hydrogeology and Engineering Geology

Institute of Plant Protection
Mr. Irakli SHAVLASHVILI - Director
Mr. Shakro KANCHAVELI – PhD in Biology, Head of Department of Phitopathology

Institute of Botany
Mr. Gia NAKHUTSRISHVILI - Director

Parliamentary Committee for Environmental Protection and Natural Resources
Mr. Kakha CHITAIA – Head of the Committee

National NGOs:
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Mr. Irakli MATCHARASHVILI – NACRES, Project Leader
Mr. Zurab GURIELIDZE - NACRES, Director
Mr. Levan TAVARTKILADZE - Association “Green Alternative” Coordinator
Mrs. Manana KOCHLADZE - Association “Green Alternative, executive director
Mr. Malkhaz DZNELADZE - World Wide Fund for Nature (WWF) - Georgia
Mr. Nato KIIRVALIDZE - Environmental Information and Sustainable Development center
Mr. Rusudan SIMONIDZE - Executive secretary of Greens Movement of Georgia
Mrs. Tamar BARABADZE – CENN - Caucasus Environmental NGO Network
Mr. Gia SOPADZE – Geographical Society of Georgia
Mr. Paata KHUMARASHVILI – GPAP – Georgian Protected Areas Program
Mrs. Msia GABUNIA – GPAP - Georgian Protected Areas Program
Mr. Kakha POTSISHVILI – GPAP - Georgian Protected Areas Program
Mr. Irakli ZAUTASHVILI – GPAP - Georgian Protected Areas Program
Mr. David GOGOBERIDZE – “Green cover”
Mrs. Baia AAKHOBADZE – “Green cover”
Mr. Ilia BICHIASHVILI – AIDIO
Mr. Andrey KANDAUROV - Campester

World Bank:
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Mr. Andrey KUSHLIN – WB Washington
Mr. Phil BRYLSKI – WB Washington
Mrs. Marjory-Anne BROMHEAD – WB Washington

Mr. Paata SHANSHIASHVILI – Director of the Protected Area Development Center

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Mr. Mamuka KHURTSIDZE - Geographic Ltd.
Mrs. Marika UCHANEISHVILI – Geographic Ltd.
Mr. Irakli UGULAVA – Geographic Ltd.
Mr. Emil TSERETELI – Center of Natural Calamities and Engineering Geology
ANNEX 2

Forests Development Project (P044800)
Project Summary (December 2000)
GEORGIA
Forests Development Project (P044800)

PROJECT SUMMARY

The Project is proposed to be financed in 2002-2007 by an IDA credit of US$20 million. It is closely linked and coordinated with the Protected Areas Development Project (GEF grant of US$8.7 million).

PROJECT OBJECTIVES AND COMPONENTS

The main objective of the Project is to establish sound forest management systems that would maximize the contribution of Georgia's forests to economic development and rural poverty reduction on an environmentally sustainable basis.

The Project is of critical importance to Georgia's forests and people. With the enactment of the new Forest Code of Georgia (June 1999), Georgia has adopted a legal framework and roadmap for transition to market principles of forest economy, including its possible privatization, while safeguarding the critical environmental, social and cultural functions of the nation's forests. The Project is designed to provide critical support to this ambitious transition.

The Project is expected to be implemented over a period of 5 to 6 years and will include the following five components:

<table>
<thead>
<tr>
<th>Components</th>
<th>Estimated Total Cost (US$ m)</th>
<th>% of Total Cost</th>
<th>IDA (US$ m)</th>
<th>of which PPF for 2000-01 (US$ m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Support to national forest policy formulation and implementation</td>
<td>6.8</td>
<td>25%</td>
<td>6.0</td>
<td>0.34</td>
</tr>
<tr>
<td>(B) Support to efficient and participatory forest management planning</td>
<td>3.3</td>
<td>13%</td>
<td>2.7</td>
<td>0.51</td>
</tr>
<tr>
<td>(C) Support to effective forest protection and afforestation</td>
<td>9.5</td>
<td>35%</td>
<td>5.0</td>
<td>-</td>
</tr>
<tr>
<td>(D) Promotion of private sector participation in sustainable forest management</td>
<td>6.0</td>
<td>22%</td>
<td>5.3</td>
<td>-</td>
</tr>
<tr>
<td>(E) Project management</td>
<td>1.4</td>
<td>5%</td>
<td>1.0</td>
<td>0.14</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>27.0</td>
<td>100%</td>
<td>20.0</td>
<td>0.99</td>
</tr>
</tbody>
</table>

PROJECT DESCRIPTION

Component A. "Support to National Forest Policy Formulation and Implementation" (US$6.8 million).

Under this component, investments would be made in improving the capacity of the Government of Georgia (GOG) for forest sector analysis, planning and policy formulation, completing the legislation for implementation of the new Forest Code, designing and carrying out appropriate institutional, governance and financial reform in the sector, training of public officials, and raising public awareness in the objectives of the national forest policy.

In particular, this component would support the State Forestry Department (SFD) and other relevant agencies in: (i) finalization and public discussion of new forest regulations supporting implementation of the 1999 Forest Code of Georgia; (ii) development and implementation of a forestry institutional reorganization plan; (iii) development and implementation of a forestry financial system reform plan; (iv) preparation and public discussion of the National Forest Policy and Strategy and the draft law "On Privatization of State Forests in Georgia". A cohesive system of implementing regulations would form initial basis for further forest governance reforms and forest policy formulation. Given this priority, development and discussion of regulations is already carried out under the PPF financing, while the privatization law and national policy would be finalized at the later stages of the project. The development of the
financial system reform plan is also already being financed though the PPF; it would be based on the overall assessment of the national forest resources, evaluation of the governance, transparency and capacity of the private sector in forestry, evaluation of the market prospects for wood and non-wood products, and analysis of all public revenues from forestry, including the setting of stumpage values and the organization of auction systems. The component would then support implementation of this plan, specifically by setting up a Forest Management Information System (FMIS) and training the SFD and core ministries' staff in operating it. The development of an institutional reorganization plan (also financed under the PPF) would lay ground for strengthening normative and regulatory functions of the SFD, rationalizing central and field capacity for its forest management planning and oversight responsibilities and proper coordination with other line agencies, private sector, communities, and civil society. In addition to restructuring the central office, the existing 54 district offices would be replaced with two regional offices and 36 range offices. The component would then provide all the necessary technical assistance, training and incremental logistical means (mainly building rehabilitation, transportation, equipment/materials) to implement this plan. Overall, the most critical elements of this component (development of implementing regulations and reform planning) are financed up-front through the PPF phase (see Box 1 for a summary of activities financed in 2000-2001 by the PPF credit advance of US$0.99 million).

Component B "Support to Efficient and Participatory Forest Management Planning" (US$3.3 million). Under this component, investments would be made in improving the quality of forest assessment and inventory carried out by the SFD, introduction of integrated forest conservation and utilization planning techniques on a landscape-ecological basis, enabling transparent access to forest management planning process and facilitating public participation in it.

In particular, this component would support: (i) a total economic valuation of Georgian forests; (ii) preparation of an improved forest inventory for a model forest area of the Central Caucasus Planning Area ("laboratory zone" - four districts over around 460,000 ha); in the Central Caucasus; (iii) preparation of model land-use and forest management plans for the above areas; and (iv) promotion of public awareness in sustainable forest management through participatory management planning for community and local forests. These activities would be implemented jointly and in coordination with the planning component of the GEF-financed Protected Areas Development Project. The underlying landscape-ecological planning techniques have already been developed using Japanese grant funding under the preparation phase and the field testing, and an initial inventory of 100,000 ha (together with provision of equipment and aerial photography) is being carried out with PPF financing. The component would then support provision of additional equipment, surveys and training to replicate improved inventory and planning on a significant scale outside of the laboratory zone, and additional facilities and equipment for information dissemination.

Component C "Support to Effective Forest Protection and Afforestation" (US$9.5 million). Under this component, investments would be made in forest protection and afforestation of the most critically degraded forest areas near population centers through improvements in technical capacity of local forest management units and development of public works in community-based forestry.

In particular, this component would support: (i) improved seed production/processing and nursery development; (ii) carrying out an afforestation program over about 3,100 ha, and (iii) carrying out a forest restoration program over about 5,600 ha in the priority zone around Tbilisi. Seed processing and testing operations will be brought together under one existing Seed Centre that will be upgraded. An existing nursery in the priority zone will be expanded/upgraded and used for supplying quality seedlings for afforestation and forest restoration, and as a model for replication in other districts. The afforestation and restoration programs will take place in the priority zone using a combination of community-managed public works and, where appropriate, private contractors using more cost-efficient techniques. These actions will result in the SFD having significantly increased its capacity for collecting, processing and testing quality seeds and producing quality seedlings. They would also facilitate a phased development of community-managed forestry in Georgia (to be supported by parallel donor financing). Moreover, around 40% of the erosion-prone areas in the priority zone will be afforested and 10% of the degraded areas restored.

Component D "Promotion of Private Sector Participation in Sustainable Forest Management" (US$6.0 million). Under this component, investments would be made in development, demonstration, certification and promotion of sustainable forest harvesting and transportation standards and techniques, so as to facilitate the emergence of private sector operators in forestry, as well as in the development of non-wood forest products, hunting and ecotourism on an environmentally sustainable basis.

This component would significantly draw on the technical assistance provided under Component A towards development of the draft law "On Privatization of State Forests in Georgia" where the parts of the national legal and
fiscal systems dealing with the possible operations of private businesses in forestry will be revised, simplified and made more stimulating for entrepreneurs. In particular, this component would support setting up a privately-run Business Support Association. The Association would be set up on a full cost-recovery basis and would provide demand-driven support services to interested entrepreneurs (e.g. training in book keeping and management, market intelligence, certification of products and systems and transfer of improved technologies). The Association would be initially operated under contract by the private sector that would eventually be expected to take it over and convert it into a private entity. Furthermore, upon completion of the improved forest management plan in a suitable area of the Central Caucasus 'laboratory zone', the component would support there a privately-run demonstration program of improved, low-impact harvesting and transportation systems and a forest road rehabilitation/construction public program. The program should result in a growing use by private entrepreneurs of independently certified techniques, processes and equipment that are more cost-efficient and environment-friendly. Moreover, the forest road network inside the laboratory zone will be significantly improved through the operation of the road construction unit included as part of the demonstration program introducing improved transportation systems. In addition, the road rehabilitation/construction works under the public program - contracted out to private entrepreneurs – will cover about 225 km outside of the laboratory zone. Lastly, the component would support preparation of a strategy for promoting non-wood forest products and carrying out pilot investments in 2 or 3 selected sites. The component's support should result in increased sales and exports of wood and non-wood products from the private sector and in a greater involvement of the entrepreneurs in the carrying out of forestry operations.

Component E. "Project Management" (US$1.4 million). This component would support overall project administration and provide to the SFD staff hands-on training and technology transfer in project development and implementation, application of fiduciary and anti-corruption safeguards. A number of critical capacity building steps, including setting up the project management unit, training in implementation and procurement planning, monitoring & evaluation, financial management systems, etc. - is being financed up-front under the PPF phase (see Box I).

IMPLEMENTATION ARRANGEMENTS

The preparation and implementation of the Project is administered by the Forest Sector Development Center (FSDC) - a legal body of civil law established by the decree of the President of Georgia on October 29, 2000. FSDC operates under the overall guidance of a Supervisory Board appointed by the President of Georgia. The Supervisory Board is chaired by a member of the Parliament of Georgia and comprised of officials of the key interested ministries and presidential administration, with participation of the academic and NGO community. (To ensure proper coordination between this project and the GEF-funded Protected Areas Development Project, a significant overlap is ensured in the membership of their respective Supervisory Boards.) FSDC is headed by the Project Director selected in an open tender by a selection commission and approved by the President of Georgia. FSDC reports to the Ministry of Finance of Georgia on financial matters and to the Georgian State Department of Forest Management on technical matters.

TIMETABLE OF PROJECT PROCESSING

- Oct. 1998 - FAO identification report
- March 1999 - FAO preparation report
- April 1999 - Project endorsement by the Presidential Investment Council
- June 1999 - PCD review and Country Director's recommendation for PPF
- June 1999 - new Forest Code enacted
- March 2000 - PPF approval (ratified in July 2000)
- May 2000 - Social Assessment completed
- Oct. 2000 - new PMU established by Presidential decree
- March 2001 - draft PAD and PIP
- April 2001 - Environmental Assessment completed
- May 2001 - Decision meeting, appraisal departure
The Government of Georgia has already borrowed US$0.99 million of IDA funds through a PPF credit advance to implement in 2000-2001 the following subset of front-loaded project activities:

1. **Development of improved forest policies and regulations**, including (i) finalization and public discussion of new forest regulations supporting implementation of the 1999 Forest Code of Georgia; (ii) development of a forestry institutional reorganization plan; and (iii) development of a forestry financial system reform plan;

2. **Development of improved forest management planning and protection techniques**, including (i) total economic valuation of Georgian forests; (ii) methodology of improved forest inventory on a landscape-ecological basis in a model forest area in the Central Caucasus; (iii) participatory management planning for community forests; and (iv) promotion of public awareness in sustainable forest management;

3. **Project implementation capacity building**, including (i) setting up a project management unit; (ii) preparation of detailed project implementation, procurement and monitoring and evaluation plans, financial management systems, including project advisory and audit services; and (iii) training of project management unit staff.

Up-front implementation of these project activities under the PPF would generate immediate and sustained benefits to Georgia on their own merit and would also provide favorable conditions for start-up and efficient implementation of follow-on project activities and increase their developmental impact.

<table>
<thead>
<tr>
<th>Box 1. Summary of PPF-funded Project Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Government of Georgia has already borrowed US$0.99 million of IDA funds through a PPF credit advance to implement in 2000-2001 the following subset of front-loaded project activities:</td>
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</tr>
<tr>
<td>(2) <strong>Development of improved forest management planning and protection techniques</strong>, including (i) total economic valuation of Georgian forests; (ii) methodology of improved forest inventory on a landscape-ecological basis in a model forest area in the Central Caucasus; (iii) participatory management planning for community forests; and (iv) promotion of public awareness in sustainable forest management;</td>
</tr>
<tr>
<td>(3) <strong>Project implementation capacity building</strong>, including (i) setting up a project management unit; (ii) preparation of detailed project implementation, procurement and monitoring and evaluation plans, financial management systems, including project advisory and audit services; and (iii) training of project management unit staff.</td>
</tr>
<tr>
<td>Up-front implementation of these project activities under the PPF would generate immediate and sustained benefits to Georgia on their own merit and would also provide favorable conditions for start-up and efficient implementation of follow-on project activities and increase their developmental impact.</td>
</tr>
</tbody>
</table>
ANNEX 3

Forests Development Project
Project Summary (May 2001)
Georgia: Forests Development Project

Project Development Objective

The objective of the project is to establish sustainable forest management systems, which would maximize the contribution of Georgia’s forests to economic development and rural poverty reduction on an environmentally sustainable basis.

Project Description Summary

The project would support implementation of national regulatory and financial reforms in the forest sector and capacity building in the State Forestry Department and other agencies dealing with the forest sector; sustainable forest planning and management in demonstration areas, which would serve for replication, and support reforestation in degraded areas.

1. National Regulatory and Financial Reforms: The project would complete the institutional and regulatory reforms initiated with PPF financing, and would support:

   a) Finalization of the forest regulatory framework, including finalization of the subsidiary regulations for proper implementation of the new Forest Code and their harmonization with environmental, budgetary and tax legislation, redefinition of institutional functions of agencies related to the forest sector. This would include development of regulations for the transfer and management of community forests. There would be widespread public discussion of these draft regulations before they are finalized.

   The ongoing transition in Georgia from a centrally planned to a market economy is proving difficult to achieve, particularly in the forestry sector where environmental considerations (a public concern) are very important. Within the framework of the existing National Environmental Action Plan, a National Forestry Strategy was prepared in 1997 by a Georgian governmental team with assistance from the World Bank's Institutional Development Fund. The main objectives of the strategy are to maximize the environmental/economic benefits derived from the forests while encouraging the privatization of forestry activities to the extent possible. It is indicated that reform should be carried out in four ways:

   i) to make possible the development of sustainable forestry development,
   ii) to elaborate financial/economic management methods,
   iii) to integrate the forestry institutions in the general economic reform,
   iv) to interest international community in supporting forestry development.

   Although the strategy contains very valid elements, such as the necessity to improve land-use planning as well as the overall management of the state forests, there is still a need for further analytical work (clarification/prioritization). In order to obtain fully operational document it is also important public participation in its preparation and implementation.

   Forest Code of Georgia has been approved by the Parliament in 1999, it is a foundation for institutional and policy reforms in the sector, it provides the legal basis for the organization, management and financing of the sector. In order to enact the Forest Code, various supplementary normative acts and regulations have to be prepared. Preparation of regulations listed below will be a guarantee for sustainable forest management and wood resource utilization.

   1. On authorization of local governing and self governing bodies for managing the local forest fund and procedures for separating the local forest fund from state forest fund;
2. On procedures for allocating designated area of the state forest fund and regulations for permitting forest use, permitting, restricted forest use and banning forest use in this area;
3. On setting boundaries of the usable state forest fund;
4. On the system of registry of the state forest fund;
5. On special requirements for registering protected areas of the state forest fund;
6. On authorized issuance of biological and chemical preparations to the physical and legal bodies with the purpose of forest protection;
7. On regulations and methods of inventory of animal wildlife in the specific areas of the state forest fund;
8. On the listing of biological, chemical and generic interventions permitted for the purposes of forest protection;
9. On selection and use of plant species for restoring and expanding the state forest fund;
10. On calculating and recovering losses born by the state forest fund due to illegal forest use;
11. On regulations for using non-wood resources of the state forest fund;
12. On regulations for accounting for the state forest fund;
13. On information on the state forest fund and its disclosure to the State Department of Forestry;
14. On regulations for forest protection;
15. On regulations for defining the annual allowable cut;
16. On regulations for producing timber and the secondary wood products;
17. On general regulations for carrying out scientific research and educational activities in the territory of the state forest fund;
18. On preparing documentation for issuing forest use tickets, including calculations of costs required for allocating cutting areas and setting regulations for recovery of these costs.

b) Revision of financial and tax regulations, including:
1. Revision of the principles and amount of financing the State Department and other governmental agencies related to the forest sector and identification of the financial resources dispersed in different institutions and intended for the implementation of the same functions. Return these revenues and other existing income and use them to carry out forest protection and management.
2. Revision of forest resource pricing principles and methodologies, including stumpage regulations in order to differentiate by quality and provide stronger incentives for resource conservation.
3. Implementation of administrative regulations in order to carry out forests activities based on the sustainable management principles and allow for better tracking of timber harvesting and export.

According to the present day Budget and Tax laws all stumpage fees collected from the State Forest Fund are directed to local budgets. The Tax Law states that the purpose of adoption of those taxes is the provision of financing of the measures for protection and restoration-reproduction of nature resources. But neither of the legislation act defines its complete percentage volume and the rule of its returning to local forestry. Hence the local authorities do not transfer the above stated income to the adequate body and use it for their local need.

It is necessary to move new introductions to the Budget and Tax Codes and Laws. It will ensure partly return (40-50%) of forest use tax payment to the local forestry.

The calculation and differentiation of forests timber resources stumpage fees need to be studied and regulated. At present it is based on the product market price and is differentiated according to the timber size and the distance between the timber produce place and the nearest railway station. Today the prices are not transparent, in addition the of goods transportation by road is more developed than by railway.

Division of forest timber resources needs to be improved. The rule of carrying out of Auction and fixed price systems are among them. This will stimulate local forest enterprises development/broadening. The mechanisms of price formation should be elaborated.
Forest resources economical evaluation is envisaged by the project. It gives us possibility of state forest fund total evaluation, of registration non-timber resources procuring and usage and support non-timber resources evaluation and their involvement into the local forestry income and Georgian budget.

The following activities should be done:

- To revise existing legislative base in order to carry out Georgian financial policy (the Georgian law of State budget, Tax Code, Forest Code and other under law normative acts);
- Financing of different governmental institutions related to the forest management and State control from the State budget and identify the financial resources dispersed in these institutions and intended for the implementation of the same functions;
- To revise the indicative plan of Georgian economical development in connection with the forest sector;
- To revise the regional (local) socio-economic development plan;
- To revise the branch structure of regional economics;
- To define the part of the forest sector in Georgian total inner product;
- To define the part of the forest sector in commodity circulation;
- To study the price formation on the main forest products;
- To study the forest products market and trade conditions;
- To revise tariffs, taxes, licenses, quota, “special tickets” etc.
- To study the import-export balance;
- To define the methods of registration of the forest sector income;
- To revise the forest sector expenses (direct and indirect), income, currency flow, financing, liquidity, financial reports and the mechanisms of financial control;
- To study the methods of marketing;
- To define the participation of the private sector in forest activities;
- To analyze the financial activities of enterprises engaged in the forest sector;
- To evaluate Georgian investing environment;

A national public education and awareness campaign to engage the public about the challenges facing the forest sector to help finalize the new national forest policy and strategy. The project would support equipment, TV, newspaper and other mass media campaigns, consultancy services and training for development of the program, workshops, and a hotline for the local population to send proposals for better forest management.

According to social researches there is a high interest of society to participate in forest resources management. Unfortunately, most of people are not aware of their legal rights. Because of lack of information and appropriate knowledge, people try to show their displeasure often in illegal ways (blocking roads etc) and as a rule they react on the results, not on the reasons causing these results. The public control is spontaneous and ineffective. Thus the most part of society prefer to be passive and inert as they see the ineffectiveness of fighting against the illegal actions in forest sector.

It is for the first time that the new Forest Code allows participation of population and public association in the management of the State Forest Fund. According to the Code the issues of regulation of Forest Inventory, division of The State Forest Fund into categories, define the regime of protection of territories of the State Forest Funds, transfer of the State Forest Fund for a term of 5 years for temporary use, as well as the accessibility of the information about condition of the State Forest resources have been guaranteed less the cases stipulated by the legislation of Georgia.

With the purpose of ensuring the publicity the Project plans to elaborate adequate programs, to organize "hot" line in Tbilisi, to use mass media and NGO for informing the wide masses of
local population and for finding out their opinion. With this purpose it is planned to create a center favoring the publicity in the Oni region, which through seminars, meetings and conferences will investigate the opinion of the local population about current situation in forests and about forest using, will provide attraction of masses in elaboration of plans of management of local forestry. The training will be organized for elaboration of the programs.

d) Elaboration of the national standards of forestry certification.

The existing situation in Georgian forests needs to be changed, one way is to implement the forestry certification in the forestry sector according to the world standards. This system will help to prevent illegal timber harvesting, decrease forest damages during forest use processes, eliminate illegal timber export, support the implementation of sustainable forest management principles and development of the legal timber trade market mechanisms. The State institutions of the forestry sector and different non governmental organizations consider that among the certification systems existing in the world, the most suitable for Georgia is FSC certification system as it have more environmental demands, which are very important for Georgian forests, having water regulative, soil protective and other unique properties. At present where is no such standards in Georgia and the initiative group who has started independently elaborating them is facing financial and other problems. The State structures of the forest sector, ministries of economic and environment and the president of Georgia have supported forest certification and expressed their readiness to assist in this activity. The implementation of this component is envisaged by the project. For this purpose it is necessary to form a 3 member unit, equip them with the office space, computer and supply with special literature. Operational costs of the unit should be include in the project.

g) The objective of the forest sector reorganization plan is to provide with a detailed, phased and costed plan for the future role, restructuring and strategic development of the SFD, which will be a guarantee of the Georgian forests protection, management based on the sustainable development principles and increase forests economic efficiency. Necessary studies will be carry out for obtaining a better understanding of the forest department’s present role, management and main activity functions, financial policy of the branch, institutional possibilities and operational activities with identification of the future optimal scenario on the central and regional level. The study should be also done to identify the role and duties of the forestry related state organizations in the field of forest protection, management and state control. This will include forest department’s public purpose activities, not core activities that could be privatized. It is supposed to unify the regional forest offices with their resources and forestry activities. The public juridical body will be established based on the several forestry. The project will create the necessary material-technical base and be responsible for the reorganized forestry staff training (carry out building rehabilitation, supply with communicative facilities, office furniture and techniques).

Setting up the Forestry Management Information System stage by stage is envisaged by the project. The outputs will be a fully operational FMIS systematizing all forest sector information and carrying out the monitoring.

h) Under the project it is foreseen to merge the forest protection Unit and Forest Inspection under the State Department of Forestry and set up a Unit of Forest Protection and Operational Service. It is assumed that the mobile group comprising ten members will be responsible for controlling/inspecting and monitoring the forest operations at national level. The group will periodically visit the regional offices (including the visits based on the signals received from the local population), in order to inspect the operational activities carried out by the regional officers in accordance with the Forest Code, Cutting rules and other normative acts. Besides the unit will be obliged to reveal and react on all the violations regarding the wood utilization and forest management. For efficient functioning, it is critical that the unit was well equipped,
particularly the unit should have one four-wheel drive vehicles for field visits, 5 mobile phones for communication, uniforms and one computer for putting all data into and for monitoring.

2. Improved forest Planning and Management in Central Caucasus Pilot Area

a) The elaboration of the forest management updated plans is foreseen under the project. These plans will improve forest sector organizational, financial, operational and commercial efficiency and optimize its contribution to the total inner product of Georgia. The following activities should be done:

- Elaboration of the new improved forest inventory methodology based on the landscape-ecological and SFM principles. The methodology must consider socio-economical and ecological aspects. Carry out the Forests inventory, using the new methodology in Oni lab.zone first.
- Elaboration of the total forests economical evaluation methodology and testing stage by stage in lab. Zone forests after inventory.
- Finally, after inventory and total economical evaluation of the forests we will have all information about resources in lab. zone. It will give possibility to elaborate fully operational forest management plans.
- The forest management information centre will be an instrument for the implementation of forest policies and will help to increase production from State- forested lands through new forest management plans. Using the information system in the lab. zone the proper computer program and its effectiveness will be identified

b) The construction and rehabilitation of the forest roads is envisaged by the project. Amortization of old roads and lack of new ones have done ecological and economical harm to forests and the country.

Georgian forests are rich in timber and non-timber resources. It is very important to use these resources effectively and increase the role of forest sector in the countries total inner product. In this case all ecological aspects of sustainable forest management principles should be taken into consideration. In particular the lack of road network causes the press of population on the nearest forests. Which is the main reason of the forests distraction.

For using natural resources, without destroying ecological balance it is necessary to construct new roads in the forests. To conduct forest tending, protection and other forest management activities it is also important to rehabilitate the existing road net-work.

The planned construction of new roads and rehabilitation of existing roads in the Lab-Zone is 45 and 150 km respectively. Geological materials about rock stability as well as updated machinery will be used during constructing new roads to prevent serious damage of the forest ecosystem.

c) Support to improved forest silvicultural operations.

The project envisages the implementation and demonstration of the ecologically improved cutting machinery and cable logging system. Using these systems The Forest Sector will be able to produce timber on the 30-35 degree forest fund slopes without destroying it. Under the project it is foreseen to exam them in the “real” situation, in the lab.zone (2-3 region) and define the real costs and profits in the connection to the existing situation.

As a result the private sector should study and use these systems.

d) Forest protection. 43% of Georgia’s total territory are forest areas. 39,6% are actually covered with forests. Georgian forests are constantly threatened by destructive agents such as fire, wind, insects disease and illegal cutting. Three agents: illegal cutting, forest fires and spreading insect disease were indicated as the main factor of forest losses over the past decade. Together these
account for forest losses averaging 3 million Lari. Losses due to pests account for 84% of this sum. The Georgian forest management seriously suffers from the insect and disease. They cause different type of damages such as total defoliation, producing physiological stress and decrease the timber thickness process, local and dispersed type of withering on the large areas of forests. In nurseries pests diseases often fully destroy nurseries and decrease outputs of standard seedlings.

In Georgian forest management system the most spreaded pests diseases are: Ips typographus, Dendroctonus micans, Oneria dispar, Nymia phacorrhoea etc. The development of the leaves and needles eating pest are the reason of their withering. Pests diseases have damaged fir, pine, chestnut, oak and beech stands in Georgia.

Under the project it is foreseen to study in details pests damaged forest areas, pests spreading dynamics over past five years, define the types of pests and reasons of their appearance, prognosticate pests spreading areas and elaborate effective pests preventive activities. It is also envisaged by this project the restoration-renovation of the pest control laboratory where the methods of the concrete pest preventive activities will be identified, tested and certified (satisfactory to the criteria of the policy of GoG and the WB).

The project will pay much attention to the problems of physical protection, which are very important and actual. At present the forest protection workers of forest management system have not enough knowledge of the Forest Code's laws and rules. They are enable to use them in everyday life. Insufficient financial support, lack of equipment and labor power force local people to use forest properties (legal and illegal harvesting of timber) and satisfy their elementary needs. This leads to irregular and unsustainable forest use and forests degradation.

Under the project it is foreseen to equip forest protection workers of the forest management system with beepers, uniforms, means of conveyance and communication. It is also envisaged to set up barriers and observation points for control and monitoring.

e) Support to private sector development of non-timber forest products.

The advertisement of non-timber production, hunting and ecotourism is envisaged by the project. The investment would be implemented in the following actions:

1. To elaborate the strategy of non-timber products for advertising and for experimental investments implementation;
2. To inventory of the lab.zone Wild Life and elaborate the hunting strategy;
3. To identify the objects of ecotourism and define the model object in the lab.zone;

For these purposes under the project it is foreseen to implemented two business supporting centers in Oni and Mestia.

f) Support to communal forest management

It should be noted that in 1995 the Georgian Parliament approved the resolution “On Usable and Municipal forests" (No 671-11 7.3.1995) to improve forests tending/protection activities. According to this regulation The Cabinet of Ministry had to transfer to the management above mentioned forests land to the SDFM.

The process became drawling and from 5165000 ha former “Kolxoz” forests land 3326000 ha (64%) is transferred to the forest department up-to-date: Including 172000 ha former “kolxoz” land examined and legally affirmed by the State Committee of Land Management Use and Protection in Oni region and 3154000 ha forest land transferred to the regional self governing bodies without material-technical base and demarcation procedures. 1839000ha is left without supervision. Former “kolxoz” forest land is mainly located near the local population and they use the forests illegally as the source of income, food and energy (firewood).
According to the Forest Code (adopted in 1999) the Local Forest Fund is defined as a part of the State Usable Forest Fund. The juridical relationship on this matter is regulated by the local governing and self governing bodies based on the Georgian legislation and the Forest Code. The rights of the local governing and self governing bodies in local forest fund managing is not defined. The preparation of the project of the Georgian President decree “on authorization of local governing and self governing bodies for managing the Local Forest Fund and procedures for separating the Local Forest Fund from the State Forest Fund” is envisaged by the project. At present the KFW is financing the establishment of the Municipal forests based on the Borjomi-Kharagauli National Park nearby forests.

3 Forests Restoration—Afforestation in Degraded areas.

The Forests Restoration-Afforestation program envisages to provide nurseries with seed of adequate quantity, species and quality. The nurseries from their side will have enough quality, quantity and seedlings for forests afforestation-restoration.

A) Seed collection, processing and storage
To obtain the adequate quantity and quality seed the following activities should be done:

- Tools for cleaning undergrowth and improving access to existing seed production stands;
- Small storage shelters in each seed production stand;
- Ladders and hand tools to improve cone collection;
- Small tractors to collect and transporting cones to forest roads;
- Renovation of the former seed processing buildings;
- Renovation of selected items of seed processing equipment;
- Equipment and materials for drying, packaging and dewing seeds;
- Set up procedures for testing and certification of forest tree seed;
- Buy the laboratory equipment for seed testing and certification;

B) The renovation of the Sartichala central forest nursery including irrigation system is envisaged by this project. The credit will finance nursery operating and maintenance costs at the first stages. Improved forest nursery will produce high quality seed and seedling for afforestation-renovation works and for individuals. Soon the nursery should be able to cover its costs for labor, machinery and for reinvestment in technological improvements. The long-term goal is to privatize the nursery.

C) Georgian forests are rich in forest resources
3-3) Georgia is rich in forest resources. However, a large part of the State forests are located on mountain slopes. Socio-economical problems which developed in Georgia during the last period, different negative events (illegal cutting for fuel wood production, livestock in the forests etc.) and climate problems have effected on the forests degradation and soil erosion and subsequently on the agricultural productivity. Afforestation programs should be re-commenced and focused on erosion-prone areas. The region selected for these works, consists of nine the most damaged districts within a 50 km radius of Tbilisi—"priority zone" where the 3100 ha erosion and 5600 ha degraded areas are foreseen to be afforestate.

4. Project management and monitoring.

The preparation and implementation of the Project is administrated by the Forest Sector Development Center (FSDC)- a legal body of civil law established by IDA Q212-) GE agreement and by the decree No 469 of the president of Georgia. FSDC is operate under the overall guidance of a Supervisory Board appointed by the President of Georgia. The Supervisory Board is chaired by the Chairman of the committee of National Resources and Environment Protection of the
Parliament of Georgia and comprised of officials of the key interested ministries and academic and NGO community. The FDSC is headed by the Project Director and has six member staff: Technical Manager, Procurement Specialist, Financial Manager, Accountant, Secretary-Translator and Operational Assistant. The FDSC will report to the Georgian State Department of Forest Management on technical matters and to the Ministry of Finance of Georgia on Financial matters. The FDSC or the Project Implementation Unit (PIU) will elaborate the detailed plans of Procurement, monitoring, and evaluation, necessary for implementation of the project and will be responsible for exact fulfillment of these plans and the WB procurement procedures. The PIU will provide financial management system satisfactory to the WB. With this system all financial and accounting operations will be carried out, according to demands of the WB and the local bank, where the special account of the project will be held. The PIU will collaborate with the State Forest Department. Special training, envisaged by the project, will help the department staff to be familiar with the WB project implementation, management, and procurement procedures. The project will finance the PIU members training in project implementation procedures, Bank project management approaches, special computer programs and language, PIU office refurbishment, office furniture, financial management computer programs installation and service and operational costs.
<table>
<thead>
<tr>
<th>Table 1: Setting up of Project Implementation Unit (Component A)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investment Costs</strong></td>
</tr>
<tr>
<td><strong>A. Building</strong></td>
</tr>
<tr>
<td>Rehabilitation (in Tbilisi) sq m</td>
</tr>
<tr>
<td>2001 2002 2003 2004 2005 2006 2007 2008</td>
</tr>
<tr>
<td>17,566 9,554</td>
</tr>
<tr>
<td>Rent/maintenance month</td>
</tr>
<tr>
<td>3,000 3,000 3,000 3,000 3,000 3,000 3,000</td>
</tr>
<tr>
<td>Subtotal Building</td>
</tr>
<tr>
<td>17,566 12,554</td>
</tr>
<tr>
<td><strong>B. Equipment</strong></td>
</tr>
<tr>
<td>Furniture set</td>
</tr>
<tr>
<td>5,000 10,000</td>
</tr>
<tr>
<td>Office equipment lumpsum</td>
</tr>
<tr>
<td>14,322 11,549</td>
</tr>
<tr>
<td>Subtotal Equipment</td>
</tr>
<tr>
<td>19,342 21,548</td>
</tr>
<tr>
<td><strong>C. Vehicles</strong></td>
</tr>
<tr>
<td>Car unit</td>
</tr>
<tr>
<td>2 12,000</td>
</tr>
<tr>
<td>Additional vehicle rental veh/month</td>
</tr>
<tr>
<td>1,100 1,100 1,100 1,100 1,100 1,100 1,100 1,100</td>
</tr>
<tr>
<td>Subtotal vehicles</td>
</tr>
<tr>
<td>0 13,100 1,100 1,100 1,100 1,100 1,100 1,100</td>
</tr>
<tr>
<td><strong>D. Technical Assistance</strong></td>
</tr>
<tr>
<td>International consultant pers/mon</td>
</tr>
<tr>
<td>5 2 2 2 2 2 2 2 15 20,000</td>
</tr>
<tr>
<td>National staff pers/mon</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 96 1,000</td>
</tr>
<tr>
<td>Technical Manager pers/mon</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 96 800</td>
</tr>
<tr>
<td>Financial Manager pers/mon</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 96 650</td>
</tr>
<tr>
<td>Accountant pers/mon</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 96 500</td>
</tr>
<tr>
<td>Procurement officer pers/mon</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 96 650</td>
</tr>
<tr>
<td>Interpreter/translator pers/mon</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 96 450</td>
</tr>
<tr>
<td>National Project Director pers/mon</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 96 1,000</td>
</tr>
<tr>
<td>Financial Manager pers/mon</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 96 650</td>
</tr>
<tr>
<td>Accountant pers/mon</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 96 500</td>
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<tr>
<td>Procurement officer pers/mon</td>
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<tr>
<td>12 12 12 12 12 12 12 12 12 96 650</td>
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<tr>
<td>Interpreter/translator pers/mon</td>
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<tr>
<td>12 12 12 12 12 12 12 12 12 96 450</td>
</tr>
<tr>
<td><strong>D. Recurrent Costs</strong></td>
</tr>
<tr>
<td><strong>A. Operation and Maintenance</strong></td>
</tr>
<tr>
<td>Equipment Month</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 12</td>
</tr>
<tr>
<td>Building Month</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 12</td>
</tr>
<tr>
<td>Vehicle lumpsum</td>
</tr>
<tr>
<td>12 12 12 12 12 12 12 12 12 96 5,000</td>
</tr>
<tr>
<td>Subtotal Maintenance</td>
</tr>
<tr>
<td>123,998 201,427 101,035 103,883 108,872 110,011 113,306 76,867 937,400</td>
</tr>
<tr>
<td><strong>TOTAL Component A</strong></td>
</tr>
<tr>
<td>140,798 221,527 122,736 127,083 131,772 136,811 141,806 107,467 1,130,080</td>
</tr>
<tr>
<td>Quantities</td>
</tr>
<tr>
<td>------------</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>I. Investment Costs</td>
</tr>
<tr>
<td>A. Carrying out of technical/strategic studies</td>
</tr>
<tr>
<td>1. Overall assessment of national forest resources</td>
</tr>
<tr>
<td>2. Development of forest legal framework (including publication &amp; printing)</td>
</tr>
<tr>
<td>3. National coordinator - Forestry legal framework</td>
</tr>
<tr>
<td>4. Preliminary studies for research/education/awareness programs</td>
</tr>
<tr>
<td>5. National Counterparts</td>
</tr>
<tr>
<td>Subtotal Carrying out of technical/strategic studies</td>
</tr>
<tr>
<td>B. Training/preparation of National Policy/Strategy</td>
</tr>
<tr>
<td>C. Training/setup of PMIS</td>
</tr>
<tr>
<td>D. Technical Assistance</td>
</tr>
<tr>
<td>Subtotal technical assistance</td>
</tr>
<tr>
<td>TOTAL INVESTMENT COSTS</td>
</tr>
<tr>
<td>II. Recurrent Costs</td>
</tr>
<tr>
<td>A. Operation and Maintenance</td>
</tr>
<tr>
<td>B. Equipment</td>
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<tr>
<td>C. Other</td>
</tr>
<tr>
<td>D. Seminars</td>
</tr>
<tr>
<td>E. Subsidies</td>
</tr>
<tr>
<td>F. Other</td>
</tr>
<tr>
<td>G. TOTAL Recurrent Costs</td>
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<tr>
<td>TOTAL Component B</td>
</tr>
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</table>
Table 3: Strengthening of Forestry Institutions (Component C)

<table>
<thead>
<tr>
<th>Component C</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
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<tbody>
<tr>
<td>Investment Costs</td>
<td>1,938</td>
<td>1,587</td>
<td>780</td>
<td>480</td>
<td>480</td>
<td>520</td>
<td>320</td>
<td>480</td>
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Notes:
- In Additional Lighting and 141.31 is for the SFD in the sub-component B.3.
- In the field of management, financial services, staff and office communications.
- Salaries are based on the official scale of the public service. Position salary supplements are discontinued.

Total Expenditure Costs (Component C): 720,000
Table 4: Support to Private Sector
(Component D)
(31.01.01)

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<tr>
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B. Operating Costs and Technical Assistance

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### Table 6: Support to Afforestation and Forest Restoration (Component F)

(31.01.01)

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<td>2005</td>
<td>2006</td>
<td>2007</td>
<td>2008</td>
<td>Total</td>
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#### Investment Costs

1. **Building**
   - Finishing of Seed Processing Lab. construction
     - spm 400
   - Construction of shelter store
     - spm 200
   - Total: 600

2. **Equipment**
   - Equip. to improve Seed island
     - spm 2
   - Equip. to connect 4 transport conveyors
     - set 2
   - Total: 6

3. **Technical Assistance**
   - International Consultants
     - pers/mon: 2
   - Total: 10

4. **Training of SF0 staff**
   - pers/mon: 1
   - Total: 10

5. **In-country training**
   - pers/mon: 2
   - Total: 20

6. **Subtotal Training of SF0 staff**
   - Total: 32

7. **Subtotal Improved seed production/processing**
   - Total: 192

### Nursery Development

1. **Building**
   - Construction of Administration building
     - spm 150
   - Total: 150

2. **Equipment material and activities**
   - Windbreak Planting
     - ha 1
   - Fencing
     - ha 4
   - Irrigation system
     - ha 40
   - Restore electric lines
     - km 10
   - Office equipment furniture
     - set 1
   - Other nursery operation equipment-small pit for seedlings
   - Total: 11

3. **Machinery**
   - Tractor attachments
     - set 2
   - Wheel tractors (60hp, wheeled)
     - unit 1
   - Mini-trackers (grub-locos)
     - unit 2
   - Total: 8

4. **Subtotal Machinery**
   - Total: 16

5. **Transportation vehicles**
   - Micro-bus 12 passenges
     - unit 1
   - Vans: 25 passengers
     - unit 1
   - Truck 3-4 ton, double axle
     - unit 1
   - Total: 10

6. **Subtotal Transportation vehicles**
   - Total: 16

7. **Technical assistance**
   - International Consultants
     - pers/mon: 1
   - Total: 10

8. **Training of SF0 staff**
   - pers/mon: 2
   - Total: 10

9. **Subtotal training of SF0 staff**
   - Total: 20

10. **Subtotal Nursery development**
    - Total: 192

### Afforestation

1. **Preparation of Afforestation Program**
   - International Consultants
     - pers/mon: 1
   - Total: 10

2. **Training of SF0 supervisors**
   - pers/mon: 2
   - Total: 20

3. **Private Contracts - Afforestation**
   - ha 300
   - Total: 300

4. **Subtotal Afforestation**
   - Total: 240

### Total Cost (US$)

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#### Parameters (in US$)

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### Notes

- Table 6 summarizes the costs associated with various components of the afforestation and forest restoration project.
- The table includes costs for investment, nursery development, and afforestation activities.
- The costs are broken down by year and component, providing a comprehensive view of the project's financial requirements.
- The table is designed to support decision-making processes in planning and budgeting for similar projects.

---
<table>
<thead>
<tr>
<th>Table 6: Support to Afforestation and Forest Restoration (Component F) (31/01/01)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Detailed Costs (US $)</strong></td>
</tr>
<tr>
<td><strong>Quantities</strong></td>
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<tr>
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<td><strong>Total Investment Costs</strong></td>
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<td><strong>II. Recurrent Costs</strong></td>
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<td>A. Improved seed production/processing</td>
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<td>National staff salaries</td>
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<td>Operation and maintenance</td>
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<tr>
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<td>O&amp;M on buildings (incl. power consumption of equipment)</td>
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<tr>
<td><strong>Subtotal Improved seed production/processing</strong></td>
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<td><strong>Total Recurrent Costs</strong></td>
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<td><strong>Total Component F</strong></td>
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/a/ Forest seed specialist
/b/ Forest Nursery Specialist
/c/ Specialist in Afforestation, Social Forestry and Economics
/d/ Chemicals, materials, fertilizers, excluding seeds already costed in A
Table 7: Development of Forest Harvesting and Transportation (Component G)

<table>
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<tr>
<th>Detailed Costs (US $)</th>
<th>Quantities</th>
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**Table Notes:**
- All costs are provided in US dollars.
- Costs are listed for each year from 2001 to 2008.
- Parameters include Physical, Cost, Expenditure, and Gross Tax.
Table 8: Promotion of Non-Wood Products / Hunting / Ecotourism  
(Component H)  
(31.01.01)

<p>| Table 8. Promotion of Non-Wood Products/ Hunting/ Eco-Tourism (Component H) |
|-------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|-------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| I Investment Costs                  |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| A Building                          |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| B Equipment (2 districts)           |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| Furniture                           | set                 | 8                   | 8                   | 625                 | 5,000               | 5,000               |                      |                      |                      |
| Office/field Equipments             |                     |                      |                      |                      |                      |                      |                      |                      |                      |
|                                      |                     |                      |                      |                      |                      |                      |                      |                      |                      |
| Subtotal equipment                  |                      | 0                   | 0                   |                      | 35,000              | 35,000              |                      |                      |                      |
| C Vehicles                          |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| 4WD vehicles                        | Unit                | 2                   | 2                   | 6,000               | 12,000              | 12,000              |                      |                      |                      |
|                                      |                     |                      |                      |                      |                      |                      |                      |                      |                      |
| Subtotal vehicles                   |                      | 0                   | 0                   |                      | 12,000              | 12,000              |                      |                      |                      |
| D Technical Assistance              |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| 1 International Consultants         | pers/mon            | 3                   | 2                   | 5                   | 20,000              | 60,000              | 100,000             |                      |                      |
| 2 National staff                    |                     |                      |                      |                      |                      |                      |                      |                      |                      |
| National Consultants                | pers/mon            | 4                   | 4                   | 4                   | 400                 | 1,600               | 4,800               |                      |                      |
| Lab Staff                           | pers/mon            | 6                   | 6                   | 6                   | 36                  | 31,200              | 187,200             |                      |                      |
| Subtotal national staff             |                      | 32,800              | 32,800              | 32,800              | 32,800              | 32,800              | 32,800              | 32,800              | 192,000             |
| Subtotal technical assistance       |                      | 92,800              | 72,800              | 32,800              | 31,200              | 31,200              | 31,200              | 31,200              | 292,000             |
| Total investment cost               |                      | 139,800             | 105,600             | 65,600              | 64,000              | 64,000              | 64,000              | 64,000              | 339,000             |
| II Recurrent Cost                   |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| A O&amp;M                              |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| Equipment                           |                      | 5,000               | 5,500               | 6,000               | 6,500               | 7,000               | 8,000               | 38,000              |                      |
| Vehicles                            |                      | 4,000               | 4,500               | 5,000               | 5,500               | 6,000               | 7,000               | 35,000              |                      |
| Building                            |                      | 2,000               | 2,000               | 2,000               | 2,000               | 2,000               | 2,000               | 12,000              |                      |
| Subtotal O&amp;M                        |                      | 11,000              | 12,500              | 13,500              | 14,500              | 16,000              | 17,500              | 85,000              |                      |
| B Research and analyses of existing conditions | | | | | | | | | |
| Research and analyses of existing conditions | | | | | | | | | |
|                                      |                      | 20,000              | 20,000              | 20,000              | 10,000              | 10,000              | 10,000              | 90,000              |                      |
| Total recurrent cost                |                      | 31,000              | 32,500              | 33,500              | 24,500              | 26,000              | 27,500              | 175,000             |                      |
| Total Component H                   |                      | 170,800             | 105,300             | 66,300              | 55,700              | 57,200              | 58,700              | 514,000             |                      |</p>
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<th>2002</th>
<th>2003</th>
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ANNEX 5

RESOLUTION OF THE PARLIAMENT OF GEORGIA
Concerning the Law of Georgia on "Environmental Permits" (October 15, 1996 No 425 -IS)
(Official English translation)

THE LAW ON ENVIRONMENTAL PERMITS
(October 15, 1996 No 424-IS)
(Official English translation)

RESOLUTION OF THE PARLIAMENT OF GEORGIA
(Official English translation)

THE LAW OF GEORGIA ON THE STATE ECOLOGICAL EXPERTISE
(October 15, 1996, No 426-IS)
(Official English translation)
RESOLUTION OF THE PARLIAMENT OF GEORGIA

Concerning the Law of Georgia on "Environmental Permits"

The Parliament of Georgia resolves:

1. The Law of Georgia on "Environmental Permits" to come into force from January 1, 1997.

2. To request the President of Georgia to ensure that the Ministry of Environment of Georgia elaborate and approve by January 1, 1997 the provisions: "On the list of the 4th category activities specified by the procedure for the issue of environmental permissions" and "On the rule for submission of applications for obtaining environmental permits and issuance of environmental permits". These provisions to be implemented from January 1, 1997.

3. The Committee for protection of natural resources and the environment of the Parliament of Georgia shall:

   a) elaborate and present for consideration to the Parliament of Georgia by January 1, 1997 a draft of the Regulation "On Environmental Impact Assessment".

   b) in conjunction with the Committees of the Parliament of Georgia for Budgetary-financial and Economical Policy and Reforms to elaborate and present for consideration to the Parliament of Georgia by June 1, 1997 a draft of the Law "On Environmental Permission Fees".

   c) in conjunction with the Committee of the Parliament of Georgia for Consultations, Legal Affairs and Legality, to elaborate and present for consideration to the Parliament of Georgia by June 1, 1997 drafts of the Laws "On amendments and changes to the Georgian Codes on administrative and legal violations" and "On amendments and changes to the Criminal Code of Georgia".

Deputy Chairman
Parliament of Georgia

Edward Surmanidze

Tbilisi,
October 15, 1996
No 425 – IS
THE LAW OF GEORGIA ON ENVIRONMENTAL PERMITS

This law establishes the legal basis for the issue of the environmental protection permits for an activity implemented on the territory of Georgia, state ecological expertise, environmental impact assessment as well as the legal basis for the public notification and participation in the decision-making process on the issue of the environmental protection permits.

Only activities planned after the enactment of the law shall be subject to the present law.

This law does not regulate the issue of other permits on the activity.

CHAPTER 1
GENERAL PROVISIONS

ARTICLE 1. THE AIM OF THE LAW

The aim of the law shall be:

1. to protect human health, natural environment, cultural and material valuables during the implementation of the activity.
2. to ensure basic rights of a citizen provided for by the Constitution of Georgia - to acquire full, objective and timely information on his working and living environment as well as, with the purpose of democratic development of the country, to ensure public participation in the adoption of important decisions by the state in the area of environmental protection.
3. to take into consideration ecological, social, economic interests of the society in the process of the adoption of important decisions pertaining to the activity.

ARTICLE 2. THE OBJECT OF THE LAW

The object of the law shall be:

1. to elaborate and defend the rights and obligations of investors, community and the state in the area of environmental protection.
2. to facilitate protection of the environment and national resources from irreversible quantitative and qualitative changes as well as to ensure their rational utilization.

ARTICLE 3. DEFINITION OF TERMS

The term “activity” shall denote entrepreneurial, economical or any other activity, implementation of habitation and development plans and projects, infrastructure projects, the implementation of settlement, habitation and sectoral development plans, including the implementation of plans and projects for protection, utilization and use of water, forests, land, mineral ore and other natural resources existing on the territory of Georgia, as well as significant reconstruction and technical and technological re-equipment of existing enterprises.

The term “investor” shall denote a physical or juridical person - the initiator of an activity who shall address the body authorized in the issue of environmental permissions to obtain the environmental protection permission.

The term “Environmental Protection Permission” shall denote a written decision of the Ministry of Environment of Georgia, its regional and local bodies and the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics. The contents and the issuance procedures of the permission are different for different kinds of activities. The environmental protection permission represents an integrated permission, which consists of permissions on exhausts, waste disposals, etc.

The term “Consultation Firm” shall denote a consulting juridical person, which is entitled under the charter to carry out consultation works in the area of environmental protection.

The term “Environmental Protection Standards” shall denote the establishment of such standards of the impact on the environment, which shall ensure the ecological balance. In view of the foregoing, the following standards shall be established: qualitative standards on the condition of the environment - in atmospheric air, water and soil; permissible standard limits for the quantity of the concentrates and micro-organisms harmful for human health and nature, permissible standard limits for noise, vibration, electromagnetic fields and other physical impacts; permissible standard limits for radiation impact; permissible standard limits for the inputs of harmful substances into the environment and environment pollution by microorganisms; permissible standard limits for the utilization of chemical means, ecological requirements for the products; load standards on the environment.
The term "Significant reconstruction, technical and technological re-equipment" shall mean such reconstruction, technical and technological re-equipment, the implementation of which shall require an elaborate feasibility study.

The term "Regional body of the Ministry of Environment" shall denote the organizations subject to the Ministry of Environment of Georgia, in particular, regional (urban) environmental divisions, as well as the Tbilisi Committee for environmental protection and regulation of natural resources.

The term "The local body of the Ministry of Environment" shall mean regional structural sub-divisions of: regional (urban) environmental divisions of Georgia, as well as the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics and the Tbilisi Committee for environmental protection and regulation of natural resources.

The term "Best technology" shall denote the best, usable and economically available technology in terms of environmental protection which: is most effective in avoiding, minimizing or transforming harmful impact on the environment; may not be widespread but its mastering and utilization are possible from technical standpoint; economically may not condition the reasonableness of the ostentation of marginal environmental benefit at the expense of considerably high value, but which at the same time from economic standpoint is available for investor.

CHAPTER II
THE PROCEDURE FOR THE ISSUE OF ENVIRONMENTAL PROTECTION PERMISSION

ARTICLE 4. CATEGORIES OF ACTIVITIES

1. In accordance with the present law the activities shall be grouped into 4 categories by their scope, importance and the quality of their impact on the environment.

2. The first category is the category which, due to its scope, location and essence can cause serious and irrevocable impact upon the environment and human health.

The first category of activity are the following:

a) Mining of mineral ores

- Mining of mineral ores (except the activities listed in Point 3 of Article 4) and mineral dressing;
- Ground and underground constructions for the extraction and dressing of mineral ores;
- Deep drilling, especially activities aimed at the extraction of deep circulation thermal waters;
- Activities for the accumulation and deployment of mining output.

b) Power industry

- Processing of oil raw materials and petrol-chemical production;
- Gasification and liquefying of coal;
- Carbonization of coal;
- Briquetting of coal and lignite;
- Construction of heat and power stations and other thermal enterprises;
- Construction of main facilities for gas, steam, hot water and electric power transmission;
- Construction of hydro-electric power stations (with the capacity of more than 10 Megawatts);
- Construction of dams, artificial water reservoirs and other hydro-technical buildings;
- Construction of nuclear reactors of different purposes and capacities;
- Construction of nuclear power stations;
- Production and dressing of nuclear fuel, processing of the used nuclear fuel.

c) Agriculture

- Fisheries;
- Wood-felling (including all systems of felling) and the usage of forest fund soils for different purposes;
- Utilization of virgin soils and unbroken expanses for intensive agriculture activities;
- Carrying out soil melioration works;
- Soil re-cultivation;
- Measures taken against hazardous natural calamities;

d) Food industry
• Production of flour from fish and animal bones;
• Production of vegetable and animal oils and fats;
• Industrial production of starch;
• Production of canned goods (objects processing more that 5 000 tons of raw materials);
• Breweries, liquor, cognac, vodka distillers, wine production (objects with the production capacity of greater than 30 million liter bottles per year)

e) Chemical industry
Chemical industry of any type and capacity:
Among them: chemical processing of semi-finished goods (interim products) and production of chemical substances; production and processing of pesticides, pharmaceutical goods, chemical colorings, varnishes, peroxide and production and processing of elastic substances (rubbers or plastic substances), production and packing of gunpowder or any other explosives; production of batteries; production of graphite electrodes, production of refrigerators.

f) Metallurgy
Metallurgy of any type and capacity;

f) Machine-building and ship-building among them:
• automobile, shipbuilding, railway and aircraft industries;
• ship-repair, railway-repair, aircraft-repair industries;
• production and testing of engines, turbines, reactors;

g) Production of building materials
• Any asbestos utilizing production;
• Production of cement;
• Production of asphalt;
• Production of glass and glass ware;

h) Wood processing, paper, leather and textile industries
• Production of fiber and sawdust boards and plywood;
• Production of artificial mineral fiber;
• Production of cellulose, paper and cardboard;
• Leather processing industry and leather utilizing production;
• Construction of fullery-worsted spinning group of enterprises in which wool is refined, degreased, bleached.

i) Waste processing and disposal
• Disposal of municipal and industrial wastes, location of their dumping places and location and operation of the factories for their processing and burning;
• Disposal of toxic, hazardous and radioactive wastes, location and operation of their dumping places and rendering them harmless.

j) Location and operation of storages
• Location and operation of ground and underground storages for gas, oil, coal, petrochemical products;
• Location and operation of storages for radioactive substances.

k) Implementation of infrastructure plans, projects and programmes
• Urbanization and city-planning programmes;
• Industry development programmes;
• Power-systems' development programmes;
• Residence area purification utilities construction projects;
• Forest use programmes (including prospective projects for forestry and hunting farms organization and follow up plans);
• Transport infrastructure development programmes, projects for motorways, railways, airfields, bridges, over-passes;
• Land use schemes for administrative-territorial units (regions);
• Projects for the main pipe-lines for any purposes;
• Projects of sea ports and terminals;
• Projects for subways, underground motor-way and railway communications;
• Projects of hotel and resort complexes;
• Projects of sport complexes and constructions;
• Projects of hospitals of oncology, infectious and tuberculosis diseases.
• Long-term rehabilitation programmes for preserved territories;
• Plans and projects for protection and utilization of water, forests, land, mineral ore and other
  natural resources existing on the territory of Georgia;
• Programmes and projects of national, regional and local importance for location of all types of
  economical and engineering objects with the view to avoid negative effects of natural spontaneous
  processes anticipated on the territory of Georgia.

All the afore-mentioned activities are subject to the environmental protection permits.

Infrastructure plans, projects and programmes shall require environmental permits issued by state
legislative and executive bodies in accordance with the rule specified by the law prior to their adoption,
approval or confirmation.

The environmental protection permit for these categories of activities shall be issued by the Ministry of
Environment of Georgia.

The obligatory integral part of the procedure for the issue of the environmental protection permits shall be
the following:

• environmental impact assessment (EIA); the procedure shall be carried out in accordance with
  Chapter III of the present law).
• state ecological expertise; the procedure shall be carried out in a manner specified by the law);
• participation of the community in the decision-making process.

3. The II\textsuperscript{nd} category is represented by an activity the scope, location and content of which can have a significant
impact on human health and the nature of the region where the activity will be carried out.

The II\textsuperscript{nd} category is comprised of:

a) Mining of mineral ore:
• ore reconnaissance and mining activities;
• operation of low capacity (below annual 100 000 tons) quarries for building, inert, decorative
  materials and reconnaissance activities;
• drilling activities for the reconnaissance of sweet potable and mineral water.

b) Power industry:
• construction of thermal and power-stations for industrial purposes and other thermal enterprises
  (with the capacity of less than 10 Megawatts);
• construction of hydro-power stations (with the capacity less than 10 Megawatts).

c) Agriculture and food industry
• utilization of virgin soils and unbroken expanses for intensive agriculture activities;
• construction and operation of potable and irrigation water supply internal systems;
• utilization of agricultural arable land (of the area from 30 to 50 hectares) for non-agricultural
  purposes;
• construction of complex poultry and cattle breeding farms;
• reception of carbamide from the cattle-breeding farms;
• setting up of mariculture and aquaculture farms;
• setting up of fishing and hunting farms;
• production of sugar;
• breweries, liquor, cognac, vodka distillers, wine production (objects with the production capacity
  from 20 to 30 million liter bottles per year)
• production of jams, syrups and juices;
• production of dairy goods;
- production of yeast;
- setting up of smoking-drying enterprises;
- setting up of enterprises for the processing of animal remains;
- construction of grain production factory;
- setting up of a non-alcoholic, wine and spirit bottling enterprise.
- re-cultivation of land (of the area greater than 100 hectares);
- canning industry (objects annually processing from 3000 to 5000 tons of raw materials).

d) Forestry
- using of forestry fund lands (of the area greater than 100 hectares) for non-forestry and economic purposes;
- wood-felling - on the forest area greater than 500 hectares (including all felling types).

Other activities:
- publishing activities;
- construction of timber and wooden furniture factory;
- construction of mineral and insulation cotton enterprise;
- construction of lime-stone and chalk production enterprise;
- municipal facilities including sewerage;
- fiber drying industry;
- construction of a brick and ceramic tile production enterprise;
- construction of a plaster tile production enterprise;
- construction of a building-structural production enterprise;
- municipal facilities including sewerage;
- establishment of an enterprise for the production of building materials out of mineral raw materials;
- construction of chemical product containers’ washing enterprise.

The environmental permits for the II<sup>nd</sup> category of activities shall be issued by the Ministry of Environment of Georgia.

The obligatory integral part of the procedure for the issue of the permission shall be:

- state ecological expertise; the procedure shall be carried out in a manner established by the law;
- public participation in the decision-making process.

4. The III<sup>rd</sup> category comprises activity, the scope, location and content of which will not bring about serious impact on the environment.

The activities under the III<sup>rd</sup> category are the following:

a) Agriculture and food industry
- collection of medicinal herbs in the environment;
- setting up of slaughter-houses;
- construction of a coffee beans and sunflower roasting enterprise;
- utilization of agricultural arable land (of the area from 20 to 30 hectares) for non-agricultural purposes;
- establishment of an egg product manufacturing enterprise (with the annual capacity exceeding 40 tons);
- establishment of semi-finished food production factories (with the annual capacity exceeding 200 tons);
- construction of a grain drying, cleaning, storing and silo tower;
- production of non-alcoholic beverages;
- production of tobacco;
- construction of buildings to store agriculture goods;
- construction of hot-houses of industrial designation;
- construction of agricultural product storing and processing buildings, facilities and enterprises;
- construction of warehouses for chemical pesticides and mineral fertilizers;
- canning industry (objects annually processing from 3000 to 5000 tons of raw materials).
• breweries, liquor, cognac, vodka distillers, wine production (objects with the production capacity from 10 to 20 million liter bottles per year)

b) Forestry
• using of forestry fund lands (of the area from 50 to 100 hectares) for non-forestry and economic purposes;
• wood-felling - on the forest area from 100 to 500 hectares (including all felling types).

Other activities:
• production of flax;
• establishment of a sawmill (with the annual capacity exceeding 1,000 m³);
• construction of buildings for timber storage (land-based, water spraying or on-water of more than 1000 cubic meters);
• setting up of a ceramic goods enterprise;
• construction of local motor-ways;
• construction of gasoline stations;
• construction of a harbor for sailing vessels;
• operation of sterilization equipment in the hospitals using ethylene oxide;
• setting up of municipal laundries;
• construction of hospitals.

The environmental protection permits for the IIIrd category of activities shall be issued by the regional bodies of the Ministry of Environment of Georgia as well as the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics.

The obligatory integral part of the procedure for the issue of the permission shall be the following:
- state ecological expertise; the procedure shall be carried out in a manner established by the law;
- notification of the community of the planned activity.

5. The IVth category is not included in points 2, 3 and 4 of Article 4, and its the impact of which on the environment is insignificant.

The list of the activities under IVth category shall be elaborated and approved by the Ministry of Environment of Georgia basing on the provisions “On the list of IVth category activities specified by the procedure of the issue of environmental permits”.

The environmental protection permission for the IVth category of activities shall be issued by the regional or local bodies of the Ministry of Environment of Georgia.

The obligatory integral part of the procedure for the issue of the permission shall be the state ecological expertise; the procedure shall be carried out in a manner established by the law.

ARTICLE 5. APPLICATION FOR THE ENVIRONMENTAL PROTECTION PERMISSION

1. In order to obtain the environmental protection permits, the investor shall be obligated to submit an application to the Ministry of Environment of Georgia, its regional or local bodies and the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics.

2. The investor shall be obligated to prepare a detailed application in a complete shape and in written form.

3. The application should include the evidential documentation on the activity, investor’s application to obtain the environmental protection permission, feasibility study project of the activity, assessment report on the activity’s impact on the environment (for the 1st category activity).

The application should include the following information:

a) name of the planned activity, name and address of the investor;
b) location of the planned activity on the map of the given region;
c) assumed date of the initiation and termination of the activity, the aims of the activity;
d) plan of the buildings necessary for the activity;
e) description of the technological process;
the list of substances which will be used during the activity or are received as a result of the activity;
g) detailed description of the measures which are planned in order to reduce the impact of the activity on the environment and social factors;
h) types and quantity of the natural resources to be used;
i) volume and type of the expected emission;
j) methods for the measurement of emission volume;
k) types and quantity of the industrial wastes, the probable places for their disposal, measures planned for the reduction of the waste volume and processing.
l) safety measures to be taken against accidents of technical nature.

4. For the activities under I, II, III categories, along with the application the investor shall be obligated to submit a brief annotation in accordance with the form given below.

- name of the planned activity, name of the investor;
- location of the planned activity;
- assumable date of the initiation and termination of the activity;
- aims of the activity;
- category of the activity;
- place and time for the public discussion of the activity;
- address, where the public will be able to familiarize itself with the documentation connected with the activity.

The information submitted in this form shall be published in the press and shall be made available to the representatives of the public.

5. The investor shall have the right to submit additional information, which he finds necessary for the specific case.

6. Having received the application presented in full, the Ministry of Environment of Georgia, its regional or local bodies and the Ministries of Ajarian and Abkhazian Autonomous Republics shall commence the procedure provided for by the law.

7. The Ministry of Environment of Georgia shall determine the content and form (the issuance rule) of environment permits as well as the form of the application to be submitted to obtain environment permits, on the basis of the provision "On the rule for submission of applications to obtain environmental permits and the issuance of environmental permits".

ARTICLE 6. STATE, INDUSTRIAL AND COMMERCIAL SECRETS

1. The investor shall be obligated to provide the Ministry of Environment of Georgia with the complete scheme of the technological process even in case the activity contains industrial, commercial or state secret.

The part of the application which contains industrial, commercial or state secret should be submitted separately by the investor.

2. The part of the application including the secret should be labeled and kept separately. This sector should be inaccessible for public representatives.

3. The body issuing environmental permits shall be obligated to keep the secrecy. Relevant officials shall be given the right of access to the secrecy in accordance with the rule laid down by the law.

4. The persons who shall be authorized by the present law to familiarize themselves with the part of the application containing secret information, in the event of its disclosure, shall bear responsibility in accordance with the legislation of Georgia in force.

ARTICLE 7. PROCEDURE FOR THE ISSUE OF ENVIRONMENTAL PERMITS FOR THE FIRST CATEGORY ACTIVITIES

1. In order to obtain an environmental protection permit for the I category activity, the investor shall be obligated to conduct environmental impact assessment.

2. In order to conduct a thorough environmental impact assessment and ensure the public participation in the assessment process, the investor shall be entitled to:
• announce a tender for obtaining the right to conduct the EIA. The terms and conditions of the tender should be published in the central press.

• ensure the availability of the examination materials, reviewed by the environmental impact assessment, to public representatives.

3. After the receipt of the detailed application on the I category activities, the Ministry of Environment of Georgia shall be obligated to carry out the procedure provided for by the present article which covers the state ecological expertise of the activity (the procedures for the expertise shall be regulated by the applicable legislation of Georgia) and to assure public participation in the decision-making process for the issue of the environmental permits.

4. Within 10 days following the receipt of the application the Ministry of Environment of Georgia shall be obligated to:

   a) ensure the publishing in press of the application and brief annotation to which the information on the date and venue of public discussion of the issues related to implementation of the activity should be enclosed;

   b) receive and discuss the written comments of the public in 45 days following the publishing of the information on the activity.

5. Within 2 months at maximum after the receipt of the application the Ministry of the Environment of Georgia shall be obligated to hold a public discussion of the activity with the participation of the investor, the Ministry of Environment of Georgia, local administration bodies and public representatives.

6. The review period of the evidential documentation on the activity at the Ministry of the Environment of Georgia shall be 3 months at maximum.

7. The copy of the application shall be kept by the body of the Ministry of Environment of Georgia where the review of the evidential documentation on the activity is planned and the public representatives shall be able to familiarize themselves with the application (with the exception of the part containing commercial, industrial and state secrets) within the entire period of application review.

8. Within this period the Ministry of Environment of Georgia shall be obligated to:

   • carry out the expertise of environmental impact assessment;

   • determine the compliance of the activity or its separate part with the legislation of Georgia in force;

   • determine the compliance of the activity or its separate part with the standards in effect of the condition of the environment in Georgia;

   • determine the measures the elaboration of which shall be necessary for the reduction of the impact on the environment in case the activity is implemented;

   • adopt a decision on the issue of the environmental permission for the activity taking into account the environmental impact assessment conclusion and public opinion.

ARTICLE 8. PROCEDURE FOR THE ISSUE OF ENVIRONMENTAL PERMITS FOR THE II CATEGORY ACTIVITIES

1. After the receipt of a detailed application for the environmental protection permission on the II category activity the Ministry of Environment of Georgia shall be obligated to carry out procedures provided for by the law, which cover the expertise of the activity and public participation in the decision-making process on the issue of the permission.

2. In 10 days following the receipt of the application for public information, the Ministry of Environment of Georgia shall be obligated to provide the publishing of application and a brief annotation of the planned activity to which the information on the date and venue of public discussion of the issues related to implementation of the activity should be enclosed;

   In view of the above, the Ministry of Environment of Georgia shall:

   • ensure the publishing of the information in press;

   • receive and discuss public comments in writing within 45 days following the publishing of the information.

3. The copy of the application shall be kept in the body of the Ministry of Environment of Georgia where the review of the evidential documentation on the activity is planned and the public representatives shall be able to familiarize themselves with the application (with the exception of the part containing commercial, industrial and state secrets) within the entire period of application review.
4. In order to ensure public participation in the process of the issue of the environmental protection permission for the activity, the Ministry of Environment of Georgia shall be obligated to carry out a public discussion within 2 months at maximum after the receipt of the application, with the participation of the investor, the Ministry of Environment of Georgia, local administration bodies and public representatives;

5. Maximal term for the review of the evidential documentation of the activity following the receipt of the application at the Ministry of Environment of Georgia shall be 2 months. During this period the Ministry of Environment of Georgia shall be obligated to:

- carry out the state ecological expertise of the evidential documentation;
- determine the compliance of the activity or its separate part with the legislation of Georgia in force;
- determine the compliance of the activity or its separate part with the standards in effect of the condition of the environment in Georgia;
- determine the measures the elaboration of which shall be necessary for the reduction of the impact on the environment in case the activity is implemented;
- adopt a decision on the issue of the environmental permission for the activity taking into account the environmental impact assessment conclusion and public opinion.

ARTICLE 9. PROCEDURE FOR THE ISSUE OF ENVIRONMENTAL PERMITS FOR THE III CATEGORY ACTIVITIES

1. After the receipt of the detailed application to obtain environmental permits for the III category activities, the regional bodies of the Ministry of Environment of Georgia (further referred to as a "regional body") and the Ministries of Ajarian and Abkhazian Autonomous Republics shall be obligated to carry out the procedure as provided for by the present article which covers the state ecological expertise of the activities as well as public notification on the planned activity.

2. Within 10 days following the receipt of the application for public notification, the regional bodies of the Ministry of Environment of Georgia and the Ministries of Ajarian and Abkhazian Autonomous Republics shall ensure the publishing of the information on the activity in the form of a brief annotation along with the application.

3. The copy of the application shall be kept by the body of the Ministry of Environment of Georgia (also in the Ministries of Ajarian and Abkhazian Autonomous Republics) where the review of the evidential documentation on the activity is planned and the public representatives shall be able to familiarize themselves with the application (with the exception of the part containing commercial, industrial and state secrets) within the entire period of application review.

4. Maximal term for the review of the evidential documentation of the activity following the receipt of the application at the regional bodies of the Ministry of Environment of Georgia and the Ministries of Ajarian and Abkhazian Autonomous Republics shall be 2 months. During this period the regional bodies of the Ministry of Environment of Georgia and the Ministries of Ajarian and Abkhazian Autonomous Republics shall be obligated to:

- carry out the state ecological expertise of the evidential documentation;
- determine the compliance of the activity or its separate part with the legislation of Georgia in force;
- determine the compliance of the activity or its separate part with the standards in effect of the condition of the environment in Georgia;
- determine the measures the elaboration of which shall be necessary for the reduction of the impact on the environment in case the activity is implemented;
- adopt a decision on the issue of the environmental permission for the activity taking into account the environmental impact assessment conclusion and public opinion.

ARTICLE 10. PROCEDURE FOR THE ISSUE OF ENVIRONMENTAL PERMITS FOR THE IV CATEGORY ACTIVITIES

1. In order to issue an environmental protection permission the regional or local body of the Ministry of Environment of Georgia (further referred to as a "local body"), after the receipt of a detailed application shall commence the procedures provided for by the present law which cover the state ecological expertise of the activity.

2. The maximum period for the discussion of the evidential documentation of the activity by a regional or local body shall be one month. Within this period the regional or local body shall be obligated to:

- carry out the state ecological expertise of the evidential documentation;
- determine the compliance of the activity or its separate part with the legislation of Georgia in force;
- determine the compliance of the activity or its separate part with the standards in effect of the condition of the environment in Georgia;
• determine the measures the elaboration of which shall be necessary for the reduction of the impact on the environment in case the activity is implemented;
• adopt a decision on the issue of the environmental permits for the activity taking into account the environmental impact assessment conclusion and public opinion.

ARTICLE 11. GROUNDS FOR THE DENIAL TO THE ISSUE OF THE ENVIRONMENTAL PERMITS

1. The Ministry of Environment of Georgia, its regional or local bodies and the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics shall not issue an environmental protection permit if:

a) the legislation of Georgia is violated during the implementation of the activity;
b) the standards for the condition of the environment effective in Georgia are violated during the implementation of the activity and the deterioration of the condition of environment in the place where the activity is carried out is caused by the use of technologies which do not meet the technology standards established by the law,
c) implementation of the activity (for infrastructure projects) is not feasible for its location, content or scope;
d) the existing environmental protection standards are not violated as a result of the implementation of the activity but there is a precedent of the deterioration of the health of the population due to the implementation of the similar activity or any of its part.

2. In case the Ministry of Environment of Georgia, its regional or the local body and the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics (for the IVth category activity) refuses to issue a permission on the activity, the investor shall be notified in writing on the decision with the detailed argumentation upon the expiry of the specified period (3 months for the IInd category, 2 months for the IIIrd categories and 1 month for the IVth category).

ARTICLE 12. THE BASIS FOR THE ISSUE OF PERMITS ON THE ACTIVITY

1. The Ministry of the Environment of Georgia, its regional or local bodies and the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics shall issue a permit on the activity, if:

a) in the case of implementation of the activity the legislation of Georgia is not violated;
b) in the case of implementation of the activity the standards for the condition of environment in Georgia are met;
c) the implementation of the activity is feasible for its location, nature and scope (for the infrastructure projects).

2. In the case when it is identified that: - as a result of the implementation of the activity, the standards in effect for the condition of the environment in Georgia are violated and that the violation of the standards for the condition of the environment are caused by the increase in the total emission by different enterprises located in a place where the activity is implemented, but at the same time the activity under discussion plans to use best available technologies, then the investor will be given the right to implement the activity. The emission standards for the existing enterprises shall be revised and the period shall be specified by the Ministry of Environment of Georgia, upon the expiry of which the enterprises shall adhere to the new emission standards.

3. In case of the issue of the permission, the Ministry of Environment of Georgia, its regional or local bodies and the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics shall, upon the expiry of prescribed period (3 months for the IInd category, 2 months for the IIIrd and IVth categories and 1 month for the IVth category), notify the investor in a written form on the decision and provide the list of measures to be taken after the implementation of the activity. in case the decision on the issue of a permission on the activity is made

ARTICLE 13. RIGHTS AND RESPONSIBILITIES OF THE INVESTOR

1. The investor shall be obligated to provide the Ministry of Environment of Georgia, its regional or local bodies, the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics and the consultation firm (for the 1st category activities) with the objective data on the planned activity.

The investor shall bear the responsibility in accordance with the legislation of Georgia for the provision of the biased information.

2. In case the permission on the activity is granted, the investor shall be obligated to:

a) implement the activity provided for by evidential documentation in accordance with terms and conditions of the state ecological expertise conclusion;
b) after commencing to implement the activity, to take the measures reducing the impact on the environment which the Ministry of the Environment of Georgia, its regional or local bodies, the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics shall deem necessary.

3. The investor shall have the right to select on the basis of a tender a consultation firm to carry out the environmental impact assessment.

4. In the case when the investor does not agree with the decision of the Ministry of Environment of Georgia, its regional or local bodies, the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics he shall have the right to appeal to the court.

CHAPTER III
ENVIRONMENTAL IMPACT ASSESSMENT

ARTICLE 14. THE ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE

1. The procedure for environmental impact assessment shall be determined by the Ministry of Environment of Georgia.

Environmental impact assessment shall denote the study and investigation procedure of the planned activity aimed at the protection of certain elements of the environment, people, landscape and cultural heritage.

2. Environmental impact assessment shall reveal and describe direct and indirect impacts on the human health and safety, vegetation, and animal world, soil, air, water, climate, landscape, eco-systems and historical monuments or the aggregate of the above-listed factors, including the impact of these factors on the cultural values (heritage) and social and economical factors (for infrastructure projects).

3. In accordance with the present law, if the activity planned by the investor falls under the 1st category, environmental impact assessment shall be the essential and significant part of the decision-making on the issue of an environmental protection permit. The issue of a permission for the 1st category of activities shall be forbidden without the environmental impact assessment except for the cases listed in paragraph 14.4 of the present law.

4. The activity may be released from environmental impact assessment if:
   - The investor repeats or continues the activity undertaken before for which the procedure for environmental impact assessment has been carried out and the repeated assessment cannot not include additional information,
   - Common state interests require that the activity shall commence and the decision shall be made urgently.

The decision on the release of the activity from environmental impact assessment shall be made on the basis of investor’s request by a special council for environmental impact assessment. The composition and functions of the council shall be defined by the Ministry of Environment of Georgia.

The decision of the council shall be approved by the Ministry of Environment of Georgia.

5. The consultation firm shall, in accordance with the legislation of Georgia, bear the responsibility for carrying out environmental impact assessment in an unbiased manner.

6. The Ministry of Environment of Georgia, its regional or local bodies and the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics shall be responsible for the compliance of the results of environmental impact assessment expertise with environmental standards. The executor of the state ecological expertise shall, in accordance with the Georgian legislation, be liable to conduct the expertise in an unbiased manner.

7. The expenses required to conduct environmental impact assessment shall be borne by the investor.

8. Public participation in the environmental impact assessment procedure shall be obligatory.

ARTICLE 15. PARTICIPATION OF PUBLIC REPRESENTATIVES IN THE ENVIRONMENTAL IMPACT ASSESSMENT

1. Public representatives shall be entitled to provide the investor with their considerations and comments on the first category activity.

2. With the view to take into consideration public opinion and to ensure public participation, the investor shall be obligated to familiarize himself with public representatives’ written considerations and comments on the first
category activity and give heed to their arguments in the process of final issuance of evidential documentation.

3. Public representatives shall be entitled to carry out independent environmental impact assessment for the first category activity for their own account and present it to the body issuing environmental permits.

4. The results of independent environmental impact assessment should be taken into consideration during the decision-making process on the issue of environmental permits.

5. If the public representative deems that his rights have been violated, he shall be entitled to apply to Court.

ARTICLE 17. DENIAL TO PROVISION OF INFORMATION FOR FIRST CATEGORY ACTIVITY

1. The investor shall (in the course of planning first and second category activities and in the environmental impact assessment process) have the right to refuse the provision of information, based on adequate argumentation, only if:

   a) the demanded information includes a state, commercial or industrial secret;

   b) the specific investigation pertaining to EIA, has not yet been finalized and, accordingly, the information is not complete and does not describe the actual state of affairs.

2. In the event of a denial to provide the information, the public representative shall have the right to appeal to the Court.

ARTICLE 18. THE RULE FOR FUNDING OF ENVIRONMENTAL PERMITS

Within the limits of the process of the issue of environmental permits, the expenses required for arranging the environmental permission procedure shall be funded in accordance with the legislation.

ARTICLE 19. RESPONSIBILITY FOR THE VIOLATION OF THE LAW "ON ENVIRONMENTAL PERMITS"

The responsibility for violation of this law shall be borne in accordance with the legislation of Georgia.

President of Georgia             Edward Shevardnadze
Tbilisi 15 October 1996 No 424-IS
RESOLUTION OF THE PARLIAMENT OF GEORGIA

On the Law of Georgia “On State Ecological Expertise”

The Parliament of Georgia resolves:


2. To request the President of Georgia to ensure that the Ministry of Environment of Georgia elaborate and approve before January 1, 1997 the Provisions “On the rule of conducting the state ecological expertise” and “On Environmental impact assessment”.

3. From January 1, 1996, the provisional Provision “On the state ecological expertise of Georgia” adopted by the Resolution of the Government of Georgia N 894 of September 5, 1992 on “Provisional provisions of the state ecological expertise of the Republic of Georgia and the approval of the provisional rule for state ecological expertise funding and compensation” to be deemed void.

Deputy Chairman
of the Parliament of Georgia

Edward Surmanidze

Tbilisi,
15 October, 1996

\No 427-IS
ARTICLE 1. STATE ECOLOGICAL EXPERTISE

1. The state ecological expertise is an essential environmental measure which shall be carried out in the course of decision-making process on the issuance of environmental permits for an activity which covers entrepreneurial, economical or any other activity, implementation of habitation and development plans and projects, infrastructure projects, the implementation of settlement, habitation and sectoral development plans, including the implementation of plans and projects for protection, utilization and use of water, forests, land, mineral ore and other natural resources existing on the territory of Georgia, as well as significant reconstruction and technical and technological re-equipment of existing enterprises.

2. The list of the categories of activities, which in the course of decision-making process to obtain environmental permits, are subject to state ecological expertise, shall be determined by the legislation of Georgia. The law shall be applied only to the activities, the implementation of which is planned after the enactment of the Law.

The purpose of the state ecological expertise shall be to ensure control on conservation of ecological balance in the environment, basing on the principles of environmental requirements, rational utilization of natural resources and sustainable development.

The opinion of the state ecological expertise shall be an essential condition for making decision on the issue of environmental permits for implementation of an activity.

ARTICLE 2. STATE ECOLOGICAL EXPERTISE LEGISLATION

State ecological expertise legislation shall be based on the Constitution of Georgia, international agreements and arrangements, this Law as well as other legislative regulations.

ARTICLE 3. KEY PRINCIPLES OF THE STATE ECOLOGICAL EXPERTISE

The key principles of the state ecological expertise shall be:

1. Potential ecological risk assessment arising from entrepreneurial or other types of activities specified by the law;
2. All-round assessment of the possible impact of entrepreneurial or other type of activities on the environment prior to their commencement;
3. Giving heed to environmental requirements and standards;
4. Independence of experts and unlimited execution of their powers;
5. Argumentation and legality of the expertise conclusion;

CHAPTER II

THE BODY AUTHORIZED TO CARRY OUT THE STATE ECOLOGICAL EXPERTISE

ARTICLE 4. BODY AUTHORIZED IN CARRYING OUT THE STATE ECOLOGICAL EXPERTISE, ITS RIGHTS AND OBLIGATIONS

1. The Ministry of Environment of Georgia, the Ministries of Environment of Ajarian and Abkhazian Autonomous Republics, regional (urban) environmental divisions included into and subject to the Ministry of Environment of Georgia (including the Tbilisi Committee for environmental protection and regulation of natural resources), as well as the regional structural sub-divisions of the regional (urban) environmental divisions, Ministries of Environment of Ajarian and Abkhazian Autonomous Republics, and the Tbilisi Committee for environmental protection and regulation of natural resources (further referred to as the bodies authorized to carry out state ecological expertise) shall be authorized to carry out state ecological expertise.

2. The obligations of the Ministry of Environment of Georgia shall be:
   • to elaborate and approve provisions and the rule for conducting state ecological expertise;
   • to elaborate and approve necessary normative-technical documentation and methodical instructions.

3. The body authorized to conduct the state ecological expertise shall be obligated:
   • to set up expert commissions intended for studying the objects subject to the expertise;
• to provide the expertise process with required information;
• to register independent experts and to develop their data base;
• to cooperate with executive authorities on state expertise related issues.

4. In the state ecological expertise area the Ministry of Environment of Georgia shall have the right to:

• invite, in accordance with the established rule, in the process of making decisions on the issue of environmental permits for the activities, foreign specialists to conduct state ecological expertise except for the cases when the expert project is a state or commercial secret;

5. The body authorized to carry out state ecological expertise shall have the right to:

• obtain from executive authorities and state juridical persons free of charge information (data, statistics and including the information for official use), required to conduct state ecological expertise, within the period specified by the law;

6. The body authorized to carry out state ecological expertise shall be obligated to:

• ensure the compliance of state ecological expertise with the legislation in force, normative-technical documentation and methodical instructions;
• provide for familiarization the applicant of an expert object (an activity entity) with legislative, normative-technical documentation and methodical instructions regulating the organization and execution of the state ecological expertise;
• at the request of public representatives, to provide them for familiarization purpose, the documents regulating the conducting of the state ecological expertise;
• notify local authorities and public representatives having submitted justified comments on an expert object, the results of their comments review;
• at the request of government authorities, deliver the information on the results of the state ecological expertise carried out at an individual object;

ARTICLE 5. THE OBJECTS SUBJECT TO STATE ECOLOGICAL EXPERTISE

The object of the state ecological expertise shall be the evidential documentation of all the activities the list of which, apart from entrepreneurial and other types of activities, shall include the following:

• the drafts for: infrastructure planning (urbanization and town-planning, industrial, power systems and transport infrastructure development programmes including the projects for: purification facilities for populated areas, highways, railways and airfields, bridges and viaducts, main pipelines designated for any purpose, marine ports and terminals, metros, underground road and railway communications, hotel and resort complexes. sport complexes and facilities, hospitals of oncology, infectious and tuberculosis diseases), development plans for populated areas, settlement and sectoral development plans and programmes, production capacities development and placement schemes, plans and programmes, which should be approved, adopted and confirmed by the state executive and legislative authorities;
• construction, reconstruction, conservation, expansion, technical and technological re-equipment projects (notwithstanding the ownership and organizational-legal forms of the activity entities) pertaining to the activity;
• long-term rehabilitation programmes for the territories where emergency ecological situation, resulting from ecological catastrophes and epidemics, was announced;
• schemes and plans for protection, use and utilization of water, forests, woods, soil, mineral wealth and other natural resources existing on the territory of Georgia;
• projects and programmes pertaining to changing the purpose and status of the territories;
• layouts and projects of all types of economic and engineering objects (national, regional and local) targeted at evading negative effects of natural disaster processes on the territory of Georgia.

ARTICLE 6. THE RULE FOR CARRYING OUT STATE ECOLOGICAL EXPERTISE

1. Within the limits of decision-making process for the issue of environmental permits, the state ecological expertise shall be carried out after the submission, in a manner established by legislation, of an application for the expertise of an activity. The application should contain the documentation evidencing the activity which shall include: the application of an activity entity to obtain a permit for his activity, the feasibility study draft and environmental impact assessment report on the categories specified by the law as well as a brief annotation.
2. The decision on the necessity of incorporating environmental assessment report in evidential documentation shall be made in a manner established by the law.

3. The conducting procedure of state ecological expertise shall be defined by provisions “On the rule for carrying out state ecological expertise”.

4. Within the limits of decision-making process for the issue of environmental permits, the body authorized to carry out state ecological expertise shall conduct the state ecological expertise and, accordingly, prepare the state ecological expertise opinion by activity categories within the period specified by the legislation of Georgia.

ARTICLE 7. STATE ECOLOGICAL EXPERTISE OPINION

1. The results of the state ecological expertise shall be incorporated into the state ecological expertise opinion, which shall be prepared by the state ecological expertise expert commission and shall be approved by the body authorized to carry out the state ecological expertise.

2. State ecological expertise opinion may be positive or negative. The positive opinion of the state ecological expertise shall be issued in the cases when the evidential documentation:
   • is in compliance with the legislation of Georgia as well as the environmental norms and standards effective on the territory of Georgia;
   • the implementation of the activity outlined in it shall not cause irreversible qualitative and quantitative changes in the environmental condition and natural resources.
   • makes provision for measures reducing or evading the impact on the environment including the measures for liquidation of possible effects of emergency situations.

3. The validity of terms and conditions of the positive opinion of the state ecological expertise on the activity specified by the law shall be determined by the provisions “On carrying out of state ecological expertise” within the limits of decision-making process for the issue of environmental permits by activity categories.

CHAPTER III
ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

ARTICLE 8. ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE

1. Environmental impact assessment shall represent the preparation of evidential documentation for an activity and determine the nature and quality of their anticipated impact on the environment in the course of decision-making process on this activity, as well as assess their ecological, social and economic effects.

2. The responsibility for organization and conducting of environmental impact assessment shall be assumed by an activity entity specified by the law.

3. The environmental impact assessment result shall be represented by environmental impact assessment report.

4. The environmental impact assessment procedure as well as the requirements for the content of environmental impact assessment report shall be defined by the legislation of Georgia and “The environmental impact assessment” provisions, which shall be elaborated and approved by the Ministry of Environment of Georgia.

CHAPTER IV
RIGHTS AND OBLIGATIONS OF THE ACTIVITY ENTITY IN THE STATE ECOLOGICAL EXPERTISE AREA

ARTICLE 9. RIGHTS OF THE ACTIVITY ENTITY IN THE STATE ECOLOGICAL EXPERTISE AREA

The activity entity in the state ecological expertise area shall be entitled to:
   • submit to the state ecological expertise authorized body the evidential documentation for carrying out of the state ecological expertise.
   • appeal to Court in the event of disputes arising from conducting of the state ecological expertise.

ARTICLE 10. OBLIGATIONS OF THE ACTIVITY ENTITY IN THE STATE ECOLOGICAL EXPERTISE AREA

The activity entity in the state ecological expertise area shall be obligated:
   • to submit evidential documentation of the activity for the state ecological expertise in accordance with the requirements provided for by the law;
   • to provide funding of the state ecological expertise process;
subsequent to the obtaining of environmental permit for the activity, to implement the activity provided for in evidential documentation in accordance with the terms and conditions of the positive opinion issued by the state ecological expertise.

CHAPTER V
STATE ECOLOGICAL EXPERTISE FUNDING

ARTICLE 11. STATE ECOLOGICAL EXPERTISE FUNDING RULE

Expenses required to prepare and carry out the state ecological expertise shall be the part of the total expenses, required for organization of the decision-making process for the issue of environmental permits for the activity that, in accordance with the legislation, shall be incurred by the activity entity.

The expenses to be incurred by the activity entity for compensation of preparation and carrying out of the state ecological expertise shall cover: the costs of material and technical provision of the state ecological expertise process, compensation of independent experts and expenses pertaining to drawing up of the state ecological expertise opinion.

CHAPTER VI
RESPONSIBILITY FOR VIOLATION OF THE LAW OF GEORGIA “ON STATE ECOLOGICAL EXPERTISE”

ARTICLE 12. RESPONSIBILITY FOR VIOLATION OF THE LAW OF GEORGIA “ON STATE ECOLOGICAL EXPERTISE”

Responsibility for violation of this law shall be borne in a manner established by the legislation of Georgia.

President of Georgia
Edward Shevardnadze

Tbilisi
15 October 1996,
No 426-IS
ANNEX 6

Environmental Assessment
OP 4.01, January 1999
These policies were prepared for use by World Bank staff and are not necessarily a complete treatment of the subject.

Environmental Assessment

Note: OP and BP 4.01 together replace OMS 2.36, Environmental Aspects of Bank Work; OD 4.00, Annex A, Environmental Assessment; OD 4.00, Annex B, Environmental Policy for Dam and Reservoir Projects; OD 4.01, Environmental Assessment; and the following Operational Memoranda: Environmental Assessments: Instructions to Staff on the Handling of the Borrower's Consultations with Affected Groups and Relevant Local NGOs, 4/10/90; Environmental Assessments: Instructions to Staff on the Release of Environmental Assessments to Executive Directors, 11/21/90; and Release of Environmental Assessments to Executive Directors, 2/20/91. Additional information related to these statements is provided in the Environmental Assessment Sourcebook (Washington, D.C.: World Bank, 1991) and subsequent updates available from the Environment Sector Board, and in the Pollution Prevention and Abatement Handbook. Other Bank statements that relate to the environment include OP/BP 4.02, Environmental Action Plans; OP/BP 4.04, Natural Habitats; OP 4.07, Water Resources Management; OP 4.09, Pest Management; OP 4.11, Safeguarding Cultural Property in Bank-Financed Projects (forthcoming); OP/BP 4.12, Involuntary Resettlement (forthcoming); OP/GP 4.36, Forestry; OP/BP 10.04, Economic Evaluation of Investment Operations; and OD 4.20, Indigenous Peoples. This OP and BP apply to all projects for which a PID is first issued after March 1, 1999. Questions may be addressed to the Chair, Environment Sector Board.

1. The Bank requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making.

2. EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project. EA evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The Bank favors preventive measures over mitigatory or compensatory measures, whenever feasible.

3. EA takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and cultural property); and transboundary and global environmental aspects. EA considers natural and social aspects in an integrated way. It also takes into account the variations in project and country conditions; the findings of country environmental studies; national environmental action plans; the country's overall policy framework, national legislation, and institutional capabilities related to the environment and social aspects; and obligations of the country, pertaining to project activities, under relevant international environmental treaties and agreements. The Bank does not finance project activities that would contravene such country obligations, as identified during the EA.

EA is initiated as early as possible in project processing and is integrated closely with the economic, financial, institutional, social, and technical analyses of a proposed project.

4. The borrower is responsible for carrying out the EA. For Category A projects, the borrower retains independent EA experts not affiliated with the project to carry out the EA. For Category A projects that are highly risky or contentious or that involve serious and multidimensional environmental concerns, the borrower should normally also engage an advisory panel of independent, internationally recognized environmental specialists to advise on all aspects of the project relevant to the EA. The role of the advisory panel depends on the degree to which project preparation has progressed, and on the extent and quality of any EA work completed, at the time the Bank begins to consider the project.
5. The Bank advises the borrower on the Bank's EA requirements. The Bank reviews the findings and recommendations of the EA to determine whether they provide an adequate basis for processing the project for Bank financing. When the borrower has completed or partially completed EA work prior to the Bank's involvement in a project, the Bank reviews the EA to ensure its consistency with this policy. The Bank may, if appropriate, require additional EA work, including public consultation and disclosure.

6. The *Pollution Prevention and Abatement Handbook* describes pollution prevention and abatement measures and emission levels that are normally acceptable to the Bank. However, taking into account borrower country legislation and local conditions, the EA may recommend alternative emission levels and approaches to pollution prevention and abatement for the project. The EA report must provide full and detailed justification for the levels and approaches chosen for the particular project or site.

**EA Instruments**

7. Depending on the project, a range of instruments can be used to satisfy the Bank's EA requirement: environmental impact assessment (EIA), regional or sectoral EA, environmental audit, hazard or risk assessment, and environmental management plan (EMP). EA applies one or more of these instruments, or elements of them, as appropriate. When the project is likely to have sectoral or regional impacts, sectoral or regional EA is required.

**Environmental Screening**

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

(a) *Category A*: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. EA for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the "without project" situation), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. For a Category A project, the borrower is responsible for preparing a report, normally an EIA (or a suitably comprehensive regional or sectoral EA) that includes, as necessary, elements of the other instruments referred to in para. 7.

(b) *Category B*: A proposed project is classified as Category B if its potential adverse environmental impacts on human populations or environmentally important areas-including wetlands, forests, grasslands, and other natural habitats—are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects. The scope of EA for a Category B project may vary from project to project, but it is narrower than that of Category A EA. Like Category A EA, it examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. The findings and results of Category B EA are described in the project documentation (Project Appraisal Document and Project Information Document).

(c) *Category C*: A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project.

(d) *Category F*: A proposed project is classified as Category F if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts.

**Sector Investment Lending**

9. For sector investment loans (SILs), during the preparation of each proposed subproject, the project coordinating entity or implementing institution carries out appropriate EA according to country requirements and the requirements of this policy. The Bank appraises and, if necessary, includes in the SIL components to strengthen, the capabilities of the coordinating entity or the implementing institution to (a) screen subprojects, (b)
obtain the necessary expertise to carry out EA, (c) review all findings and results of EA for individual subprojects, (d) ensure implementation of mitigation measures (including, where applicable, an EMP), and (e) monitor environmental conditions during project implementation. If the Bank is not satisfied that adequate capacity exists for carrying out EA, all Category A subprojects and, as appropriate, Category B subprojects—including any EA reports—are subject to prior review and approval by the Bank.

**Sector Adjustment Lending**

10. Sector adjustment loans (SECALs) are subject to the requirements of this policy. EA for a SECAL assesses the potential environmental impacts of planned policy, institutional, and regulatory actions under the loan.

**Financial Intermediary Lending**

11. For a financial intermediary (FI) operation, the Bank requires that each FI screen proposed subprojects and ensure that subborrowers carry out appropriate EA for each subproject. Before approving a subproject, the FI verifies (through its own staff, outside experts, or existing environmental institutions) that the subproject meets the environmental requirements of appropriate national and local authorities and is consistent with this OP and other applicable environmental policies of the Bank.

12. In appraising a proposed FI operation, the Bank reviews the adequacy of country environmental requirements relevant to the project and the proposed EA arrangements for subprojects, including the mechanisms and responsibilities for environmental screening and review of EA results. When necessary, the Bank ensures that the project includes components to strengthen such EA arrangements. For FI operations expected to have Category A subprojects, prior to the Bank's appraisal each identified participating FI provides to the Bank a written assessment of the institutional mechanisms (including, as necessary, identification of measures to strengthen capacity) for its subproject EA work. If the Bank is not satisfied that adequate capacity exists for carrying out EA, all Category A subprojects and, as appropriate, Category B subprojects—including EA reports—are subject to prior review and approval by the Bank.

**Emergency Recovery Projects**

13. The policy set out in OP 4.01 normally applies to emergency recovery projects processed under OP 8.50, *Emergency Recovery Assistance*. However, when compliance with any requirement of this policy would prevent the effective and timely achievement of the objectives of an emergency recovery project, the Bank may exempt the project from such a requirement. The justification for any such exemption is recorded in the loan documents.

14. When the borrower has inadequate legal or technical capacity to carry out key EA-related functions (such as review of EA, environmental monitoring, inspections, or management of mitigatory measures) for a proposed project, the project includes components to strengthen that capacity.

**Institutional Capacity**

15. For all Category A and B projects proposed for IBRD or IDA financing, during the EA process, the borrower consults project-affected groups and local nongovernmental organizations (NGOs) about the project's environmental aspects and takes their views into account. The borrower initiates such consultations as early as possible. For Category A projects, the borrower consults these groups at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared. In addition, the borrower consults with such groups throughout project implementation as necessary to address EA-related issues that affect them.

**Public Consultation**

16. For meaningful consultations between the borrower and project-affected groups and local NGOs on all...
Category A and B projects proposed for IBRD or IDA financing, the borrower provides relevant material in a
timely manner prior to consultation and in a form and language that are understandable and accessible to the
groups being consulted.

17. For a Category A project, the borrower provides for the initial consultation a summary of the proposed
project's objectives, description, and potential impacts; for consultation after the draft EA report is prepared, the
borrower provides a summary of the EA's conclusions. In addition, for a Category A project, the borrower makes
the draft EA report available at a public place accessible to project-affected groups and local NGOs. For SILs and
FI operations, the borrower/FI ensures that EA reports for Category A subprojects are made available in a public
place accessible to affected groups and local NGOs.

18. Any separate Category B report for a project proposed for IDA financing is made available to project-affected
groups and local NGOs. Public availability in the borrowing country and official receipt by the Bank of Category
A reports for projects proposed for IBRD or IDA financing, and of any Category B EA report for projects
proposed for IDA funding, are prerequisites to Bank appraisal of these projects.

19. Once the borrower officially transmits the Category A EA report to the Bank, the Bank distributes the
summary (in English) to the executive directors (EDs) and makes the report available through its InfoShop. Once
the borrower officially transmits any separate Category B EA report to the Bank, the Bank makes it available
through its InfoShop. If the borrower objects to the Bank's releasing an EA report through the World Bank
InfoShop, Bank staff (a) do not continue processing an IDA project, or (b) for an IBRD project, submit the issue
of further processing to the EDs.

Implementation

20. During project implementation, the borrower reports on (a) compliance with measures agreed with the Bank
on the basis of the findings and results of the EA, including implementation of any EMP, as set out in the project
documents; (b) the status of mitigatory measures; and (c) the findings of monitoring programs. The Bank bases
supervision of the project's environmental aspects on the findings and recommendations of the EA, including
measures set out in the legal agreements, any EMP, and other project documents

1. "Bank" includes IDA; "EA" refers to the entire process set out in OP/BP 4.01; "loans" includes credits;
borrower" includes, for guarantee operations, a private or public project sponsor receiving from another financial
institution a loan guaranteed by the Bank; and "project" covers all operations financed by Bank loans or
guarantees except structural adjustment loans (for which the environmental provisions are set out in OP/BP 8.60,
Adjustment Lending, forthcoming) and debt and debt service operations, and also includes projects under
adaptable lending-adaptable program loans (APLs) and learning and innovation loans (LILs)-and projects and
components funded under the Global Environment Facility. The project is described in Schedule 2 to the
Loan/Credit Agreement. This policy applies to all components of the project, regardless of the source of
financing.

2. For definitions, see Annex A. The area of influence for any project is determined with the advice of
environmental specialists and set out in the EA terms of reference.

3. See OP/BP 4.12, Involuntary Resettlement (forthcoming); OD 4.20, Indigenous Peoples; and OP 4.11,

4. Global environmental issues include climate change, ozone-depleting substances, pollution of international
waters, and adverse impacts on biodiversity.

5. For screening, see para. 8.

6. EA is closely integrated with the project's economic, financial, institutional, social, and technical analyses to
ensure that (a) environmental considerations are given adequate weight in project selection, siting, and design
decisions; and (b) EA does not delay project processing. However, the borrower ensures that when individuals or
entities are engaged to carry out EA activities, any conflict of interest is avoided. For example, when an
independent EA is required, it is not carried out by the consultants hired to prepare the engineering design.

7. The panel (which is different from the dam safety panel required under OP/BP 4.37, Safety of Dams) advises
the borrower specifically on the following aspects: (a) the terms of reference for the EA, (b) key issues and
methods for preparing the EA, (c) recommendations and findings of the EA, (d) implementation of the EA's
recommendations, and (e) development of environmental management capacity.

8. These terms are defined in Annex A. Annexes B and C discuss the content of EA reports and EMPs.

9. Guidance on the use of sectoral and regional EA is available in EA Sourcebook Updates 4 and 15.

10. A potential impact is considered "sensitive" if it may be irreversible (e.g., lead to loss of a major natural
habitat) or raise issues covered by OD 4.20, Indigenous Peoples; OP 4.04, Natural Habitats; OP 4.11,
Safeguarding Cultural Property in Bank-Financed Projects (forthcoming); or OP 4.12, Involuntary Resettlement.
I. When the screening process determines, or national legislation requires, that any of the environmental issues identified warrant special attention, the findings and results of Category B EA may be set out in a separate report. Depending on the type of project and the nature and magnitude of the impacts, this report may include, for example, a limited environmental impact assessment, an environmental mitigation or management plan, an environmental audit, or a hazard assessment. For Category B projects that are not in environmentally sensitive areas and that present well-defined and well-understood issues of narrow scope, the Bank may accept alternative approaches for meeting EA requirements: for example, environmentally sound design criteria, siting criteria, or pollution standards for small-scale industrial plants or rural works; environmentally sound siting criteria, construction standards, or inspection procedures for housing projects; or environmentally sound operating procedures for road rehabilitation projects.

12. SILs normally involve the preparation and implementation of annual investment plans or subprojects as time slice activities over the course of the project.

13. In addition, if there are sectorwide issues that cannot be addressed through individual subproject EAs (and particularly if the SIL is likely to include Category A subprojects), the borrower may be required to carry out sectoral EA before the Bank appraises the SIL.

14. Where, pursuant to regulatory requirements or contractual arrangements acceptable to the Bank, any of these review functions are carried out by an entity other than the coordinating entity or implementing institution, the Bank appraises such alternative arrangements; however, the borrower/coordinating entity/implementing institution remains ultimately responsible for ensuring that subprojects meet Bank requirements.

15. Actions that would require such assessment include, for example, privatization of environmentally sensitive enterprises, changes in land tenure in areas with important natural habitats, and relative price shifts in commodities such as pesticides, timber, and petroleum.

16. The requirements for FI operations are derived from the EA process and are consistent with the provisions of para. 6 of this OP. The EA process takes into account the type of finance being considered, the nature and scale of anticipated subprojects, and the environmental requirements of the jurisdiction in which subprojects will be located.

17. Any FI included in the project after appraisal complies with the same requirement as a condition of its participation.

18. The criteria for prior review of Category B subprojects, which are based on such factors as type or size of the subproject and the EA capacity of the financial intermediary, are set out in the legal agreements for the project.

19. For the Bank's approach to NGOs, see GP 14.70, Involving Nongovernmental Organizations in Bank-Supported Activities.

20. For projects with major social components, consultations are also required by other Bank policies—for example, OD 4.20, Indigenous Peoples, and OP/BP 4.12, Involuntary Resettlement (forthcoming).


22. See OP/BP 13.05, Project Supervision, forthcoming.
Sectoral Environmental Assessment

Sectoral environmental assessment (SEA) is a much needed complement to project-specific EAs in development planning. Where project EAs focus on the impacts of specific investments and often treat sector strategic planning as a given, SEA offers an opportunity for sector-wide environmental analysis before investment priorities have been determined. It also supports integration of environmental concerns into long-term development and investment planning. SEA is most commonly applied in the context of sector investment programs involving multiple sub-projects. It can also be applied in conjunction with sector-oriented time-slice and line-of-credit projects, and even with sector adjustment operations or in evaluation of sector policies.

This EA Sourcebook Update, which belongs to Chapter 1: The Environmental Review Process (Update Binder), describes SEA in terms of advantages, operational context, selection criteria, and components. It also discusses what some of the challenges associated with SEA preparation are, and how SEA is being used in Bank operations. This Update expands on existing information in Chapter 1 (pp. 14-17) of the EA Sourcebook.

Background

World Bank guidance on sectoral EA was introduced in 1989 with the adoption of Operational Directive (OD) 4.00, Annex A: Environmental Assessment (amended in 1991 as OD 4.01). The Environmental Assessment Sourcebook (1991) provided more detailed advice that has helped the Bank and its borrowers to introduce SEA in project preparation, despite the lack of a tested methodology. On the basis of this accumulated experience, it is now possible to expand Bank guidance on SEA.

SEA avoids the inherent limitations of project-specific EAs in addressing issues related to policy and planning and the legal and institutional framework. By moving upstream in the planning process to a stage where major strategic decisions have not yet been made, SEA offers better opportunities not only for analyzing existing policies, institutions, and development plans in terms of environmental issues, but also for supporting environmentally sound sector-wide investment strategies. A SEA may, for example, allow for a more realistic environmental assessment of competing investment alternatives in the power sector, where one option might favor massive coal thermal and hydro-electric expansion; a second option, nuclear and hydro-electric power; and a third, a combination of coal and gas thermal power coupled with demand-side management and development of renewable biomass energy. Similarly, where project-specific EA would analyze the impacts on ambient air quality around a new industrial estate, the sectoral EA might look at the cumulative effects of acid rain or other problems resulting from proposed industrial developments in terms of their regional, national or even transnational impacts.

The Bank’s increasing use of programmatic, sector-oriented loans and time-slice investment programs has served to build demand for a sectoral EA approach, and has provided the best opportunities for developing SEA as a planning tool. An example of this approach is presented in Box 1. In other cases, sectoral EA may be the only EA output if the sub-projects do not require EAs individually. Environmental planning measures and/or guidelines developed by the SEA may then be applied (see Box 2 for a list of Bank-financed projects with a SEA component).

Advantages of Sectoral EAs

The growing Bank experience with SEAs has revealed several important benefits to be gained from use of this instrument in development planning (see Boxes 1 and 3–6). The following advantages are worth highlighting:

- Sectoral EAs can prevent serious environmental impacts through analysis of sector policies and investment strategies upstream in the planning process, before major decisions are made.
- They can assist governments in forming a long-term view of the sector and can increase the transparency of the sectoral planning process (that is, show the reasoning behind development plans), thereby decreasing the opportunities for purely political decisions that might be environmentally harmful.
- They are suitable for analysis of institutional, legal and regulatory aspects related to the sector, and for making comprehensive and realistic recommendations regarding, for example, environmental standards, guidelines, law enforcement, and training, thus reducing the need for similar analysis in downstream EA work.
- They provide opportunities for consideration of alternative policies, plans, strategies or project types, taking into account their costs and benefits, particularly the environmental and social costs that are often ignored in least-cost project planning.
SEAs help to alter or eliminate environmentally unsound investment alternatives at an early stage, thus reducing overall negative environmental impacts, while also eliminating the need for project-specific EA of these alternatives (see Figure 1).

They are well suited to consider cumulative impacts of multiple ongoing and planned investments within a sector, as well as impacts from existing policies and policy changes.

They are valuable for collecting and organizing environmental data into information and, in the process, identifying data gaps and needs at an early stage, and for outlining methods, schedules and responsibilities for data collection and management during program or project implementation.

They allow for comprehensive planning of general sector-wide mitigation, management, and monitoring measures, and for identifying broad institutional, resource and technological needs at an early stage.

They provide a basis for collaboration and coordination across sectors, and help to avoid duplication of efforts and policy contradictions between sector agencies and ministries.

They may strengthen preparation and implementation of sub-projects by recommending criteria for environmental analysis and review, and standards and guidelines for project implementation.

The Operational Context

Three broad operational contexts, or situations, may trigger SEA work. The need to interpret OD 4.01 varies according to these contexts.

The first type of situation is a category A or B investment program or a series of independent A and/or B projects in a given sector. In these cases, the process and timing and the scope of the SEA should follow the requirements of OD 4.01. For B projects a limited sectoral environmental analysis would normally be the appropriate form of SEA. Types of projects in this first context may include:

- a national or sub-national sector program;
- a series of projects in the same sector;
- a large project with sectoral implications;
- a sectoral intermediate credit operation; or
- a sectoral time-slice investment operation.

The second context is in projects and programs where a SEA is prepared to complement the planning process. These SEAs may be triggered by Bank environmental screening of a project; but they cover a broader set of issues than merely the impact of the project, and they proceed in parallel with the required project EA work. This SEA approach may, for example, be appropriate in sectors with widespread and well-known environmental damage although the project supported by the Bank may not create any significant additional problems. The Bank might help secure funding for such SEA work, but OD 4.01 does not directly apply (and subsequently the SEA does not have to be completed prior to appraisal). Box 6 provides an example of a SEA prepared in this context.

The third context is when sectoral environmental analysis is employed without any direct link to lending activities. In this case, the SEA is typically related to Bank economic and sector analysis for a country. OD 4.01 does not apply, and no particular procedures need to be followed although this Update may provide valuable information.

Criteria for Choosing SEA

The following questions will help identify where a sectoral EA approach may be particularly appropriate and useful in a project or program where OD 4.01 applies. If the answer to the following question is positive, SEA should be seriously considered:

- Is the Bank considering any of the investment types listed in the section on Operational Context (above), in a sector with significant environmental issues?

If the answer to the next three questions is also positive, SEA is highly recommended:

- Are there major existing environmental problems associated with the sector, and/or sector-wide potential environmental impacts resulting from the proposed program or series of projects?
- Is there a clear potential for significant environmental improvement or avoidance of major problems in the sector?
- Are there clear policy, regulatory and/or institutional weaknesses relative to environmental management in the sector?
SEAs will vary in scope and content according to the types and significance of issues and the operational context. A general outline for a full category A SEA can be constructed, however, using the guidance provided in OD 4.01, Annex B, for a full project-specific EA (see also Box 5 for a sector-specific example).

Executive Summary. As in a project-specific EA, a SEA should contain an executive summary (in English), with a concise discussion of significant findings and recommended actions.

Policy, Legal and Administrative Framework. This section is one of the most important parts of a sectoral EA. It is helpful to analyze both (1) the national environmental legal, regulatory and institutional framework, and (2) sector-specific policies, regulations and institutions (see Box 3). If other, recent studies have already analyzed these dimensions in an adequate way, the SEA should draw on this work rather than duplicate it.

- The national framework. The relevant national environmental policies, laws and regulations should be assessed for completeness and appropriateness in light of the particular conditions and problems of the sector, and gaps and weaknesses noted. Non-environmental laws and policies that have significance for the sector's utilization of resources, production processes, or pollution should also be identified. Similarly, the national regulatory framework for EA preparation and review should be assessed. The SEA should look closely at the institutional capacity of the main environmental ministry or agency, in terms of effectiveness and capacity for providing guidelines, setting and enforcing standards, and reviewing environmental assessments. The capacity and performance of agencies responsible for specific environmental services such as nature protection and cultural heritage should also be reviewed when relevant.

- The sector framework. The SEA should analyze sector-specific policies, laws and regulations that have environmental implications. It should also identify how environmental responsibilities are distributed among (public or private) sector institutions and assess their capacity to administer these tasks. The sectoral investment planning process, in terms of objectives, methodology and procedures for review and approval of plans and projects, should be carefully reviewed. The relationship between timing of project review, issuance of licenses and permits, and the sectoral planning process should be clearly indicated. The SEA should assess whether environmental and social issues are adequately covered by current procedures.

Project Description. The nature and objectives of the program, plan, series of projects or other context to which the SEA is attached should be described, and the main environmental issues associated with the sector and these programs, identified.

Baseline Data. This section should describe and evaluate the current environmental situation in the sector. Where a project-specific EA would describe conditions such as ambient air and water quality or existing impacts from pollution around a proposed project site, the SEA should concentrate on the issues and problems that are typical of the sector as a whole. For example, occupational health may be a concern across enterprises within a specific industry; seepage of heavy metals into streams and groundwater may be a recurring problem in the mining sector; or deforestation may result from activities in the agriculture sector. Another important function of this section is to note major data gaps.

Environmental Impacts. The single most difficult challenge in SEAs is to produce a sufficiently precise impact analysis, often in the face of uncertainties related to the final investment decisions and their individual and combined impacts. In recent years, advances have been made in the methodologies for assessing cumulative impacts, in relation to development plans and programs. Means include quantitative modeling, forecasting and various qualitative analyses. If any proposed sub-project is expected to cause particularly significant impacts, the SEA should recommend an appropriate course of action to address them, including carrying out a project-specific EAs (see Box 4).

All cumulative effects should be considered: positive and negative, direct and indirect, long-term and short-term. Aggregate problems such as sewage discharge, acid rain, ozone depletion and deforestation are usually the result of several activities, sometimes stemming predominantly from a single sector. Cumulative impacts on environmentally important and sensitive areas and assets such as coastal zones and wetlands, or freshwater resources, are also important in cases where the sector activities heavily affect these areas and/or resources.
The sectoral EA is an appropriate instrument for considering issues related to long-term sustainable development. Specifically, the SEA may contain a discussion of how a proposed investment program may influence long-term productivity of environmental resources affected by the program.

**Analysis of Alternatives.** A major purpose of a SEA is to do a thorough analysis of alternative investment options and strategies in terms of environmental costs and benefits. For example, if a proposed agricultural program emphasizes conversion of wetlands to rice production, an alternative approach such as intensification of production in existing fields, conversion of other land types, or crop rotation may be considered.

All major investments under consideration, besides the option being considered by the Bank, should be considered at this stage, whether complementary or alternative to the Bank option. The other options may include investments by the private as well as the public sector.

A comparative analysis of alternative programs is highly recommended, applying indicators of environmental and social impacts and methods to evaluate and compare the indicators and ultimately the alternative options. Where several donors are involved in the sector, the SEA should review their existing and/or planned activities and, if necessary, suggest ways to coordinate efforts.

The sectorial EA can also be used to evaluate the environmental effects of sector policy alternatives. For example, changes in tax and subsidy rates on the use of natural resources may greatly influence rates and methods of extraction.

The analysis could conclude with a list of sector proposals, ranked according to environmental preference. The analysis of impacts and alternatives should result in a recommendation for an optimal investment strategy, in terms of environmental and social costs and benefits.

**Mitigation Plan.** Mitigation measures are usually of a detailed, technical nature, and therefore normally addressed in project-specific EAs. However, if planned or existing production and process technologies in a sector are relatively uniform, the SEA could recommend broad options for eliminating, reducing to acceptable levels, or mitigating environmental impacts. Such solutions could include a complete production system design as well as end-of-pipe cleaning technologies. SEA mitigation recommendations should draw on findings from the analysis of policy, legal and institutional issues as well as the analysis of impacts and alternatives.

A SEA is an effective tool for designing and recommending mitigation measures that can be implemented only at the national or sectoral level for regulatory or economic reasons. In an urban transportation program, for example, automobile emission limits could be recommended if the level of emissions were found to supersede acceptable standards for air quality. Similarly, in a sector program involving multiple investments, the SEA may be better placed than project-specific EAs to consider sector-wide mitigation solutions that require economies of scale in order to be cost-effective. Construction of a solid waste recycling plant for an entire country is one such example.

**Environmental Management and Training.** One of the main outputs of a SEA should be an institutional plan for improving environmental management in the sector, based on findings of the previous sections (see Boxes 1 and 6). The plan might recommend training of existing staff, hiring of additional staff, reorganization of units or agencies, or redefinition of roles and responsibilities. This section might also include recommendations on policy and regulatory instruments for environmental management and enforcement in the sector. A screening process to separate those sub-project needing a project-specific EA from those not requiring further analysis should be designed, if it is not already in place (see Box 4).

**Environmental Monitoring Plan.** The SEA should provide general guidelines for long-term sector-wide environmental monitoring to ensure adequate implementation of investments. A monitoring plan should use the findings of the baseline data section as a basis to measure progress in mid-term review and final evaluation. The plan should also recommend measures needed to collect and organize missing data.

**Public Consultation.** Public consultation is an integral part of the EA process, whether a project-specific or sectoral EA is being prepared (see OD 4.01 and EA Sourcebook Update No. 5: Public Involvement in Environmental Assessment for more specific guidance). However, since a SEA normally covers an entire sector (in a national or subnational context) and is conducted before concrete investment decisions are made, it may not always be possible to consult representatives of all potentially affected people during preparation of the SEA. Often, it is more feasible and appropriate to carry out consultations with national NGOs (for example, for nature protection), scientific experts, relevant government agencies, and perhaps also industrial and commercial interests. A successfully implemented consultation process will help ensure public support for the final sector program.

**Challenges in SEA**

**Timing and Status**

In order for a SEA to reach its full potential as a planning tool, it must be undertaken in concert with the overall investment planning in the sector. In practice, this is sometimes difficult to achieve because Bank-financed projects and programs are often prepared after government sector planning and strategic decision-making. This
makes any consideration of strategic alternatives difficult. Early coordination between the planning processes of the borrower and the Bank is the best way to overcome this constraint.

If a SEA is undertaken, its relevance to sector planning should be ensured through preparation of terms of reference (TORs) and coordination between preparers and sector planners. If SEAs over time demonstrate high quality and usefulness as a planning tool, they likely will have growing acceptance.

**Costs**

A sectoral EA is generally more costly to undertake than project-specific EA. For this reason, some borrowers may be reluctant to choose the SEA option unless the SEA can be expected to so improve the quality of sector planning that the need will be reduced for project-specific EA work—and associated costs—downstream.

**Appropriate TORs and Consultants**

Experience and special skills are required to do adequate SEA work, especially in cumulative impact assessment and in analysis of alternative options and the policy, legal and institutional framework. At the same time, TORs for the EA need to be realistic in their requirements and manageable. TORs should narrow the scope of analysis to issues that are most significant and widespread within the sector, rather than require coverage of all aspects. TOR preparation and EA team selection should also support development of in-country capacity for SEA work.

**Adjusting to Circumstances**

A sectoral EA approach may be useful even in cases where major sector decisions have already been made. For example, the SEA can be adjusted to the purposes of a time-slice or financial intermediary loan involving numerous sub-projects in which the primary issue is setting up appropriate mechanisms for sub-project screening, review, impact analysis, and monitoring. In these cases, doing a more limited SEA may reduce the amount of EA work needed for individual sub-projects, while facilitating more effective review and monitoring at the sectoral level.

In many developing countries, economic and social changes are often rapid and unpredictable, as are changes in technological opportunities (for example, with regard to pollution abatement). On the other hand, planning time frames tend to be long-term due to difficulties in raising capital and limited absorptive capacity. Because of this tension, a full SEA may not always be the optimal option. An alternative approach, currently used by Kenya in the energy sector and supported by the Bank, is to identify major investment options within the sector, rank them by environmental and social criteria and impacts, and provide a general overview of mitigation requirements for each option. This approach allows for gathering of essential data and can serve as a “preamble” to project-specific EAs where needed.

**Ensuring Specificity and Follow-Up**

Doing a SEA should not become an excuse for overlooking site-specific environmental issues, even though the emphasis is primarily on issues generic to the sector. The SEA should be employed to identify prevalent problems in the sector as a whole and major site-specific problems, which might subsequently be addressed in project-specific environmental assessment. The SEA should help determine where more EA work is needed downstream.
Box 1. State of Orissa, India: Water Resources Consolidation Project

India has begun increasing irrigation capacity through more efficient operation and maintenance of existing facilities, rather than through construction and development. A series of Water Resources Consolidation projects (WRCP) currently being planned by four State Governments and supported by the Bank will facilitate this change of direction. A sectoral EA approach is being adopted for these projects because: (1) they are substantially programmatic and not all activities will be fully defined at appraisal; (2) the main environmental issues concern monitoring and management rather than impacts from new construction projects; and (3) environmental considerations related mainly to water quality and quantity are becoming increasingly important in all these states. The governments need improved technical advice on how to cope with these challenges on the institutional and policy level.

The first of these projects was Orissa WRCP, and preparation of the SEA was divided into two phases. Phase 1, currently in progress, focuses heavily on the institutional and legal framework for the water sector and includes the following objectives and tasks:

- to assist in establishing an Environmental Group within the Orissa Irrigation Department’s Central Planning Unit;
- to review the status of environmental legislation and its applicability to the water resource sector in general, and to proposed projects in particular;
- to provide guidelines for the approach to and the preparation of required Site Clearance and Environmental Clearance documents for various types of irrigation projects (such as dams, irrigation development, river basin plans, major drainage and flood protection works, and rehabilitation of major irrigation schemes);
- to provide initial training for the water resource sector and other related government staff in EA procedures, techniques and analyses;
- to establish the organization, staffing levels, responsibilities, operating procedures and budgeting for a proposed environmental sector unit;
- to prepare a comprehensive training and institutional strengthening program, including 2-3 case study EAs for representative projects; and
- to delineate procedures for interagency liaison and internal department clearances for water resource project EAs with departments such as Environment, Forests, and Health Service.

The total cost of the Phase 1 program was estimated at US $446,700, with staff requirements estimated at 34.5 person months.

Phase 2 will be based on findings and recommendations of the first phase. It would probably include such components as preparation and completion of the case studies, long-term training in EA, preparation of monitoring plans for the irrigation sector, and upgrade of the environmental monitoring facilities.

Box 3. Bolivia: Sectoral EA for Industry and Mining

The purpose of this EA was to help design the Environment, Industry and Mining Project (EIMP), proposed to begin about mid-1995. A sectoral approach was chosen to strengthen capability in planning new industrial and mining investments and to build institutional capacity for environmental management. The SEA was prepared by a Swedish team and a counterpart group appointed by the National Environmental Secretariat (SENMA). The EA report included all the components described in OD 4.01—Annex B, with an emphasis on (1) the policy, legal and institutional framework, generally and specifically, for the two sectors; (2) assessment of impacts from ongoing activities and planned investments (covering natural resources and the environment, occupational health and safety, social structures, and heavily affected regions); and (3) recommendations for a mitigation plan. There was also a separate chapter on public participation in the EA process, which documented consultations with some 40 governmental and nongovernmental organizations, including several NGOs at the local level.

Policy, Legal and Institutional Framework

The analysis of the cross-sectoral policy, legal and institutional framework was comprehensive and covered the following aspects: (1) organization of the State (branches of government, key ministries and major legal instruments); (2) economic policy; (3) national policies, laws and institutions for the environment; (4) environmental impact assessment requirements; (5) policies and laws for the use of natural resources; (6) environmental
management in areas such as water quality, solid waste, pesticides and air pollution; (7) occupational health and safety; and (8) foreign assistance. Major issues related to the policy, legal and institutional framework included: (1) unclear environmental law about institutional responsibilities, which leads to weak enforcement; (2) almost no environmental laws regarding mining, and poor enforcement of the few provisions in place; (3) no regulations specifically for hazardous waste or industrial air emissions; and (4) no effective regulation of industrial water pollution except in a few municipalities.

EA Recommendations
The EA preparers were able to produce a series of concrete recommendations that were directly related to the environmental problems caused by activities in the two sectors. Recommendations for changes fell into three areas: (1) broad policy, legal and institutional changes (e.g., setting goals for ambient environmental quality, implementing new EIA regulation, and improving laboratory capacity); (2) major mitigation activities (e.g., addressing environmental issues in privatization of state-owned mines on the basis of environmental audits, extending sewerage systems in Cochabamba, and addressing problems related to alluvial gold mining in the Bolivian Amazon basin); and (3) additional priorities (e.g., encouraging broad public participation, building a coherent national environmental database, and introducing environmental audits, first voluntarily and eventually as a requirement, of industrial and mining facilities).

Box 4. Procedures for Sectoral EA: Asia Region

Extensive experience with program and time-slice lending in the highway sector, particularly rural areas, has spurred development of informal procedures for sectoral EA in the Bank's Asia region, to ensure consideration of all possible impacts on the environment. According to the informal procedures, a sectoral EA should contain:

- a screening process designed to identify sub-projects having potentially significant issues that would need to be addressed in a sub-project EA;
- a general assessment of the kinds of impacts that might be associated with the different types of rural road sub-projects; and
- a sectoral environmental action plan to eliminate, minimize or mitigate the impacts identified in the sectoral EA, and provide general guidelines for long-term monitoring.

Two categories are used in environmental screening of sub-projects:

- sub-projects that may create a few minor and easily recognizable environmental problems, but no significant ones; and
- sub-projects with potentially adverse impacts on environmentally sensitive areas, defined as zones of significant human habitation; ecologically important areas such as wetlands and primary forests; archeological, historical and cultural sites; and terrain with slope greater than 50%.

The second category of sub-projects requires project-specific EA, while the first category is addressed primarily through the sectoral EA in the form of general impact assessments, sectoral action plans, and codes of engineering practice for environmentally sustainable road development. These codes apply to both categories of sub-projects and cover such issues as construction practices, site selection, resettlement and compensation, and public consultation/participation.

Box 5. Technical SEA Guidelines in the Electricity Sector: LAC Region

The Bank's Latin American and Caribbean (LAC) region has developed technical guidelines for sectoral EA in the electricity sector, based on its extensive experience in this sector. The guidelines stipulate that a sectoral EA is recommended where project-specific EAs are not appropriate, due to:

- minimal preparation of individual project components at the time of Bank appraisal (e.g., hydro-power developments may be at very preliminary stages of planning);
- the nature of the lending operation, such as time-slice operations involving a large number of projects at varying stages of development; and/or,
- the nature and scale of the projects or programs under consideration.

The guidelines describe the principal sections of a SEA for the power sector: (1) description of the current situation of the power sector; (2) review of the country's environmental institutional framework; (3) review of the power
sector's regulatory framework and planning procedures; (4) analysis of planned and alternative power sector strategies; (5) choice of an optimal investment strategy; (6) review of institutional capacity of power sector agencies; (7) public consultation; and (8) action plan (for mitigation, management and monitoring).

Box 6. Morocco: Large-Scale Irrigation II
(Sectoral EA as Part of Sector Planning)

The Government of Morocco and the Bank agreed to conduct a sectoral EA as a complementary activity in the preparation of this project. Although a full EA or SEA was not required for the proposed project under OD 4.01, both parties saw the potential added value a SEA could bring to the integration of environmental concerns into the long-term development of the irrigation sector. Concurrently, the investment component of the project, focusing on the rehabilitation of existing irrigation infrastructure, was placed in environment screening category B and was thus the subject of a field-based environmental review. A joint venture of two French consulting firms, financed with a Japanese grant, was hired (following a competitive selection process) to prepare both the SEA and the environmental review.

The SEA examined the long-term environmental implications of proposed future investments in the sector; evaluated environmental concerns associated with system operation and maintenance; and analyzed institutional, legal and regulatory aspects. The SEA proposed an environmental management framework focused on development of environmental units for irrigation at both the national and district levels. Support for the initial phase of implementation of the institutional strengthening and training recommended in the SEA was included in the project. It should be noted that the SEA preparation and review process resulted in significantly increased awareness of the diversity and complexity of environmental issues in this sector by the Moroccan study coordinators and participants.

The SEA provided an analysis of legal, regulatory and institutional aspects of environmental management in the irrigation sector, including recommendations for: (1) creation of new institutions responsible for policy and strategy formulation, environmental monitoring, and training; and (2) development of new laws and regulations for improving management and overall performance in the sector. Major technical activities recommended in the SEA included: (1) protection of watersheds; (2) water use planning; (3) soil conservation; (4) protection of ecologically sensitive habitats and species; (5) public health programs and monitoring; and (6) training and special studies.
ANNEX 7

MONTREAL PROCESS CRITERIA AND INDICATORS FOR THE CONSERVATION AND SUSTAINABLE MANAGEMENT OF TEMPERATE AND BOREAL FORESTS
CRITERION 1: Conservation of biological diversity

Biological diversity includes the elements of the diversity of ecosystems, the diversity between species, and genetic diversity in species.

Indicators:

1.1 Ecosystem diversity
   1.1.a. Extent of area by forest type relative to total forest area-(a);
   1.1.b. Extent of area by forest type and by age class or successional stage-(b);
   1.1.c. Extent of area by forest type in protected area categories as defined by IUCN2 or other classification systems-(a);
   1.1.d. Extent of areas by forest type in protected areas defined by age class or successional stage-(b);
   1.1.e. Fragmentation of forest types-(b).

1.2 Species diversity
   1.2.a. The number of forest dependent species-(b);
   1.2.b. The status (threatened, rare, vulnerable, endangered, or extinct) of forest dependent species at risk of not maintaining viable breeding populations, as determined by legislation or scientific assessment-(a).

1.3 Genetic diversity
   1.3.a. Number of forest dependent species that occupy a small portion of their former range-(b);
   1.3.b. Population levels of representative species from diverse habitats monitored across their range-(b).

CRITERION 2: Maintenance of productive capacity of forest ecosystems

Indicators:

a. Area of forest land and net area of forest land available for timber production-(a);
b. Total growing stock of both merchantable and non-merchantable tree species on forest land available for timber production-(a);
c. The area and growing stock of plantations of native and exotic species-(a);
d. Annual removal of wood products compared to the volume determined to be sustainable-(a);
e. Annual removal of non-timber forest products (e.g. fur bearers, berries, mushrooms, game), compared to the level determined to be sustainable-(b).

CRITERION 3: Maintenance of forest ecosystem health and vitality

Indicators:

a. Area and percent of forest affected by processes or agents beyond the range of historic variation, e.g. by insects, disease, competition from exotic species, fire, storm, land clearance, permanent flooding, salinisation, and domestic animals-(b);
b. Area and percent of forest land subjected to levels of specific air pollutants (e.g. sulfates, nitrate, ozone) or ultraviolet B that may cause negative impacts on the forest ecosystem-(b);
c. Area and percent of forest land with diminished biological components indicative of changes in fundamental ecological processes (e.g. soil nutrient cycling, seed dispersion, pollination) and/or ecological continuity (monitoring of functionally important species such as fungi, arboreal epiphytes, nematodes, beetles, wasps, etc.)-(b).

CRITERION 4: Conservation and maintenance of soil and water resources

This criterion encompasses the conservation of soil and water resources and the protective and productive functions of forests.

Indicators:
a. Area and percent of forest land with significant soil erosion-(b);
b. Area and percent of forest land managed primarily for protective functions, e.g. watersheds, flood protection, avalanche protection, riparian zones-(a);
c. Percent of stream kilometres in forested catchments in which stream flow and timing has significantly deviated from the historic range of variation-(b);
d. Area and percent of forest land with significantly diminished soil organic matter and/or changes in other soil chemical properties-(b);
e. Area and percent of forest land with significant compaction or change in soil physical properties resulting from human activities-(b);
f. Percent of water bodies in forest areas (e.g. stream kilometres, lake hectares) with significant variance of biological diversity from the historic range of variability-(b);
g. Percent of water bodies in forest areas (e.g. stream kilometres, lake hectares) with significant variation from the historic range of variability in pH, dissolved oxygen, levels of chemicals (electrical conductivity), sedimentation or temperature change-(b);
h. Area and percent of forest land experiencing an accumulation of persistent toxic substances-(b).

CRITERION 5: Maintenance of forest contribution to global carbon cycles

Indicators:

a. Total forest ecosystem biomass and carbon pool, and if appropriate, by forest type, age class, and successional stages-(b);
b. Contribution of forest ecosystems to the total global carbon budget, including absorption and release of carbon (standing biomass, coarse woody debris, peat and soil carbon)-(a or b);
c. Contribution of forest products to the global carbon budget-(b).

CRITERION 6: Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies

Indicators:

6.1 Production and consumption
   6.1.a. Value and volume of wood and wood products production, including value added through downstream processing-(a);
   6.1.b. Value and quantities of production of non-wood forest products-(b);
   6.1.c. Supply and consumption of wood and wood products, including consumption per capita-(a);
   6.1.d. Value of wood and non-wood products production as percentage of GDP-(a or b);
   6.1.e. Degree of recycling of forest products-(a or b);
   6.1.f. Supply and consumption/use of non-wood products-(a or b).

6.2 Recreation and tourism
   6.2.a. Area and percent of forest land managed for general recreation and tourism, in relation to the total area of forest land-(a or b);
   6.2.b. Number and type of facilities available for general recreation and tourism, in relation to population and forest area-(a or b);
   6.2.c. Number of visitor days attributed to recreation and tourism, in relation to population and forest area-(b).

6.3 Investment in the forest sector
   6.3.a. Value and volume of wood and wood products production, including value added through downstream processing-(a);
   6.3.b. Level of expenditure on research and development, and education-(b);
   6.3.c. Extension and use of new and improved technologies-(b);
   6.3.d. Rates of return on investment-(b).

6.4 Cultural, social and spiritual needs and values
6.4.a. Area and percent of forest land managed in relation to the total area of forest land to protect the range of cultural, social and spiritual needs and values-(a or b);

6.4.b. Non-consumptive use forest values-(b).

6.5 **Employment and community needs**

6.5.a. Direct and indirect employment in the forest sector and forest sector employment as a proportion of total employment-(a or b);

6.5.b. Average wage rates and injury rates in major employment categories within the forest sector-(a);

6.5.c. Viability and adaptability to changing economic conditions, of forest dependent communities, including indigenous communities-(b);

6.5.d. Area and percent of forest land used for subsistence purposes-(b).

**CRITERION 7: LEGAL, INSTITUTIONAL AND ECONOMIC FRAMEWORK FOR FOREST CONSERVATION AND SUSTAINABLE MANAGEMENT**

**INDICATORS:**

7.1 Extent to which the legal framework (laws, regulations, guidelines) supports the conservation and sustainable management of forests, including the extent to which it:

7.1.a. Clarifies property rights, provides for appropriate land tenure arrangements, recognizes customary and traditional rights of indigenous people, and provides means of resolving property disputes by due process;

7.1.b. Provides for periodic forest-related planning, assessment, and policy review that recognizes the range of forest values, including coordination with relevant sectors;

7.1.c. Provides opportunities for public participation in public policy and decision-making related to forests and public access to information;

7.1.d. Encourages best practice codes for forest management;

7.1.e. Provides for the management of forests to conserve special environmental, cultural, social and/or scientific values.

7.2 Extent to which the institutional framework supports the conservation and sustainable management of forests, including the capacity to:

7.2.a. Provide for public involvement activities and public education, awareness and extension programs, and make available forest-related information;

7.2.b. Undertake and implement periodic forest-related planning, assessment, and policy review including cross-sectoral planning and coordination;

7.2.c. Develop and maintain human resource skills across relevant disciplines;

7.2.d. Develop and maintain efficient physical infrastructure to facilitate the supply of forest products and services and support forest management;

7.2.e. Enforce laws, regulations and guidelines.

7.3 Extent to which the economic framework (economic policies and measures) supports the conservation and sustainable management of forests through:

7.3.a. Investment and taxation policies and a regulatory environment which recognize the long-term nature of investments and permit the flow of capital in and out of the forest sector in response to market signals, non-market economic valuations, and public policy decisions in order to meet long-term demands for forest products and services;

7.3.b. Non-discriminatory trade policies for forest products.

7.4 Capacity to measure and monitor changes in the conservation and sustainable management of forests, including:

7.4.a. Availability and extent of up-to-date data, statistics and other information important to measuring or describing indicators associated with criteria 1-7;

7.4.b. Scope, frequency and statistical reliability of forest inventories, assessments, monitoring and other relevant information;

7.4.c. Compatibility with other countries in measuring, monitoring and reporting on indicators.
7.5 **Capacity to conduct and apply research and development aimed at improving forest management and delivery of forest goods and services, including:**

7.5.a. Development of scientific understanding of forest ecosystem characteristics and functions;

7.5.b. Development of methodologies to measure and integrate environmental and social costs and benefits into markets and public policies, and to reflect forest-related resource depletion or replenishment in national accounting systems;

7.5.c. New technologies and the capacity to assess the socio-economic consequences associated with the introduction of new technologies;

7.5.d. Enhancement of ability to predict impacts of human intervention on forests;

7.5.e. Ability to predict impacts on forests of possible climate change.

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1: Indicators followed by an "a" are those for which most data are available. Indicators followed by a "b" are those which may require the gathering of new or additional data and/or a new program of systematic sampling or basic research.

2: IUCN categories include: I. Strict protection. II. Ecosystem conservation and tourism. III. Conservation of natural features. IV. Conservation through active management. V. Landscape/Seascape conservation and recreation. VI. Sustainable use of natural ecosystems.

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ANNEX 8

PUBLIC CONSULTATION AND DISCLOSURE PLAN - GUIDELINES
Public Consultation and Disclosure Plan - Guidelines

Public Consultation as part of an Environmental Assessment

In accordance with World Bank policy, a Sectoral Assessment has been implemented. Public consultation is an integral part of the Environmental Assessment process, when a project specific or sectoral EA is being implemented. However, since SEA covers an entire forest sector in national context and is conducted before concrete investment decisions are made, at this level, it was not possible to consult representatives of all potentially concerned people during preparation of this SEA. Obviously, successful consultation process will help ensure public support for the final forest sector program. Therefore, in the beginning of the study potential stakeholders were identified and consultations were held.

The purpose of public consultation during an SEA is two-fold. First, consultation during the SEA preparation process helps to identify key environmental issues and provides information on stakeholders' concerns about and views of potential cumulative environmental impacts of development of various scenarios of the investment program. Second, consultation allows stakeholders to review findings and comment on proposed mitigation and management options.

Levels of Consultation

The consultation process for the SEA will take place at two levels:

At the national level, consultation with interested government bodies, NGOs, and other interested members of civil society will take place at both the preparation phase and the disclosure of the SEA phase.

At the local level, consultation with government authorities, forest users, potentially affected nearby villagers, and any other interested stakeholders will take place in some depth during the SEA preparation phase. Public meetings at the regional level will be organized for the second phase of consultation, when the SEA report is disclosed and discussed.

Phases of Consultation

For the purposes of the SEA, consultation will take place in the following way:

SEA preparation: During the SEA preparation, consultation will take place with key stakeholders at the local level. These include:

- Local branches of the State Department of Forest Management
- Local branches of the Ministry of Environment
- Local branches or agencies of relevant State Authorities (State Department of Geology, Roads, Protected Areas, Land Management, etc.);
- Local government authorities
- Village Councils nearby forest who might be affected by the project implementation
- NGOs active in the relevant local areas
- Forest farms
- Wood processing enterprises
- Forest users (private companies)
- Any other stakeholders identified through the consultation process

List of stakeholders interviewed to date is given in Annex 1.
At the national level, consultation will also take place on a general project input level in Tbilisi. Consultation with an interested audience will be undertaken as a method of disclosing information about the project and the SEA, and receiving feedback on either the process or specific aspects of the project.

**EIA of Proposed Projects in the Forest Sector**

Once the concrete investment decisions are made and project is finalized, EIA of the proposed project must be implemented according to the national legislation and the World Bank guidelines described in Operational Policy 4.01 "Environmental Assessment". EIA of the specific projects must focus on potential impacts of the proposed project and develop mitigation measures to ensure that the project options are sound and sustainable. EIA is expected to inform all stakeholders and decision makers on the nature of the environmental risks and consult representatives of all potentially affected people during preparation of the study.

**Disclosure and Discussion of Draft EIA Report:** When the draft EIA report is complete, it should be sent directly to a group of key stakeholders, which will be identified during the first phase of consultation (as it was done during SEA). A non-technical summary should be written, translated into Georgian and made widely available through government and non-government networks at the national and local level. Meetings with key stakeholders at the national and local level should be held to discuss the EIA report in order to get reaction and feedback to the environmental management options proposed in the draft report. Additionally, a series of public meetings (provisionally in Tbilisi and on site) could be held, and advertised to the public at large in order to disclose the draft EIA and the proposed environmental management plan.

**Methods**

The following methods could be used for disclosing and discussing project information:

- leaflet with basic project information (*Text of project flyer see below*),
- small group meetings,
- briefings/workshops at the regional/national level, and

Meetings at the local level can be organized with the assistance of local offices of the State Department of Forest Management and government authorities. Meetings at the national and regional level can be organized through invitation to specific workshops, and through open advertisement using print media and radio of public meetings.

The non-technical summary of the draft EIA report should be distributed to identify interested parties and should be made available at appropriate locations, such as government offices, libraries, town halls, and other sites identified during the consultation process. The public should be notified of the availability of the non-technical summary through appropriate media, such as posters at the local level and through newspaper and radio advertisements at the national level.

**On-going Consultation**

Given that consultation is a process, this Public Consultation and Disclosure plan should be updated as the consultation process proceeds in order to identify specifically which stakeholders should receive what kind of information, and what mechanisms should be used to keep interested parties and stakeholders informed of and included in the process.
Some common questions like:

What will the projects impacts be? Answer.

Will there be any conflicts over forest use? Answer.

What are the benefits of the project? Answer.

Etc.

Contact Information:
For further information, please contact the following project representative.

Indication of investor:
(The Government of Georgia and the World Bank)

Name, Position
Address, Telephone, Email

Environmental Impact Assessment of (the title of the project)

Your comments will help us to ensure that the project is undertaken in an environmentally responsible manner, in accordance with the laws of Georgia and the World Bank standards and policies.

INSERT PHOTOS if any

This leaflet forms part of a program of public information and consultation in relation to the environmental assessment of the proposed (title) Project.

Project description: (describe briefly the proposed project)

Project Components: (List the project components)

The Environmental Assessment (Aims and objectives of EIA)
ANNEX 9

SEA Terms of Reference
Tasks Breakdown
GEORGIA
FORESTS DEVELOPMENT PROJECT
SECTORAL ENVIRONMENTAL ASSESSMENT
(Project Preparation Grant JPN 25144-GE)

Terms of Reference

1. **Introduction.** The Government of Georgia (GoG) has requested that the World Bank (the Bank) provide support for a Forests Development Project (the Project). This Project will help the GoG to establish sound forest management systems that would maximize the contribution of Georgia’s forests to economic development and rural poverty reduction on an environmentally sustainable basis. The Project is of critical importance to Georgia’s forests and people. With the enactment of the new Forest Code of Georgia in June 1999, Georgia has adopted a legal framework and roadmap for transition to market principles of forest economy, including its possible privatization, while safeguarding the critical environmental, social and cultural functions of the nation’s forests. The Project that will be implemented in 2001-2008 is designed to provide critical support to this ambitious transition. The total project cost estimate is about US$30 million dollars equivalent and will be financed by the GoG, the World Bank, Japan and, possibly, the European Union and other international and bilateral donors.

2. To support preparation of the proposed Project, the GoG seeks the services of internationally qualified consultant(s) to prepare a Sectoral Environmental Assessment (SEA) which will be consistent with the GoG environmental procedures and the requirements of the Bank as outlined in Operational Policy 4.01 “Environmental Assessment” (attachment A).

3. The project has been placed in the Bank environmental screening category “B.” However, the GoG seeks to undertake a Sectoral Environmental Assessment which will also fulfill the requirements of the Bank’s environmental screening category “A,” including information disclosure and public consultations. As a significant focus of Project implementation is to promote policy development, it is expected analyses on the sectoral environmental impact will continue as policies and forests-related programs evolve.

4. **Background Information.** The proposed Forests Development Project is expected to be appraised by the World Bank in March 2001 and submitted for World Bank’s Board approval in July 2001. The Project will have the following five complementary and inter-related components:

   (a) **development and improvement of national forest policies, laws and regulations** (including forest sector institutional reorganization plans and financial system reform plans);

   (b) **development and improvement of forest management planning systems** (including forest inventory, landscape-ecological zoning and environmental and social assessments for forest conservation and multiple-purpose use, forest management information systems, economic valuation and pricing of forest resources, effective forest fire and pest management, reforestation and afforestation, and community participation in forest management);

   (c) **strengthening of forest sector institutions and human resources development** (including training and re-training of professional forest management staff, forest research and education, public awareness campaigns for rural communities and general population);

   (d) **support to private sector in sustainable forest management and utilization** (including assistance with development and demonstration of environmentally sustainable forest harvesting and transportation techniques, training in forest road planning, maintenance and rehabilitation, training in preparation of environmental impact assessments and public consultations for private projects);

and,

Depending on the project, a range of instruments can be used to satisfy the Bank’s EA requirement: environmental impact assessment (EIA), regional or sectoral EA, environmental audit, hazard or risk assessment, and environmental management plan (EMP). When the project is likely to have sectoral or regional impacts, sectoral or regional EA is required. A Sectoral Environmental Assessment (SEA) is an instrument which offers opportunities for sector-wide environmental analysis and support integration of environmental concerns into long-term development and investment planning. SEAs are particularly suited for reviewing (a) the effect of sectoral policy changes; (b) sector investment alternatives; (c) institutional capacity and requirements for environmental review, implementation and monitoring at the sectoral level; and (d) cumulative impacts of many relatively small, similar investments which by themselves may not appear to have significant environmental impact. World Bank guidance on sectoral EA can be found in OP 4.01, the Environmental Assessment Sourcebook (1991) and the October 1993 Environmental Assessment Sourcebook Update (Number 4).
5. Substantial technical work detailing each component was completed in 1998-99 by the SFD together with the FAO specialists. Additional preparation work (including Overall forest utilization planning, Social Assessment, and this Sectoral EA study) is being financed by a Japanese project preparation grant and has to be completed before project appraisal. The remaining critical preparation and start-up activities for the Project including: (i) development of improved forest policies and regulations; (ii) development of improved forest management planning and protection techniques; and (iii) project implementation capacity building - are being funded through a project preparation advance (PPF) in September 2000 to July 2001.

6. Project implementation will be carried out in the following way. The Forestry Development Fund (FDF) - a project preparation unit established under the SFD that is currently administering the Japanese Grant, will be used as the core of the new Project Management Unit (PMU) that will be established in August-September 2000 by a decree of the President of Georgia. Administration of the remainder of the Japanese grant will also be transferred to this new entity. The PMU will be established as a legal person under Georgia’s civil law and its Executive Director will be nominated by the Ministry of Finance and SFD and appointed by the President. The PMU will report to a twelve-member Supervisory Board that will include representatives of the Ministries of Economy, Finance, Agriculture, and Environment, SFD, State Department of Protected Areas, State Department of Land Management, Parliamentary Committee on Environmental Protection and Natural Resources, Georgian Academy of Sciences, and non-governmental organizations.

7. The first stage of the Project will focus on implementing land-use and forest management planning activities agreed to by all interested stakeholders during project preparation and early stages of implementation. After sufficient dialogue and analyses, later stages of implementation will focus more directly on forest sector investments, with an increasingly important role played by the private sector. Work on land-use planning and forest management information systems will, however, continue for the duration of the Project and beyond. An environmental management plan (EMP) for project implementation will have to be developed as part of this study. This EMP will provide a process by which specific environmental impact assessments will be conducted for each of the Project’s subcomponents before they are financed by the Bank. Guidelines for sustainable forest management in a format that can act as a sourcebook for forest managers and which are consistent with the FAO Model Code of Forest Harvesting Practice will also be developed during project implementation. These will include not only guidelines for environmentally friendly silvicultural and harvesting operations, but also guidelines for the EIA of forestry practices on forest biodiversity, ecosystems-based inventories, but also for the establishment of forest lands Landscape Ecological Networks. These will culminate in the preparation of sustainable forest management 10-year plan guidelines.

8. The Implementing Agency for the Project is the Georgian State Department of Forest Management. Financing for Project preparation commenced in July, 1998. Significant analysis (including legal analysis) and proposals for Project financing were developed in partnership with FAO. A Social Assessment was carried out in August-December 1999 and its results were published in July 2000. The World Bank is also preparing the GEF-financed Georgia Protected Areas Development Project (PAPD) in coordination with the Forests Development Project.

9. It is envisaged that the FD Project will be appraised in March 2001 and presented to the World Bank Board of Directors in July 2001, before becoming effective in October 2001. The SEA must therefore be completed before February 2001 so that the findings and recommendations can be incorporated into Project design before its appraisal.

10. Objectives. The objectives of the SEA are to (i) analyze the policy, legal and administrative framework relevant to the forest sector and make recommendations for reform if needed; (ii) identify major environmental and social issues related to the development of the forest sector; (ii) collect baseline data in relation to these environmental and social issues and their trends; (iii) analyze potential impacts from proposed Project activities vis-a-vis alternative programs, particularly for long-term sustainable development, and make recommendations for mitigation if necessary; (iv) analyze in-country capacity for environmental management and assessment in the sector; (v) provide general guidelines for long-term sector-wide environmental monitoring; and (vi) assist in inter-agency coordination and public/NGO consultation process.

11. Environmental Assessment Requirements. The following regulations and guidelines should guide the assessment and assist in specifying the content of the final report:

- World Bank Operational Policy (OP) and Bank Procedure (BP) 4.01: Environmental Assessment;
- World Bank Operational Policies on Forestry (4.36), Natural Habitats (OP 4.04), and Cultural Heritage (OP 4.11);
Georgia Forests Development Project

- Law of Georgia on State Environmental Assessment
- Other national, region provincial or communal laws and/or regulations on environmental reviews and impact assessments;
- Draft Biodiversity Strategy and Action Plan
- World Bank Environmental Assessment Sourcebook (1991) and the October 1993 Environmental Assessment Sourcebook Update (Number 4).

12. **Scope of Work.** The SEA should be carried out in an open and participatory manner involving consultations with all the major stakeholders. Specific tasks will include the following:

13. **Task 1. Project description and identification of major environmental and social issues related to the development of the forest sector and the Project.**

14. **Task 2. Baseline data and monitoring.** Assemble, evaluate and present baseline data in relation to these environmental and social issues, and include information on any changes anticipated in the near future. Whereas a project-specific EA would describe impacts around a proposed project site, the SEA should concentrate on the issues and problems that are typical of the sector as a whole. This may include information on the physical environment, biological environment and socio-cultural environment. It may also include the identification and current management practices on ecologically sensitive areas, information on land and resource use (including non-timber forest products), systems of land tenure and resource use rights, extent and causes of illegal harvesting at the community level, existing and planned development activities. A more detailed subset of baseline data shall be assembled and evaluated at a local (district) level - for the territory of the Oni District - using the results of the Overall forest utilization planning and the Landscape-ecological zoning undertaken in 1998-2000. The consultant(s) should also closely review the results of the Social Assessment undertaken by other consultant(s). This section of the SEA will also identify major data gaps.

15. **Task 3. Policy. Legal and Administrative Framework.** Identify and analyze both the (a) national environmental legal, regulatory and institutional framework and (b) sector-specific policies, regulations and institutions, and make recommendations for future needs or changes.

16. The relevant national environmental policies, laws and regulations should be assessed for their completeness and appropriateness in light of the conditions and problems of the sector, and gaps and weaknesses noted. Non-environmental laws and policies that have significant for the sector's utilization of resources and/or production processes should also be identified. These may include legislation related to land restitution, tenure systems, private sector development, enforcement, judicial system or customs. Similarly the regulatory framework for EA preparation and review of forest sector investments should be assessed (see Task 5).

17. The SEA should also analyze current and proposed forest sector-specific policies, laws and regulations that have environmental implications. To some degree, analysis of the Forest Code which was approved in June 1999 by the Georgian Parliament has already been started by the FAO during project preparation. However, numerous subsidiary regulations are being developed to support this Forest Code, and the SEA should help to identify any gaps in these implementing regulations that are critical to support sustainable forest management (SFM). In addition, the impact of the recent (1998-99) temporary ban on commercial logging vis-a-vis alternatives should be analyzed, with suggestions made for regulatory and/or other adjustments that would be needed to ensure that the effective lifting of this ban after approval of the 1999 Forest Code does not lead to the acceleration of unsustainable harvesting practices.

18. The SEA should also identify how environmental responsibilities are distributed among (public or private) institutions and assess their capacity to administer these tasks. The State Forest Department's investment planning process, in terms of objectives, methodology and procedures for review and approval of plans and projects, should be carefully reviewed. The SEA should assess whether environmental and social issues are adequately covered by current procedures.

19. **Task 4. Analyze potential impacts from proposed forest sector development scenarios (including those outlined by the FD Project).** While one challenge for SEAs is to produce a sufficiently precise impact analysis in the face of evolving policy development, this section of the SEA should focus on (a) comparison of alternative forest sector development scenarios proposed during project preparation by the GOG and FAO, including a “do-nothing alternative;” (b) short-term and long-term effects of various harvesting scenarios on forest structure, watersheds and biodiversity; (c) short-term and long-term effects of logging roads; (d) likely impacts of developing community-forest management systems, and what systems would need to be in place to ensure communities manage their forests sustainably; and (d) effects of the development of a forests product processing sector.
20. If these questions cannot be answered immediately, suggest ways in which the Project or the GoG can eventually obtain this analysis.

21. **Task 5. In-country Environmental Assessment Capacity.** Analysis of capacity within the relevant ministries or departments to run an effective EA process during forest management planning. This would include a review of the mandates and capacity of institutions at local, provincial/regional and national levels, and recommend steps to strengthen or expand them. The recommendations may extend to new laws and regulations, new agencies or agency functions, inter-ministerial arrangements, management procedures and/or training, staffing and administrative reorganization.

22. **Task 6. Environmental Monitoring and Management Plan.** The SEA should provide general guidelines for long-term sector-wide environmental monitoring, the Forest Management Information System (FMIS) which is to be funded under the Project as well as processes by which the environmental impact of any potential future forestry operations will be assessed. Based on the informational gaps identified in the baseline data sections, the plan should also recommend measures needed to collect and organize missing data. A monitoring plan should use the findings of the baseline data sections to measure progress.

23. **Task 7. Consultation.** Assist in inter-agency coordination and public/NGO participation. Coordinate the SEA with other government agencies, in obtaining the view of local NGOs and affected groups, in keeping records of meetings and other activities, communications, and comments and their disposition.

24. **Report.** The SEA should be concise and limited to significant environmental issues. The main text should focus on findings, conclusions and recommendations supported by summaries of the data collected and citations for any references used in interpreting those data. Detailed or uninterpreted data should be presented in appendices or a separate volume. The report should be presented in English as well as in Georgian languages. The SEA should be organized according to the outline below:

- Executive Summary
- Policy, Legal and Administrative Framework
- Description of the Proposed Project and Major Environmental and/or Social Issues
- Baseline Data
- Analysis of Impact of Proposed Scenarios (including Proposed Project)
- In-Country EA Capacity for Forest Sector Activities
- Environmental Monitoring and Management Plan
- Summaries of Consultations, if necessary
- Outline of Recommended Future SEA or EA Analysis
- Appendices:
  - List of SEA Preparers
  - References
  - Record of any Consultations

25. **Consulting Team.** The composition of the SEA Team should include the following expertise:

- an internationally qualified ecologist and biodiversity conservation specialist
- a forest management specialist, with particular knowledge of Georgian forest management
- an internationally qualified expert in environmental impact assessment of forest harvesting and road development, in particular cumulative effects
- an internationally qualified expert in participative management of natural resources
- an internationally qualified expert in natural resources legislation
- an internationally qualified expert in environmental institutions

26. **Schedule.** The consultants are expected to carry out the review over a period of 5 (five) months (in October 2000 to February 2001) according to the following timetable:

- **3 weeks:** consultants review available documents and conduct initial stakeholder consultation to review TOR and identify any outstanding issues that need consideration in the SEA;
2 weeks: Consultants draft workplan for the SEA based on review and stakeholder consultations.

3 Months(s): detailed review of existing documents; data gathering in Georgia including consultations, local expert workshops to close information gaps; preparation of draft report.

1 week: distribution of draft report to stakeholders;

January 31, 2001: last date for presentation of the revised draft to the Ministry of Environment, State Department of Forests and the World Bank for comments; presentation of report to stakeholder consultation; and

February 25, 2001: last date for submission of final report incorporating these comments.

26. Payment Schedule:

- 15% upon signing of contract;
- 40% upon GoG and Bank approval of the work plan;
- 45% upon GoG and Bank acceptance of the satisfactory final report.

27. Other Information. In carrying out this assignment, the Consultant(s) should report to the Executive Director of the Project Management Unit (PMU) at the Georgian State Department of Forest Management. The following data sources, project background reports and studies should be consulted (to be made available through the PMU):

- Promotion of Sustainable Forest Management in Georgia. Workshop Report. WWF/World Bank Alliance, October 1999.
## Tasks Breakdown

<table>
<thead>
<tr>
<th>Task</th>
<th>Title</th>
<th>Limitations defined with PPU</th>
<th>Priority</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>PROJECT DESCRIPTION</td>
<td></td>
<td>1</td>
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<tr>
<td>1.1</td>
<td>Identification of major environmental and social issues related to the development of the forest sector and the Project</td>
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<td>1</td>
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<tr>
<td>2</td>
<td>BASELINE DATA AND MONITORING</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2.1</td>
<td>Baseline data collection and analysis</td>
<td></td>
<td>1</td>
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<tr>
<td>2.2</td>
<td>Forecast on anticipated changes</td>
<td></td>
<td>2</td>
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<tr>
<td>2.3</td>
<td>Presentation of data</td>
<td></td>
<td>1</td>
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<td>2.4</td>
<td>Identification and current management practices on ecologically sensitive areas</td>
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<td>2.5</td>
<td>Collection of information on land and resource use, including non-timber forest products</td>
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<td>2.6</td>
<td>Analysis of systems of land tenure and resource use rights</td>
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<tr>
<td>2.7</td>
<td>Analysis extent and causes of illegal harvesting at the community level</td>
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</table>
2.8 Analysis of existing and planned development activities

2.9 Collection and evaluation of more specific detailed subset of baseline data at a local (district) level - for the territory of the Oni District.

This is not the collection of new data. This is merely to use existing report to assess how nation-wide issues and data are being translated down to the district-level.

2.10 Review of the results of the Social Assessment undertaken by other consultant(s).

2.11 Identification of major data gaps. A write-up major data gaps is necessary. However, it is only a write-up.

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<tr>
<th>3</th>
<th>POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK</th>
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<tbody>
<tr>
<td>3.1</td>
<td>Identification, analysis and assessment of:</td>
</tr>
<tr>
<td></td>
<td>• national environmental legal, regulatory and institutional framework</td>
</tr>
<tr>
<td></td>
<td>• sector-specific policies, regulations and institutions</td>
</tr>
<tr>
<td>3.2</td>
<td>Recommendations for future needs or changes</td>
</tr>
<tr>
<td>3.3</td>
<td>Analysis of current and proposed forest sector-specific policies, laws and regulations having environmental implications.</td>
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<tr>
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<td>• land restitution,</td>
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<td>• private sector development,</td>
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<td>• judicial system</td>
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<td>• customs</td>
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<td>3.4</td>
<td>Assessment of the regulatory framework for EA preparation and review of forest sector investments.</td>
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EA regulatory framework
### 3.7 Analysis of the impact of the recent (1998-99) temporary ban on commercial logging vis-a-vis alternatives should, and development of suggestions for regulatory and/or other adjustments to ensure that the effective lifting of this ban after approval of the 1999 Forest Code does not lead to the acceleration of unsustainable harvesting practices.

### 3.8 Identification of environmental distribution among public and private institutions.

### 3.9 Assessment of the capacity to administer the tasks.

### 3.10 Review of the State Forest Department’s investment planning process, in terms of objectives, methodology and procedures for review and approval of plans and projects.

### 3.11 Assessment whether environmental and social issues are adequately covered by current procedures.

### 4 ANALYZIS POTENTIAL IMPACTS FROM PROPOSED FOREST SECTOR DEVELOPMENT SCENARIOS (INCLUDING THOSE OUTLINED BY THE FD PROJECT)

#### 4.1 Analysis of potential impacts through:

- comparison of alternative forest sector development scenarios proposed during project preparation by the GoG and FAO, including a “do-nothing alternative”
- short-term and long-term effects of various harvesting scenarios on forest structure, watersheds and biodiversity
- short-term and long-term effects of logging roads;
- likely impacts of developing community-forest management systems, and what systems would need to be in place to ensure communities manage their forests sustainably
- effects of the development of a forests product processing sector

Analysis

- This is national-level, sector-wide desk analysis (not review of individual investment proposals), and it significantly overlaps with 2.4 – 2.8

### 5 IN-COUNTRY ENVIRONMENTAL ASSESSMENT CAPACITY
5.1 Analysis of capacity within the relevant ministries or departments to run an effective EA process during forest management planning.

- Institutional Mandates for EA of forest activities (MoE)
  - This overlaps significantly with 3.8 – 3.9
  - PIU can help to organize documents and organize meetings

5.2 Review of the mandates and capacity of institutions at local, provincial/regional and national levels, and recommend steps to strengthen or expand them.

6 ENVIRONMENTAL MONITORING AND MANAGEMENT PLAN

6.1 Development of general guidelines for
- long-term sector-wide environmental monitoring.
- Forest Management Information System (FMIS) which is to be funded under the Project
- processes by which the environmental impact of any potential future forestry operations will be assessed.

General guidelines for environmental monitoring (monitoring systems and data)

The FMIS will be developed by another consultancy during project implementation. This is not the design of a monitoring system, merely recommendations based on major gaps in data and existing systems.

6.2 Recommendation of measures to collect and organize missing data

6.3 Development of a Environmental Management Plan

Environmental Management Plan

Design of process by which potential impacts will be mitigated, environmental impact of future operations will be assessed for FPP&State Program

7 CONSULTATION

7.1 Assistance in inter-agency coordination and public/NGO participation

The PIU will coordinate all stakeholder consultations. The consultancy would be required to liaise with the PIU on who should be invited, information picked up during the course of the work, and be prepared to either make presentations at the consultations and respond/follow-up to questions and comments, incorporating them in the final report.

7.2 Coordinate the SEA with other government agencies, in obtaining the view of local NGOs and affected groups, in keeping records of meetings and other activities, communications, and comments and their disposition

* Note: A Sectoral Environmental Assessment (SEA) is an instrument which offers opportunities for sector-wide environmental analysis and support integration of environmental concerns into long-term development and investment planning. The SEA therefore attempts to take a broader, landscape view of sector-wide development – and does not focus as much on investment-specific environmental impacts (an investment-specific EA will be conducted within the scope of the early phase of the Project itself before these investments are financed by the Bank at the second phase of the Project).

1 Tasks numbering is following the initial ToR.