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Sectoral and Cross-Sectoral Integration of Biodiversity in Georgia

Contents

Introduction

Georgia reported[1] that against a background of political and socio-economic unrest much of the country's focus is, understandably, often on overcoming the various issues that resulted whilst the protection of the environment remains very limited in the development plans of the country. The main directions of the **Medium-Term Strategy of the Government of Georgia,** for 2007-2010, were; the restoration of territorial integrity through a step-by-step peaceful policy, overcoming poverty and associated social problems, energy safety and infrastructure development. However, the following priorities for environmental protection and the management of natural resources have been identified over the past four years:

I. elaboration of the resource-use system;

II. elaboration of environmental protection systems;

III. elaboration of the system for monitoring and forecast.

The second point, elaborating the environmental protection system, comprises the establishment of a protected areas system as well as its continued development. In this field attention is paid to the development of eco-tourism in protected areas, reduction of forest fires and the conservation of biodiversity.

Elaboration of resource-use systems focuses on the facilitation of forest protection as well as the sustainable use of forest resources. The major direction of the recent measures implemented and planned in this area are: the reform of forestry; the elimination of legal and regulative gaps in forest resource-use; the issue of long-term licenses for forest resource use through auction and the protection of forests from parasitic-borne disease, fires and negative anthropogenic impacts. In order to facilitate the sustainable use of water resources and to improve water quality, the medium-term plan sets transition to a reservoir based management system.

According to the Georgian constitution, international agreements and Georgian legislation, the **Second National Environmental Activity Program (NEAP)** of Georgia is now being developed. The first was approved in 2000 and its validity term was 2000-2004. The adoption of the first program became the base for the qualitatively new phase of cooperation between Georgia and various international financial organizations and developed countries. The development of the second NEAP started in 2006 and was coordinated by MoE and funded by UNDP. Within the process major environmental problems were revealed, prioritized issues identified and measures to overcome these problems developed. In 2008 MoE, with the support of the Ministry of Construction, Spatial Planning and Environment of Netherlands, renewed the development of the action plan for the protection of the environment. NEAP determines

[1] Georgia (2010). Fourth National Report to the United Nations Convention on Biological Diversity, March 2010, Ministry of Environmental Protection and Natural Resources, 94 pp.

long-term goals for the protection of the environment (until 2030) as well as a set of results to be achieved by 2015 and activities to be completed in the nearest five years. One of the NEAP sectors will be biodiversity and fishing.

Forestry

The NBSAP describes problems in forestry and identifies strategic goals. The strategy and action plan for sustainable forestry should be developed as a separate document, although at present only a working version of the forestry policy exists and this not yet been approved. Measures in the forestry sector are mainly determined by the medium-term strategy of the government of Georgia and other policy documents.

Approximately 2.8 million ha, or 40% of the country's territories, are covered by forest and about 97% of these are of natural origin. The majority of Georgia's biodiversity is directly or indirectly connected with forest ecosystems. After 1990 the forests of Georgia became intensively exploited for economic purposes whilst, for the part of rural communities firewood has remained one of the sources of energy. Significant demand exists on timber. It is clear, then, that the introduction of sustainable forestry principles is of key significance to the conservation of the country's biodiversity.

At present Georgian forests are entirely State owned, managed by MoE with forest-use licenses issued by the Ministry of Economic Development, via auction. According to 2005 data, 109,337 ha of mountain forests belong to resort forests, 270,340 ha are green zone forests and the remaining 2,076,555 ha have soil protection and water regulative functions. Protected areas have been established on about 10% of state forests.

At present, 37 long-term licenses for wood production have been issued on 156,000 ha. The special decree of the Georgian government sets out forest-use conditions, which partially encompass biodiversity protection commitments. For example, a timber production licensee is obliged to:

- facilitate the protection of high conservation value forests by preserving and improving their main characteristics and should document how that protection is facilitated;
- not allow the deterioration of wildlife habitats, breeding areas, migration and water access routes and drinking areas;
- not cause ecosystem fragmentation, changes of the natural structure and composition of the forest or impoverish species diversity;
- facilitate the protection of rare, endangered, endemic and relict species, and their habitats, within the license area;
- not allow the spread of alien (invasive) species and gene-modified organisms and/or use any of these during the activation on the licensed area;

- conduct measures of forest maintenance, protection from parasite-borne disease and fires and restoration;

- prove, in advance, the necessity for using plant protection facilities and agree with MoE on the proposed activity plan;

- use ecologically acceptable devices, tools and technologies during work in the forest.

The licensee is obliged to act within the forest-use plan, as agreed upon with MoE, in a way that reflects specific actions to fulfil these commitments.

For the development of sustainable forestry, significant problems remain: legal and institutional gaps; insufficient financial resources; undistributed functions between the central and local authorities; absence of forest inventory and monitoring systems; lack of knowledge and experience in sustainable forest management and insufficient information on the state of forest resources. Towards sustainable forestry, the inventory of the economic forest fund is planned within a special state program. As a result, the real volume of wood resources will be identified and an appropriate information base established. The forestry department, in cooperation with the GTZ project looking at the sustainable management of biological resources in the southern Caucasus, activities are being undertaken to develop forest management standards in compliance with the state strategy of the forestry development and best international practice.

Due to ease of access, forests located near villages are especially prone to damage. During the Soviet period these forests were under the ownership of collective farmer households but are now state owned. Certain rights, although yet indistinctly determined, still belong to the local authorities.

The Kharagauli Temi Forest Project serves to introduce innovative forest management tools and methods and strengthen the role of local authorities. The project is funded by the Development Agency of France. The project aims to establish and coordinate sustainable forest management systems at local levels (Temi) in Kharagauli district. The goal of the project is to establish local forestry in Kharagauli, which will greatly contribute to the restoration of the degraded forests and protection of Borjomi-Kharagauli National Park, as the target forests are located near the national park. The inventory of Kharagauli forests, preparation of management plans for those areas to be passed to the municipality and the implementation of a model sustainable management model are planned within the project scope.

The Support of the Development of the Management Policy and Practice of Temi Forests in Mountainous Regions of Caucasus is a project supported by the Regional Ecological Centre of the Caucasus and European Commission and also aims to strengthen the position of village (Temi) organizations in the management of mountain forests. The rationale behind this is that, in addition to economic value, forests located near residential areas, especially in the highlands, also have cultural significance. The project encourages the development of legal, institutional and technical tools for Temi forest management as well as the protection of the villager's rights in forest-use. The project focuses on

the improvement of awareness in Temi and local authorities and supports urgent measures for the restoration of forest ecosystems, necessary in protecting villages from natural disasters (such as landslides and avalanches).

Agriculture

Traditionally, agriculture has played an important role in the country's economy due, in part to fertile soils and a temperate climate that form very favourable conditions for farming and livestock breeding. Traditional agricultural crops are grapes, wheat, maize, various fruits, citruses and tea. Traditional livestock breeding focuses on sheep and cattle although bee-keeping is also developed.

Agricultural land occupies 3,025,800 ha, or 43.5% of the total area of the country. Of this, arable land and perennial crops cover 1,056,600 ha (15.2% of the country) whilst hay meadows and pastures make up 1,940,400 ha (27.9%).

During the transition period (after the disintegration of the Soviet Union) many problems occurred in the agricultural sector, which were primarily connected with rapid increases in prices of agricultural production tools and a decrease in the production cost. The latter was caused by the collapse of the central supply system and a change to a free market system. Due to a loss of traditional markets fruit, grape, citrus and tea production have drastically decreased in comparison with the 1980s. By comparing the 2004 agricultural census data with that taken in 1988, the decreasing trend becomes prominent: the area of perennial crops has decreased by 245,400 ha whilst that turned over to arable land has decreased by 364,000 ha. By 2008 data, 329,000 ha of arable land (only 41% of the total area of arable land) were being used. A significant portion of the abandoned agricultural land has now become wild and some of the territories have even developed into semi-natural habitats.

During the past 20 years, agricultural practices have also undergone significant change and the use of fertilizers and pesticides has dramatically decreased. This, in turn, has resulted in significant reductions in the impact of agriculture on the environment. In the 1980's, up to 600,000 tons of mineral fertilizers were used whilst only a decade later, this had fallen to only 12,000 tons. At present the trend in fertilizer use is increasing (52,700 tons in 2008), although utilization levels remain insignificant in comparison with pre-transition figures.

Similarly, the use of pesticides has greatly decreased from 2008 figures, when the total area of annual and perennial crops processed with pesticides was 142,400 ha (or 13.4% of arable land and perennial crops). In spite of the diminishing use of chemical inputs, the local impact on the environment and biodiversity at specific areas may have increased. In many farms the rules of fertilizer and pesticide use are now almost ignored, resulting in the pollution of the environment with harmful substances.

It is worth noting that, according to legislation, only registered means of plant protection can be used and, in Georgia, only those means that have received positive feedback during the process of state examination in terms of toxicology, hygiene and ecology are registered. Furthermore, within the scope of both nationally and internationally funded projects, activities to render harmless and safely dispose of

agro-chemicals that have passed their expiry date are regularly conducted. The law on pesticides and agro-chemicals (2005) exerts control over the use of pesticide and agro-chemicals. The order of the Minister of Agriculture on the approval of the rule of import, storage, realization and wise use of agro-chemicals was also adopted in 2005. This order outlines all of the necessary rules and norms that need to be followed while suing fertilizers and pesticides.

Since its independence, Georgia has been steadily developing the practice of organic farming and there is a distinct trend for an increase in the number of biological farms. This is supported by certain legislative and regulative acts adopted in recent years that include a law on biological agro-production adopted in 2006 which legally regulates issues of organic farming in Georgia. The law is based upon an international standard (principles of Codex Alimentarius GL 32) and appropriate regulations set-out by the EC (EEC #2092/91). Georgian standards on biological agro-production, that identify substances that can be used in biological agricultural production, have been developed and the preparation of rules for bio-production certification is being planned.

Significant changes have also occurred in livestock breeding. Since the 1990s, the total number of livestock has drastically decreased; more specifically, the numbers of sheep and goat have almost halved while the proportion of cattle has increased. Despite this, conditions in the country's pastures have not improved due, in part, to the exclusion of Georgian pastoralists from traditional pastures in the northern Caucasus, such as those in Dagestan, and the subsequent concentration of sheep on Georgian winter pastures.

The joint initiative of MoE and the Ministry of Agriculture on the preparation of the model codex of agricultural practice should be noted. The codex represents the unity of commitments, recommendations and practical advice, as stipulated by Georgian legislation, both for small peasant households and farms and large agro-production units. The goal of the codex is to encourage the decrease of the negative impact of agriculture on the environment and degradation of the major natural resources through the introduction of less harmful farming rules.

Fishery

Fishing (extraction of fish from the Black Sea and inland reservoirs) is managed by MoE in Georgia. The ministry also evaluates the existing resources, sets extraction limits, fishing rules and enforces fishing license rules. The main legal documents regulating fishing are: the Law of Georgia on Wild Fauna, Law on State Licenses and Permits; Regulations "The procedures for issuing and conditions of fishing license (#138, 11.08.2005), "List of fauna species permitted for use and rules for their taking, terms and permitted methods (#512, 07.12.2005).

After 1991, difficulties in Georgian economics and the loss of markets, as well as dramatic decreases in fish stocks in the Black Sea, have had a negative impact on the fishing sector. The volume of fishing in the Black Sea has significantly decreased from 1988.

Eight fish species are commonly extracted from the Black Sea for commercial purposes at present (anchovy, whiting, spurdog, mullet, golden mullet, flat head mullet, jack mackerel, Caspian shad). The most important is the Black Sea anchovy. The extraction of other fish species is much more limited.

According to legislation, fishing farther than 300 m from the Black Sea coast needs a license. The state purpose-specific program for the sustainable use of fish resources was implemented in 2005 when fish supplies were studied in the Black Sea, within Georgian waters. Based upon the study, long-term (10 year) fishing licenses were issued in 2006. Licensees are obliged to evaluate the fish resource supplies annually and present the results of the survey to MoE. According to the ministries recommendation, the Ministry of Economic Development approves species specific annual extraction quotas.

In addition, the order of MoE sets certain restrictions and prohibitions designed to protect fish resources and support their restoration. The order covers the following aspects:

- fishing terms (commercial fishing in the Black Sea is entirely banned from 1st May till 1st June and for inland reservoirs is determined individually);
- areas where fishing is banned (i.e. fishing is entirely banned in rivers used by migrating sturgeons and salmon and within 500 m around their estuaries as well within five miles from the coastal Foti to Ochamchire);
- species fishing of which is banned;
- fishing tools and their technical characteristics;
- banned extraction methods;
- minimum size of fish permitted for extraction.

Many rivers, lakes and artificial reservoirs are located in Georgia and fishing occurs in the majority of them. At present the long-term licensing of fishing for several lakes and reservoirs is being conducted. For licensing purposes, ichthyofauna conditions have been assessed in the reservoirs and specific rules for fishing and restoration of fish populations have been developed to facilitate the sustainable use of fish resources as well as the restoration of threatened and endemic species.

In spite of measures to encourage sustainable fishing, the problems of illegal fishing as well as the spread of non-local/invasive species and the absence of monitoring system have remained.

Climate Change

Georgia became party to the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and in 2006-2009 Georgia prepared its second national notification to the convention. During this process a national inventory of green-house gasses was conducted, scenarios of expected climate change processed and vulnerability of various ecosystems and branches of economics to current and expected changes was assessed. Along with plans for reducing green-house gas emissions, adaptation projects were also developed and activities aimed at improving public awareness arranged.

With due regard to the second national notification and the results of other completed or active projects, the short and long-term strategy for climate change was prepared. It does not yet cover the entire country but focuses on priority regions selected according to the results of the initial study. Based upon the expected scenario of climate change, three regions (the Black Sea coast, Dedoplistskaro district and Kvemo Svaneti) were evaluated using identified vulnerability and adaptation measures.

The following information details the impact of climate change on these ecosystems and the expected threats and adaptation measures which are directly connected with biodiversity issues.

Black Sea Coast: against the background of global warming four main threats have become distinct for the Black Sea ecosystems:

I. an increase in the speed of eustatic variations (the global rise of the sea level towards land);

II. an increase in the intensity and frequency of storms and a change in seasonality;

III. the activation of sedimentation in deltas of rivers feeding on glaciers (this threatens only the Rioni delta and middle reaches);

IV. changes in the thermal characteristics of the sea.

Evaluations revealed that the most vulnerable sectors within the coastline are the Rioni and Chorokhi river deltas and the lower reaches of the Rioni River. Kolkheti National Park is directly adjacent to the Black Sea and comprises coastal waters, coastal peat bogs, Paliastomi Lake and wetland Colchic forests. As the evaluation showed, the rise in sea water levels has significant negative impact on the protected areas, particularly Lake Paliastomi. Between 1927 and 2006 the temperature had risen by 0.7º C which, along with other factors, resulted in serious changes of the lake's ecosystem. Climate change adaptation measures are planned for the lake within the strategy plan and include: a detailed study of the impact of climate change, the preparation of adaptation measures and the sourcing of investments to implement.

Dedoplistskaro District: this is one of the priority regions selected during the preparation of the second national notification as a territory under the threat of desertification and where effective adaptation measures should be introduced. Dedoplistskaro is rich with fertile soils and vast pastures, but poor in water resources, with low annual precipitation rates. Represented here are unique semi-arid ecosystems, untypical for the country and rich with flora and fauna. In order to protect these ecosystems, protected areas have been established over various periods: Vashlovani Protected Areas (comprises a national park (25,114 ha) and a Reserve (10,142 ha) as well as Natural Monuments (the Alazani floodplain and the Artsivi gorge) and Chachuna State Reserve (5,200 ha). The total area of the protected areas is 30,552 ha, or 12% of the district. Agriculture plays a leading role in the economy of the region but is serious impeded by a lack of water (irrigation systems are in a state of total disrepair), frequent droughts and strong winds (windbreaks have been entirely eliminated during the last 20 years). Soil degradation in Dedoplistskaro district represents one of the most acute problems; with pasture

management almost absent, erosive processes are accelerated, impoverishing the vegetation and intensifying the desertification processes.

The following adaptation measures are determined for Dedoplistskaro district:

- the establishment of a permanent monitoring system, within the protected areas, to evaluate land degradation and the impact of climate change on endemic species of flora and fauna (in conditions free from anthropogenic pressure);
- the planting of plantation stands on abandoned and eroded land (a project is proposed for the planting of a 40 ha bio-energetic forest);
- the rehabilitation of windbreaks.

In 2008 the project on the Climate Tolerant Rehabilitation of Degraded Landscapes, Georgia, was implemented by MoE, in cooperation with the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and GTZ. The goal of the project is to restore degraded landscape and provide aid to the government of Georgia in implementing measures against land degradation and desertification. The project mainly focuses on Dedoplistskaro district, where the restoration of windbreaks has begun on a 30 ha plot, and actively involves the local community.

Kvemo Svaneti: this mountainous region was selected as an ecosystem whose vulnerability to natural disasters is intensified by the threat of global warming. The increase in frequency and intensity of such disasters (flash floods, landslides and mudflows) severely damages agriculture, forests, roads and other infrastructure.

Due to landslides and flash floods the population of Lentekhi district has fallen by 40% since 1986. Forests covering more than 60% of the region area represent one of the major natural treasures of Kvemo Svaneti but, during the past 15 to 20 years parasite-borne diseases have widely spread in the forests. It is thought that this may, in part, be driven by climate change.

An evaluation of glaciers in the Central Caucasus region (of which Kvemo Svaneti is a part) revealed that their total area has decreased by about 25% whilst total volume has fallen from 1.2 km^3 to 0.8 km^3 since the 1950s. The expected increase in temperature by 2050 could result in the vanishing of the glaciers of Kvemo Svaneti.

The following adaptation measures have been identified for Kvemo Svaneti:

- rehabilitation and adequate management of severely damaged forests;
- restoration of forests, for protection against landslides, in appropriate areas;
- development of economic packages for the protection of local forests from harmful insects.

Environmental Impact Assessment

General requirements connected with the EIA system are determined in the law of Georgia on Environmental Protection (1996). The law sets out environmental requirements for development activities during decision making and implementation. According to this law an Environmental Impact Permits (EIPs) is required for the implementation of certain activities. In order for such a permit to be issued, an EIA must first be conducted by the developer.

At present, the EIA system is regulated by 2007 Law on Environmental Impact Assessment and Sate Ecological Expertise. According to the law environmental permits are necessary for activities characterized by excessive threat to human life or health. According to the provisions of the law, the purpose of the EIA is to ensure that any planned activity includes measure for the protection of individual components of the environment including landscapes, cultural heritage and human populations. In this way, EIAs should identify any direct or indirect impacts on human health and safety, wildlife, soil, air, water, climate, landscape, ecosystems and historical monuments, or the products of any of these factors such as cultural values and socio-economic conditions.

The law gives a full list of activities that require an EIP within Georgia:

a) extraction of minerals (ecological expertise is not needed for construction material extraction, except for as stipulated by paragraph g);

b) any industrial technology using asbestos;

c) cement, asphalt, lime, gypsum marl, gypsum and brick production;

d) glass and glass product manufacturing;

e) processing of solid domestic waste (among these, arrangement of waste burning factories) and/or arrangement of dumps;

f) allocation of toxic or other hazardous waste, their entombment and/or processing, neutralization of such waste;

g) production of any volume related to coal gasification, liquidation, briquetting and coking;

h) construction of major oil and gas pipeline;

i) allocation of storage, terminals for oil and oil products as well as liquid and natural gases, if the volume of reservoirs located within such territory exceeds 1000 m^3 or their total volume exceeds 1000 m^3;

j) construction of international and national automobile roads, railroads and their bridges, road tunnels as well as engineering protective buildings of automobile roads, railroads and their territories;

k) construction of high voltage (exceeding 35 kwt) air or cable electricity lines and allocation of stations (exceeding 100 kwt);

l) Allocation of hydro power stations (exceeding 2 mwt) and thermal power station (exceeding 10 mwt);

m) construction of metro;

n) arranging of reservoir (exceeding 10,000 m^3);

a. allocation of water treatment centers (exceeding 1,000 m^3 per day) as well as major sewage collector;

o) arrangement of aerodrome, airport, railway stations and marine ports;

p) allocation of dam, port, pier, dock and berth;

q) chemical industry, namely: chemical processing of semi-manufactured (half-finished material) and chemical substance manufacturing; production and processing of pesticides, mineral fertilizers, chemical paints, lacquer, peroxides and elastic substances (rubber or plastic substances); production of gunpowder and explosives; manufacturing of graphite electrodes;

r) oil and gas processing units (exceeding 500 t per day);

s) any metallurgical production (with volume more than 1 ton per hour), except for cold processing of metal and jewellery production;

t) arrangement of storage of toxic and other hazardous material.

The regulations on environmental impact assessment (approved by order #18, 09.03.2009 of MoE) EIA outlines the stages of the EIA process and mandatory issues to be reviewed by a EIA report.

The executor of the activity is responsible for the organization and completion of an EIA and also bears all the necessary expenses connected with EIA procedure. Upon completion the EIA report is presented to MoE for its consideration and award of an EIP where appropriate. The permit issue procedure, then, consists of the following components:

- Environmental Impact Assessment;
- ecological expertise;
- public participation in the decision making process.

In order to receive an EIP the legislation requires that the EIA is carried out by a qualified professional and in an impartial and rigorous manner. EIP is then issued through the state ecological expertise procedure. This involves the following, the expert commission appointed by MoE reviews the project

documentation and EIA report and prepares its' conclusions. Furthermore, any permit will include a set of conditions by which the activity must be carried out. Such conditions can include requirements for implementing mitigation measures for any identified impacts on biodiversity.

Currently, there are no legislative requirements for strategic environmental assessments in Georgia. Capacity building in this field is necessary as the inclusion of EIA issues in corresponding educational programs and the preparation of guidelines on such issues, connected with biodiversity, to be covered by the EIA system.