Final Document

Sustainable Forest Management Plan for ISMAILLY FOREST MANAGEMENT UNIT in Azerbaijan Republic

October 2015
Sustainable Forest Management Plan for Ismailly Forest Management Unit in Azerbaijan

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Administered by
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PREFACE

This sustainable forest management plan has been developed for the territory of the Ismailly Forest Management Unit for a ten-year period.

The forest management plan is primarily addressed to the Forest Department of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan and management of the Ismailly Forest Management Unit, as the representatives of the forest owner (state).

The plan describes general tools to achieve the forest management sustainability and serves as a basis for developing more specific steps.
Ismailly Sustainable Forest Management Plan

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ABBREVIATIONS

FAO       Food and Agriculture Organization of the United Nations
FSC       Forest Stewardship Council
HCV       High Conservation Value (of forest)
MENR      Ministry of Ecology and Natural Resources
NEFC      Near East Forestry Commission
SF        Sustainable forestry
SFMP      Sustainable forest management plan
UNCED     United Nations Conference on Environment and Development
1. SUSTAINABLE FOREST MANAGEMENT

1.1. What is sustainable development

The concept of sustainable development is now central to the programs of many governments, businesses, educational institutions and non-government organizations around the world. The concept is related to environmentalism but has evolved since its introduction in the 1980s. The most widely held definition was published by the United Nation's World Commission on Environment and Development (also known as the Brundtland Commission) in 1987.

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."

The approach is thus one that aims to meet human needs, including those of future generations, while also protecting the environment. There are eight key issues of sustainable development, i.e. that it would satisfy ‘the needs of the present without compromising the ability of future generations to meet their own needs’. These eight issues are:

- Population and Human Resources
- Industry
- Food Security
- Species and Ecosystems
- The Urban Challenge
- Managing the Commons
- Energy
- Conflict and Environmental Degradation

Three aspects of development are integrated in an attempt to accomplish this: environmental sustainability, socio political sustainability, and economic sustainability (see figure 1).
Many of these objectives may seem to conflict with each other in the short term. For example, industrial growth might conflict with preserving natural resources. Yet, in the long term, responsible use of natural resources now will help ensure that there are resources available for sustained industrial growth far into the future.

Studying the puzzle raises a number of difficult questions. Many of them relate to forests and forest management. For example, is it possible to preserve the ecological values of the forest ecosystems in times of the growing demand for wood and increasing harvesting levels? Is it possible to build the forest use system so as to receive the maximum amount of various products (not only wood, but also mushrooms and berries, etc.) from a forest area unit? Is there a balance between the interests of the forest business, environmental organizations, and forest villages' residents? The introduction of a sustainable forest management system on a particular territory allows to answer these questions positively.

1.2. Forest sustainability as important part of sustainable development

Forests with their complex ecological processes are necessary for economic development and maintaining all life forms. Forest is a source of wood, food, and medicines. Besides, it is a treasure chest of many biological products that have not been discovered yet. They are stores of water and carbon, which could otherwise be released into the atmosphere and transform into gas, causing the greenhouse effect. Forests are home to many wildlife species. In addition, forests satisfy cultural and spiritual needs of the mankind. Thus, sustainable development in the filed of
forestry and forest use is a significant part of the sustainable development of the planet as a whole.

The sustainable forest management system differs significantly from the traditional one. The table 1 below provides a comparison of the traditional and sustainable forest management systems.

Table 1. Comparison of traditional and Sustainable forest management systems.

<table>
<thead>
<tr>
<th>Traditional system</th>
<th>Sustainable system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management objective</td>
<td></td>
</tr>
<tr>
<td>cultivation of the forests, where the most important thing is the stock of timber or non-timber forest products</td>
<td>formation of the forest ecosystem with different resources and functions</td>
</tr>
<tr>
<td>Success Criteria</td>
<td></td>
</tr>
<tr>
<td>the volume of the obtained products, forests productivity</td>
<td>product quality (including the value-added amount), the state of the forest ecosystem after use</td>
</tr>
<tr>
<td>Forest definition</td>
<td></td>
</tr>
<tr>
<td>it is a &quot;vegetable garden&quot;, designed for cultivation and harvesting of timber and non-timber forest products</td>
<td>it is a landscape element with complex links between the living and non-living components</td>
</tr>
<tr>
<td>Procedure of managerial decision-making</td>
<td></td>
</tr>
<tr>
<td>decisions are made single-handedly either by the forest owner or by the state</td>
<td>the local population and non-governmental organizations are involved in the decision-making</td>
</tr>
<tr>
<td>Forest perception philosophy</td>
<td></td>
</tr>
<tr>
<td>a free natural resource, the source that needs to be used</td>
<td>natural capital, ecosystem functions can also generate income, it is necessary to support all its functions and resources</td>
</tr>
</tbody>
</table>

1.3. The concept of sustainable forest management

Under the growing rate of wood resources consumption and timber exploitation, conservation and enhancing of the forest ecosystems' sustainability becomes the greatest global challenge.

Although the principle of sustainability has been recently accepted, Wiersum (1995) argues that it has been accepted in forestry since the eighteenth century when early forest managers in Europe developed an understanding of natural forestry productivity and how it might be enhanced through silviculture to maintain a continuous supply of wood, game, and other products for human use and consumption. The concept was fundamentally driven by the desire to avoid the social and economic disruption associated with shortages of timber, whether for local use or as the basis for a community export economy. During the past century, the concept of sustainability in forestry has evolved to a greater depth and richness. Our vastly expanded understanding of the complex functioning of forest ecosystems, and a recognition of the full
range and diversity of resources, values and ecological services that forests represent, has created new challenges and opportunities.

Nowadays, sustainable forest management (SFM) has become a key concept that underpins modern forestry. It refers not just to the flow of goods and services but also to maintaining forest ecological processes essential for maintaining ecosystem resilience – the capacity of a forest ecosystem to recover following disturbance. It relates to the multiple uses and functions of the forests (e.g., wood production, collecting non-wood forest products, recreation, protection of soil and water resources, biodiversity conservation, carbon sequestration) and aims to maintain and enhance social, cultural, environmental and economic values of forests for the benefit of present and future societies. The new understanding of the concept became increasingly influential with the increasing rates of deforestation and degradation of the world’s forests, and has become an integral component of international agreements and forest policy deliberations in the past two decades.
2. FOREST MANAGEMENT OF AZERBAIJAN

2.1. Current management system (leshoz structure)

Forest policy of the country is implemented by the Department for Forests Development under the Ministry of Ecology and Natural Resources (see figure 2).

The department takes care of the protection and preservation of forests, restoration and planting of forests, preparation of planting stocks, harvesting of forest trees and bushes, preservation of forests and other forestry actions, which includes the efficient and purposeful utilization of forest reserves and related spheres of agriculture. It also works on the improvement of the protection of forest soil, water preservation, a clean environment, sanitary and hygienic actions, preservation of species of animals in the forests, ensuring biodiversity, the establishment of cultural, scientific and recreational complexes throughout nature, as well as the protection and expansion of the gene pool in the growth of forest seed.

The Department for Forests Development controls 34 establishments for regional forest protection and restoration, 3 institutions of forestation and 3 establishments for forest seeding (The Scientific-Research Institute of Forestry and the Center of Combating Against Pests and Diseases).
2.2. Current level of forest planning and monitoring

Forest based inventory and data being used for planning and management of the country’s forests is generally out of date. The state forestry sector has some difficulties on accessing to modern inventory tools and techniques to provide with reliable and up-to-date data for an appropriate and applicable planning and management of forest resources. Inventories for accurate data on forest resources, periodic validation and updating of existing figures are also being carried out in very low standards with old-fashioned and out of date methodologies in Azerbaijan. Furthermore, Azerbaijan forestry sector also strictly need qualified and experienced personal resources at all levels. The institutional capacity of the Ministry as well as the FD for forest based cadastral surveys and management planning, monitoring and assessment of forests is need to be strengthened. The official registration of the forest resources and forest fund land based on the timely inventories and actual data should also be provided and inconsistencies on forest resources should be cleared up.
2.3. Main trends in Azerbaijan forestry: Improvement of existing forests and expansion of forest areas

Because Azerbaijan is a low forest cover country and quite poor in terms of forested land, expansion of the forested areas through afforestation and new plantation is among the major forestry priorities of the Azerbaijan government as well as the MENR. The target of the Ministry, declared unofficially by authorities is to increase forest area from 11 percent up to 20 percent of the country’s land as a mid-term goal. This declaration reflects the willingness of the state forestry sector although the target seems unrealistic unless new suitable (quality and quantity) land is allocated for the afforestation and tree plantation purposes.

The Resolution of the Cabinet of Ministers of the Republic of Azerbaijan approved the "Rules on protection of the forest fund and reproduction of forests". The rules define the purpose of forest reproduction is to afforest bare lands, improve forest species composition. For the purposes of establishing forests and woodlands in treeless areas, preventing land erosion, establishing shelter belts and creating green areas around cities land utilized for other purposes, particularly if unsuitable for agriculture, may be transferred to the forest fund.

Terms of allocation, recovery and use of forest fund's land are set out in the Land Code, the Forest Code of the Azerbaijan Republic and other legislation.

Review of present status of forests, attraction of investment to the forest sector, preparation of projects on afforestation and preparation of measures aimed for reforestation are envisaged for achieving the main objectives for regeneration of forest areas and for the tree plantation. In order to implement such measures, the following tasks are particularly given to the Ministry of Ecology and Natural Resources:

- Restoration, conservation and ensuring of sustainability of natural forests;
- Plantation and the use of new forests;
- Efficient use of economic, environmental and social potential of the forests;
- Establishment of new processing plants of wild fruits and berries.
- Cultivation and processing of fast growing trees (acacia, poplar, etc.) with appropriate quality for subsequent use in the furniture and construction industries.
- Widely introduce and use international experience in establishment and development of Model Forests applying provisions and recommendations of the ENPI-FLEG Program.

Sustainable forest management plan for the Ismailly forest unit should take into consideration forest sector development trends of Azerbaijan republic.

2.4. Forestry activities (current and planned)

1) Effectively organize the protection of forests from fires, destructions, pests and disease and the conducting of reforestation activities;
2) Arrange for the selection, based on the sample, and exchange, shipment of the highly genetic and specific species, positive and elite trees from the forests, parks, external areas for reforestation and plantation, including arrange for the seed stock, conduction of registration and analysis;
3) Make substantiated proposals to the Ministry on the production of consumable popular and other industrial products from the local forest products and the timber generated as a result of the service works provided in the forest;
4) Organize the use of secondary level forest products, further use of forests and extension of supplementary spheres of agriculture;
5) Arrange for accurately and timely developing statistic and internal reports;
6) Implement other duties entrusted by the Ministry in accordance by the legislation.
3. SUSTAINABLE FOREST MANAGEMENT PLANNING: GENERAL INFORMATION

3.1. SFM: goal and objectives

The primary goal of the Forest Sustainable Management Plan is to demonstrate that an environmentally and socially sound, sustainably managed forest can contribute to local and regional economies while at the same time protecting significant or unique natural communities and elements of biological diversity and satisfying needs of local communities.

This will be pursued subject to the following resource goals for the Forest:

1. To preserve the existing forest areas and, where possible, increase the forested areas in accordance with the National Forest Program of the Azerbaijan Republic.
   - To ensure that the forested areas are, as a minimum, preserved and, in the best case, increased.
   - Forest areas extension should be economically, ecologically, and socially viable, and thoroughly thought through. The results of the work should be periodically monitored.

2. Protect and enhance biological diversity native to Ismailly forest and habitats of species which are rare, threatened, endangered, or in need of conservation unit.
   - Insure that management policies and actions are consistent with State requirements for protecting and managing rare, threatened and endangered species of plants and animals. Locations of rare, threatened and endangered species habitat and forest conditions associated with the habitat requirements of these species should be identified. For the areas with high concentration of rare species, special regimes of use, excluding the possibility of the reduction in species abundance caused by anthropogenic reasons, shall be selected.

3. Perpetuate indigenous natural communities, their traditions and customs
   - Insure that management policies and actions are consistent with the interests of local forest dependent communities. The territories of particular interest to the local population have been identified. A special regime of use, ensuring a long-term sustainable use of the resources necessary for the local population, has been selected for these territories.

4. Through Sustainable Forestry practices, maintain and improve the timber resource, while at the same time protecting other resource values consistent with responsible forest management.
   - To ensure that any forestry practices correspond to a long-term forest management plan. Planning of activities is carried out based on the quality and update information on the state of forests. The workers engaged in the forestry operations have sufficient knowledge and qualification for their execution.

5. Provide opportunities for the enjoyment of the natural resources on the forest by making appropriate areas available for resource-based, low impact recreational activities and environmental education programs that are consistent with the resource values of the Forest.
That forest recreational and educational opportunities will be provided as appropriate, and are consistent with the above goals. Recreational and educational program opportunities available on the forest should be integrated with those available within Ismailly forest unit. The forest service will determine the appropriate levels of recreational activities on the Forest as part of its ongoing evaluation and monitoring process.

**The purpose of this work:** to develop a forest management plan for the forest area of the Ismailly Enterprise for Forest Protection and Restoration comprising 35,557 ha, ensuring the sustainable forest management for meeting the needs of the key stakeholders with preservation of the ecological values of the territory

**Objectives:**

1. To analyze the current state of the forest fund and forest management, to identify the positive aspects of the forestry situation and major problems;
2. To identify the main stakeholders and to analyze the needs of the local population as one of the key stakeholders;
3. To conduct the zoning of the territory on the basis of the collected data;
4. To develop a forest management plan (for each zone), corresponding to the goals of a zone, but not violating the principles of the sustainable forest management;
5. To assess the compliance of the proposed system with the criteria and indicators of the sustainable forest management.

**3.2. SFM Plan Structure**

The sustainable forest management plan is developed taking into account the scale and intensity of the forest management activities, and considering the key stakeholders' demand for the forest resources.

This forest management plan contains:

1. Goals and objectives of the forest management
2. A description of the Ismailly Forest Management Unit's territory
3. An analysis of the key stakeholders' need for forest resources
4. Proposals for the zoning of the territory
5. Recommendations on the regime of the territory use for each zone with an assessment of the allowable removal volume
6. An analysis of compliance with the international sustainable forest management indicators

The annexes to the plan consist of cartographic materials, including:

1. Overview Map with roads, settlements, rivers and other objects.
2. Overview zone map.
3. Detailed zone maps.
3.3. SFM Planning Process

The introduction of the sustainable forest management into practice starts with the planning process. In general terms the planning consists of eight steps:

- Step 1. Determining the goal of the sustainable forest management plan implementation.
- Step 2. Collection and analysis of all available information, which can contribute to the sustainable forest management plan creation.
- Step 3. Identification of the key stakeholder groups and analysis of their needs for forest resources.
- Step 4. Developing the first draft of the SFMP.
- Step 5. Public assessment of the first draft of the SFMP.
- Step 6. Responses analysis and SFMP adjustment.
- Step 7. Developing the final version of the SFMP.
- Step 8. The SFMP implementation.
- Step 9. The SFMP assessment.

All steps are interconnected and each subsequent step is based on the results of the previous one. The "final" ninth step is, in substance, the beginning of a new round of planning.

The diagram (see Figure 3) shown below illustrates how the development, implementation, monitoring, reporting and amendment of the plan is designed to adapt to new information and provide for continual improvement.
3.4. Supporting Documents, Plans, and Policies

The sustainable forest management plan for the Ismailly Forest Management Unit is developed considering the regulatory legal acts, policies, and other documents existing in the Republic of Azerbaijan, as well as international documents in the field of sustainable forest management. Table 2 contains a list of these documents.
Table 2. List of supporting documents.

<table>
<thead>
<tr>
<th>SFM Plan Supporting Documents</th>
<th>Level</th>
<th>Content/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Forest Code of the Azerbaijan Republic from December 30, 1997 № 424-IG</td>
<td>National</td>
<td>The Code establishes legal bases of regulation of forest relations, use, protection, preservation and reproduction of forests, increase of their ecological and resource potential on the territory of the Azerbaijan Republic.</td>
</tr>
<tr>
<td>National forestry program (Forest policy statement and the Action plan) 2015-2030 (Final Draft)</td>
<td>National</td>
<td>A document containing the forest policy of Azerbaijan up to the year 2030, as well as an action plan for the forest sector development and sustainable forest management implementation</td>
</tr>
<tr>
<td>The project of forest management and development of the Ismayilli Enterprise for Forest Protection and Restoration</td>
<td>National</td>
<td>A document contains the information about current situation in forest, volume of annual allowable cut for sanitary cuts</td>
</tr>
<tr>
<td>Law of the Azerbaijan Republic from June 8, 1999 of No. 678-IG About environmental protection</td>
<td>National</td>
<td>A document covering the basic aspects of the environmental protection of the Republic of Azerbaijan</td>
</tr>
<tr>
<td>FSC Principles and Criteria for Forest Stewardship Council FSC-STD-01-001 (V5-0) En</td>
<td>International</td>
<td>An international document reflecting the principles and criteria of the sustainable forest management according to the Forest Stewardship Council system</td>
</tr>
</tbody>
</table>

3.5. Implementing a flexible management system

It is acknowledged that this SFM Plan is a change in format and concept of forest planning for managers. As well it is also recognized that there may be limited knowledge and/or uncertainty
in some of the components of the plan. Therefore, as a premise or fundamental aspect of this plan it is accepted that the plan will require changes over time; some changes may be significant to this plan or to practices.

This notion of change or continual improvement is based on adaptive management concepts. As further knowledge is gained, these concepts will guide future management practices and the refinement of management strategies - adapting to this additional knowledge.

In support of the planning process described earlier in Figure 3, Ismailly expects to make changes to forest management and/or the SFM Plan as a result of:

- monitoring data and results;
- new technical or scientific information;
- new social and economic information;
- new information gathered during public participation processes; and
- unanticipated negative impacts due to forest management.

3.6. Sustainable forest management planning and FSC certification.

Management planning is one of the key requirements of a Voluntary FSC certification. FSC reviews Management Plan as a collection of documents, reports, records and maps that describe, justify and regulate the activities carried out by any manager, staff or organization within or in relation to the Management Unit, including statements of objectives and policies.

According the Principle 7: Management Planning, The Organization shall have a management plan consistent with its policies and objectives and proportionate to scale, intensity and risks of its management activities. The management plan shall be implemented and kept up to date based on monitoring information in order to promote adaptive management. The associated planning and procedural documentation shall be sufficient to guide staff, inform affected stakeholders and interested stakeholders and to justify management decisions.

This SFMP takes into account FSC requirements.
4. BACKGROUND INFORMATION ABOUT ISMAILLY FOREST MANAGEMENT UNIT

4.1. General Information about the territory

Geographical position

The total area of land of the district is 217315 ha. The population of the district is 82000 people (as of 01.06.2012).

The area of forest fond land is 62380 ha, of which 35557 ha is under the authority of Ismailly Forest Protection and Reforestation Establishment and 26823 ha is under the authority of Shahdag National Park.

Ismaily district is located in the southern slope of the Main Caucasus Mountains, in the high and middle mountainous zone, in the Ajinohur lowlands and in the Alazan Haftaran valley. The highest summits in the territory of the district are the Babadag (3629 m), Asaddag (3471 m), Garaburga (3345 m), Shahnazardag (2874 m) and Gamchadag (2139 m) in the Main Watershed. In parallel to the Main Watershed, in the south there are the Govdag Mountains (Govdag summit – 2437 m) and the Niyaldag mountains (Yelligadik summit – 2322 m). In midlands, Lahij and Mudru intermontane hollow covers large area. The relief, going down from Girdiman river valley towards the east, falls in Shamakhi-Gobustan plateau.

Climate

Ismaily district is located in subtropical and partly mild climatic zones. The northern boundary of subtropical belt passes from 550-650 meter above sea level. Above this zone the vertical belt is observed. There is temperate hot and partly semi desert and arid climate types in plains and foothills and cold and mountainous tundra climate types in highlands. The amount of total solar radiation is 125 kkal/sm$^2$ in plains, especially in Eyrichay valley, and between 140-145 kkal/sm$^2$ towards highlands. The utmost level reaches 148 kkal/sm$^2$ near the Babadagh. The average annual temperature is 14-14.5°C in plains, 11-13°C in lowlands, 7-9°C in midlands and 0°C in highlands. The temperature is below -2-5°C in the high summits of the Main Watershed. The average temperature of July is 22-25°C in plains, 20-15°C in midlands, 10-5°C in highlands. The average temperature of January is below 0-4°C in plains, 0-3°C in midlands and minus 14-15°C in highlands. Fruit growing and vegetable growing is typical for Ismailly district that make use of abundance of solar energy. There are great opportunities to use climate resources for the purposes of resort and relax. Magnificent landscape of forests in the mountain slopes, mild climatic condition, networks of mineral springs, healing mountainous summer houses create great perspectives for the district to be used as a region of resort and relax. The average annual precipitation is between 500-1000 mm. The precipitation reaches 1400-1500 mm at a height of 2400-2800 m. The precipitation decreases by 900-1000 above the height of 2800 m. It is 400-600 mm in plains. In result, there is a favorable condition for dry farming in foothills and in highlands. The maximum amount of precipitation is in May and September. In December the average thickness of snow carpet is 10 cm in foothills, 20-50 cm in midlands, and more than 70
cm in highlands. While the possible evaporation is 600-800 mm in plains and midlands, it decreases by 400mm, 300mm and even 200mm in highlands.

4.2. Ecosystems and forest types

The landscape of the region has been formed on accordance with the vertical belt: xerophyte, dry field and arid forest in lowlands; forest meadows in plains (in intrazonal Ganikh Eyrichay); forest and meadow shrub in midlands; mountain meadows (subalpine and alpine); subniveal and niveal landscapes.

Soil: range of grey, chestnut colored, light and dark chestnut colored, grayish cinnamonic, dark cinnamonic and cinnamonic soils from plains to uplands, chernozem soils in glades, alluvial meadow forest, fatty, peaty, and primary mountainous meadow soils in subalpine and alpine meadows. Total area of land of the district is 217315 ha. There is 3.6 ha per capita (for Azerbaijan it is 0.2 ha per capita). The soils fit for agriculture is 98070 ha, of which 36460 ha is for sowing area (especially dry farming).

Plant cover: vegetable kingdom has been formed in accordance with landscape: perennial pasture, shrubs, and two varieties of crab cherry, 14 varieties of dog rose, eight varieties of willow tree, seven varieties of birch tree, five varieties of poplar tree is known in plains and foothills. Four varieties of oak tree, hornbeam tree, beech tree, chestnut tree, wild pistachio tree, wild rose bush, wild grape, goat leaf, asparagus, madder, and some varieties of medical herbs are typical for midlands. Slopes of the Greater Caucasus have high percentage of forest cover.

While the broadleaved forests, foothill and alpine meadows are more typical for the territory of Ismailly, there is only scanty number of coniferous trees.

Plant cover is characterized by oak tree, beech tree and hornbeam tree (Quercus-Carpinetum-Fagus forest types). There are Quercus castaneifolia and C. macranthera in humid areas. There are Quercus anatolica, C. hypochnys, C. Iberica, C. longipes in relatively dry areas.

Along with it, there are forest tracts comprised of species of Carpinus caucasica, C. oxycarpa var. C. orientalis, Acer laetum, A. campestris, A. pseudoplatanus, Fraxinus excelsior, Populus nigra, T. platyphyllos, Sorbus torminalis, Prunus mahleb, P. ovum, P. incana, P. microcarpa, Pyrus caucasica, P. boisseriana. Malus orientalis, Cornus avellana, C.Iberica, C.mas.

At a height of 1300-1600 m above the seal level, the plant cover is comprised of the formations of Quercus-Carpinetum, Quercus -Fagetum and originated by the species of Fagus orientalis, Quercus macranthera, S. castaneifolia, Populus tremula, Prunus divaricata, Fraxinus corticalis, Pyrus caucasica, P. hyrcana, Malus orientalis, Sambucus nigra, Lonicera caucasica, Viburnum opalus.

At a height of 800-1000 m, there are a considerable number of beech trees, maple trees, and lime trees. Oak trees are on the northern slopes, while there are pine trees and juniper trees on the southern slopes.

The forests of beech trees stretch up to 650-700 m at the height of 1400 m of the southern slopes.
The oak forests of north-eastern slopes are different from those of southern slopes. There are a considerable number of beech trees, birch trees, lime trees at a height of 800-1700 m of north eastern slopes. Besides it there are oak trees, pine trees, and juniper trees in the forests.

**Subalpine forest belts**

This forest landscape is observed at a height of 800-2000 m of southern and north eastern slopes. The Main and Side Caucasus ranges are covered by xerophyte plants. Grayish cinnamonic, and mountainous cinnamonic soils are characteristic for the forest landscape hereabouts. The soils and plant cover in foothills (from 500-600 m to 1200 m) are very rich in account of climatic attributes.

There are beech trees up to 1400 m above the sea level in the southern slopes. These forests sometimes stretch up to 650-700 m above the sea level. Subalpine forests are represented by beech trees at e height of 1800-2000 m.

Forest plants and mountainous forest soils are typical for this landscape. Forest landscapes in mountainous slopes are represented by beech tree and hornbeam tree forests in highlands, and by hornbeam and oak tree forests in lowlands.

Some forest types in Ismailly district has special preservation status. These species include *Acer velutinum*, *Ulmus scabra*, *Celtis caucasica*, *Euonymus velutina*, *Prunus incana*, *Pinus boissieriana*, *P. vsevolodi*, *P. grossheimii*, *P. serotina*, *Sorbus boissieri*, *S. graeca*, *Gleditsia caspica*, *Alnus incana*, *Betula litwinowii*, *B. raddeana*, *Ficus hyrcana*, *Carpinus geoktschaica*, *Quercus crispata*, *Q. erucifolia*, *Buxus hyrcana*, *Taxus bacata* etc.

**Alpine meadows and rocky areas**

Alpine meadows (above 2800 m) in the territory of Ismailly are very rich in terms of their composition. The plant kingdom of the meadows is formed by mountainous peaty, meadow and field meadow soils.

The natural landscape has intensively been shattered. Steep slopes and rocky areas denies the formation of plant cover and soil.

There are open association of alpine belt between the heights of 3400-3800 m.

Along with the 30 varieties of flowery plants, there are mosses and mossy plants. Alpine meadows are characterized by alpine and semi desert plants in mid-steep slopes.

Above 3600 m, there are a considerable number rocks and stones. The highest peaks of the territory are the Bazarduzu (4466 m) and the Shahdag (4245 m) mountains.

**Step ecosystems**

Step formations and rare xerophyte shrubs are observed in southern slopes. The vegetation is mainly comprised of short trees and shrubs (*Berberis vulgaris*, short *B. Iberica*, *Crataegus...*)
Meadows and fields at the height of 1600-1900 m are dry and damp. The majority of plants in the fields are fodder crops. The area is characterized by mountainous xerophyte and meadows.

There are *Fagus orientalis*, *trautvetteria*, *Betula litwinowii*, *B.alba*, *B.verrucosa*, *Sorbus boissieri*, *S.caucasigena*, *S.kusnetzozii*, *S.subfusica*, *salix trees*, *S.cinerea* at the heights of 2100-2400 m.

**Mountainous ecosystems**

There are vivid samples of mountainous regions at the heights of 3400-3800 m. It is represented by the 30 varieties of the flowering plants, including anophyte and lichens. There are colorful meadow grass in alpine meadows at a height of 3600 m, semi desert flora in steep slopes at a height of 4250 m and rocks and talus above this.

4.3. Protected areas

Shahdag National Park is created in the area of 26823 ha of the forests in the district. Before that this area was Ismailly State Reserve (Conservation).

Taking into the consideration of the magnificent nature, beautiful landscape, flora and fauna of the district, Ismailly conservation whose area was 74 thousand ha was established in 1969. In 1981 Ismailly reserve, whose area was 5780 ha was established in the basis of conservation to preserve natural composition (landscape). The reserve consists of two parts: highlands (800-2250 m above the sea level – 96.3%) and plains (600-650 m above the sea level – 3.7%). 87 % of the plains are the forests. Only 4% of the Ismailly reserve includes subalpine and alpine meadows of the Govdag Mountains. The Reserve covers the Goychay, Akhokhchay, and partly Girdimanchay basin. The reserve is completely indifferent from the remaining parts of the southern slopes in terms of geological and geomorphologic structure. Jurassic and Cretaceous deposits, and partly paleogene clays are found here. The area was shattered in account of river valleys.

The composition of forests mainly consists of beech trees, hornbeam trees, oak trees, and partly birch trees, ash trees. There are also birch tree and ash tree forests. Some trees have special preservation status.

There are 40 varieties of mammals, 17 varieties of reptiles, 6 varieties of amphibians, 4 varieties of fish, 104 varieties of birds living in the area. The birds such as, Caucasian tetra, golden eagle, mammals, such as brown bear, lynx, roe, Mediterranean tortoise, triton, river salmon are included the “Red Book” of Endangered and Threatened Species.

The plant cover of the area comprised of alpine, subalpine mountain meadows and forest plants. The plants of the forest areas mainly include hornbeam trees, beech trees and oak trees. The inhabitants of the conservation are billy goats, roes, Caucasian deer, jackals, wild cat, raccoon, fox, hare, badger, squirrel, partridge, pheasant, turaj, wood pigeon, quail, grey partridge, mallard, white and grey heron and etc.
4.4. The Forest Products Industry

There are not any industrial enterprises of timber forest products in the district, except small timber workshops in a few villages.

4.5. Infrastructure (roads, pipes)

The nearest railway stations are Mosulu and Ujar, which are located 45 – 78 km away from the Ismailly city center.

There are highways and many earth roads networking the Ismailly city center with suburban settlements. 70 km of Baku-Gabala-Balakan highway is in the area.

The Table 3 shows the Infrastructure details.

<table>
<thead>
<tr>
<th>Category of roads</th>
<th>Grade of road</th>
<th>Type of road covering</th>
<th>Distance from the area</th>
<th>Seasonal prevalence of road</th>
<th>Current status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rail ways</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Automobile roads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) country wide importance</td>
<td>I</td>
<td>Solid cover</td>
<td>70</td>
<td>Permanent</td>
<td>good</td>
</tr>
<tr>
<td>b) local importance</td>
<td>I</td>
<td>Solid cover</td>
<td>28</td>
<td>Permanent</td>
<td>good</td>
</tr>
<tr>
<td>3. Roads on the purpose of forest industry and anti fire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Solid cover</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) earth roads</td>
<td>II</td>
<td></td>
<td>105</td>
<td>in dry seasons</td>
<td>In need of repair</td>
</tr>
<tr>
<td>4. pathways</td>
<td>-</td>
<td></td>
<td>240</td>
<td>In dry seasons</td>
<td>In need of repair</td>
</tr>
</tbody>
</table>

The length of the roads in the area is 3.3 km per 100 hectare, of which 1.2 km is automobile roads and 2.1 km are the earth roads.

4.6. Dynamics of forest cover over the last decade

Tables 4 and 5 show a Status of the Ismailly forest fund as of 2005 and 2015. The data allows drawing conclusions regarding the forest fund dynamics for a decade. The major changes are related to the Shahdag National Park establishment, resulting in an almost twofold reduction of the total forest fund area.
### Table 4. Status of Ismailly forest fund as of 1 January 2005

<table>
<thead>
<tr>
<th>Total area of Forest fund lands, ha</th>
<th>Lands covered with forest plants</th>
<th>Lands uncovered with forest lands</th>
<th>Reforestation fund</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Including, forest planting</td>
<td>Forest plantations with umbrella trees</td>
<td>Forest seeding plantations</td>
</tr>
<tr>
<td>62380</td>
<td>56421</td>
<td>116</td>
<td>155</td>
<td>457</td>
</tr>
</tbody>
</table>

### Table 5. Status of Ismailly forest fund as of 1 January of 2015

<table>
<thead>
<tr>
<th>Total area of Forest fund lands, ha</th>
<th>Lands covered with forest plants</th>
<th>Lands uncovered with forest lands</th>
<th>Reforestation fund</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Including, forest planting</td>
<td>Forest plantations with umbrella trees</td>
<td>Forest seeding plantations</td>
</tr>
<tr>
<td>35557</td>
<td>32835</td>
<td>234</td>
<td>100</td>
<td>122</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Forest lands</th>
<th>Non-forest lands</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sowing fields, ploughings</td>
<td>Hayfields</td>
</tr>
<tr>
<td>Subaquatic zones</td>
<td>Pastures</td>
</tr>
<tr>
<td>Gardens and vineyards</td>
<td>Roads and ways</td>
</tr>
<tr>
<td>Buildings and courtyards</td>
<td>Marshes</td>
</tr>
<tr>
<td>Sandy places</td>
<td>Other lands</td>
</tr>
<tr>
<td>Non-forest lands, total</td>
<td>5037</td>
</tr>
</tbody>
</table>
The changes in the Ismailly forest fund took places as a result of the submission of 26823 ha of forest fund area to the authority of Shahdag National Park by the Decree of Cabinet of Ministers in 2009 and as a result of the reforestation activities implemented in the region over the last 10 years.

There has not been any fires, degradations and natural disasters that may cause for the changes in the plant cover of the forests over the last 10 years.

4.7. Socio-economic Description

The population of Ismailly is 82000 as of 01.06.2012 (see Table 6). There are 109 settlements in Ismailly district, of which 1 is urban/city (Ismailly), 2 are settlements (Lahij and Basgal) and 106 are rural settlements and villages.

Table 6. Ethnic composition of Ismailly district

<table>
<thead>
<tr>
<th>Ethnic group</th>
<th>Number as of 1999</th>
<th>Number as of 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azerbaijanis</td>
<td>61 190</td>
<td>68 448</td>
</tr>
<tr>
<td>Lesgins</td>
<td>7 722</td>
<td>8 076</td>
</tr>
<tr>
<td>Russians</td>
<td>2 514</td>
<td>2 024</td>
</tr>
<tr>
<td>Kurds</td>
<td>382</td>
<td>498</td>
</tr>
<tr>
<td>Turks</td>
<td>244</td>
<td>194</td>
</tr>
<tr>
<td>Ukrainians</td>
<td>25</td>
<td>9</td>
</tr>
<tr>
<td>Tatars</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>Jews</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Armenians</td>
<td>5</td>
<td>...</td>
</tr>
<tr>
<td>Others</td>
<td>25</td>
<td>67</td>
</tr>
<tr>
<td>Total</td>
<td>72 144</td>
<td>79 330</td>
</tr>
</tbody>
</table>

The city is governed by Ismailly District Executive Authority.

Grain growing, cattle breeding, wine growing, fruit growing, tobacco cultivation have been developed in Ismailly. There is a carpet factory, wine and juice factory, meat and milk processing enterprises in the district. There are famous resort centers, such as "Giz Galasi", "Green House", "Garanohur" functioning in the district. There are the district branches and ATMs of "International Bank", "Kapital Bank", "Deka Bank" and "Mugan Bank" and also "Cred Agro" credit organization (for agriculture) in the city center.

4.8. Current and Anticipated Uses

**Timber**

As it was said earlier there is no commercial wood harvesting in Azerbaijan. Nevertheless there is some wood supply from selective sanitary cuttings.
The permissible volumes of wood extraction are defined after getting the data on the forest resources condition, i.e. after the forest inventory. Based on this data, the document “The project of forest management and development of the Ismayilli Enterprise for Forest Protection and Restoration” gets developed. The last forest inventory for the Ismailly Forest Management Unit was conducted in 2005. According to its results, an annual allowable cut for sanitary cuts was 2,45 thousand cubic meters on the area of 110 ha.

The felling is aimed at improvement of the forests sanitary state. The total volume of the sanitary felling is planned on the area of 328 ha of forest area with the obtained wood volume of 7,36 thousand cubic meters. This volume is designed for felling during a three-year period. The volumes of wood extraction are defined by the forest inventory one time after the works. However, unfortunately at the present moment for a number of reasons the forest management project is running partially, which significantly complicates the monitoring and control over the works execution.

Table 7 shows the information about the timber stocking in Ismailly district over the last 5 years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Area of logging</th>
<th>Logged wood volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>85ha</td>
<td>596 m3</td>
</tr>
<tr>
<td>2011</td>
<td>50 ha</td>
<td>596 m3</td>
</tr>
<tr>
<td>2012</td>
<td>70 ha</td>
<td>724 m3</td>
</tr>
<tr>
<td>2013</td>
<td>267 ha</td>
<td>1080 m3</td>
</tr>
</tbody>
</table>

4.9. Tourism and Recreation

“Giz Galası” resort center is located on the bank of the Akh-Okh river in Nagakand. There are 3 single room cottages (for 1 and 2 persons) and 4 single and double room (for 3 and 5 persons) cottages here. There is also small fitness room for tourists here. There is a fully furnished "Ivanovka Guest House" in Ivanovka village of Ismailly.

There are lots of small recreation areas mostly along the road. Usually it is kind of outdoor café some of it has BBQ and fireplace facilities, gazebos or small houses.

Historical and cultural reserves have been created in Basqal and Lahij villages. The historical monuments here are protected. In Basqal village the mosque of XVII century and a bath house, and in Lahij village Badoyun mosque, Zevero Mosque (1791), Agoli mosque and Zevero spring are protected.

There are motels and resorts for accommodation of tourists in the region.

4.10. Agriculture and Range

Grain growing, cattle breeding, vine growing, fruit growing, tobacco cultivation is highly developed in Ismailly.
4.11. Non-wood forest products

Hunting tourism is highly developed in Ismailly due to the fact the district has a very rich animal kingdom.

There are deer, mountain goats, boars, bears, foxes, hares, and other animals living in the forests of the region. The licenses for hunting in open areas and seasonal fishing is provided by the Ismailly District Department of Ecology and Natural Resources.

Nuts and fruits harvesting is also developed

<table>
<thead>
<tr>
<th>Number</th>
<th>Type of the product purveyed</th>
<th>Unit</th>
<th>Approximate biological reserve</th>
<th>Planned in previous foresting</th>
<th>Actually implemented</th>
<th>The highest annual indicator in the auditing term</th>
<th>In the last year of auditing term</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Walnut</td>
<td>Ton</td>
<td></td>
<td>2.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apple</td>
<td>“—-”</td>
<td></td>
<td>12.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cornel</td>
<td>“—-”</td>
<td></td>
<td>7.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dog rose</td>
<td>“—-”</td>
<td></td>
<td>0.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical herbs</td>
<td>“—-”</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a)</td>
<td>plantain</td>
<td>“—-”</td>
<td></td>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b)</td>
<td>nettle</td>
<td>“—-”</td>
<td></td>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are bee keeping farm in the enterprise. Hunting is less developed and is of amateur character. The wild animals such as boars, bears, mountain goats, deer, wolves, badgers etc. could be seen in the area.
5. KEY STAKEHOLDERS AND THEIR NEEDS

5.1. Forest stakeholders and their classification

Achieving consensus on forest management and conservation requires an assessment of how the linkages above affect the different stakeholder groups. Stakeholders can be classified in many different ways. For the purposes of this FMP, stakeholders have been classified into five categories, depending on the nature of their relationships to the forest.

*State* - the forest owner, interested in the efficient use of forest resources while maintaining their ability to perform protective functions. It is responsible for the state of the forests, is engaged in organization, management, and direct implementation of the forestry activities.

*Local (forest-dependent) communities* - those whose primary concern is preserving the forest as a living environment and as a source of sustenance and livelihood, including tribal indigenous groups.

*Business* - local enterprises, including leisure and recreation centers, public catering facilities, and timber workshops.

*Environmental NGOs* - this group includes organizations who are concerned primarily with the conservation of species or of forest ecosystems and with the local and global environmental values associated with them.

*Education & research institutes* – a narrow group of stakeholders, interested in studying the processes (primarily, the natural ones), taking place in the forest.

Consideration of the interests of all groups of stakeholders is necessary during the development of the sustainable forest management plan. An absence of conflicts among the participants of the forest relations is one of the criteria (requirements) of the international voluntary forest certification schemes, including the certification according to the FSC system.

At the initial stages of the SFMP development, it is necessary not only to identify the main groups of stakeholders, but also to assess the interests and degree of dependence on forest resources of each group.

5.2. An assessment of the degree of the main groups of stakeholders’ dependence on the forest resources

The degree of the stakeholders' dependence on the forest resources is shown in the form of a matrix, where the columns represent a list of stakeholders and rows represent the services provided by the forest.

At the matrix intersection a color-scale assessment has been made, where:

- a high degree of dependence
A brief explanation is given to each cell. The figure in the cell corresponds to the clarification number.

It is important to emphasize that the matrix reflects the interests under the normal ("accident-free", sustainable) use. For example, it is assumed that, when having a rest outdoors, the local residents follow the fire safety rules, clean up and remove the rubbish after themselves. In this case the interests of the environmental NGOs are not affected. But if the recreation of the local population results in the pollution of the environment, the interest of the environmental NGOs will increase from low to medium, or (depending on the strength of the negative impact) high.

<table>
<thead>
<tr>
<th>Fruit, berries, nuts, and other NTFP</th>
<th>Collection by the local population to meet their own needs and for sale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>3</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood as a fuel</td>
<td>The use by the local population for their own needs and by the state - to meet the needs of the army and budget organizations</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Wood for auxiliary applications</td>
<td>The use for construction, fences, as a material for timber workshops</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Forest pastures</td>
<td>The use of forest areas by the local people for cattle grazing</td>
<td>3</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Recreation services</td>
<td>The use of the territory for provision of tourist services (organization of recreation centers, catering facilities) for the purpose of gaining profit</td>
<td>7</td>
<td>11</td>
<td>12</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Conservation of biodiversity</td>
<td>Conservation of the species and landscapes diversity of a forest territory, including rare and protected species, endemic species, rare, and relict ecosystems</td>
<td>13</td>
<td>3</td>
<td>3</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Protective functions of forests</td>
<td>Water-protective, erosion-preventive, water-control, and other ecosystem services important for the forest areas sustainability</td>
<td>16</td>
<td>17</td>
<td>3</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Outdoor recreation</td>
<td>Free (non-organized) leisure of the local population</td>
<td>3</td>
<td>18</td>
<td>19</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Carrying out scientific researches</td>
<td>Collection of information, reference marking, creation of educational routes, and other actions related to the scientific and educational activities</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>20</td>
</tr>
</tbody>
</table>
Clarifications to the matrix.

1. The state does not depend directly on the collection of NTFP. Nevertheless, the state has an indirect interest in the provision of its citizens with food products necessary for their livelihood. The state receives a share of the NTFP collected on the plantations as a commission.
2. The local population collects NTFP for personal consumption and for sale. In some families it accounts for a significant part of the budget.
3. The group of stakeholders is not related to this type of resources and has neither direct nor indirect interests, associated with its use.
4. The state uses wood for heating the buildings housing its subordinate authorities, as the most affordable resource for these purposes. However, in case of the fuel wood absence, the state can ensure heating from other sources.
5. For the local population, wood is the only source of energy for heating and cooking. Even in the gas supplied districts quite often gas does not provide an alternative. The local population profits from selling charcoal.
6. Wood is required to upkeep tourist infrastructure facilities, public catering facilities, and is the most affordable type of energy for business.
7. The state receives taxes from business activities.
8. Wood is actively used in homesteads and is the only truly accessible resource
9. Wood is the primary resource for timber workshops
10. The forest is a no alternative territory for grazing
11. The local residents use recreation facilities for the organization of their leisure. The local residents are given the opportunity to work at recreation sites
12. The recreation services, provided by business, are equipped resting places (summer-houses, barbecue grills)
13. The state has ratified the Convention on Biological Diversity, thereby committing itself to take measures, aimed at biodiversity conservation.
14. Preservation of the ecological values of the environment is one of the purposes of the environmental NGOs functioning.
15. The natural ecosystems are of the greatest interest for the study and science activities, but at the same time, they are not the only and no-alternative object for research
16. The state, as the forests owner, is responsible for the forest ecosystems condition and fulfillment of the protective functions by the forests. The loss of the forest ecosystems ability to perform protective functions will demand high expenses from the state for the water-protective and erosion-preventive functions fulfillment.
17. The forest, performing protective functions, provides the protection to the settlements against the natural catastrophic factors (landslides, mudslides, floods)
18. The population staying in the open air is a traditional, century-old right. Besides, it is a free (or affordable) type of recreation
19. Business profits from delivery of services in the form of equipment provision. (barbecue grills, fire-pits, etc.)
20. Forest ecosystems are an interesting, but not a no-alternative subject of scientific research.
The matrix shows that this is the local population that has the greatest dependence on the forest resources. For them, the forest is a source of resources necessary both for provision of their livelihood, and satisfaction of their moral and aesthetic needs. During the development of the forest management plan, the interests of the local communities should be taken into account. This will ensure sustainability of the forestry activity on the territory, help to avoid conflicts, and reduce the threat of illegal activities.

Detailed study of the local communities' needs has been done through the questionnaire which is formulated in such a way as to get general information about a respondent (including social and financial situation), and to make a detailed assessment of the respondent's (and his family's) need for such resources as firewood, fruit, nuts, mushrooms, medicinal herbs, etc. Besides, the questionnaire gives understanding to what extent the existing forestry and environmental legislation of the Republic of Azerbaijan meets the local population's needs for forest resources or limits their satisfaction.

5.3. The survey results

The survey was conducted in April of 2015. 91 people have taken part in the survey. The survey results turned out to be controversial and do not allow to reveal a number of expected patterns and carry out a detailed analysis of the local residents' dependence on specific types of NTFP. This is probably due to one of the following reasons:

1. The respondents have filled out the survey carelessly and tried to quickly respond to the questions.
2. The respondents could not give specific answers without pre-training, therefore, they gave very approximate figures and facts.

However, below you can find the conclusions, which can be made based on the survey results.

The survey results have revealed an average degree of dependence of the population living in the forest villages located on the territory of the Ismailly Forest Management Unit on the forest and its products. NTFP are not a survival factor, but they significantly improve the locals' life quality, especially taking into account a low level of income of the local population.

In spite of the fact that most families have a permanent income in the form of salaries and state payments (pensions, allowances), the residents assess their living standards as low or average (probably comparing themselves with the city residents). A low standard of living is also determined by an educational attainment of the local population - in most families people have no higher education, and therefore, most likely, they perform low-paid work.

Almost all forest products can be purchased. These products provided by other locals or by the Forest management unit. The price is affordable for most families. Besides, the overwhelming majority of the respondents have homesteads, which provide them with necessary products.

The main product obtained from forest is firewood. Almost 80% is involved in collecting (harvesting) of firewood, which is used as fuel for cooking. So, firewood is the product necessary for survival, especially in the absence of alternative energy sources (for example, gas).
Two-thirds of the respondents use forest as a pasture. It usually happens due to lack of grasslands around the settlements. This is the most stressful impact on the forest, because overexploitation as pastures does the greatest harm to the forest ecosystems. Animals do not only trample the soil, but also browse fresh sprouts and plants, which results in mortality of young trees (undergrowth) and lack of natural regeneration.

The local population barely uses forest territories to obtain meat (hunting) and fish (fishing). Only 10% is involved in hunting and fishing, which is (most likely) more of an entertainment rather than exploitation of resources, necessary to feed their families. The detailed quantitative indicators are reflected in the diagram. The x-values show the forest benefits used by the population. The y-values – the number of respondents having noted that they use this product.

The local population is actively engaged in collecting berries and fruit, among which the basic ones are medlar, hawthorn, cotoneaster, raspberry, pear, apple, and others.

Unfortunately, the survey results have not allowed to reveal a clear correlation between the number of family members and amount (volume) of consumed NTFP. As already noted, this appears to be due to the fact that the respondents had never paid attention to the evaluation and, therefore, wrote approximate figures.

For the overwhelming majority of the respondents forest products are not a source of additional income (implying the income in the form of money from their sale), because the collected (caught) products are used only for personal needs. This is an important point for assessing the forest management sustainability - the lack sales indicates absence of overexploitation. This means that the sustainable level of resources extraction existing at the moment will be maintained in the long term and during the planning no additional measures will be required for the collection control.

However, when developing the sustainable forest management plan it is important to take into account the interests of the local population and establish traditional nature use zones around the villages. In the first place, in order to avoid a conflict of interest and assignment of the business activities, which can result in a loss of the forest benefits used by the local population.

Emotional connection of the inhabitants with the forest is very high. More than half of the respondents rest in the forest one or more times in a month. The main form of recreation is picnics organization. The indigenous peoples' connection with the forest should be maintained at the state level, in order to preserve the cultural component, a traditional way of life.

5.4. Plan on cooperation with local stakeholders

Besides, when developing and implementing the SFMP, it is important to take into account the interests of the local population as a key stakeholders group. A system of continuous cooperation with the local residents needs to be established. An optimum option of interaction is conducting the meetings in the form of public hearings.

The table 9 proposes an approximate schedule of meetings with the representatives of the local population in the framework of the SFMP implementation for 2015-2025.
Table 9. Schedule of meetings with the representatives of the local population in the framework of the SFMP implementation for 2015-2025

<table>
<thead>
<tr>
<th>Period</th>
<th>The purpose of the meeting</th>
<th>The main topics for discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning of December 2015</td>
<td>Coordination of the strategic SFMP for 10 years with the public</td>
<td>• General trends in the forestry of the Azerbaijan Republic and the forest management unit role.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> the strategic plan discussion requires a significant amount of time, therefore, the meeting can be split into two with a break of a few days. During this break, the representatives of the local population will be able to discuss the plan among themselves and formulate additional questions.</td>
<td>• SFMP. The main items of the ten-year plan - goals, objectives, implementation periods and main economic activity in each of the periods, expected results.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Zoning. Socially important areas. A regime of use for each zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The local residents' role in the SFMP implementation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A detailed plan of the forest management activities for the first year.</td>
</tr>
<tr>
<td>Beginning of December 2015 – 2024</td>
<td>Coordination of an operational plan for 1 year</td>
<td>• The major outcomes of the past year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• An assessment by the local population (the speech of the local community leader)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A detailed plan of the forest management activities for the next year</td>
</tr>
<tr>
<td>If and when necessary</td>
<td>The discussion of &quot;emergency&quot; (abnormal, conflict situations)</td>
<td>• Overview of an &quot;emergency&quot; situation</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> The local population should know that, in the event of an &quot;emergency&quot; situation they have the right to obtain clarification and/or assemble a public hearing.</td>
<td>• Reasons for the emergence of this situation and options for consequences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Possible ways of resolving the &quot;emergency&quot; situation, a search for compromise solutions</td>
</tr>
<tr>
<td>December of 2025</td>
<td>Review of the SFMP implementation results</td>
<td>• The results of the SFMP implementation - presentations of the representatives of different stakeholder groups</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> This final meeting might turn</td>
<td></td>
</tr>
</tbody>
</table>
The public hearings efficiency to a large extent determines the success of the SFMP implementation. The maximum efficiency can be achieved in the following ways:

1. **Recognition of the public as an equal partner.** The local population know the conditions and problems of their life, and often the forest situation better than anyone. It is important to respect the representatives of the local population. They should not be considered as uneducated specialists not able to think constructively.

2. **Advance notification is obligatory.** The local population should be notified of the upcoming public hearings in advance (ideally, 40-30 days prior to the hearings). The announcements of the forthcoming hearings should be placed in public areas – in the administration, on the information stands in the stores, and in the post office. The announcement should include the following:
   a. Objective (agenda)
   b. Date, time, and place of the hearings
   c. Sources of information for self-study
   d. Contacts of the organizers

3. **Ensuring access to the documented information,** which will allow to examine in detail the peculiarities of the planned activity.

4. **Openness.** All interested should be allowed to attend the public hearings.

5. **Objectivity of information.** All consequences of the planned activity, not just the positive ones, should be mentioned.

6. **Record-keeping.** The minutes of the meeting should be signed by all participants of the public hearings (in case of a small number), or by the representatives of each stakeholder group.

Thus, the recognition of the public as an equal partner promotes cooperation between individual citizens, state, and business, which is a key condition for the sustainable development of the society.

The public involvement is useful for all stakeholders and society as a whole. A strong argument in favor of the public participation is the fact that the local population is often more aware of the local problems, requiring greater attention, and the simplest methods to solve them. Moreover, as the practice shows, the public's awareness and participation, support of the government bodies' initiatives by the population dramatically improve the likelihood of success of the planned activities.
6. SUSTAINABLE FOREST MANAGEMENT PLAN AND ITS IMPLEMENTATION

6.1. Functional zoning

**General information on the functional zoning**
The territory of the forest management unit is multifunctional. The following functions can be distinguished: environmental, recreational, the function of resources provision for the local population, etc. Some functions, by definition, conflict with each other. Some of them, however, can be spatially compatible. These contradictions can be avoided or resolved through the functional zoning of the area.

In the framework of the sustainable forest management plan development, the functional zoning is understood as division of the territory into zones with different functional value, followed by selecting an optimal regime of use for each zone.

The functional zoning reflects a spatial differentiation of regimes with a subsequent differentiation of permissible and necessary activity. Specification of the regime enables regulating the activities within each zone, identifying accessibility, optimal level of recreational load, and internal regulations.

The functional zoning of the forest management unit area will ensure sustainable use of its natural resources upon the condition of its environmental values conservation, as well as most flexible consideration of all existing problems and creation of the conditions for a long-term maintaining of the balance in natural ecosystems.

**Definition of a functional area**
A functional area can be defined as a limited territory with spatial and temporal management prescriptions in force and ongoing activities aimed at fulfilling specific tasks of the Ismailly Forest Management Unit. The zoning system should ensure efficient management of all forest management unit resources by means of:

- setting of the management priorities;
- prioritizing the financial and labor resources allocation when planning the management activities;
- eliminating the natural resources management conflicts by introducing spatial and temporal limitations.

The zoning concept is based on the idea of management flexibility and adaptability implemented by means of management activities. Moreover, it is necessary to strive for delimitation of authority and responsibility on different plots of the territory within the boundaries of the forest management unit when performing the zoning of the territory.
General principles of the functional zoning:

1. A forest management compartment, being the most convenient, is taken as a zoning unit. In some cases, landscape boundaries of the territory and remoteness from human settlements have been used for the zoning.
2. A functional area is the basic territorial administration unit of the Ismailly Forest Management Unit.
3. In the course of time (10 years), the zoning requires adjustments, due to accumulation of the objective situation changes and identifying design deficiencies. The borders and the established zones' regime can change according to the procedure used for their approval.

Functional zoning and HCV

Functional zoning is done taking into account HCV concept. All forests contain environmental and social values, such as wildlife habitat, watershed protection or archaeological sites. Where these values are considered to be of outstanding significance or critical importance, the respective forest stands can be assigned a High Conservation Value (HCV) status.

HCV forests are those that need to be appropriately managed in order to maintain or enhance their respective values.

There are 6 types of HCV. They are:

HCV1. Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g. endemism, endangered species, refugia).

HCV2. Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.

HCV3. Forest areas that are in or contain rare, threatened or endangered ecosystems.

HCV4. Forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control).

HCV5. Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health).

HCV6. Forest areas critical to local communities’ traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

A detailed description of HCV, their availability on the territory of the Ismailly Forest Management Unit, and management strategies are presented in the Management Strategies Chapter.

The zones identified in the framework of this SFMP considerably overlap with HCV.
A list of zones

In general terms, the whole territory can be divided into three parts: areas of high ecological value, areas important for the livelihood of the local population, and all other areas. Based upon this, functional areas have been identified.

The areas of high ecological value include the parts of the forest territory, which are characterized by a high level of biological diversity (compared to the neighboring territories), as well as the forest areas performing essential ecosystem functions (including water-protective, erosion-preventive and others).

The areas of high ecological value are divided into 3 types:

- Biodiversity conservation territories - forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (HCV1)
- Rare ecosystems - forest areas that are in or contain rare, threatened or endangered ecosystems (HCV3.)
- Ecosystem services territories - forest areas that provide basic services of nature in critical situations (HCV4)

Social forests are the areas of high significance for the local population. Usually, they are located around population centers.

Social forests include four zones:

1. Areas of mass wild-harvest picking (HCV 5)
2. Grazing areas (HCV 5)
3. Firewood harvesting areas (HCV 5)
4. Recreation areas (HCV 6)

Other forests are the remaining forest areas not included in the above-mentioned categories. It is important to note that these forests are also guaranteed to possess an ecological and often social value. However, this value is lower than the value of the forests, which were referred to the ecological and social categories.

6.2. Criteria & Indicators of Sustainability

Background

A number of regional initiatives on sustainable forestry have been established in different parts of the World – Europe, Africa, Central and South America, Asia.

For the conditions of the Ismailly Forest Management Unit, the Near East Process (1996) is the closest in terms of conditions. The Near East process originated in an FAO/UNEP Expert Meeting on Criteria and Indicators for Sustainable Forest Management, held in Cairo, Egypt (10/1996) under the coordination of FAO and UNEP. The experts in forest management from 30 Near East countries identified seven regional and national level criteria and 65 indicators,
focusing mainly on the management of dry-zone forests and woodlands in the region. The Near East Forestry Commission (NEFC) once more endorsed the process in its Fourteenth Session held in July 2000 and subsequently follows its work and activities.

Member Countries 30: Afghanistan, Algeria, Azerbaijan, Bahrain, Cyprus, Djibouti, Egypt, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Kyrgyz Republic, Lebanon, Libya, Malta, Mauritania, Morocco, Oman, Pakistan, Qatar, Kingdom of Saudi Arabia, Somalia, Sudan, Syria, Tadjikistan, Tunisia, Turkey, Turkmenistan, United Arab Emirates and Yemen.

Criteria and Indicators (C&I’s) describe the essential components of Sustainable Forest Management by identifying important social, ecological and economic values. Once established, management strategies can be developed to provide a strategic and systematic means to achieve, evaluate or monitor progress towards achieving those values.

Criterion can be viewed as a category of conditions or processes which sustainable forest management may be assessed. An indicator is an aspect of the criterion that can be measured. Through the Verifier of the criterion (indicator), there is the ability to observe, demonstrate trends, periodically monitor, and determine the results of the management strategies employed. There can be one or several verifiers for each indicator.

The developed verifiers are not fundamental and the only right ones for the territory of the Ismailly Forest Management Unit. It is, rather, an attempt to identify the most important and/or critical issues, failing which it is impossible to talk about the sustainable forest management. It is impossible to develop more detailed verifiers in the framework of this report, because it requires a more in-depth knowledge of the situation in the forest sector of Azerbaijan.

A working group, consisting of the representatives of all stakeholders, should be organized for further development of the verifiers. The finalized verifiers should serve as a basis for the development of the SFMP for the next decade. In the event of significant contradictions between the verifiers given below and the ones developed by the Working group, the latter should prevail. If the verifiers developed by the Working group require adjustment of this SFMP, these adjustments should be made.

For those indicators that are not applicable or are not the high priority for the territory of the Ismailly Forest Management Unit, the verifiers are not proposed.

These C&I will also be used for subsequent monitoring of the implementation of the Management Plan.

**Criterion 1: Extent of forest resources**

**Indicator 1.1 Area and percentage of forests and “other wooded lands” (including plantations, agroforestry, shelterbelts) with their change over time (deforestation, reforestation and conversion).**

**Verifier 1.1.1.** The forest area remains unchanged or increases according to the plan

**Indicator 1.2 Biomass/Standing volume, Growing stock, Carbon stock.**
Verifier 1.2.1. The verifiers remain unchanged or increase

Indicator 1.3 Area and percentage of forests for which management plans are made

Verifier 1.3.1. A long-term sustainable forest management plan is developed for the territory
Verifier 1.3.2. Operational plans are annually developed based on a long-term plan
Verifier 1.3.3. The management plan shall include verifiable targets by which progress towards each of the prescribed management objectives can be assessed. Examples of verifiable targets to be established include:
- Site productivity, yield of all products harvested;
- Growth rates, regeneration and condition of the vegetation;
- Composition and observed changes in the flora and fauna;
- Water quality and quantity;
- Soil erosion, compaction, fertility and carbon content;
- Wildlife populations, biodiversity and status of High Conservation Values;
- Sensitive cultural and environmental resources;
- Stakeholder satisfaction with engagement;
- Benefits of management operations provided to local communities;
- Number of occupational accidents; and
- Overall economic viability of the Management Unit.

Indicator 1.4 Area and percentage of forests and other wooded lands which have been demarcated.

Verifier 1.4.1. The borders of the forestry unit are clearly defined and marked on site with signs (notice plates) and cleared strips
Verifier 1.4.2. The maps with defined borders are available

Criterion 2: Conservation of biological diversity in forest areas

Ecosystem indicators:

Indicator 2.1 Distribution of forest ecosystems (area by type of vegetation, natural or man-made)

Verifier 2.1.1. A natural structure of forest stands is being preserved
Verifier 2.1.2. On the territories with the artificial regeneration, the species are selected based on the natural forest growth conditions

Indicator 2.2 Areas of forest reserves and protected areas

Verifier 2.2.1. All identified especially valuable areas are included in the list of reserves or protected areas
Verifier 2.2.2. The number and total area of protected areas remains unchanged or increases
Verifier 2.2.3. A management regime, corresponding to the purposes of the protected area establishment, is selected for each protected area, additional studies are conducted (when required)

Indicator 2.3 Spatial fragmentation of forest resources

Verifier 2.3.1. The use of forest areas does not result in spatial fragmentation of the
Ismailly Sustainable Forest Management Plan

**Indicator 2.4: Excisions affecting rare ecosystems by area**

n/a

**Species indicators:**

**Indicator 2.5: No. of forest dependent species (fauna, flora)**

Verifier 2.5.1. Program of biological diversity preservation is developed and applied.
Verifier 2.5.2. A periodic monitoring of the composition and observed changes in the flora and fauna is being conducted

**Indicator 2.6: Area and number of species at risk in forest areas**

Verifier 2.6.1. The work on identifying the sites with high concentration of rare and protected species has been carried out
Verifier 2.6.2. The high concentration sites are marked on the maps
Verifier 2.6.3. A regime of use (protection), contributing to maintaining the rare and protected species population, has been selected for the areas of vulnerable species concentration

**Indicator 2.7: Extent of mixed stands**

n/a

**Indicator 2.8: Reliance on natural regeneration**

Verifier 2.8.1. During reforestation the preference is given to natural methods. Sowing and planting are permissible only on the areas where natural regeneration is difficult or impossible for some reason or other.
Verifier 2.8.2. A natural age structure of the forest stands is being maintained on the territory of the forest fund (all generations of forest stands are present)
Verifier 2.8.3. In the forest where, due to anthropogenic reasons (as a result of cattle grazing, firewood harvesting), the undergrowth is missing or insufficient for the regeneration, reforestation works are conducted

**Genetic indicators:**

**Indicator 2.9: Existence of the number of seed provenance**

n/a

**Indicator 2.10: No. of forest dependent species with reduced range**

Verifier 2.10.1. The habitat area of species is not decreasing
Verifier 2.10.2. In case the species habitat area reduction is detected, the studies to identify the reasons for such reduction are conducted and the actions to stabilize and restore the habitat area are taken

**Indicator 2.11: Population levels of key species across their range**
Verifier 2.11.1. The populations of key species are not declining
Verifier 2.11.2. In case a decline in the population is detected, the studies to identify the reasons for such decline are conducted and the actions to stabilize and restore the population are taken

Criterion 3: Health, vitality and integrity

External influence indicators:

Indicator 3.1 Areas and percentage of forest (plantations/natural forests) affected by:

- natural fires
- storms
- insects and diseases
- drought
- wild animals (game)

Verifier 3.1.1. the forest areas subject to a negative impact tend to zero
Verifier 3.1.2. emergency response procedures are developed and implemented
Verifier 3.1.3. in the event of an emergency, all measures for its elimination and/or minimization of its consequences are taken

Forest vitality indicators:

Indicator 3.2 Area of natural forests with healthy regeneration

Verifier 3.2.1. Natural forest areas capable to self-reforestation do not decrease and/or increase.
Verifier 3.2.2. The program to promote self-reforestation has been elaborated and is being implemented

Indicator 3.3 Incidence of defoliation

n/a

Anthropogenic influence indicators (site degradation):

Indicator 3.4 Area of encroachment for farming, urban expansion and unplanned tourism

Verifier 3.4.1. Areas of encroachment for farming, urban expansion and unplanned tourism are defined and agreed with the stakeholders
Verifier 3.4.2. The territories are mapped
Verifier 3.4.3. The territories are marked on site with notice plates, cleared strips, or by other means
Verifier 3.4.4. The regime of use, enabling the territory to fulfill its functions, has been selected
Verifier 3.4.5: The monitoring of the impacts on the territory is being conducted

Indicator 3.5 Average annual consumption of fuelwood per capita

Verifier 3.5.1. The necessary timber volume is defined
Verifier 3.5.2. The amount of the consumed fuel wood meets the stakeholders' demands, but does not exceed the allowable volume of annual wood removal
Verifier 3.5.3. The rules for the fuel wood harvesting/collection are clearly defined

Indicator 3.6 Area and number of fires caused by people

Verifier 3.6.1. The number of fires caused by humans is equal to 0
Verifier 3.6.2. Preventive activities aimed at reducing the number of fires are being conducted
Verifier 3.6.3. In the event of an emergency, all measures for its elimination and/or minimization of its consequences are taken

Indicator 3.7 Grazing damage by domestic animals

Verifier 3.7.1. The grazing areas (forest pastures) are clearly defined and agreed upon during the stakeholders' negotiations
Verifier 3.7.2. Forest pastures are mapped and marked on site.
Verifier 3.7.3. The monitoring of the cattle grazing impact on the forest ecosystems is being conducted

Indicator 3.8 Competition from introduced plants

Verifier 3.8.1. The efforts should be made to avoid the use of introduced plants during the silvicultural activities
Verifier 3.8.2. The use of introduced plants should be controlled. The use of the introduced plants competing with the local species is not permitted

Indicator 3.9 Trends in crop yields

Verifier 3.9.1. The volumes of the harvested forest resources should be sustainable in the long term

Criterion 4: Productive capacity and functions

Indicator 4.1 Percentage of forests and other wooded lands managed according to an integrated management plan

Verifier 4.1.1. 100% of the territory of forests and other wooded lands are managed by an integrated management plan
Verifier 4.1.2. In the event of the area boundaries change, the appropriate changes are to be made in the management plan

Indicator 4.2. Annual balance between wood increment and wood harvesting and trends

Verifier 4.2.1. The annual volume of wood removal does not exceed the allowable sustainable level

Indicator 4.3 Wood production

Verifier 4.3.1. The annual increment does not decrease or increases
Verifier 4.3.2. In the case of the annual increment reduction, it should be justified by objective reasons

Indicator 4.4. Non-wood forest products outputs including among others aromatic and medicinal plants
Verifier 4.4.1. an annual productive capacity does not decrease or increases
Verifier 4.4.2. in the case of the annual productive capacity reduction, it should be justified by objective reasons

Criterion 5: Protective and environmental functions

Indicators of protective functions:

Indicator 5.1 Extent of forests and other wooded lands managed for protection purposes

Verifier 5.1.1. The total area of forests with protective functions remains unchanged or increases
Verifier 5.1.2. The activities contributing to maintaining the protective functions of the forest have been developed

Indicator 5.2 Size and percentage of wooded areas managed mainly for the protection of watersheds

Verifier 5.2.1. The number of territories remains unchanged or increases
Verifier 5.2.2. The forest area management activities, contributing to the watersheds conservation, have been developed

Indicator 5.3 Areas managed for scenic and amenity purposes

Verifier 5.3.1.: The number of territories remains unchanged or increases
Verifier 5.3.2. The forest area management activities, contributing to the conservation of the scenically attractive landscapes and the landscapes of high aesthetic value, have been developed

Indicator 5.4 Areas managed for soil protection

Verifier 5.4.1. The number of territories remains unchanged or increases
Verifier 5.4.2. The activities contributing to maintaining the soil-protective functions of the forest have been developed

Indicators of combating land degradation:

Indicator 5.5 Area of sand dunes annually stabilized through tree/shrub planting

n/a

Indicator 5.6. Area of eroded hillsides annually rehabilitated through tree/shrub planting

Verifier 5.6.1. Area of rehabilitated eroded hillsides achieve or exceeds annual plan of reforestation

Indicator 5.7 Efficiency of trees/shrubs planted in stabilizing sand dunes or rehabilitating eroded hill sides

Verifier 5.7.1. Erosion on rehabilitated areas stops or considerably decreases

Indicator 5.8 Effectiveness of plans formulated for managing trees/shrubs planted for desertification control.

n/a
Indicator 5.9 Extent of combating desertification

n/a

Criterion 6: Maintenance and development of socio-economic functions and conditions

Indicators of economic conditions:

Indicator 6.1 Value of wood products

n/a

Indicator 6.2 Value of Non-Wood Forest Products

Verifier 6.2.1. The value of the non-wood forest products has been recognized by the major stakeholders. The forest use that can drastically reduce the amount (volume) of NWFP shall not be allowed.

Indicator 6.3 Value of recreation

Verifier 6.3.1. The value of the forest recreation has been recognized by the major stakeholders. The forest use that can drastically reduce the recreational attractiveness of the territory or the volume of the recreational services shall not be allowed.

Indicator 6.4 Value of hunting

n/a

Indicator 6.5 Share of forest sector in GNP/GDP

n/a

Indicator 6.6 Value from secondary forest industries

n/a

Indicator 6.7 Value from biomass energy

n/a

Indicator 6.8 Forest trade balance

n/a

Indicator 6.9 Level of investment in forest sector and forest products based industries

n/a

Indicator 6.10 Employment generation in forest sector

Verifier 6.10.1. The number of jobs in the forest sector remains constant or increases
Verifier 6.10.2. The local population should be given preference in the recruitment
Verifier 6.10.3. If the local residents have insufficient qualification, they must be given the opportunity for training
Verifier 6.10.4. Employment of the specialists from other regions and/or foreign experts is justified

Indicator 6.11 Forest dependent communities involvement (numbers of organized groups and women)

Verifier 6.11.1. Forest dependent communities are involved in the forest sector issues discussions
Verifier 6.11.2. Consultations with the local population are carried out at least once a year.
Verifier 6.11.3. The procedure for processing complaints and suggestions is developed
Verifier 6.11.4. All population groups are allowed to participate in consideration of the forest sector issues. Age, gender and race discrimination is prohibited

Indicator 6.12 Contribution to agricultural development

n/a

Indicator 6.13 Rate of improved livelihood of forest dependent communities

Verifier 6.13.1. The living standards of the local population groups, dependent on the forest resources, should improve

Indicator 6.14 Reduction in the number of forest offenses

Verifier 6.14.1. A set of unified standards in the forest sector (the "rules" of conduct) has been developed and communicated to all stakeholders groups
Verifier 6.14.2. The number of violations in the forest sector is tracked and recorded on an annual basis
Verifier 6.14.3. The number of violations in the forest sector is decreasing every year.
Verifier 6.14.4. An action plan on prevention of the violations in the forest sector is developed and being implemented.

Indicator 6.15 Interest and contributions of the rural communities, media, NGOs, politicians and the public in general for the conservation and development of forests and forestry

Verifier 6.15.1. A list of key stakeholders has been compiled
Verifier 6.15.2. A key stakeholder engagement plan has been developed and is being implemented in practice
Verifier 6.15.3. The key stakeholders’ opinion is taken into account during the silvicultural operations planning and execution
Verifier 6.15.4. The information on the Forest Management Unit’s activity is public and available

Criterion 7: The legal and institutional frameworks

Indicator 7.1 National forest policy, legislation and regulations

Verifier 7.1.1. A set of documents of the state importance, covering all key aspects of forestry (both current and planned, with strategic and tactical planning among them), including the National policy, normative legal acts, has been developed
Verifier 7.1.2. Regional (at the level of the forest management unit) documents, procedures, programs, etc., supplementing the state documents and taking into account
the regional specific features of the forestry, have been developed.

**Verifier 7.1.3.** The area management plan has been harmonized with the documents on Indicators 7.1.1. - 7.1.2.

**Indicator 7.2 Institutional instruments and tools**

**Verifier 7.2.1.** SFMP is being implemented under the supervision of the relevant agencies.

**Verifier 7.2.2.** Particular persons responsible for the area management plan implementation have been assigned.

**Indicator 7.3 Concrete implementation and capacity to monitor**

**Verifier 7.3.1.** Specific steps to implement the SFMP are being taken.

**Indicator 7.4 Economic framework and financial instruments**

**Verifier 7.4.1.** A long-term budget guaranteeing the possibility of the management plan implementation is developed.

**Verifier 7.4.2.** In case the budget deficit is identified, appropriate adjustments should be made in the management plan.

**Indicator 7.5 Community consultation and information tools**

**Verifier 7.5.1.** The program and procedure for considering the local population's opinion have been developed.

**Verifier 7.5.2.** The most effective tools for interaction with the population have been defined.

**Verifier 7.5.3.** The population's opinion is taken into account. Where necessary, changes are introduced to the management plan.

**Indicator 7.6 Research and extension capacity**

**Verifier 7.6.1.** Representatives of research institutes and higher educational institutions are involved in the SFMP implementation. The cooperation is based on the mutually beneficial terms.

**Indicator 7.7 Valorization of local expertise, knowledge, and local technologies**

**Verifier 7.7.1.** The local experts and technologies are involved in the management plan implementation wherever possible.

**Indicator 7.8 Transfer and adaptation of appropriate technologies**

**Verifier 7.8.1.** Involvement of the foreign experts and technologies is only permitted if their quality is fundamentally higher than the quality of the local ones.

**Verifier 7.8.2.** The local experts, when possible, are trained in the best modern forestry management technologies.

**Indicator 7.9 Capacity to implement international instruments**

n/a
Note:

The indicators marked as n/a are not applicable or low-priority ones only within the framework of this SFMP. The necessity to refer the indicators to n/a in most cases is attributable to the limited resources (primarily, time). At the next stages of the work (during the SFMP development for the next decades), these indicators should also be gradually included in the management system.
6.3. Management Strategies

Management strategies provide the operational means by which the verifiers of sustainability can be met.

The strategies are a part of a single sustainable forest management plan. They are interrelated and often overlap with each other. Every strategy has one or more corresponding verifiers out of those suggested in the previous section. Some verifiers repeat in different forest management strategies, which shows the importance and complexity of this verifier.

The following strategies have been developed based on the most current international experience. Environmental, economical and social strategies are very important as key components of sustainable development. Strategies were supplemented by HCV strategy for the reason that it contemporary corresponds with all three key strategies. It was necessary to specify data management strategy as a separate to overcome significant data problem. For instance lack of data, outdating of forest inventory information.

Every forest management strategy is considered based on a common plan:

1. The goal of the strategy
2. Description – i.e. a general description of the forest management object, including the definition and analysis of the availability on the forest management unit’s territory (if necessary)
3. The strategy itself, i.e. the steps that need to be taken at this stage.
   **Note:** the duration of each step is not defined in the framework of this SFMP, because decision-making by the management of the forest management unit will be more efficient.
4. A list of the key cartographic materials
5. A list of the key supporting documents

The following strategies have been developed (see Table 10).

### Table 10. Correspondence between Management Strategies and Verifiers

<table>
<thead>
<tr>
<th>Name of Management Strategy</th>
<th>List of Verifiers</th>
</tr>
</thead>
</table>
| 1. High Conservation Value Forests Strategies | Criterion 1 1.3.1.- 1.3.3.  
Criteria 2 2.1.1.-2.1.2.; 2.2.1.-2.2.3.; 2.5.1.-2.5.2.; 2.6.1.-2.6.3.; 2.10.1.-2.10.2.; 2.11.1.-2.11.2;  
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Criteria 7 |
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<tr>
<td><strong>2.2. Species Management Strategy</strong></td>
<td>Criterion 2</td>
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<td><strong>2.3. Soil protection strategy</strong></td>
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<td><strong>2.4. Water protection strategy</strong></td>
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<td><strong>2.5. Silviculture and Natural Forest Dynamic Strategy</strong></td>
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<td><strong>2.6. Invasive Plants Strategy</strong></td>
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| 3.1. Local Employment Strategy | Criterion 6  
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|                               | Criterion 7  
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| 3.2. Employee & Forest Workers Training Strategy | Criterion 6  
|                               | 6.10.3.  
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| 4. Economic Strategy | Criterion 2  
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|                               | 7.1.1.-7.1.3.; 7.2.1.-7.2.2.; 7.3.1.; 7.4.1.-7.4.2.; 7.7.1.  
| 5. Data Management Strategy | Criterion 1  

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</table>
6.4. High Conservation Value Forests Management Strategy

The goal is to preserve the High Conservation Values of the Ismailly Forest Management Unit

General provisions

The high conservation value forests preservation strategy is a key one, because its implementation allows to resolve a host of ecological and social issues.

At the initial stage, the key objective was a clear determination of the boundaries for the HCV of each category. The next step is to develop a management strategy: first for the HCV groups (by category), and then for each specific HCV.

This section provides the information on the main HCV categories - the concept definition, information on the availability, as well as basic recommendations on the HCV management.

HCV1: Globally, regionally or nationally significant concentrations of biodiversity values

Description

This value is intended to include areas with extraordinary concentrations of species, including threatened or endangered species, endemics, unusual assemblages of ecological or taxonomic groups and extraordinary seasonal concentrations. Any forest that contains the species identified as HCVs, or which contains habitat critical to the continued survival of these species, will be a HCV forest. This will include forests with many species that are threatened or endangered or many endemic species (e.g.“Biodiversity hotspots”). Exceptionally, it may even be that a single species is considered important enough to be a HCV on its own.

At present, there is quite a large amount of information on the potential HCV 1 locations.

- Global 200 Ecoregions
- International Biodiversity "hotspot" Caucasus
- World centers of plant diversity
- Wetlands
- Key ornithological territories

Global 200 Ecoregions

The Global Ecoregions is a science-based global ranking of the Earth's most biologically outstanding terrestrial, freshwater and marine habitats. It provides a critical blueprint for biodiversity conservation at a global scale. Developed by WWF scientists in collaboration with regional experts around the world, the Global Ecoregions is the first comparative analysis of biodiversity to cover every major habitat type, spanning 5 continents and all the world's oceans.

The aim of the Global Ecoregions analysis is to ensure that the full range of ecosystems is represented within regional conservation and development strategies, so that conservation efforts around the world contribute to a global biodiversity strategy.
The Global Ecoregions reflects 3 major innovations:

- It is comprehensive in its scope - it encompasses all major habitat types including freshwater and marine systems as well as land-based habitats. It ranges from arctic tundra to tropical reefs, from mangroves to deserts, to include species from every major habitat type on Earth.
- It is representative in its final selection. The most outstanding examples of each major habitat type are included from every continent and ocean basin. Thus it includes, for example, the most important tropical and temperate forests from each continent, and the most important coral reefs from each ocean.
- It uses ecoregions as the unit of scale for comparison and analysis. Ecoregions are large areas of relatively uniform climate that harbour a characteristic set of species and ecological communities. By focusing on large, biologically distinct areas of land and water, the Global Ecoregions set the stage for conserving biodiversity.

Availability: A part of the Global 200 - Caucasus-Anatolian-Hyrcanian Temperate Forests - is located on the mountain (Caucasian) part of the Ismailly Forest Management Unit.

This Global ecoregion is made up of 6 terrestrial ecoregions: Kopet Dag woodlands and forest steppe; Caucasus mixed forests; Euxine-Colchic deciduous forests; Northern Anatolian conifer and deciduous forests; Caspian Hyrcanian mixed forests; and Elburz Range forest steppe. Territory of Ismailly forest unit belongs to Caucasus mixed forests ecoregion.

The mountain range falling in the overland from the Caspian Sea to the Black Sea, and a related stretch of forests in Bulgaria on the other side of the Black Sea and south of the Caspian Sea, together form the Caucasus-Anatolian-Hyrcanian Temperate Forests and represent some of the most diverse and distinctive temperate forests in Eurasia.

The combination of a moderate climate, rugged topography, varied geology, and geographic proximity to both Europe and the Near East, help account for the uniqueness and complexity of plant and animal life here. Endemism is high throughout - in the Caucasus alone up to 20% of the flora is considered endemic.

Caucasus mixed forests contain a mixture of species from Central and Northern Europe, Central Asia, and the Middle East and North Africa. It also contains a remarkable number of endemic species, including more than 1,500 plants.

For the whole region the main threats are aggressive forestry techniques including clear felling and replanting with alien species, coastal development in narrow coastal strips, overgrazing, recreation, and dam construction in large and small catchments. Since the territory of the Ismailly Forest Management Unit has no clearfellings, the Global 200 regions threat level can be assessed as low.

Conservation International "Biodiversity hotspots"

These are the areas with the highest level of biodiversity defined by Conservation International.
To qualify as a biodiversity hotspot, a region must meet two strict criteria:

- It must have at least 1,500 vascular plants as endemics — which is to say, it must have a high percentage of plant life found nowhere else on the planet. A hotspot, in other words, is irreplaceable.
- It must have 30% or less of its original natural vegetation. In other words, it must be threatened.

**Availability:** biodiversity hotspot "Caucasus".

According to several sources of information, territorially it coincides with the Global 200 boundaries, although exact cartographic materials or a detailed description of the territory's borders has not been found.

Selected species of the region include the Caucasian tur (*Capra caucasica*), maral (*Cervus elaphus maral*), chamois (*Rupicapra rupicapra*), red deer (*Cervus elaphus*), and the Caucasian bison (a subspecies of European bison, *Bison bonasus*). Predators such as the wolf (*Canis lupis*), bear (*Ursus arctos*), lynx (*Lynx lynx*), and the extremely rare Central Asian leopard (*Pantera pardus tullianus*) also roam these forests.

Two birds found here and nowhere else are the Caucasian black grouse (*Tetrao mlokosiewiczii*), which nests in thickets of rhododendron, juniper, and birch, and the Caucasian snowcocks (*Tetraogallus caucasicus*), flocks of which can often be seen near mountain goats.

More than 10,000 plants, 700 vertebrates, and 20,000 invertebrates have been catalogued in the Caucasus Mixed Forests. The Euxine-Colchic deciduous forests together with the swampy broadleaf forests of the Colchic lowland, boast 130 endemic species of plants and animals.

**Important bird area**

BirdLife’s Important Bird and Biodiversity Area (IBA). Programme aims to identify, monitor and protect a global network of IBAs for the conservation of the world's birds and other wildlife. BirdLife Partners take responsibility for the IBA Programme nationally, with the BirdLife Secretariat taking the lead on international aspects and in some priority non-Partner countries.

Birds have been shown to be effective indicators of biodiversity in other animal groups and plants – especially when used to define a set of sites for conservation. So although the IBA network is defined by its bird fauna, the conservation of these sites would ensure the survival of a correspondingly large number of other animals and plants.

**Availability.** The territory of the Azerbaijan Republic has two IBAs located within the boundaries of the Ismailly Forest Management Unit. It is Ismailly (http://www.birdlife.org/datazone/sitefactsheet.php?id=165) and Babadag (http://www.birdlife.org/datazone/sitefactsheet.php?id=152).

**Ramsar wetlands of international importance**
These are the wetlands necessary for biodiversity conservation (mainly, waterfowl habitat protection). Such places are specific biodiversity refugia, climate stabilizers, and often fresh water sources.

**Availability.** The territory of the Azerbaijan Republic has two Ramsar wetlands, but neither of them is located within the boundaries of the Ismailly Forest Management Unit.

**HCV1 Strategy** includes the following steps:

**Step 1.** To define clear boundaries for all above-mentioned territories and draw them on the maps, and, when necessary, mark them on site with notice plates, information signs.

**Step 2.** To develop the regime of use (protection) for the territory. Any economic activity, which can destroy the HCV 1 territory and/or disturb natural environmental processes, is prohibited.

**Step 3.** To organize a periodic monitoring on HCV 1 area.

**HCV2. Globally, regionally or nationally significant large landscape level forests**

**Description**

This part of the HCV forest definition aims to identify those forests that contain viable populations of most if not all naturally occurring species. It often also includes forests that contain important sub-populations of very wide-ranging species (e.g. wolverine, tiger, elephant) even though the sub-populations may not in themselves be viable in the long term. It includes forests where ecological processes and ecosystem functioning (e.g. natural disturbance regimes, forest succession, species distributions and abundance) are wholly or relatively unaffected by recent anthropogenic activities.

**HCV 2 availability.** There are no HCV 2 on the territory of the Ismailly district, because it has no forest massifs with sufficient area.

**HCV2 Strategy**

No need

**HCV3: Rare, threatened or endangered ecosystems**

**Description**

Some ecosystems which are naturally rare (For example, where the climatic or geological conditions necessary for their development are limited in extent. Recent processes, such as land conversion, may have decreased their extent even further. Examples include mountain forests in eastern Africa, cloud forests in Central America or riverine forests in semi-arid regions of Africa) OR have become rare through recent human activity, such as conversion of natural ecosystems into agricultural or other land use. It is often these ecosystems that are the most at risk in the future.
**HCV 3 availability.** It is not possible to draw a conclusion regarding the HCV 3 availability on the basis of the existing data.

**HCV3 Strategy** includes the following steps:

**Step 1.** To carry out the work on identifying HCV 3 and develop the regime of use (protection) for the territory.

This work should be based on the data on the current state of the forests (current forest inventory data). The following territories need to be identified based on these data:

- Naturally rare forests - the most rare forest types (for example, those which occupy < 5% of the territory)
- Disappearing forests - the forest types which area has significantly reduced compared with the results of the previous forest inventory.
- Potentially disappearing forests - the forest types threatened with extinction or reduction in area (for example, in full absence of reforestation).
- Habitats of rare species, i.e. a reserve as a habitat of RDB species: Caucasian grouse. [http://www.birdlife.org/datazone/species/factsheet/22679483](http://www.birdlife.org/datazone/species/factsheet/22679483)

These are the above-mentioned territories that will be HCV 3 for the Ismailly Forest Management Unit.

**HCV 3 Strategy**

**Step 1.** The identified HCV 3 need to be mapped. Besides, it is required to select a regime of protection for each type of HCV 3.

**Naturally open forests** should be fully protected against any types of anthropogenic impacts and natural disasters, because in view of their small area they can be totally destroyed by an extensive fire, windfall, etc. Naturally open forests fit their ecological niche and in a normal (no emergency) situation do not require any additional activities to preserve their areas or extend their boundaries.

**Disappearing forests**, unlike the naturally open ones, reduce in their area if compared to the initial territory. Therefore, the first and key step in the disappearing forests' management is to identify the reasons for reduction of their area.

For **the potentially open forests**, the reasons of the potential reduction of their area should be determined. If these are natural successional processes, there is no need to interfere in the process. In case of threats by anthropogenic activities, potentially open forests should be fully preserved, any economic activity, representing a potential threat to ecosystems, must be stopped.

**Step 2.** To organize a regular periodic monitoring of the ecosystems condition, aimed at tracking of the ecosystems' state changes (including the area changes).

**HCV4 Forest areas providing basic services of nature in critical situations**
Description

All forests provide some services of nature, such as watershed protection, stream flow regulation or erosion control. These services should always be maintained under good management, a fact reflected in the requirements of most forest management standards. The value can be considered an HCV if the consequence of a breakdown in these services would have a serious catastrophic or cumulative impact. For example, a forest that forms a large proportion of the catchment area of a river that has a high risk of damaging and destructive flooding downstream may be critical in preventing flooding and would be considered an HCV forest. It is this type of situation that HCV4 attempts to identify.

Since there is a range of separate ecosystem services, this value has been sub-divided into three elements:

- **HCV4.1 Forests critical to water catchments**: Forests play an important role in preventing flooding, controlling stream flow regulation and water quality.
- **HCV4.2 Forests critical to erosion control**: A second basic service of nature that forests provide is terrain stability, including control of erosion, landslides, avalanches and downstream sedimentation.
- **HCV4.3 Forests providing barriers to destructive fire**

**HCV 4 availability.** In fact, all the forests of the Ismailly Forest Management Unit fall into the category of HCV 4.

**HCV 4 Management Strategy** is to follow the legislation requirements.

**HCV5. Forest areas fundamental to meeting basic needs of local communities**

**Description**

The definition of forests with HCVs recognizes that some forests are essential to human well-being. This value is designed to protect the basic subsistence and security of local communities that are dependant on forests - not only for “forest-dwelling” communities, but also for any communities that get substantial and irreplaceable amounts of income, food or other benefits from the forest.

A forest may have HCV status if local communities obtain essential fuel, food, fodder, medicines, or building materials from the forest, without readily available alternatives.

- Areas for collection of non-wood forest resources;
- Areas for collection of wild fruit and berries by local community;
- Areas for collection of leaf vegetables, plants for pickling, seasoning-flavouring-dressing plants and edible mushrooms;
- Forest areas with high concentration of the best honey plants;
- Traditional tree-based bee-keeping forests;
- Forest areas for nesting of Georgian endemic bees;
• Forest areas rich of medicinal herbs;
• Fishing areas;
• Forests with wild plants, used in production of traditional garments, household items, decoration of living environment;
• Forests with plants containing coloring and astringent (tannin-based) matters;
• Forest areas represented by plants for baskets, wicker-work, tying up, fencing, making pillows, mats, brooms;
• Forests important for the use of wood resources:
  o Forest areas intended for special fire-wood use for the part of the village community which doesn’t have any other means of alternative heating;
  o Forest areas intended for reserve fire-wood use, where use of resources shall be permitted if, in extreme situation, local community doesn’t have other energy resources;
  o Forest areas to be used for utilization of timber and fire-wood for agricultural and ritual purposes, for constructing rooves, including coppiced forest stands.
  o Forest areas intended for obtaining timber for the purpose of construction of houses or other personal use.
• Forests with recreational, climate regulating, sanitary-hygienic, balneological and other properties having particular value for population;
• Forests of balneological significance (forests existing around resort areas of various kinds);
• Forest strips, existing around holiday homes, children’s camps and medicinal and recreational establishments;
• Forest strips existing around tourist tracks of national and regional importance;
• Forests existing around suburban areas, summer cottages and settlements;
• Green zone forests.

**HCV 5 availability.** There are HCV 5 on the territory of the forest management unit, they include:

• fruit and berry forest, where mass picking of NWFP is performed
• areas around the population centers, where cattle grazing is conducted
• firewood harvesting areas

**HCV5 Management Strategy** includes the following steps:

**Step 1.** Collecting the information on the local population’s demand for forest resources (types of resources, their volume, harvesting sites, and alternatives for obtaining resources, etc.). The optimal way to collect reliable information is a direct interviewing of the local population representatives. The interview should be conducted by a local resident having a good understanding of the regional specifics and able to clarify disputable issues.

**Step 2.** Identifying the HCV 5 zones based on the questionnaire results.

**Step 3.** Developing the proposals on the regime of use and their coordination with the representatives of the stakeholders (local residents).

Step 5. Monitoring (ideally, with the involvement of the local population’s representatives). The main goal of the monitoring is to define whether the current volume of extraction of one or another resource exceeds the sustainability level.

HCV6: Forest areas critical to local communities’ traditional cultural identity

Description

As well as being essential for subsistence and survival, forests can be critical to societies and communities for their cultural identity. This value is designed to protect the traditional culture of local communities where the forest is critical to their identity, thereby helping to maintain the cultural integrity of the community.

A forest may be assigned a HCV if it contains or provides values without which a local community would suffer an unacceptable cultural change and for which the community has no alternative:

- Shrine forests
- Sacred and ritual places
- Old graveyards,
- Tombs and remnants of towns,
- Destroyed or abandoned villages,
- Forest strips located around the paths leading to ritual places;
- Stations of ancient people, battlefields;
- Places of archeological value, forest stands existing around historical- cultural and archeological monuments;
- Forests located around leisure and feasting places around the springs and their sources;
- Places of religious purpose (places where sacred trees grow, spiritual places, springs with sacred water, sacred stones, hills of honor, places of sacrifice, myth-related places)

HCV 6 availability. There are HCV 6 on the territory of the Ismailly Forest Management Unit (according to the forest management unit’s representatives and some local residents, with whom it was possible to meet in the framework of this SFMP development). However, there is no documented information on the HCV 6 location. Therefore, it is necessary to carry out the work on identifying the HCV 6. This work can be conducted in parallel with the HCV 5 identifying.

HCV6 Management Strategy includes the following steps:

Step 1. Collecting the information on the HCV 6 location (questionnaires).
Step 2. Identifying the HCV 6 zones based on the questionnaire results.
Step 3. Developing the proposals on the regime of use and their coordination with the representatives of the stakeholders (local residents).
Step 5. A periodic monitoring of the objects condition

The list of key materials necessary for HCV strategy implementation is presented below. Some materials are already exist, and some need to be done. The process of collecting and updating information about HCV should be permanent. But it is recommended to identify HCV during forest inventory work. This should be done not only by forest taxator in collaboration with different specialists such as botanists, zoologists, sociologists etc.

A list of the key cartographic materials

- A general-purpose schematic map showing the HCV location
- Schematic maps showing the location of each type of HCV separately
- Schematic maps showing the location of HCV for each divisional forestry unit

A list of the key supporting documents

- A management program for each type of HCV, coordinated with the stakeholders
- HCV monitoring program
6.5. Environmental Strategies

Environmental strategies are aimed at preserving the environmental values of the Ismailly Forest Management Unit forests, including biological diversity, soil, water and water resources; as well as maintaining natural processes of the ecosystems functioning, with reforestation among them.

Environmental strategies comprise 9 strategies, including:

- Biodiversity Conservation Strategy
- Species Management Strategy
- Soil protection strategy
- Water protection strategy
- Silviculture and Range of Natural Variability Strategy
- Invasive Plants Strategy
6.5.1. Biodiversity Conservation Strategy

The goal is conservation of biological diversity on the territory of the Ismailly Forest Management Unit

Description

Biodiversity - is the variety of life on Earth. It is the variety within and between all species of plants, animals and micro-organisms and the ecosystems within which they live and interact.

Forest ecosystems are characterized by one of the highest levels of biological diversity. This is due to a large number of forest forming species and options for spatial and age structure of forest stands, as well as differences the growth conditions. Since it is impossible to develop and implement measures on conservation of each particular species, it is necessary to preserve not specific species, but their habitats. Such habitats can be identified at three levels: landscape, ecosystem, and local.

Conservation of biodiversity at the landscape and ecosystem levels is described in the HCV management strategy (HCV 1 and HCV 3, respectively). In this regard, it is conservation of biological diversity at the local level (level of forestry plots) that will be considered in detail in this section.

Currently, one of the most popular world practices in the field of biodiversity conservation at the local level is identifying and preserving the key biotopes and key stand elements. In fact, this means conservation of small forest plots or individual trees that are most valuable for biodiversity on the harvested logging sites.

However, on the territory of the Ismailly Forest Management Unit, where logging with the purpose of timber procurement is prohibited by law, with the exception of a sanitary felling, the concept of key biotopes and elements identifying makes no sense. On the other hand, a large amount of illegal logging, including the one performed by the population with the purpose of firewood harvesting (when the population cut "old and dried up" trees and also take dead standing trees and fallen trees out from the forest), require attention to such important aspect of biodiversity conservation as dead wood preservation. It is a proven fact that more than 90% of all forest species are associated with dead wood. This means that in order to maintain a high level of biological diversity, dead wood at different decomposition stages should always be present in the forest. The larger-sized dead wood is particularly valuable.

Strategy

As already noted above, the major challenge in the biodiversity conservation at the local level is outtake of the dead wood (dead standing trees, stubs, windfall timber) and potentially dead wood (old drying up trees) by the local population during the firewood harvesting.

The dead wood conservation problem can be addressed in two ways.

1. Prevention of illegal wood harvesting - enhancing the forest protection and monitoring, implementing tough administrative and/or criminal restrictive measures. This solution has two substantial shortcomings.
• First, enhanced protection and monitoring will require significant additional funding on the part of the state.

• Second, the demands of the local population, which largely depend on the firewood harvested in the forest, are not taken into account.

2. The second solution is more preferable, because it implies an active work with the local residents as the key stakeholders. It consists of several steps.

• Calculation of the wood (firewood) volume necessary for the population. The best basis for the calculation is the data obtained directly from the local population (by means of a questionnaire, survey, etc.)

• Calculation of the allowable outtake and its comparison with the necessary volume of firewood.

• Development of a firewood harvesting plan (determination of the harvesting places and dates, volumes per plot, harvesting rules and technologies, wood cost - affordable for the local population.

• Development of the rules for the firewood harvesting ensuring continuity of the dead wood. Harvesting rules trainings for the local population.

A list of the key cartographic materials
• No applicable

A list of the key supporting documents
• Firewood harvesting plan
• Rules of firewood harvesting
6.5.2. Species Management Strategy

This strategy is, inherently, a continuation of the biodiversity conservation strategy. The strategy requires an obligatory participation of specialist biologists and should be implemented with the support of research institutes.

The **goal** is to identify, preserve, and monitor the condition of individual species, which:

- are of international importance and unique and/or endemic for this area or
- are the indicators of the environment condition and can contribute to the ecosystems’ status assessment

**Description**

Habitat for the majority of species of Ismailly forest Unit should be maintained by following the HCV and Biodiversity conservation strategies. The species selected for monitoring under strategy, will provide a test of whether these strategies are working.

In addition to these indicator species, there are a number of species, which, for various reasons, may require specific management strategies tailored to their habitat needs. This includes red and blue-listed species likely impacted in some way (positive or negative) by operations in forest.

This strategy requires the development of effectiveness monitoring plans for selected indicator species. Selection of these species requires considerable thought, because these species must be closely linked to forested habitat that is being impacted by human, and their monitoring must be cost effective and logistically feasible. In order to select and test these species, has partnered with local institutes.

**Strategy**

**Step 1.** To find partners for the strategy implementation – representatives of higher educational institutions, research institutes, environmental organizations.

**Step 2.** To select model species of living organisms for the strategy implementation (no more than two to three species of international importance and no more than two to three species-indicators) jointly with the partners. To study every species, paying special attention to the habitat area (its current condition and, if such data is available, its dynamics), types of anthropogenic influence having a negative impact on the population.

**Step 3.** To develop a system for the species condition monitoring.

**Step 4.** To actually monitor the species. Upon the completion of every monitoring stage, to prepare an analytical report on the species condition, reflecting not only the current species’ condition, but also the dynamics of the main verifiers. To assess the forest management activities’ influence on the species condition.

**Step 5.** If necessary – to adjust the forest management activities.

**Note**
In this strategy, the forest management unit can take over the function of an initiator of the activity and general coordinator, but it cannot be responsible for overseeing the content. A similar work (rare species and species-indicators monitoring) is probably already being conducted by a research institute. In this case, the forest management unit can join the project. In order to minimize the strategy implementation cost, it is possible to use the labor of the students preparing their graduation projects.

**A list of the key cartographic materials**
- model species range maps with an indication of migration paths (when necessary)

**A list of the key supporting documents**
- an agreement on cooperation between the forest management unit and research institute, higher educational institution, and other project partners
- model species monitoring program
- the structure of the report on the monitoring results
6.5.3. Soil protection strategy

The goal is to ensure soils resistance to wind and water erosions

Description

The soils on the territory of the Ismailly Forest Management Unit are not affected by heavy machinery (harvesters and forwarders). Therefore, such widespread problems as rutting and local waterlogging of plots are not typical for the territory. However, mountain terrain is responsible for another problem - soil erodibility by water and wind. The areas located on steep slopes not covered with tree vegetation at all or covered with sparse forest stands are at risk. Cattle grazing, resulting in grassland vegetation trampling and destruction and soil compaction, also generates a negative impact.

Strategy

Key steps to protect soils are aimed at reducing the erosion-prone areas. This work should be carried out in a few steps.

Step 1. To divide soils into categories depending on their erodibility. It is convenient to use the traffic light method here - the entire forest management unit territory should be split into three categories. Each of them has to be painted with green, yellow, or red color, where

- Green color - the territories where erosion is unlikely. These are lowland forest territories covered with forest stands and not affected by anthropogenic impacts (or this impact is minimal).

- Yellow color - the territories with a risk of erosion under a significant influence of natural factors (for example, heavy rains) or under strong anthropogenic influence (spontaneous cattle grazing). These are:
  - lowland forest territories not covered with forest or covered with sparse forest stands,
  - soft slopes covered with sparse forest stands
  - slopes of medium and high steepness covered with forest stands

- Red color - the territories with an extremely high probability of erosion. These are slopes of medium and high steepness not covered with forest or covered with sparse forest stands.

As a result of the conducted work aimed at soils splitting, a map should be developed. The most convenient scale - level of forestry plots

Step 2. To develop an action plan for each "traffic light" zone.

The "red" zone is a priority. A reforestation plan (forest crops planting) should be worked out for the "red" zone. Preference should be given to the species which are the most suitable for the natural conditions. Besides, these species should possess soil-fixing and soil-protecting properties (a heavy root system, a low height). In addition, cattle grazing needs to be limited to
the extent possible. If there is no alternative territory for cattle grazing, it is required to continuously monitor the changes experienced by the cover and avoid the areas that are most sensitive to the influence of the cattle.

Forest planting should also be introduced in the "yellow" zone. However, due to the fact that these territories are less prone to erosion, the reforestation works there can start after the completion of the works in the red zone.

The "green" zone does not require any additional forestry activities, but it needs monitoring, which includes:

- A periodic monitoring. The purpose of the monitoring is to assess the forest stands condition (to prevent formation of the areas not covered by forest), and to assess the degree of the anthropogenic impact on the territory. To minimize the costs, the periodic monitoring can be conducted in parallel with other types of forest works, as well as based on high-resolution space images.

- An operative monitoring is carried out in the event of strong threats - after persistent heavy rains.

For the entire territory of the Ismailly Forest Management Unit, the terrain features should be taken into account while constructing the infrastructure, especially roads.

**A list of the key cartographic materials**

- A general-purpose schematic map showing the division of the area according to the soils' resistance to erosion (for the entire forestry unit)
- Schematic maps showing the division of the area according to the soils' resistance to erosion for each divisional forestry unit
- Schematic maps reflecting a yearly reforestation plan (for a general-purpose use and for every divisional forestry unit)
- Schematic maps reflecting the reforestation results (for a general-purpose use and for every divisional forestry unit)

**A list of the key supporting documents**

- A reforestation program (including an action plan)
- Soils condition monitoring program
- Reforestation results monitoring program
6.5.4. Water protection strategy

The goal is to preserve the aquatic ecosystems located on the territory of the Ismailly Forest Management Unit, including the aquatic ecosystems that are of critical importance for provision of the local population with water, in their natural condition.

Description

Aquatic ecosystems are highly vulnerable and even a slight anthropogenic influence can have a negative impact on the water level, its quality, and biological species living directly in the water or associated with it at one of the stages of their ontogenesis.

First and foremost, these are cattle grazing and recreational activity that can have a negative effect on the aquatic ecosystems located on the territory of the Ismailly Forest Management Unit. The negative consequences include - garbage dumping by careless tourists, up to emergence of unauthorized landfills on the banks of water reservoirs, inputs of organic matters into water, illegal firewood harvesting and felling of trees for arrangement of recreational facilities, etc.

Forestry activities carried out on the territory of the forest management unit, under the normal conditions, should not have a negative impact on aquatic ecosystems. "Normal conditions" in this regard is compliance with the sanitary felling regulations and reforestation with account of the natural conditions.

Strategy

The water resources management should include the following steps:

Step 1. Creating a high-quality cartographic basis with indication of all water bodies and their watersheds.

Step 2. Identifying water protection zones around rivers, lakes, and other water bodies, as well as water protection zones and protective sanitary zones around springs that are critical to provide the local population with fresh water. Water protection zones should be outlined with account of the landscape boundaries (a minimum width of a water protection zone shall not be below the one provided by the legislation of the Republic of Azerbaijan)

Step 3. Selecting an acceptable regime of use for the territory.

The following types of activities are allowed within the water protection zone:

- Sanitary fellings
- Recreation (with obligatory arrangement of composting toilets and waste containers, as well as organized removal of this waste to SDW landfills or garbage recycling plants, use of legally harvested firewood or coal)
- Beekeeping and haying (provided that the soil will not be disturbed during the haying process)
The following activities are prohibited within the water protection zone:

- Massive cattle grazing
- Use of toxic chemicals for conservation and protection of forests

The following activities are undesirable within the water protection zone (if alternatives are available):

- Construction of roads and other linear facilities
- Use of chemicals for conservation and protection of forests

**Step 4. Monitoring of the water bodies condition**

**Note 1**

When planning large-scale events (for example, roads construction), which can have a significant impact on the aquatic ecosystem, an integrated assessment of the impact needs to be done. Such impact assessment should be based on the basin approach, implying accounting of the impact on the entire aquatic ecosystem and watershed area.

**Note 2**

This section does not review the impact of the fishing by the local population on the state of the water ecosystems. This is due to the fact that the results of the conducted survey showed a low interest to fishing on the part of the local population. However, if massive fishing is carried out on some river parts or other water bodies, these areas also require special control by the forestry unit.

**A list of the key cartographic materials**

- A general-purpose schematic map showing the water bodies and watersheds location
- A schematic map showing the planned silvicultural operations within the boundaries of the water protection zones (for a general-purpose use and for every divisional forestry unit separately)
- A schematic map showing the conducted silvicultural operations within the boundaries of the water protection zones (for a general-purpose use and for every divisional forestry unit separately)

**A list of the key supporting documents**

- A plan of activities in the water protection zones (including the sanitary felling plan)
- Water bodies condition monitoring program
6.5.5. Silviculture and Natural forest dynamic Strategy

The **goal** is to support the forests regeneration and preserve a natural mosaic structure of the landscape.

**Description**

Forest is a dynamic phenomenon. It is constantly changing under the influence of natural processes and factors. This process of change is referred to as natural forest dynamics. Every forestry plot is always characterized by a type of natural forest dynamics. The natural forest dynamics implies the forest's self-regeneration ability without additional activities. This enables a continued forest existence on the territory for thousands of years.

An anthropogenic activity violates natural forest processes. As for the Ismailly Forest Management Unit, these are primarily the forest areas around the population centers that experience a negative anthropogenic impact, with such consequences as a violated natural age structure of trees populations, lack of ecosystems' natural regeneration, and a degrading state of the ecosystems in general.

**Strategy**

**Step 1.** An assessment of the area's ability for self-regeneration. For convenience, it is recommended to use a forestry plot as a unit. The main criteria for assessment:

- Undergrowth amount
- Species composition (correspondence to the natural dynamics)
- Undergrowth viability
- Undergrowth spatial distribution
- Availability of damages

The outcome of the assessment should be a classification of the territory by zones depending on a required method of forest regeneration. This classification can be quite simple, for example:

- Areas of natural regeneration
- Areas of natural regeneration facilitation
- Areas of artificial regeneration

**Step 2.** Development of activities for each zone at the plot level. All the activities should imitate natural processes typical for this type of forest ecosystem.

**Step 3.** Development of activities on the anthropogenic load management (coordinating the regimes of the territory use with the local population)

**Step 4.** A periodic forest regeneration monitoring. The areas of artificial regeneration require the most frequent monitoring, the areas of natural regeneration - the least frequent.
This strategy mostly covers the forest areas around the population centers. However, any works aimed at forest regeneration, even those conducted outside the territories around the population centers, should consider the natural forest dynamics processes. Only such an approach will facilitate the ecosystems sustainability in the future.

A list of the key cartographic materials

- Schematic maps showing the area classification by reforestation types
- Schematic maps of the planned reforestation by years (for a general-purpose use and for every divisional forestry unit)
- Schematic maps of the reforestation results by years (for a general-purpose use and for every divisional forestry unit)

A list of the key supporting documents

- A natural forest dynamics instruction, reflecting the best tree species for reforestation for each type of dynamics
- A reforestation program
- A reforestation monitoring program
6.5.6. Invasive Plants Strategy

The **goal** is to maintain the sustainability of the natural ecosystems located on the territory of the Ismailly Forest Management Unit.

**Description**

Invasive species are any species that are non-native to a particular ecosystem and whose introduction and spread causes, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.

In a global, national and provincial context invasive plant species produce widespread negative effects that influence many aspects of our lives. They cost ranchers, farmers, utilities, forest companies, government agencies, conservation organizations and the general public untold millions of dollars each year in lost productivity and increased management costs. Invasive plants transform the landscape, weakening the economic and environmental health of the areas they infest. The invasive plant problem crosses all political, ecological and land ownership boundaries, and negatively affects industries and activities that rely on healthy ecosystems.

The following provides some negative effects of invasive plants:

- Have the capacity to establish quickly and easily on new sites, whether through prolific seed production, aggressive rooting structures, broad ecological amplitude or other characteristics.
- Are considered the second-most serious factor responsible for the extinction of native species and loss of biodiversity, worldwide, after habitat loss.
- Out-compete native grasses and wildflowers, including rare and endangered species.
- Endanger public health and safety. They increase allergies and hay fever, and are potentially toxic to humans, pets, livestock and wildlife. They clog waterways used for swimming and boating, and reduce visibility on transportation corridors.
- Increase costs for maintaining resources and public utilities.
- Destroy natural habitat for birds, butterflies and other wildlife, domestic animals, and fish and other aquatic, organisms.
- Reduce the yield and quality of agricultural crops and natural forage, and the quality and price of marketable livestock.
- Accelerate soil erosion and stream sedimentation, consume critical water resources and negatively impact water quality.
- Increase the wildfire hazard and interfere with the regeneration of forests.
- Act as carriers of disease and insects to beneficial plants.

According the Global Invasive Species Database there are 16 invasive species in Azerbaijan (₁), most of them are plans. Two of that 16 species (*Imperata cylindrica* and *Ips typographus*) are alien species. So they need to be controlled carefully. Unfortunately there is no detailed information if they are presented in Ismailly.

**Strategy**
Decision-making on invasive species should lie with competent specialists (particularly, biologists) able to assess the degree of threat to the natural ecosystems. These can be employees of scientific institutes and representatives of professional environmental organizations managed by the Ministry of Ecology and Natural Resources of Azerbaijan.

Although, the forestry unit employees do not have proper competence in these issues, nevertheless, these are the specialists working in forest who can be the first to notice a threat from the invasive species. Therefore, the task of the forestry unit is to track and respond to any unusual changes in the forest ecosystem and provide this information to the relevant bodies (Ministry of Ecology and Natural Resources of Azerbaijan), which in their turn should carry out a necessary analysis for making decisions in respect of a particular territory subject to invasive species.

Should the invasive species really threaten the ecosystems integrity, one or several activities can be implemented. Possible types of activities include:

- **Herbicide Application** – successful in significantly reducing infestations of invasive plants so that native vegetation has a chance to out-compete the aggressive invaders. Some invasive plant species are non-responsive or sometimes more vigorous to manual/mechanical and biological control treatment methods.

- **Biological Control Methods**. Current research will be consulted prior to concluding that any particular biological control method should be implemented. Use of biological control methods shall be documented, monitored and strictly controlled in accordance with national laws and internationally accepted protocols.

- **Manual/Mechanical Treatment** – will be utilized in sensitive areas (within 30 metres of a water source, known edible plant areas, critical wildlife habitat areas, and high public use areas) and on suitable species of invasive plants. Suitable species are those invasive plant species that do not spread through a rhizome root system, which typically becomes more aggressive if manual treatment such as hand pulling is applied.

- **Operational Control** – includes grass seeding, access control, deactivation, vehicle undercarriage washing to prevent the introduction and reduce the spread of invasive plants. Operational plans incorporate measures to reduce the spread of invasive plants into new areas.

After taking decisions on specific situations and if some additional works are needed, the forestry unit employees can be involved for the implementation of the required activities.

**A list of the key cartographic materials**

- No applicable

**A list of the key supporting documents**

- The program of use, management, and monitoring of the invasive species condition
6.6. Social Strategies

The goal of the social strategies is to consider the interests of the villagers living on the territory of the Ismailly Forest Management Unit, as one of the key stakeholders, during the forest management activities planning and execution.

The social strategies implementation is the most challenging part of this SFMP.

Social strategies include:

- Local Employment Strategy
- Employee & Forest Workers Training Strategy
- Public Participation Strategy
- Recreation Strategy
6.6.1. Local Employment Strategy

The goal is - to assist in the creation of a positive long-term social, cultural and economic benefit for the people and communities in which the company operates.

Description.

Currently, the forest areas of the Ismailly Forest Management Unit are managed by the forestry unit. However, hired specialists are involved for performance of a number of forestry works. One of the factors that determine a poor standard of living of the population in the villages is a high share of unemployed population. Involvement of the local population could provide the opportunity to improve the living standards of the local population. We are not talking here about improving the quality of life in all villages, but even improvement of the financial status of some families is a positive result.

In spite of the fact that involvement of the local residents in the forestry works performance requires some investments in their training, in a long term perspective it turns out to be less expensive than attracting the workers from the remote regions of the country or from abroad.

Strategy

Step 1. To define a total scope of forestry works based on the plans. The amount of forestry operations can increase in case of emergency situations (for example, those related to the natural phenomena).

Step 2. To evaluate the required number of employees, including seasonal and part-time employment, as well as the necessary qualification. To identify the types of work that can be carried out without higher or professional education in the forestry sector.

Step 3. To conduct new recruitments from the local population. If the representatives of the local population include the people with the specialized education or work experience, they can become group leaders.

Step 4. To organize the professional training (see the employees training strategy)

Step 5. To conclude contracts for the performance of works.

Step 6. During the intermediate and final performance control, it is necessary to collect a database of the employees having demonstrated their commitment to doing their work responsibly for future cooperation.

A list of the key supporting documents

- A program designed to attract the local residents for employment
- Cooperation agreements with local recruitment companies (if available)
6.6.2. Employee & Forest Workers Training Strategy

The goal is to create an environment in which all employees and forest workers can contribute to their maximum ability and maintain high performance standards, through effective training, open and honest dialogue and active participation in problem solving and entrepreneurship.

Description.

Forestry is the sector for which saltatory development at a very rapid pace is not typical. Nevertheless, there are always some changes there. Therefore, employees training should become an integral part of the personnel management and should be perceived as a long-term investment.

Personnel training is development of professional knowledge, skills, and proficiencies of the employees, taking into account the goal of sustainable forest management development on the territory of the Ismailly Forest Management Unit.

The positive role of the training is the following:

- organizing and forming a required level of the employees qualification, which provides an opportunity to implement the strategies described in this SFMP and other documents on the forest sector development in Ismayilli;
- personnel integration and adaptation;
- establishing a personnel reserve, mitigating the risk related to the unexpected need to fill the vacancies in the event of a key employee's departure.

Strategy

Step 1. To develop a training program for all employees, including the temporary ones. The training programs should take into account the world's best forest management technologies.

- For the permanent employees, comprehensive programmes for professional development, which allow not only improving the skills in the forestry sector, but also building up leadership skills, are required.
- For the temporary staff performing simple forestry activities, the training can be conducted by the forestry unit employees themselves. In some cases, the training can be in the form of a detailed briefing prior to the beginning of the work. This will help to cut the training cost.

Step 2. To implement the training program with its proper adjustment when necessary. The training should become a continuous process. Therefore, every subsequent personnel training program should be based on the results of the previous one and should be its logical continuation.

To conduct the employee's formal evaluation aimed to determine learning acquisition. The employees showing the best training results can be included in the "management personnel reserve".
Ismailly Sustainable Forest Management Plan

A list of the key supporting documents

- A list of all posts, including temporary and seasonal ones
- A list of employees
- A personnel training program (for everybody)
- A personal enhancement program for the most promising employees
- A training results monitoring program
6.6.3. Public Participation Strategy

The goal is to implement the process of receiving and responding to a wide range of public input to forest planning, and provide information on forestry operations to the local communities.

Strategy

Step 1. To make a list of all stakeholders with up-to-date contact information

Step 2. To define the main interests of each stakeholder.

Step 3. To develop efficient means of cooperation with each stakeholder, including the methods of notification about the planned forestry activities, methods for collecting and accounting opinions, etc.

Step 4. To carry out the work on interaction with the stakeholders. It is important to inform the stakeholders about all important activities and respond to all their requests, even if some of them are non-constructive. Openness and promotion of the dialogue are of key importance for the development of the forest management sustainability.

Note 1.

A significant portion of the work on interaction with the stakeholders is already in process. There is no need to change the system completely. It just needs to be supplemented with missing parts.

Note 2.

Different stakeholders can have an absolutely different vision of the forest area unit management. Therefore, to avoid acute conflicts, cooperation between the stakeholders' representatives needs to be established. One of convenient forms of interaction is a Forest dialogue.

The Forest dialog is a platform for discussing the topical issues related to the forest management and use, where each stakeholder has an equal opportunity to participate in a debate on problems. Meetings in this format are a standard practice all over the world. The Forest dialog has become an efficient form of public participation, exchange of opinions, and joint search for the optimal ways to address the current problems by different stakeholders.

More detailed information on the Forest dialogs as a form of discussing the challenging issues can be obtained from the website http://theforestsdialogue.org

Note 3.

A considerable amount of the current forest problems are related to the local population's activity. Recognition of responsibility by every person living on the territory of the Ismailly Forest Management Unit is an important step in the sustainable forest management development.
Special attention should be paid to building responsible thinking in the young generation (children and adolescents). Creation of school forestry units is an excellent practice.

The purpose of school forestry units creation is fostering a careful, environmentally and economically sound attitude towards nature, deepening the adolescents' knowledge in the field of forestry and ecology, ability to implement in practice the activities aimed at safeguarding and increasing the forest wealth, preservation and strengthening of protective, recreational and other useful natural functions of the forest.

The goals of the school forestry units:

- forming a responsible attitude to nature
- forming an active life position among the members of the school forestry units;
- learning and acquiring the basics of the forest management disciplines;
- acquiring the research work skills;
- acquiring the skills in the field of use, security, protection, and regeneration of forests, forest management activities conducting;
- introduction to the socially useful labor on the rational use and restoration of natural resources, development of a deliberate interest to the productive work;
- conducting the outreach activities focused on the forest protection; studying the basics of the forestry workers' professional activity, pupils' occupational guidance, preparing to the conscious choice of profession;
- organizing the appropriate and rational use of the schoolchildren's free time

Forms of organization of the school forestry units and their duration can be of any kind (for example, a club two times a week throughout the whole academic year, or a two-week filed camp during the summer holidays, etc.).

Forestry units jointly with educational institutions (schools, specialized secondary schools, higher education institutes) can take up the responsibility for developing the educational programme and activities, as well as directly implementing the activity.

It is important to involve kids in the real works in forest

**A list of the key cartographic materials**

- an area zoning map – social zones (for a general-purpose use and for every divisional forestry unit)

**A list of the key supporting documents**

- a program of cooperation with the local population (a program of public hearings, explanatory works, etc.)
- a model citizen application
- a response procedure to citizen applications
6.6.4. Recreation Strategy

The goal is to develop a recreation on the territory of the Ismailly Forest Management Unit in order to provide the local population with resting places, attract tourists from other regions of Azerbaijan and from abroad.

Description

Outdoor recreation is important for the local population. Recreational facilities provide employment for the local population and bring additional income to the local budget (in the form of lease payments for forest plots and tax payments). Today, most of the recreational spots are small roadside cafes with a well arranged territory and arbors. Besides, there is "Giz Galası" resort center. All recreational facilities influence the environment, but the impact of different types of recreational facilities to the forest ecosystems is different. At the same time, the impact on the forest ecosystems can be minimized provided that a number of conditions is fulfilled.

Strategy

The recreational strategy in the framework of this forest management plan addresses already existing recreational facilities and includes the following steps:

Step 1. To define and map all active recreational spots. This information should be updated either straight after launching a new spot (or closing an old spot) or periodically (for example, once a year).

Step 2. To classify the recreational spots by the degree of impact on the forest area. The classification should be based on the following indicators:

- An annual average attendance of a recreational spot
- Types of provided services
- Current infrastructure (availability of fundamental facilities)

Step 3. Based on the classification results, to develop a set of requirements for business owners addressing such issues as arrangement of the territory, use of resources, cleaning of the territory, which will mitigate the negative effects on the environment.

Step 4. To conduct a training (or prepare and disseminate information materials) on the territory use guidelines for business owners

Step 5. To carry out a periodic monitoring (control) over the recreational spots for compliance of the guidelines for using the territory.

Note:

Currently, the recreational and tourism potential of the Ismailly Forest Management Unit's territory is not fully exploited. The unique nature of the territory, way of life and traditions of the
Azerbaijani people can serve as an excellent basis for further development of tourism. A competently organized tourism can bring additional income to the district (state) budget.

The key tourism areas may include:

- Ethnographic tourism, including:
  - Event tourism
  - Food tourism
  - Rural tourism
- Environmental tourism
- Sports (mountain) tourism

The forestry unit is not responsible for tourism development. However, possessing the expert knowledge about the forest territory, it can facilitate tourism development (for example, in terms of areas selection).

A benefit is that tourism does not require a big startup investment and the infrastructure development can be conducted in parallel with the tourism promotion and increase of tourists' number.

**A list of the key cartographic materials**

- A general-purpose schematic map showing the recreation facilities location
- Comprehensive maps showing the recreation facilities location with the indication of types of facilities for every divisional forestry unit

**A list of the key supporting documents**

- The territory using rules, permitted and prohibited types of activity
- A program for monitoring the forest condition within the boundaries of cafes, recreation centers, and other recreation facilities
- A recreation development program
- A tourism development business plan
6.7. Economic Strategy

The **goal** is self-sufficiency of the Ismailly Forest Management Unit.

This is a long-term goal and it cannot be achieved within a decade. It is possible to reduce the difference between the income and expenditure items in the framework of this SFMP.

**Description**

The forestry of the Ismailly Forest Management Unit is a subsidized one. Therefore, in the event of an emergency situation (for example, an economic crisis) there is a risk of decline of the interest in the forest management on the part of the government, as the forest owner.

However, forestry and adjacent areas (tourism, selling of non-wood forest products) can be self-sufficient.

**Strategy**

**Step 1.** To calculate annual expenses necessary for the forest management activity execution for ten years

**Step 2.** To calculate the expected income from the forest lease

**Step 3.** To draw up a business plan for the tourism development on the territory of the Ismailly Forest Management Unit, with particular regard to such issues as the market capacity (potential number of tourists), required investment, marketing, potential profit.

**Step 4.** To draw up an overall budget for a decade based on the obtained calculation results

**Note:**

Logging with the purpose of timber procurement can become an additional (and significant) source of income. In spite of the fact that all Azerbaijan's forests are referred to the forests of the first group, there is an option of commercial selective logging.

Low-intensity selective logging conducted with account of the ecological requirements will not disturb the integrity of the forest ecosystems and will not have a negative impact on the forest's ability to fulfill its forest protection functions.

Unfortunately, we cannot give recommendations on logging organization in the framework of this SFMP. This is due to a lack of up-to-date information on the forest condition.

**A list of the key cartographic materials**

- No applicable

**A list of the key supporting documents**
- Overall budget for the decade
- A detailed annual budget
- Annual financial reports
- A program designed to improve the forestry and Forest Management Unit’s profitability
6.8. Data Management Strategy

**The goal** is availability of up-to-date information on the forest fund condition

**Description**

A lack of up-to-date information on the forest fund condition is a key problem of the Ismailly Forest Management Unit. The available forest management data from 2005 has outdated and does not reflect the real forest situation. This is a significant obstacle to the forestry development. A lack of the up-to-date information determines a high probability of wrong forestry activities (for example, violation of the priorities during the reforestation area selection). The forest management unit does not use geographic information systems, which give an opportunity to quickly and cost effectively prepare cartographic materials. Data of Earth remote sensing, a modern high-quality tool for monitoring and assessment of forest stands condition, is not used either.

**Strategy**

**Step 1.** To introduce GIS-technologies As a minimum, the following shape-files should be created and periodically updated:

- A forest inventory map (contours of the forestry plots with a mensurational description)
- Hydrography (rivers, lakes, springs, and other sites with water protection zones, the territory division into river basins)
- Linear facilities (roads, power lines)
- Population centers
- High nature values

**Step 2.** To introduce a system for using space images in order to monitor and assess the forest stands condition. Both medium resolution images, which allow to make an assessment at the forestry plot level, and high resolution images, allowing to assess the situation on a scale of several trees, can be used.

**Step 3.** To conduct a forest inventory

**Note:**

A split into steps is relative in this strategy, because all three processes can be conducted simultaneously. Moreover, the earlier they are conducted, the sooner it will be possible to use their results for the purpose of the forestry development.

**A list of the key supporting documents**

- A GIS technologies and ERS implementation program
- A forest management implementation program
6.9. Monitoring

In order to advance the various sustainability objectives established in the Criteria and Indicators, the Forest Management Unit should develop and implement a variety of programs, strategies and activities. It is also necessary however, to have a monitoring and evaluation process to ensure that these plans and activities contribute to meeting the objectives and are capable of alerting the manager for any needed change in practices.

It is common information about international experience of monitoring but it fully corresponds to Ismailly Forest Management Unit and can be implemented as is.

Monitor program linked to a GIS-based data management system is the key to a successful adaptive management program.

Given that this plan is relatively new, there are no completely developed all aspects of the monitoring plan for each Indicator and Verifier. However, there has been some initial development towards what may be required for a comprehensive monitoring plan. It is important that monitoring results can be compared to a baseline or initial value as well, to allow for assessment of change.

The monitoring implementation is one of the requirements of the voluntary forest certification according to the FSC system. According the Principle 8 (Principles & Criteria 5.0) *The Organization shall demonstrate that, progress towards achieving the management objectives, the impacts of management activities and the condition of the Management Unit, are monitored and evaluated proportionate to the scale, intensity and risk of management activities, in order to implement adaptive management.*

This portion of the SFM Plan provides background information on monitoring, types of monitoring, monitoring protocols, and monitoring programs. For the time being, details of specific monitoring aspects are identified within the applicable strategies.

Background

The Business dictionary defines monitoring as supervising activities in progress to ensure they are on-course and on-schedule in meeting the objectives and performance targets.

Monitoring as defined in the Oxford Dictionary is “To observe, supervise or keep under review; to measure or test at intervals, especially for the purpose of regulation or control, or to check or regulate the technical quality of something.”

Forest monitoring is a system for observation, assessment, and forecast of the forest fund condition and dynamics, aimed at efficient management in the field of forest use, regeneration, protection, and conservation, and strengthening of its environmental functions.

The purpose of the monitoring is to control the forest condition and forest management activity efficiency in a short-, medium-, and long-term perspective in order to make sound management decisions promoting sustainable forest management in a long-term perspective.
The forest monitoring objectives:

- collecting, storing, and analyzing the environmental condition indicators;
- timely and reliable identifying the zones with probable poor state of the environment;
- developing the activities to ensure the most effective forest management;
- providing the interested consumers with the archive, operational, and forecasting ecological information.

In the Sustainable Forest Management, a critical feedback loop process represents a regular verification whether the management practices really implement the functions they were set out to do. Below are additional reasons to monitor, aimed at description of the purpose, or explanation on why the monitoring program is required:

- Exogenous factors – comply with the International & National Criteria & Indicators, Forest Certification, Sustainable Forest Management Plans, Forest & Range Practices Act, and so on.
- Assessment of Success – a process including goals and estimation of success in achieving them.
- Enhancement of the Activities Management – maintaining an adaptive management approach with monitoring as a “feedback loop” for prospective management practices.
- Planning Support (Strategic) – submission of feedback regarding the assumptions and estimates used in the strategic planning.
- Permanent Enhancement – monitoring offers a continual feedback loop supporting planning and helping to improve management activities.
- Risk Control – risk mitigation in the strategic planning through testing of the assumptions and feeding back into the planning process or modeling exercises.
- Information of the Public/ Satisfying the Expectations – analysis can offer the results or findings serving the public's interests.

The monitoring should be conducted in accordance with the scale of the territory, forest management activity intensity.

**Types of Monitoring**

*Monitoring classification by objects*

Depending on the specific goals, objectives, and objects of observation, several types of monitoring are distinguished. Thus, for instance, there is a notion of *general monitoring*. Its subject of research is forest as a multicomponent ecosystem, subject to diverse natural dynamic changes and experiencing various human-induced affects and transformations.

For concretization of actions and ease of consideration, a general monitoring can be broken down into the following units: *ecological, social, economic*.

Each of these units may include certain types of monitoring depending on specific objects under observation.
**Monitoring classification by tools for its conducting**

1. Monitoring using GIS and ERS

Regular monitoring, conducted based on the satellite data, can become an effective tool in the fight against illegal logging and various forestry violations, during the forest management quality inspection, and also for identifying the environmental violations.

2. Field monitoring

3. Desktop ("documental") monitoring

**Methods and Procedures Used to Perform the Monitoring**

Projects/programs of the monitoring may vary from a general reconnaissance to full-scale study. Besides, the scale (time and area), intensity, and frequency should bring into balance the necessity of cost-effectiveness vs practicability, precision, and risk.

The below mentioned components shall be included as standardized components in each monitoring program, irrespective of the scale and intensity.

- Explicit Goals
- Relevant Indices
- Proper Design
- Sustained Execution
- Comprehensive Data Administration
- Exact Data Analysis And Interpreting
- Prompt Reports Submission
- Adjustive Administration (Enhancement)

**Explicit Goals.** The monitoring objectives, which have to be clear and concise, must be driven from C&I, established in the SFM Plan. Major part of the C&I relies on the clearly defined business needs. To understand the purpose of the monitoring program is of critical importance for the successful program fulfillment.

**Relevant Indices** Identification of one or more environmental “indices” suitable and cost-effective for monitoring purposes is a fundamental first step in designing environmental monitoring programs. It is required to regularly measure the indices irrespective of changes availability. On the whole, the following must be taken into account during selection of the monitoring “indices”:

Measurability: It is required to measure the index on a quantitative or qualitative basis for checking the changes in it. The preference shall be given to quantitative indices, but it is not always possible and sometimes qualitative and descriptive indices need to be applied. In case of qualitative indices use, it is important to plan the changes tracking method beforehand.

Straightforwardness: It shall be easy to understand and measure the indices in order to minimize the risk of mistakes. However, it is not always possible, because some issues, such as HCVs,
may need relatively complex indices. In light of the above, if a choice of indices is possible - always chose more straightforward ones.

Cost-effectiveness: It would be risky to state that the cheap-to-measure indices must be selected, as it is not always possible. However, the cheaper the index in terms of direct costs (for instance, specialists payment, purchase of such information as satellite images, etc) and/or indirect costs (for instance, staff time, use of vehicles), the greater is the likelihood that the monitoring will be fulfilled in the long term. During the hard times when the savings have to be done, high-priced monitoring programs are often the first to be examined. Try for the indices providing the most value.

Time: Two important issues to do with time are the following. First, at the very beginning it is important to take a decision regarding the regularity of the indices measurement (on a monthly or yearly basis, after an event, etc.). Second, the easier and faster the information required for an index can be collected, the higher is the likelihood that the work will be done timely and correctly.

Appropriateness: Besides the foregoing, it is highly important to be sure that the index is appropriate and efficient in respect of the value measurement. There are often the cases that in an effort to keep indices straightforward, quantitative, cheap, and easy, people measure the items not providing any useful information.

**Proper Design.** The following sections should be included in the monitoring program: intended population, sampling method and size, variables, which need to be measured or estimated, regularity, as well as design of the plot/field procedures. All these things will depend on the monitoring objects, reasons and on what is appropriate for the monitoring indices.

In accordance with the agreement reached through consultation, First Nations and directly affected persons could participate in the design, implementation, and assessment of particular monitoring programs.

Intended Population: It is required to define and quantify the intended population, which shall be executed using up-to-date textual or spatial information (it depends on the attribute being monitored).

Method of sampling: Method of sampling describes the samples selection procedures, including the sample frame (sampling units list) and sampling type. The method of sampling should represent the whole area of interest and should be simple.

Sampling size: Sampling size rests on a number of such aspects as:

- The budgets and costs of the sample
- Relevance of post-stratification
- Changeability of the differences between actual and forecasted or expected values
- Testable hypotheses and a desired error
Variables which need to be Measured or Estimated: A clear picture on the information which is being collected and the way it is to be measured or collected is required. It is required to define the variables to be measured in the monitoring objectives. If any additional useful information can be collected, make sure that it is understood why and how it is to be used. As far as feasible, try to design methods fitting in with other activities or those which can be used to collect information for more than one index at once. It will help to save money and time.

Measurements Regularity: Sampling regularity depends on the measured indices. While identifying the sampling regularity, one shall consider the frequency with which index might change.

In terms of forests with HCVs, an annual monitoring program, aimed at evaluation of the efficiency of the measures used to maintain or enhance the applicable conservation attributes, will be elaborated.

Design of the Plot and Field Procedures: The best way will be if the plot design or field procedures are based on the existing monitoring protocols. It will help to save money, time, and will enhance reliability.

Sustained Execution. The monitoring program requires consistent fulfillment of the procedures, which will reduce the chances of inaccurate or unsuitable results. Best of all the program delivery consistency can be implemented if it is clearly defined who is responsible for the program. An adequate mechanism implemented for the monitoring program quality assurance and/or quality control can also increase the consistency.

Comprehensive Data Administration There should be a secure, accessible data management system in place to maintain the data monitoring records. It should be based on the existing procedures and systems. There is a big number of inventory databases available. Besides, Tembec has “The Forest Manager” system, which will aid in much of the data storage and reporting. The data entry, synthesis, analysis and reports timeframes should to be set in each monitoring program or defined in the applicable strategies. A quality control component should be necessarily incorporated within the data storage and retrieval.

Exact Data Analysis and Interpreting. Prior to the data collection, the data analysis and use shall be defined. It needs to be planned within the monitoring program. One has to use the existing analysis protocol, if available and applicable.

Besides, one should know the data limitations. It is imperative to recognize what can/cannot be inferred from the particular data. After the data analysis, the results review and interpreting has to be done. Setting these up as a formal program with regular dates fixed for execution these reviews might be appropriate.

Both senior management and the people responsible for the monitoring program implementation shall be involved in the significant results or changes review. The minor results or changes require simply an interoffice memo presenting the monitoring data and requesting a review.
If the scheduled measurements are not being made, it is necessary to identify the reasons and take measures to ensure future measurements fulfillment according to the plan. Particularly sensitive values may require immediate measurements in order to confirm that they have not changed while the monitoring program was not being implemented.

When the results show a negative change to the value - immediate action is normally required, which might comprise of emergency meetings, additional problem analysis, and/or operating procedures changes. This should also result in the monitoring or management plan revision, aimed at reflection of the introduced changes.

Specific to High Conservation Values (HCV), identification of unacceptable variations in attributes requires determining the causes of the latter, considering the effect of the:

- specific management activities;
- likelihood of a number of cumulative effects, which may lead to the HCVs degradation;
- the degree to which natural disturbance events could cause the HCVs degradation; and
- the degree to which the events that happen beyond the boundaries of the forest management unit can lead to the HCVs degradation.

**Prompt Reports Submission.** The results must be analyzed, summarized, and reported in the time and manner defined in the monitoring program. This would take into account the monitoring goals, indices, and measurement regularity. The summarized results will be reflected in the Sustainability Report, while respecting confidentiality on an annual basis.

The data reporting timeframes need to be set out within each of the monitoring programs, and results made available. The comments following the public review will be incorporated within the Monitoring Program, as well as within the SFMP Criteria & Indices, Strategies and Practices.

**Adjustive Administration (Enhancement).** The monitoring results together with the stakeholders' comments will be incorporated into the future planning and practices. The results will guide the management on refinement of Criteria & Indicators, Strategies and Practices. The results may lead to the SFM Plan or monitoring programs' changes

**Annual Sustainability Report**

Sustainability Report is a great tool to evaluate progress of SFMP implementation. Sustainability report should be prepared annually and provide the current status and details of the monitoring aspects identified in the strategy section of this plan. It is expected that this will form the initial reporting requirements and values for our Sustainable Forest Management Plan. While respecting confidentiality, results from the monitoring will be included in the Sustainability Report and will be made public. Applicable information received from the public with regards to this report will be incorporated in the future planning process.
CONCLUSIONS

1. A sustainable forest management plan that considers the interests of all stakeholders, including the forest villages' inhabitants, representatives of non-governmental and environmental organizations, businesses, state (forest owner) and others is a good tool for sustainable forest management both for the Ismailly Forest Management Unit and the entire Republic of Azerbaijan.

2. The plan covers a ten-year period and represents an instrument for tactical decision-making (medium-term planning). However, management quality improvement requires a strategic plan for a period of a few decades (a forest recreation cycle or a longer period). The strategic plan should address potential social, environmental and other changes.

3. The present sustainable forest management plan takes into account the requirements of the local legislation in the forestry sector, primarily, the Forest Code of Azerbaijan and National Forestry Program. At the same time, the plan includes the proposals on improving the legal framework.

4. The plan covers the requirements of the voluntary forest certification according to the FSC system, in particular, the requirements on identifying and managing High Conservation Values (Principles 7 and 9 of the FSC Principles and Criteria Version 5.0).

5. The developed sustainable forest management plan can be used as a basis (example) for other forestry units of Azerbaijan.

6. The management plan should be regularly reviewed based on the monitoring results or as new scientific and technical information becomes available. It should also be updated in line with environmental and socio-economic developments. If the need arises, the forest management plan shall be supplemented with operational changes, related to natural and anthropogenic factors (vegetable-feeders explosions and forest diseases, floods, fires, and illegal logging), as well as operational changes agreed with the stakeholders and related to maintaining or changing the management regime for the areas of special importance for the local community in regard to the use of forest resources and sites of special cultural, ecological, economic and religious significance for the local residents.

7. For efficient area management and timely forest management plan adjustment, the following procedures need to be established:
   a. first, a procedure for interaction with stakeholders (for example, in the form of public hearings). This procedure should be based on the principles for guaranteeing citizens' rights to complete, accurate, and timely information on the state of environment and use of natural resources, as well as the right to participate in the decisions that affect their right to a favorable environment;
   b. second, a procedure for prompt reporting on the changes in the forest.

8. For the sake of convenience, a forest management compartment is taken as a minimum planning unit. However, in some cases, zoning has been made along the landscape boundaries of the territory or in line with the boundaries of the existing objects.

9. According to the plan, the territory should be divided into functional areas with different management modes, including the territories to be fully preserved for conservation of their
ecological value and partially used to cover the needs of the local population. In some cases, functional zones may overlap.
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The Forest Law Enforcement and Governance (FLEG) II European Neighbourhood and Partnership Instrument (ENPI) East Countries Program supports participating countries’ forest governance. At the regional level, the Program aims to implement the 2005 St. Petersburg FLEG Ministerial Declaration and support countries to commit to a time-bound action plan; at the national level the Program will review or revise forest sector policies and legal and administrative structures; and improve knowledge of and support for sustainable forest management and good forest governance in the participating countries, and at the sub-national (local) level the Program will test and demonstrate best practices for sustainable forest management and the feasibility of improved forest governance practices at the field-level on a pilot basis. Participating countries include Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia, and Ukraine. The Program is funded by the European Union.

http://www.enpi-fleg.org

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