MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES PROTECTION OF GEORGIA

Georgia's Fifth National Report to the Convention on Biological Diversity

Contents

Executive Summary

Biodiversity of Georgia provides life-sustaining ecosystem services and natural resources for the population and supports sustainable development of such important economic sectors as forestry, agriculture, hydropower and tourism. The availability of ecosystem services such as clean water, fertile soil, favorable climate, and biological pest control are essential for nearly 53% of Georgians who are engaged in agriculture. Georgia, as a country distinguished in biological and landscape diversity has an important potential for developing nature-based tourism. Protected areas sustain nature-based tourism development and strengthen economic and social impacts of tourism. Ecotourism is one of the most rapidly developing sub-sectors. According to the data of APA, number of visitors of the protected areas has increased 54 times over the period of 2007-2014.

Under the TEEBScoping Study, which was conducted with participation of the MoENRP, UNEP, WWF-Caucasus Program Office, five core sectors of Georgian economy were identified (energy, tourism, agriculture, mining, and forestry), which are substantially dependent on natural capital and ecosystem services. Under the scoping study, a guide was elaborated for comprehensive study of ecosystems and economy of biodiversity, which should serve as demonstration of tight links existing between economic development and biodiversity andsustainintegration of the values of natural capital into economic policy.

The Caucasus isconsidered by international organizations as one of the distinguished regions of the world in respect of biodiversity. It is within one of WWF's 35 "priority places" (the greater Black Sea basin) and is also part of two of 34 "biodiversity hotspots" (the Caucasus and Iran-Anatolian hotspots) identified by Conservation International as being simultaneously the richest and most threatened reservoirs of plant and animal life.

At present, the Red List of Georgia contains 139 animal species and 56 wooded plant species; 275 species of vascular plants are endemic to Georgia. 152 species of Georgian endemic flora (approximately 60% of endemic species) are categorized as endangered.Due to the lack of regular monitoring, there is scarce information available on dynamics of populations of species included in the Red List.Lately,increase in number of deer was recorded in Borjom-Kharagauli and Lagodekhi protected areas. Due to the loss of habitats and spawning migration routes, and excess fishery, all of the six sturgeon species and trout are threatened. Within the last decade, owing to fragmentation and degradation of habitats, endemic amphibian – Caucasian Salamander (*Mertensiellacaucasica)*and endemic reptile – Caucasus Viper (*Viperakaznakovi)* have considerably decreased in number. Among birds of prey, the most endangered one is the Eastern Imeprial Eagle (*Aquila heliaca).* There are only 15 nesting places of this bird remaining in Georgia. The Cinereous Vulture (*Aegipiusmonachus)*and black stork (*Ciconianigra)* are endangered as well. Decrease in the number of bats is caused by degradation of their habitats and more frequent disturbance of their shelters. Decreased number of

habitats and illegal hunting is the main reason of reduced number of ungulates. The rarest species of ungulates include C*apra aegagrus*. According to the latest data, total number of C*apra aegagrus* amounts to 300 individuals.
Number of *Capra caucasica* individuals remains at the critical leveland counts only 100-150 individuals.In winter approximately 18 000 Harbourporpoisesand 16 000 white-sided dolphins gather in the territorial waters of Georgia. The named concentration indicates that the Black Sea waters of Georgia are wintering area for the Black Sea Cetacea. Since 1999, a 5 mile width sea water area between the River Churiahead and river Rionihead (15 276 ha area) has been included in the Kolkheti National Park.

20 families, 76 genera and 479 species of plants are wild relatives of the ancient Georgian plant cultures, 114 of which (23.8%) are endemic. Majority of these plant species are genetically closely related with local species (landraces) and are supposed to be their progenitor species. Natural populations of cultural plants' wild relative species are threatened due to deterioration and fragmentation of their habitats, overgrazing and desertification.The indigenous species and populations of domestic animals are also threatened due to their hybridization with non-indigenous species.

In terms of biodiversity conservation, forests are the most important habitats of Georgia and Caucasus Region. Existence of about 65% of Caucasus species depends on forests. The forest area currently covers about 41% of the total area of Georgia (28,382km2).Over the last decade, this figure has been relatively stable.

There are 18 critical freshwater habitats revealed in Georgia, with total area of 2 422 241 ha, and only 625 081 ha (25.81%) of this area is covered by various category protected areas.

Impoverishment of biodiversity is caused by several basic and complementary reasons, which inter alia include:

- Poverty of population, which drives them to unsustainable utilization of natural resources for obtaining energy, food and financial benefits;
- Unawareness of the population regarding values of biodiversity and significance of its preservation;
- Insufficient incorporation of the values of biodiversity in policy documents, strategies and programs;
- Legislative gaps in the sphere of regulation of biological resource utilization;
- Lack of resources for exercising biodiversity preservation laws and procedures.

The named reasons lead us towards factors directly affecting biodiversity, such as: degradation and fragmentation of natural habitats, excess utilization of natural resources, environmental pollution, introduction of alien invasive species and climate change.

On May 8, 2014, the Government of Georgia endorsed an updated National Biodiversity Strategy and Action Plan (NBSAP) for the period of 2014-2020. The documentformulates a comprehensive policy and defines national priorities in order to transform Georgia into the country, where by the year 2030 „*it will be a country with population living in harmony with nature, biodiversity will be commonly valued, biological resources - conserved and wisely used. This will provide natural continuity of ecosystem processes, healthy environment and benefits essential for all people˜.*

Under the updated NBSAP for Georgia, 21 national goals are set for protection of biodiversity, which are targeted at preservation of the values of biodiversity, raising public awareness regarding significance of biodiversity and benefits derived therein, integration of biodiversity aspects, enhancement of the biodiversity status and mitigation of threats to biodiversity.

One of the main goals of the NBSAP is creation of background for fulfillment of obligations undertaken under the European Union Association Agreement and facilitation of harmonization with European environmental policy and strategies. The Georgia - European Union Association Agreement, which was executed in June of 2014 includes important commitments for conservation of species and habitats and sustainable use of biological resources. Georgia has already made first steps to this effect: with technical assistance of the GIZ, elaboration of the Draft Law of Georgia "on Biological Diversity" is ongoing for the purpose of harmonizing the national legislation with EU Council Environmental Directives. At the present time, Georgia is part of the joint program on „Establishment of the Conserved Area Emerald Network in South Caucasus and Central and East Europe", which is in progress in seven states of Central and East Europe and South Caucasus and is backed by the EC. Under the program, 21 hot-spots in terms of biodiversity conservation are already revealed and associated scientific data and maps are prepared. As a result of project implementation, in 2018 Georgia is expected to include its first areas in the "Emerald Network".

Within the period of 2010-2014, Georgia has achieved certain progress in fulfillment of Strategic Plan for Biodiversity 2011-2020 and Aichi Biodiversity Targets.

Within this period, there were three new national parks (Machakhela, Javakheti and Pshav-Khevsureti), 7 nature reserves (Kartsakhi, Sulda, Khanchali, Bughdasheni, Madatapa, Sataplia and Assa) and 27 natural monuments founded in Georgia. Therefore, as compared to the year 2010 space of protected areas has increased by 104 643 hectares and as of 2014 it constitutes 9% of the total area of the country.Establishment of Ecocorridors in Lesser Caucasus is ongoing, together with development and extension of newly established and existing protected areas. Caucasus Nature Fund (CNF), which has been operating since 2008, is a fairly effective mechanism for extending subsidiary sustainable funding to protected areas of Caucasus and in particular – to those of Georgia.

The gene bank collections of Agricultural University, Lomouri Agricultural University and Botanical Garden have been supplemented with new specimen. A National Center for "Agro - Vine and Fruit Planting Material Production" was established, which possesses a rich collection of Georgian vine and fruit tree species. Since 2011, planting material is being handed out to the farmers free of charge.

For the purpose of on-farm conservation of the local animal breeds a pilot-illustrative farm was established in Kakheti Region. An electronic catalog of agrarian biodiversity of Georgia was produced, which contains 824 indigenous and local selective species of domestic animals. Restoration of over 4,000 ha area of degraded pastures is ongoing.

In 2013, with active involvement of stakeholders the "National Forest Concept for Georgia" was prepared. The goal of the Concept should be to establish a system of sustainable forest management that will ensure: improvement of the quantitative and qualitative characteristics of Georgian forests, protection of biological diversity, taking into account their ecological value, and effective use of their socio-economic potential. Forestry code is under elaboration, which is expected to be completed by the end of 2015.

Since 2008, establishment of the unified national system of biodiversity monitoring is ongoing for assessing the status of biodiversity, intensity of threats affecting it and effectiveness of implemented measures. Biodiversity monitoring concept has been developed and 25 indicators under three types (state, pressure and response) have been selected, a methodology of data collection and analysis by indicators has been developed. Findings per eight indicators are already available. Starting from 2012, monitoring of 14 species included in the Red List of Georgia is in progress.

Integration of biodiversity aspects across the sectors and in national development plans is one of the most considerable challenges for Georgia. Though, there are certain positive shifts apparent in this respect.

Conservation of biodiversity is one of the main directions of the National Environmnetal Action Plan (2012). Socio-economic and Regional Development strategies point out significance of nature conservation and sustainable utilization of natural resources. Forest resources protection and introduction of sustainable forestry practices are especially highlighted. According to the National Forest Concept for Georgia, the national forestry policy is aimed at establishment of a system of sustainable forest management that will ensure: protection of biological diversity and effective use of the economic potential of forests taking into account their ecological value, while the agricultural development strategy is focused on sustainable management of natural grasslands and preservation of agrarian biodiversity and endemic species.

The Second National Action Programme to Combat Desertification and Climate Change strategies incorporate actions directed at conservation of biodiversity.

Within the scope of biodiversity conservation, Georgia is actively cooperating with Caucasus Ecoregion countries. In course of 2011-2012, with extensive participation of experts and stakeholders the Ecoregion Conservation Plan for the Caucasus, which was initially adopted in 2006, was subjected

to update in line with Aichi biodiversity targets. The Regional Biodiversity Council facilitates coordination of activities at the Ecoregion level.

International and local NGOs play significant part in conservation and preservation of Georgia's biodiversity. Georgia has repeatedly demonstrated an example of successful cooperation between public and private sectors aimed at conservation of biodiversity. A wide range of experts and stakeholders, which was represented by various ministries, NGOs, Universities, private sector and international organizations was engaged in the NBSAP update process.

The following activities will materially contribute to strengthening conservation at the national level:

- Development of the resource mobilization strategy for NBSAP implementation, which will provide for all of the existing sources of funding, including state budget, donor countries and organizations, and updated innovative means of funding, such as partnership with private sector;
- Assessment of economic values of biodiversity and ecosystem services and integration of their outcomes in development strategies of 5 core sectors of Georgian economy;
- Further development of protected area system and establishment of the protected areas' network, enhancement of its management efficacy and provision of its financial sustainability;
- Reformation of forestry sector, establishment of a system of sustainable forest management;
- Further development and upgrading of the biodiversity monitoring system, which will contribute to effective planning of biodiversity conservation measures;

- Raising the level of communication, education, public awareness and participation with respect to biodiversity, existing threats and ways of their solution, as well as economic value of biodiversity and ecosystem services.

1. An update on biodiversity status, trends, and threats and implications for human well-being

1.1 Significance of Biodiversity for the Welfare of the Country

The Caucasusis considered by international organizations as one of the distinguished regions of the world in respect of biodiversity. It is within one of WWF's 35 "priority places" (the greater Black Sea basin) and is also part of two of 34 "biodiversity hotspots" (the Caucasus and Iran-Anatolian hotspots) identified by Conservation International as being simultaneously the richest and most threatened reservoirs of plant and animal life.

Biodiversity of Georgia provides life-sustaining ecosystem services and natural resources for the population. The forest ecosystems provide timber and non-timber products, prevent soil erosion, mitigate impacts of natural calamities and contribute to climate regulation. Meadows (pastures and hay meadows) provide food for livestock. Wetlands and lakes are natural fresh water reservoirs. Fisheries in the Black Sea and inland waters are of great importance for food security. Natural ecosystems support tourism development. Various economic sectors rely on ecosystem services and natural resources. Agriculture, hydropower, fisheries and fresh and mineral water supplies depend on freshwater resources formed in Greater and Lesser Caucasus Mountain Ranges.

Rural population of Georgia(46,3% of the total population) is considerably dependent on biological resources and ecosystem services. Annually the rural population uses 300-500 thousand m^3 of timber and fuelwood resources. This function of the forest is especially important for the present-day Georgia, since fuelwood is basic means of heating for the rural population. The local population also extensively harvests for food wild fruits, berries, mushrooms, nuts, herbs (nettle, goosefoot, portulaca, thorn, etc.). There are various plants in the natural habitats that are used as spices or for preparation of herbal teas.
1200 plant species are used as medicinal herbs. Local population of Georgia has gained wide experience and tradition of using medicinal herbs in folk medicine.

In Georgia, development of a large number of economic sectors, including forestry, agriculture, hydro power and tourism sectors, is directly associated with conservation of natural ecosystems.

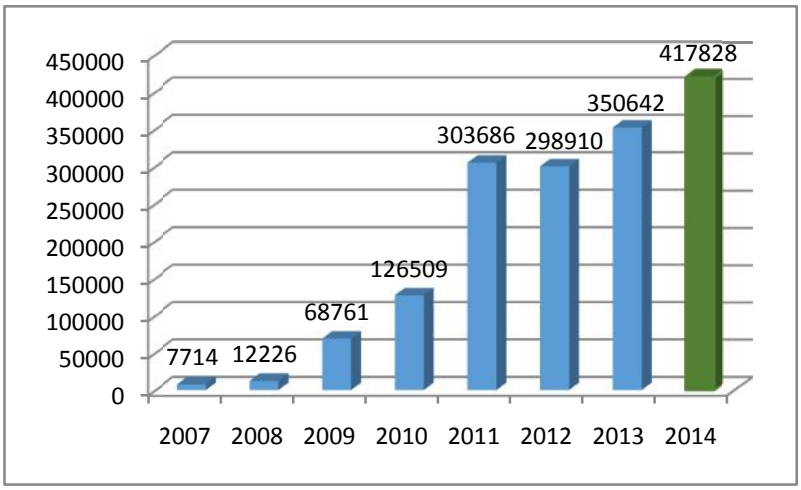
Georgia, as a country distinguished in biological and landscape diversity has an important potential for developing nature-based tourism. Beauty of its nature, sea shore and mountains is attractive for tourists and provides numerous investment opportunities, which in majority of cases is supported by ecosystem services. The above-mentioned inter-alia includes:

- Recreational spas and health centers
- Restaurants, cafes, and clubs

- Traditional spa and seaside resorts
- Winter mountain resorts
- Wine and vineyard tours
- Hotel development
- Cultural tourism
- Ecotourism
- Adventure tourism
- Historical tours

Protected areas sustain nature-based tourism development and strengthen economic and social impacts of tourism. Ecotourism is one of the most rapidly developing sub-sectors. According to the data of APA, number of visitors of the protected areas has increased 54 times over the period of 2007-2014.

Chart 1.1 Number of protected areas visitors, source:www.apa.gov.ge



After establishment of the protected areas, number of visitations to the high mountain region of Georgia – Tusheti, has dramatically increased. In 2006, prior to launching operation of the protected area, there were only 7 guesthouses in Tusheti and 12 persons were employed in touristic business. Currently, number of guesthouses in Tusheti has increased up to 40. The local population is actively engaged in tourism-related services (including tour guiding, renting horses, and selling traditional handicrafts, trips to the protected areas and within the boundaries of protected areas). The locals are developing a guesthouse network, with expectation of the gradual growth of the number of visitors in future. Gross annual income of local people from Nature based Tourism related activities in Tusheti is estimated at one mln USD[1].

Other sectors, like agriculture, mineral and potable water supply, hydro power and fishery also derive benefits from ecosystem services of protected areas.

[1]Flores M., Adeishvili, M., 2012. Economic Valuation of the Contribution of Ecosystems in ProtectedAreas to Economic Growth and Human Well-Being in Georgia. Prepared byECFDC/GCCW/AMECO, UNDP/GEF project Catalyzing Financial Sustainability of Georgia'sProtected Areas System.

Establishment of Borjom-Kharagauli and MtiralaNational Parks has had positive impact on honey production and quality. 160 households living in the Borjom-Kharagauli National Park support zone are engaged in bee keeping. Gross annual income of each household is GEL 5 500[2].

Grasslands of the protected areas of Georgia are indispensable condition required for sustainability of livestock farming and dairy production. Borjom-Kharagauli and MtiralaNational Parks are good illustrations of the above-mentioned. In summer, about 143 households utilize pastures located in the alpine part of Borjom-Kharagauli national park, in the traditional use zone. Average gross annual income of these households, including revenues received as a result of selling meat and dairy products, amounts to GEL 3,000.

Number of households relying on application of natural resources of MtiralaNational Park and its support zone should also be taken into consideration. The table 1.1 below illustrates data on the number of beneficiaries and economic benefits derived by them, which amounts to GEL 15,7 million per annum. Moreover, the local population is also engaged in nature based tourism related activities.

Table 1.1Number of households relying on application of natural resources of Mtirala National Park and its support zone, Source: Flores,M., Adeishvili, M., 2011. Valuation of the Contribution of Borjomi-Kharagauli and Mtirala National Parks Ecosystem Services to Economic Growth and Human Well-being. Prepared for WWF Caucasus.

Resources and Sector	Number of households	Number of persons	Valuated economic benefit (in GEL)
Grain crops	3.019		6,552,520
Livestock farming	2400	3.600	4,615,700
Bee keeping	116	116	1,169,000
Crafts	85		45,400
Non-timber products (berries/fruits)	964	2.000	985,000
Decorative plants		286	39,553
Medicinal herbs		37	11,500
Fuelwood	4.468	16.620	1,207,920
Fish industry	44	78	1,050,000
Fishery	56	56	4,000
Total			15,680,593

Borjom-Kharagauli National Park supplies potable water to town Borjomi with a population of 10 thousand. Contribution of MtiralaNational Park ecosystems to provision of water supply for Ajara population should also be taken into account. Batumi city with a population of 137 000 is supplied with potable water from the reservoir located in the support zone of Mtirala National Park, which in turn feeds on the river Chakvistskali located in the Mtirala National Park area.

[2]Flores,M., Adeishvili, M., 2011. Valuation of the Contribution of Borjomi-Kharagauli and MtiralaNational Parks Ecosystem Services to Economic Growth and Human Well-being. Prepared for WWFCaucasus.

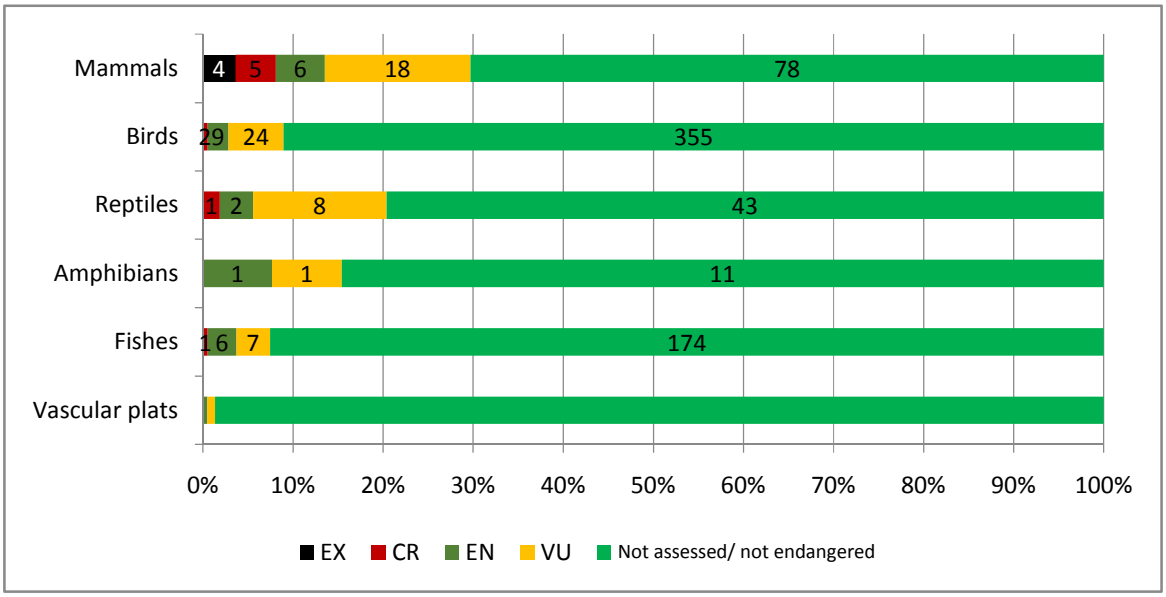
The above stated examples manifest contribution of protected areas to poverty alleviation and equitable sharing of resources and their necessity for deriving economic benefits from ecotourism.

Against the background of comprehension of the value of biodiversity conservation for enhancement of wellbeing of the population and sustainable development of the country, Georgia became one of the pilot countries for TEEBScoping Study[3].The preliminary study identified five core sectors of Georgian economy applicable for the TEEB Initiative; these are Energy, Tourism, Agriculture, Mining, and Forestry. The study highlighted the substantial dependence of these driving forces of Georgian economy on natural capital and the services it provides, which is illustrated in chapter 1.4. The chapter 2.3 provides information on surveys relating to economic valuation of biodiversity.

1.2 The status and trends of Georgia's biodiversity

Plant and Animal Species

At present, the Red List of Georgia contains 139 animal species and 56 wooded plant species; 43 of the



animal species and 20 of the plant species are categorized as endangered (EN) or critically endangered(CR); 44 vertebrate species prevailing in Georgia are also considered globally threatened and included in the IUCN Red List, as vulnerable (VU) or endangered taxa.

Chart 1.2 The Status of Animal and Plant Species in Georgia

[3] http://www.teebweb.org/countryprofile/georgia/

Currently, due to the lack of regular monitoring, there is scarce information available on dynamics of populations of species included in the Red List. Based on the surveys conducted under various projects, the following picture shapes out:

275 species of vascular plants are endemic to Georgia. 52 species of Georgian endemic flora (approximately 60% of endemic species) are categorized as endangered. 20% of endemic flora are calciphilos lithophytes, which are observed in limestone ridges of Kolkheti. Species of this environmental group also occur pointwise in Lesser Caucasus and Eastern Greater Caucasus. 80% of endemic plants associated with limestone habitats are also endangered (due to over grazing, infrastructure development, tourism and recreational activities, and global climate change trend). GIS analysis of endemic calciphytes has enabled allotment of significant territories for plants in the limestone ridge areas of Georgia, which may form basis for planning *in situ* conservation measures.

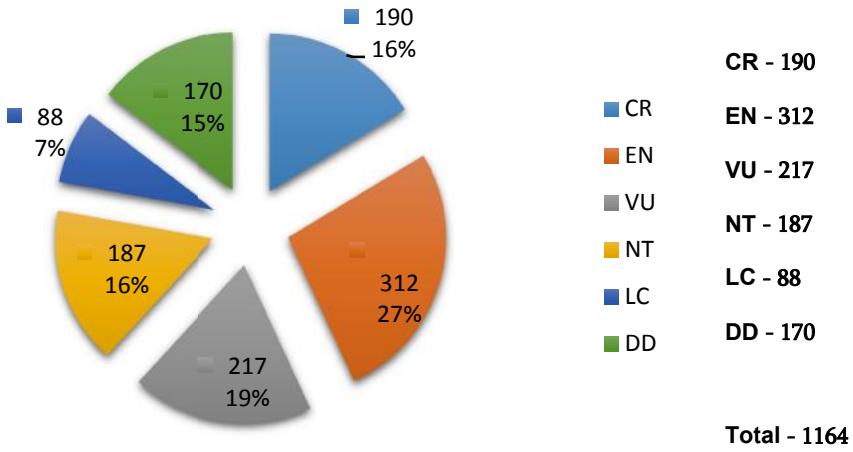
Invasive fungus disease poses significant threat to endangered woody plants included in the Red List, such as chestnut (*Castanea sativa*), Imeretian oak (*Quercusimeretina*), Colchic box tree (*Buxuscolchica*), elm (*Ulmusglabra*). Chestnut forests are especially affected in Imereti Region (16 960 ha area). Within the period of 2010-2013, Colchis box tree became particularly threatened, since major part of its sets ceased their existence due to the fungus disease. During the last 2-3 year period, the Colchis box tree disease spread across a 55-65% of Kintrishi protected landscape area, in MtiralaNational Park - on 60% of the box tree population.

Based on researches conducted during past years[4], under which the Caucasus Endemic Plant List (2950 taxa) was prepared and the status of about 1200 species was assessed, was developed the Regional Plant Conservation Strategy (2012-2020)[5], and was published the Red List of the endemic plant species of the Caucasus (Missouri Botanical Garden, 2013), which includes floristic and conservational analysis of ecoregion plants, assessment of conservation status of over 60% of Caucasus endemic species and priority species selected for conservation. 190 assessed species are critically endangered, 312 -endangered.

[4]A regional Plant Conservation Strategy and Red List of Caucasus Endemic plants are developed under the researches conducted for the 'CoordinationandDevelopmentofPlantRedListAssessmentsfortheCaucasusBiodiversityHotspot' Project, whichwasimplementedwithin the period of 2006-2010 bythe IUCN SpeciesSurvivalCommissionincollaborationwithMissouriBotanicalGarden, USA, the WWF CaucasusProgramme Office, andbotanistsfromsixcountriesoftheCaucasus, with backing of CEPF.

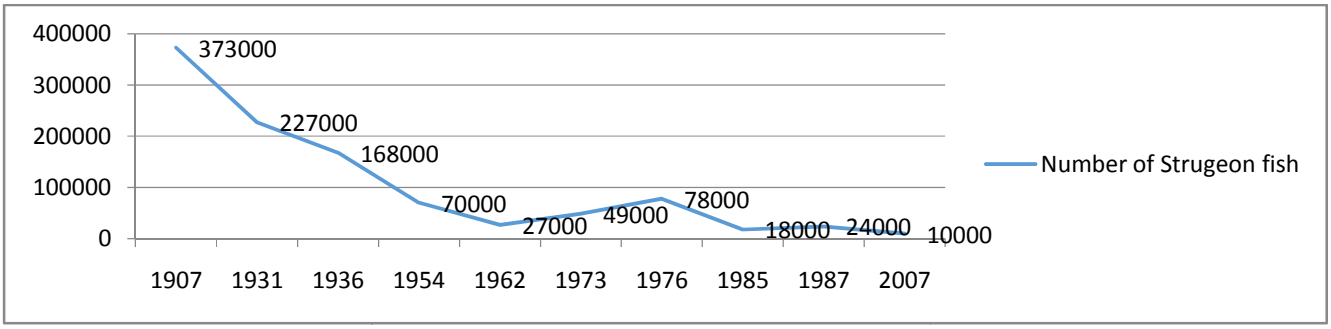
[5]https://www.mobot.org/MOBOT/Research/pdf/RedBook69mobot.pdf

Chart 1.3. Status of Caucasus Endemic Plants, Source: Coordination and Development of Plant Red List Assessments for the Caucasus Biodiversity Hotspot, IUCN, CEPF Final Project Completion Report



Among the Black Sea fishes, all six species of sturgeon (*Acipensersturio, A. stellatus, A. gueldenstaedti, A. nudiventris, A. persicus and Husohuso*) found in Georgian coastal waters and river deltas are threatened and are included in the national Red List. A. sturio is also included in the IUCN Red List as Critically Endangered.

Chart 1.4. Number of Sturgeon fishes within the period of 1907-2007
Source:ArchilGuchmanidze, Current and Historical Status of Sturgeon (Acipenseridae, Osteichthyes) in Georgia, Status and Protection of Globaly Threatened Species in the Caucasus, 2009



Sturgeon fish is threatened due to elimination of its habitats and spawning areas and excess fishery.

Illegal poaching has had especially adverse impact on the trout (*Salmo spp.*), which is included in the Red List and is categorized as vulnerable. Within the period of 1995-2005, number of trout populations has decreased at least by 30%. By the research of 2014, a taxonomic attribution was determined for trout and salmon prevailing in Georgia, and the status of trout was assessed in the regions of Georgia. There are mostly three species of trout prevailing in Georgia: *Salmocoruhensis*, *Salmociscaucasicus and Salmociscaucasicus.* The status of trout populations is relatively good in the river Ktsia, and small tributaries of the rivers Kintrishi, Akaverta, Sakraula, and Sno, but size of seperateindivids of fishes is small, which indicates that all the three species of trout should have their status of conserved species preserved.

Among birds of prey, the most endangered one is the Eastern Imeprial Eagle (*Aquilaheliaca).* There are only 15 nesting places of this bird remaining in Georgia. The Cinereous Vulture (*Aegipiusmonachus)*is one of the rarest Carrion Birds in Georgia as well as worldwide. The most important threat affecting this speciesis degradation of nesting habitats in the arid ecosystems of Georgia, disturbance and direct chase by humans and shepherd-induced fires. The black stork (*Ciconianigra)* is remarkable among minority species, its habitat is tugai, and therefore its nesting places are extremely limited.

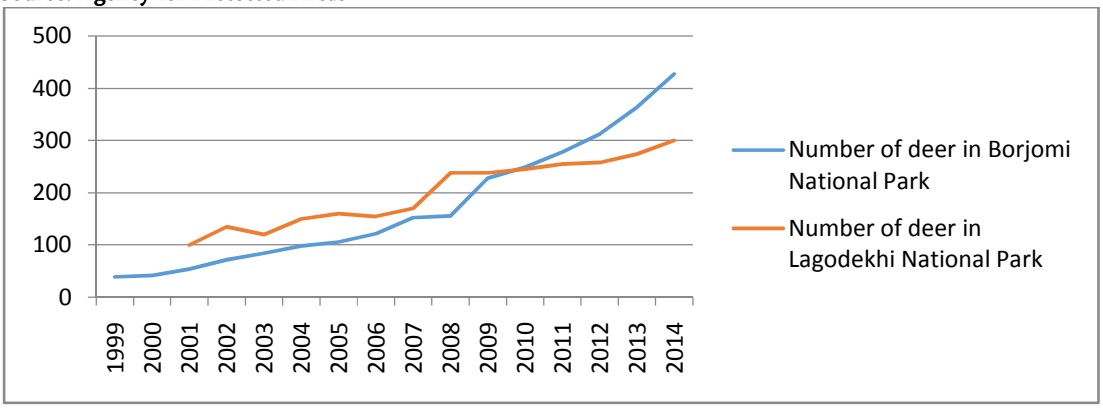
There are 30 species of bats recorded in Georgia, among them, 4 species Mediterranean horseshoe bat (*Rhinolophus Euryale)*, Mehely's horseshoe bat(*Rhinolophusmehelyi)*, *Myotisbechsteinii* and western barbastelle (*Barbastellabarbastellus)* are included in the Red List of Georgia. Trialeti mountain range and Iori plateau are especially distinguished in diversity of bat species. Lately, their number has been decreasing, which is caused by degradation of their habitats and more frequent disturbance of their shelters. The number of forest species is also showing the tendency towards decline and the following species are more rarely encountered: Natterer's bat *(Myotisnatereri*), Leisler's bat (*Nyctalusleisleri)*, western barbastelle (*Barbastellabarbastellus)*, Nathusius'spipistrelle (*Pipistrellusnathusii*) and common long-eared bat (*Plecotusauritus).* Decrease in the number of bats in natural and artificial caves was already obvious in the 70-ies of XX century and this trend is still ongoing, it especially concerns the Iori Plateau, where the mixed maternity colony of 1000-1200 individuals existing in TetriSenakebi (Geoffroy's bat (*Myotisemarginatus*) and the greater horseshoe bat (*Rhinolophusferrumequinum*), which within the period of 2001-2004 was known as the greatest colony in East Georgia, has decreased to 600-700 individuals in 2005, and to 450 – in 2014. The biggest maternity colony of the Lesser mouse-eared bat (*Myotisblythii*) in East Georgia with habitat in one of the caves of the Baptist's Monastery has decreased from 600-650 to 300individuals. In 2004 in Ghliani Cave located in Imereti region there was a habitat of the famous biggest colony in Georgia with 7000 individuals, which consisted of 5 species:*Rhinolophusferrumequinum, RhinolophuseuryaleBlasius , Myotisblythii, Myotisemarginatus and Miniopterusschreibersii.* Within the period of 2013-2014, following arrangement of touristic infrastructure in the cave, number of bats has been reduced to 3500 individuals and Rhinolophus, which were main inhabitants of the cave are no longer found there.

Decreased number of habitats and illegal hunting is the main reason of reduced number of ungulates. The rarest species of ungulates include C*apra aegagrus,*found only in Tusheti and in small numbers – in PirikitaKhevsureti. According to the latest data, total number of C*apra aegagrus* amounts to 300

individuals and it is included in the Red List of Georgia as a critically endangered species, it is also considered globally threatened and included in the IUCN Red List, as vulnerable. The population of C*apra aegagrus* distributed in Georgian part of Lesser Caucasus got extinct in the beginning of last century. Currently, the programme of its reintroduction is ongoing in Borjom-KharagauliNational Park.

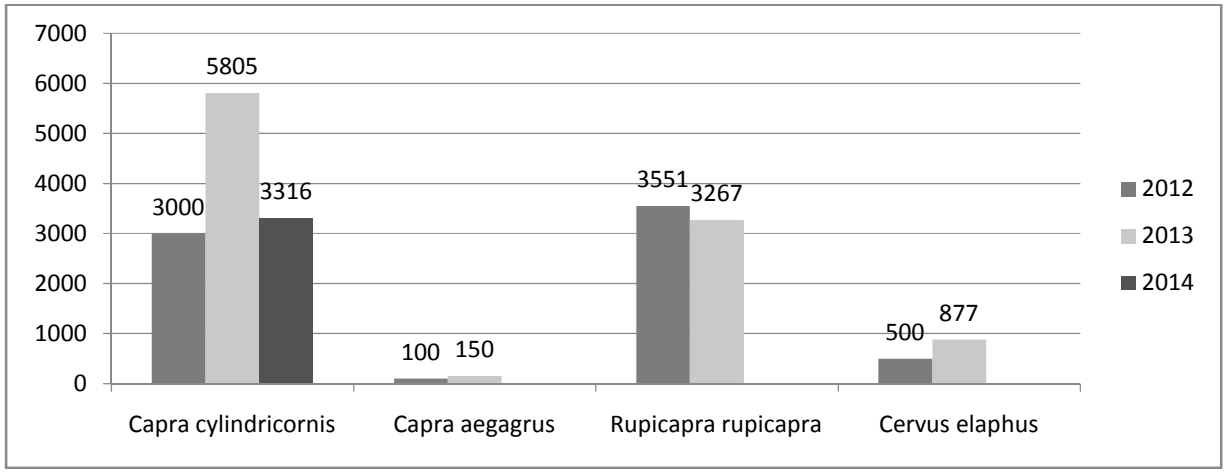
Deer (*Cervuselaphus)* is a rare as well, which is preserved only in two populations.Deer is categorized as critically endangered and included in the Red List of Georgia. In the beginning of the 20th century deer was distributed throughout the whole territory of Georgia, but in 80-ies deer was only preserved in singular, isolated populations. In nineties, due to illegal poaching, number of deer was drastically reduced. From 2007, increase of deer population is recorded as a result of measures carried out to this effect. In 2014, number of deer within the protected areaa amounted to 800. In addition to fostering natural restoration of this species, it would be advisable to activate a captive breeding program aimed at its reintroduction.

Chart 1.5. Number of deer within the boundaries of Lagodekhi and Borjom-Kharagauli Protected areas, Source: Agency for Protected Areas



Both species of Capra are endemic to Caucasus. According to the latest records, a decrease trend is obvious with regard to the number of *Capra cylindricornis*. This species of Capra is mostly distributed in the eastern part of Great Caucasus, and westward – up to the mountain Shkhara. Number of *Capra caucasica* individuals remains at the critical leveland counts only 100-150 individuals.Both species of Capra are included in the Red List of Georgia.

Chart 1.6. Changes in the numbers of certain species, Source: Service of Biodiversity Protection of the MoENRP



It is expected that leopard (*pantherapardus*), whose individual specimen was observed in Vashlovani National Park several years ago, may have been preserved in the mountainous regions.

According to the data of 2012, number of brown bear approximates 1600. It is rather a widespread species, but its distribution is uneven. Its widest distribution is observed in Ajara.

As a result of assessment of the status of otter in East Georgia, it was revealed that the number of individuals in the population amounts to 400. The population is decreasing in number, which is caused by reduction of fish stocks in the rivers and deterioration of their habitats.

Lynx is included in the Red List of Georgia, as a critically endangered species. Though, in 2012 a research carried out in semiarid ecosystem of Georgia has revealed that the number of Lynx individuals may appear to be higher than expected.

All the three speciesof dolphins found in the Black Sea are included in the IUCN Red List: *Delphinusdelphisponticus)*- categorized as vulnerable (VU; A2cde); *Tursiopstruncatusponticus)*- categorized as endangered (EN; A2cde); and *Phocoenaphocoenarelicta*–categorized as endangered (EN; A1d+4cde) (Birkun&Birkun 2008; Birkun, 2012; Birkun&Frantzis, 2008). Due to their genetic uniqueness, adaptation to special conditions of the Black Sea and existing threats, the status of populations of Cetacea of the Black Sea is subject of solicitude at the national, regional and European levels as well as globally. Recordings of 2014 have revealed that in winter approximately 18 000 Harbourporpoisesand 16 000 white-sided dolphins gather in the territorial waters of Georgia.[6] The named concentration indicates that the Black Sea waters of Georgia are wintering, e.g. vital area for the Black Sea Cetacea. Population of the bottlenose dolphins is extremely small numbered and includes only 100-150 individuals. Significant threats to the Black Sea dolphins include: seining (especially for Harbourporpoisesthat get caught in the dragnets installed at the seabed), chemical pollution (with oil products, heavy metal, and solid waste), sound pollution, and eutrophication. Pursuant to the Law of Georgia "On the establishment and management of Kolkheti Protected

[6]GurielidzeZ, KopalianiN, DevidzeN, DekanoidzeD, NinuaL, JavakhishviliZ, KerdikoshviliN, PaposhviliN. 2014. Black Sea Cetacea Monitoring Program. Prepared with assistance of Colchis Protected Areas Development Fund

Areas" (1999), a 5 mile width sea water area between the River Churia outlet and river Rioni outlet (15 276 ha area) are included in the Kolkheti National Park, the total sea water area of the National Park is 15 276 ha, where the fishing activities and water transport traffic are prohibited (the only activity allowed is scientific-research works).

Genetic Resources Important for Food and Agriculture

In terms of conservation, the most remarkable ones are cultivated plants, which were being cultivated in Georgia since ancient times (endemic species and local species/landraces) and their wild relatives (possible source of cultivation of local species). These species are as follows:(a) vine and its wild relatives(*Vitisvinifera subsp. sylvestris*), fruits and nuts (*Malus, Pyrus, PrunusCorylus*); (b) field crops - wheat (including five endemic cultivated species, numerous local species and their seven wild relatives), barley, and other grains and leguminous plants, and flax; (c) cultivated grasses. It is remarkable that wild relative species of vine distributed in Georgia is similar to the local species in genetic and morphological terms, which is a proof of vine cultivation tradition in Georgia (Ekhvaia et al., 2010). Currently, numerous local species of field crops, vegetables, fruit and vine are preserved only in the collections of scientific institutes' collections.Restoration of 6 grain (*TriticumcarthlicumNevsky, Triticumaestivum L., Hordeumvulgare var. nudum, Secalecereale (L.) M. Bieb, Panicummiliaceum L., Setariaitalica (L.) Beaur*), 5 leguminous plant (*Cicerarietinum L., Viciafaba L., Lens culinaris Medic., VignaunguiculataL.Walp., and Lathyrussativus L.*) and *LinumusitatissimumL.*local varieties in the farms was supported by the project backed byUNDP/GEF. Collections of Georgian plant agrarian biodiversity are kept in the largest gene banks worldwide and local scientific institutes, the most important ones among them are: the gene bank of Agricultural Institute of Agrarian University (collection of field and vegetable crops - 3 057 specimen) and collection of the Georgian Scientific-Research Institute of Gardening Vinery and Winery – collections of vine, fruit, nuts and berries -1519 specimen.

20 families, 76 genera and 479 species of plants are wild relatives of the ancient Georgian plant cultures, 114 of which (23.8%) are endemic. Majority of these plant species are genetically closely related with local species (landraces) and are supposed to be their progenitor species (Akhalkatsi et al., 2012). Natural populations of cultural plants' wild relative species are threatened due to deterioration and fragmentation of their habitats, overgrazing and desertification.

1200 plant species distributed in Georgia (MedGeoNet, 2011) are used for medicinal purposes. There are 418 medicinal herb species found only in Samtskhe-Javakheti (Akhalkatsi et al., 2012). They inter alia include endangered, rare and endemic species, which require in situ and ex situ conservation. The threat of total extinction of medicinal herbs' local populations is caused by excess collection for commercial purposes, basically for the benefit of pharmaceutical industries. Currently, numerous medicinal herbs are threatened, e.g.: *Origanumvulgare, Helichrysumplicatum, Hypericum spp.* etc.

The indigenous species and populations of domestic animals are also threatened due to their hybridization with non-indigenous species. The following species are endangered: Tushetian and Imeretian sheep species, Tushuri Horse, Kakahetian, Svanetian and Racha pig populations and

Megruli horse. Georgian mountain cattle, Megruli Red Cattle and Caucasian Tsabla have decreased in number, and certain breed of these local species is completely extinct. Georgian bee is facing threat of genetic erosion. For the purpose of preserving genetic purity of Georgian bee species, import of other bee species is barred, which results in distribution of just the local Georgian bee Apis*melliferacaucasica* countrywide. Since Georgia is the place of origin of this species, conservation of its gene pool is of utmost importance. Lately, spreading of the new bee disease has been a grave problem, which was caused by environmental pollution with pesticides, cultivation of monocultures in large areas (unvaried ration for bees). Ancient Caucasian species of silkworm got extinct in the 19-th century. The lately introduced species are also endangered. The state museum of silk has a collection of museum specimen of silkworm from various countries. This is a unique collection of over 5000 species and variations, including specimen of XIX century.

Ecosystems and Habitats

In the first place, it is notable that until the recent period no modern systems of habitat classification werebeingapplied in Georgia. The named issue creates problem of harmonization with international and namely – European conservational policy and strategies, hampers priority identification process, assessment of current status of individual habitat types, and planning efficient conservational actions.

In 2010, a national system of habitat classification was elaborated with support of the "Sustainable Management of Biodiversity South Caucasus" GIZ project, which was further updated in 2012. It is crucial to proceed with works in this field and classify habitats based on the EUNIS[7] system. Under the „Emerald Network"development program, 15 habitats of Georgia were selected from the habitats included in the Bern Convention Schedule 4. Moreover, 27 priority habitats were selected in terms of threats affecting them and their sensitivity. However, there is very scarce information available on current status of these important habitats and it is necessary to conduct detailed researches.

Priority Habitats of Georgia

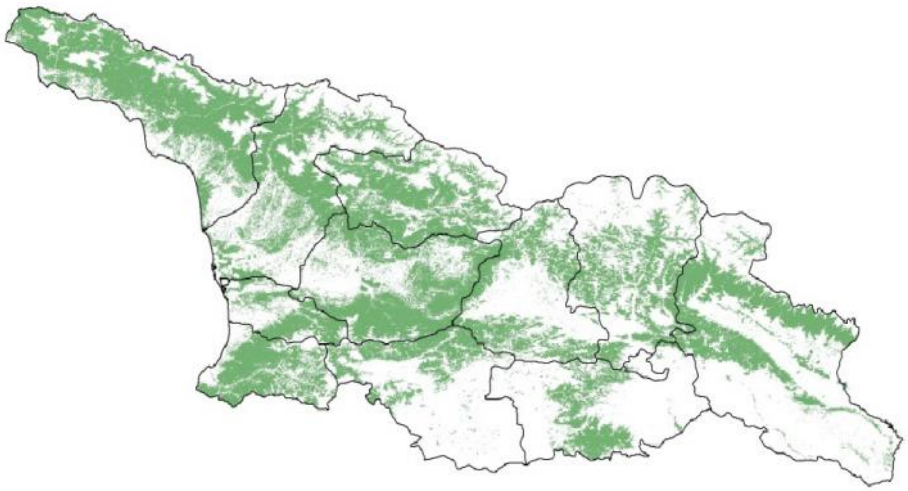
1.	Coastal lagoons
2.	Fixed coastal dunes with herbaceous vegetation (grey dunes)
3.	Mezo-oligotrophic marshes with sphagnum (*Sphagnetapalustrae*)
4.	Tall grass marshes
5.	Low grass marshes
6.	Tussock sedge wetlands
7.	Short rhizome sedge marshes
8.	Long-rhizome sedge marshes
9.	Caves
10.	Rock and true glaciers
11.	Subalpine beech woods with *Acer* spp.

[7] EuropeanNaturalInformationSystem;http://eunis.eea.europa.eu/habitats.jsp

12. Limestone beech forests (*Cephalanthero-Fagion*)
13. Beech forests with Colchic understory (*Fagetafruticosacolchica*)
14. *Tilio-Acerion* forests of slopes, screes and ravines
15. Bog woodland
16. Alluvial forests
17. Xero-thermophyte oak forest
18. Bichvinta Pine Forest *(Pinuspithyusa)*
19. Yew forest *(Taxusbaccata)*
20. Chestnut forest (*Castaneasativa*)
21. Zelkova forest (*Zelkovacarpinifolia*)
22. Forest with Boxwood (*Buxuscolchica*)
23. Kolhketi relic broad-leaved mixed forest
24. Arid open woodlands
25. Sub-alpine birch krummholz
26. Sub-alpine tall herbvegetation
27. Prostrate scrub vegetation (Rododendretum)

In terms of biodiversity conservation, **forests** are very important habitats of Georgia and Caucasus Region.The forest area currently covers about 41% of the total area of Georgia (28,382km^2).The number is mostly consistent and not changed during last 10 years.

Figure 1.1 Distribution of the forest area in Georgia. The estimated forest area is based on satellite images from 2001-2008.*Source: Biotrends, results of the NBMS, indicator S 1 – total forest fund area, 2013*



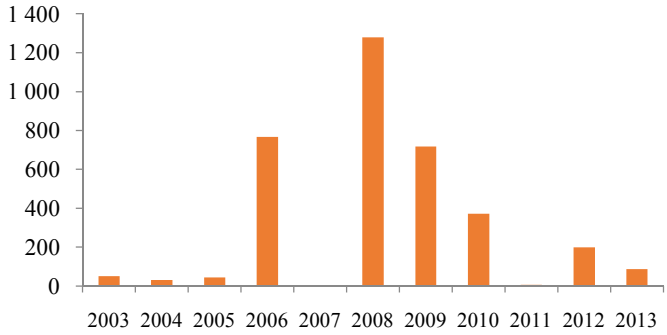
Georgian forests are diverse and include deciduous, coniferous, arid and lowland (including tugai) forests, which are formed according to the altitude above sea level, soils and climate. Existence of about 65% of Caucasus species depends on forests. Forest ecosystems play significant part in soil protection and water level regulation.

Main threats to the forest ecosystems in Georgia include: unsustainable utilization of forest resources, which is mainly caused by lack of access to alternative energy sources; overgrazing by the livestock, which results in degradation of the forests' natural regeneration capability; forest pests and diseases; alien invasive species; frequent forest fires and legislative gaps and shortcomings in management. Unsustainable utilization of forest resources has inflicted damage on beech forests in mountainous

regions of Georgia and chestnut forests in Colchis foothills, oak forests are only preserved in distant canyons and relatively meagre soils.

Forest ecosystems are locally affected by forest fires. Within the last 3-4 year period, a 2500 ha forest area was destroyed or seriously damaged by fires. Major damage to the forest ecosystems dates back to 2008, when a 1272 ha forest area was burnt down as a result of military actions.

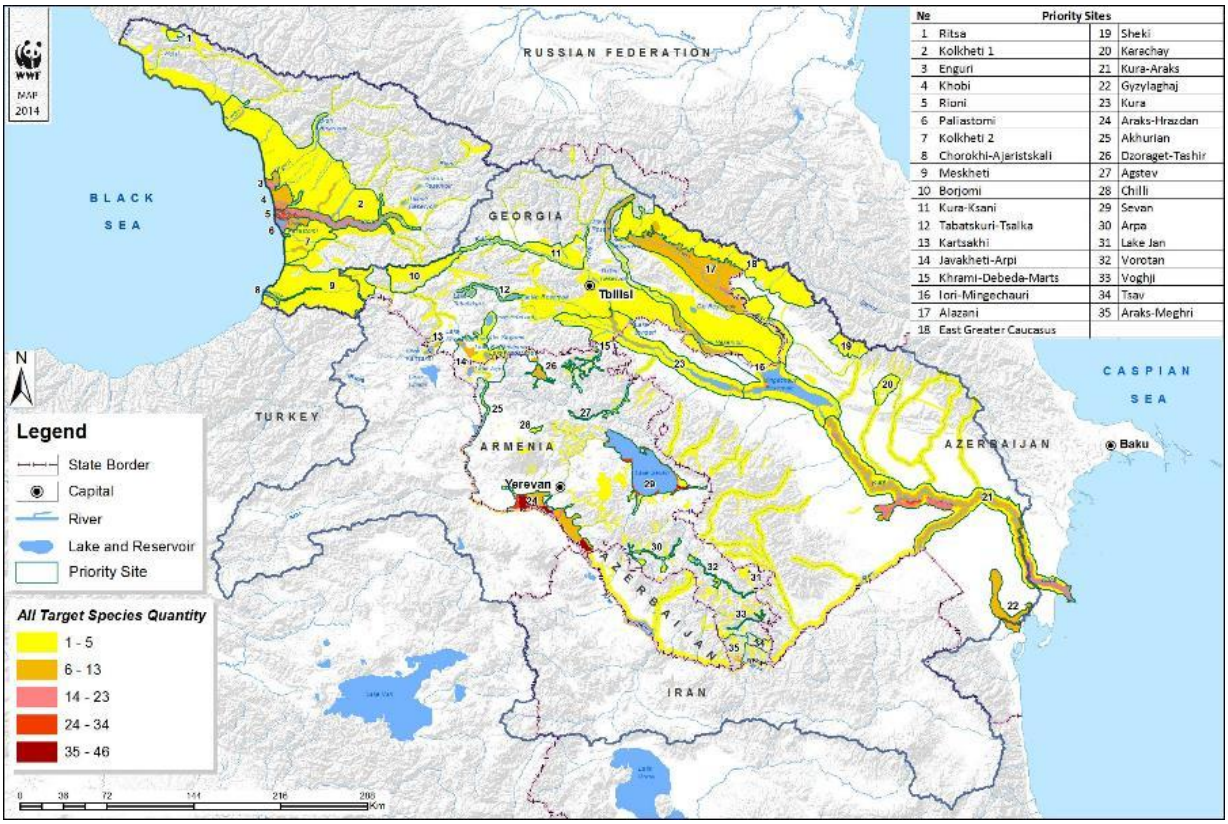
Figure 1.8. Areas affected by fires (ha) by years, Source:Biotrends,*Results of the NBMS, indicator* P11 – Forest diseases and forest fires, 2014



In the **freshwater ecosystems** of Georgia, there are 91fish species, over 100 crustacea species, 58 ostracean species and more than 2,600 algae species. Main threats to biodiversity of freshwater ecosystems include water pollution with organic matters and heavy metals, application of illegal fishing facilities, invasive species and construction and operation of infrastructural sites. While planning and implementing activities in the vicinity of water bodies, it is especially important to keep in mind their ecological properties and values and preserve migration routes and feeding/breeding grounds for fish.

There are 18 critical freshwater habitats revealed in Georgia, with total area of 2 422 241 ha, and only 625 081 ha (25.81%) of this area is covered by various category protected areas. (See chapter 2.3).

Map 1.2 Critical freshwater habitats, Source: *„Freshwater Ecosystems and Biodiversity, Critical Sites for Threatened Freshwater Biodiversity in the Southern Caucasus" WWF, 2015*



1.2 Main threats to Biodiversity

Impoverishment of biodiversity is caused by several basic and complementary reasons, which inter alia include:

- Poverty of population, which drives them to unsustainable utilization of natural resources for obtaining energy, food and financial benefits;
- Unawareness of the population regarding values of biodiversity and significance of its preservation;
- Insufficient incorporation of the values of biodiversity in policy documents, strategies and programs;
- Legislative gaps in the sphere of regulation of biological resource utilization;
- Lack of resources for exercising biodiversity preservation laws and procedures.

This reasons lead us towards factors directly affecting biodiversity, such as: degradation and fragmentation of natural habitats, excess utilization of natural resources, environmental pollution, introduction of alien invasive species and climate change.

Degradation and Fragmentation of Natural Habitats

Degradation and fragmentation of natural habitats is the main reason of reduced populations of numerous plant and animal species and their inclusion in the Red List of Georgia.

Due to the loss of habitats and blocked migration routes, all of the six sturgeon species are threatened. Within the last decade, owing to fragmentation and degradation of habitats, endemic amphibian – Caucasian Salamander (*Mertensiellacaucasica)*and endemic reptile – Caucasus Viper (*Viperakaznakovi)* have considerably decreased in number. Caucasian Salamander is found on the extreme western slopes of Trialeti mountain range, and Meskheti and Shavsheti mountain ranges, while the Caucasus Viper is prevailing only on the south-western slopes of Greater Caucasus and Meskheti mountain range. Habitats of endemic rodents – *Mesocricetusbrandti*and*Prometheomysschaposchnikovi*are fragmented due to grazing, agricultural land development and impact of chemicals. Loss of habitats poses threat to existence of bat populations, as well.

There is still no protected areas network in place in Georgia, separate protected areas are not connected through ecological corridors, not even in such key locations as Likhis Range and Alazani Valley.

Recently, as a result of various sector development (including energy, agriculture and infrastructure) their pressure on natural environment is increasing. Due to hydro power station, power line, industrial and urban development projects, habitats, which are of great significance for biodiversity

are being assimilated that urges changes for effective integration of biodiversity aspects in spatial planning and environmental impact assessment systems.

In light of increasing pressure on land and resources and the deteriorated ecological balance in the natural ecosystems, wild animals more often come into conflict with local people: they raid crops that are near the forests of protected areas and attack livestock and bee hives. This creates strong negative attitudes toward the species involved, which eventually translate into legitimate or illegitimate behaviours. Any such conflict has a negative impact on both the local people and biodiversity. In many parts of the country, the conflicts between the local farmers and large carnivores are extremely acute. The root causes of such conflicts often lie in the destruction of habitats and wild prey bases and the lack of household waste management, i.e. random landfills near settlements.

Unsustainable use of natural resources

Forestry

Over the last two decades, unsustainable use of forest resources has remained one of the most serious problems in the country. The main causes of unsustainable and illegal logging are unsustainable forest management practices and lack of access to alternative energy sources.

Timber resources are mostly harvested for non-commercial purposes, for provision of fuelwood and timber material to the population, public organizations and legal entities of public law. Social logging is characterized by a growth trend and constitutes 80,7% of the total logging registered in Georgia (625,980 m^3). To all appearance, utilization of timber for fuelwood will for a long time remain as a main type of forest use in Georgia, which due to its volumes and coverage has significant impact on forest resources.

Grazing

Despite of the decrease in the number of livestock, the status of pastures has not improved, on the contrary – it has deteriorated in certain locations. The named problem especially applies to sheep breeding, which has been deprived of traditional winter pastures outside Georgia, the ones located in North Caucasus. Therefore, over-grazing is occurring everywhere and especially in KakhetiDedoplistskaro municipality, where this problem has evoked disastrous results, due to double and triple utilization of pastures. In Dedoplistskaro, degraded lands, which are on the verge of desertification cover a 5 thousand ha area.

Over-grazing by livestock (cattle, sheep, goats and pigs) poses a serious threat to Georgia'sforests. In certain locations—especially around human settlements and on summer and winter pastures—excessive numbers of livestock result in non-sustainable grazing in nearby forests. Overgrazing in the

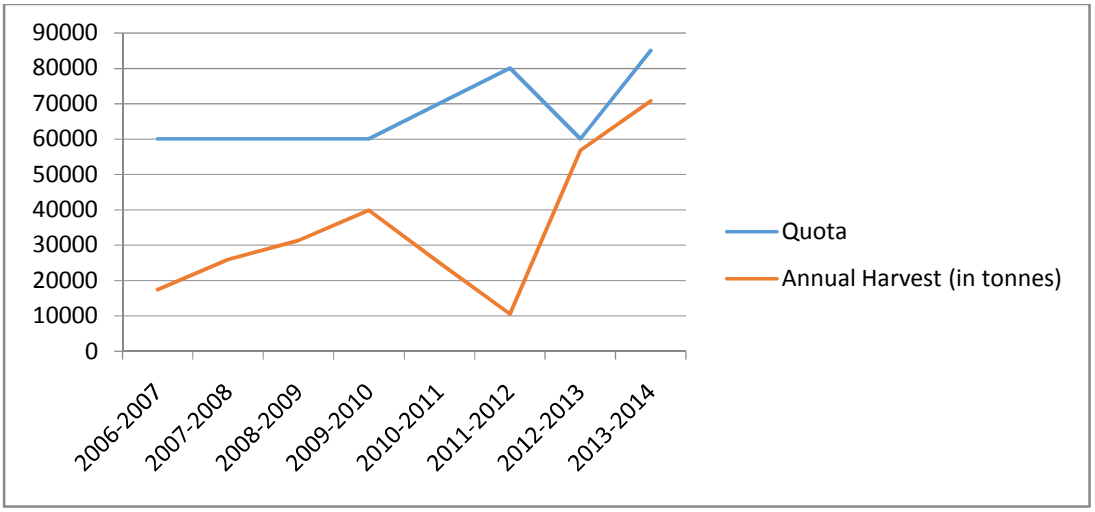
forests causes the compaction of soil, which in turn can cause erosion and a decline in the forest's natural regeneration capability. All of this often leads to irreversible processes.

The root-causes of overgrazing include rural poverty and a lack of alternative livelihood opportunities; insufficient funding and support for the sector; and limited awareness among shepherds and livestock owners that hampers the adoption and implementation of more sustainable and efficient practices.

Fishery

In the Black Sea waters of Georgia, in terms of fishery,the most affected fish species is anchovy (*Engraulisencrasicolusponticus).* Other important commercial fish species include mackerel (Trachurusmediterraneusponticus), Mullusbarbatusponticus and Odontogadusmerlangus, though they are harvested in relatively lower quantities in comparison with anchovy. Annual harvest of other fish species is negligible and constitutes 0,1-1% of fish harvest in the Black Sea waters of Georgia. For fishing industry, commercial fish stocks are annually assessed in the Black Sea, based on which harvest quotas are set. Harvest quota is a specified number allowed for fishing by license holders during the fishing season. The chart below presents an annual harvest quota for anchovy and quantities of actually harvested resources. Normally, fishing is considered as sustainable if annual harvest does not exceed annual quota.

Chart 1.10 Annual quota and harvest for anchovy (t/y)



Other fish species are also harvested within the limits of set quota.

Non-indigenous species (Coregonusalbula, Coregonusalbulainfracpeciesladogensis, Coregonus, Ctenopharyngodonidella, Hypophthalmichthysmolitrix and Crucian carp)are mostly harvested in the inland water bodies of Georgia. At present, there are valid fishing licenses for 5 lakes and 4

reservoirs. Out of them, management plan for sustainable fishery is developed for 4 lakes and 1 reservoir.

Pollution

Starting from the 90-ies of the past century, the area of agricultural lands was drastically reduced together with the volume of agricultural production. Therefore, agricultural impact on natural environment was respectively alleviated, especially at the expense of reduced utilization of chemical fertilizers and pesticides. As compared to the 1980-ies, when approximately 600 thousand tonnes of chemical fertilizers were utilized on average for agricultural purposes, the quantity of fertilizers applied in 2013 equaled 71 thousand tonnes.

Pesticide utilization has dramatically declined as well. Though lately, its growth trend is obvious again. By 2013, as compared to 2010, the areas of pesticide treated crops have increased 1.55-fold and have covered a 360.2 thousand ha area.

Rapid development of agricultural sector and growth of production within this sector is vital for Georgia, but it is associated with growing adverse impact on natural environment due to soil and water pollution by agrochemicals and pesticides and land degradation. One of 7 strategic tasks outlined in the Agricultural Development Strategy (2014-2020) is development of biodiversity conservation and environmental protection programs (for more detail see chapter 2.4).

Untreated municipal wastewater still remains as the main source of pollution of surface waters in Georgia. Currently, municipal wastewater treatment facility is accessible only for 11% of the total population of Georgia. Therefore, in major part of rivers, concentration of ammonium ions significantly exceeds the threshold levels. Besides, other sources of surface water pollution with biogenic substances include diffusive pollution from agricultural sector, domestic waste landfills and industrial sectors, such as food production and processing, generating wastewater, which is rich in nutrients.The excess concentration of heavy metals observed in certain rivers is associated with mining industry and namely with copper and manganese extraction/processing.

Eutrophication and pollution by oil and heavy metals is one of the major threats to the Georgian Black Sea waters as well as to the entire Black Sea. Pollution by chloroorganic pesticides is worth mentioning as well. These compounds are distinguished for their resistance and in the first place settle at the bottom of the coastal zone. Chloroorganic pesticides cause various diseases, mostly in benthonic fish and based on above, they also affect Porpoises, since these animals feed on benthonic

fish. One more serious threat to the Black Sea is pollution with solid waste discharged by rivers, and especially by solid waste such as plastic objects[8].

Alien Invasive Species

Invasive alien species established in Georgia pose a threat to both terrestrial and aquatic ecosystems. Georgia's forests are suffering from pest species and diseases that have been unintentionally introduced into the country. Riparian forests are threatened by *Paulownia tomentosa and Ailanthus altissima.* The latter may inhibit local species of riparian forest, such as*Pterocariapterocarpa. Paulownia tomentosa* is being cultivated in agricultural lands for obtaining timber resources. It is establishing itself in local forests of west Georgia (Ajara) and Kakheti, Lagodekhi and may pose threat to protected areas of Lagodekhi.

Crucian Carp (Carassiuscarassius) rapidly spread throughout the country after 30 years of its first introduction. The species is now the most common fish in the inland waters of Georgia. It is likely that this invasive species has had a very negative effect on the native fish populations in many rivers and lakes.

Alien invasive species pose serious threat to Black Sea ecosystems. Presently, there are 26 invasive alien species in the Black Sea. Among them, the following species have had the greatest impact on Black Sea ecosystems and native biodiversity: comb jelly *(Mnemiopsisleidyi),* mud crab *(Rhithropanopeusharrisii),* veined rapa whelk (*Rapanavenosa),* sand gaper *(Mya arenaria),* redlip mullet *(Liza haematocheila)* and *Cunearca cornea*.

The invasion of the comb jelly has apparently had the greatest impact. It was probably brought to the Black Sea along with ballast waters in the early 1980s. The invasion and rapid spread of this species coincided with a decline in the densities and species diversity of ichthyoplankton and mesozooplankton in the Black Sea.

Another invasive species that has had a dramatic impact is the veined rapa whelk. It has caused a decrease in the populations of filter feeding bivalve molluscs, which has led to the deterioration of water quality. It has also lead to a decrease in the food bases of benthic fish, including important species such as sturgeon.

Climate Change

During the last 50 year period, an average annual temperature in the whole country was manifesting a growth trend with maximum increment (+0.7 ^{0}C) observed in east Georgia semiarid zone and the Black Sea coastal zone (+0.6 0C). By 2100, the maximum growth of temperature (+4.2 ^{0}C) is expected in Batumi. Within the same timeframe, annual levels of precipitations have most of all increased in

[8]Marine Litter in The Black Sea Region, 2009, http://www.blacksea-commission.org/_publ-ML.asp

Svaneti lower mountain zone and Ajara mountains (+14%). Overall, in majority of West Georgia regions, level of precipitations has increased, while in East Georgia – it has decreased by 6-8%. According to the forecast, in west Georgia precipitation growth tendency will persist till 2050, which by 2100 will be followed by their reduction by 10-20% throughout the whole country.

The named trend of climate change is already affecting forest ecosystems: In ZemoSvaneti, Mestia Mountainous zone birch is being replaced by pine and fir trees. As for abiotic disorders, there was an increase in the number of forest fire incidents registered in Borjomi, at the same time biotic disorders were manifesting in Ajara and Borjomi catchment through growing establishment of various pests and diseases. According to the forecast, increase of an average annual temperature is expected in Ajara, as well as ZemoSvaneti and Borjom-Bakuriani. As for the aggregate annual precipitations, their volume will increase, which will be followed by decrease trend. As a result of these changes, fire risks may increase and the growing prevalence of pests and diseases will cause spread of new diseases in Ajara and Borjomi catchment, while there are no significant disorders expected in ZemoSvaneti forest ecosystems.

Within the framework of preparation of the *ThirdNational Notification to National Climate Change Framework Convention (UNFCCC) of Georgia,* impact of climate change on protected areas was assessed by the example of Ajara protected areas, for Kakheti Region this issue was analyzed in the Second Notification to National Framework Convention of Georgia. In the first place, Ajara protected areas are affected by the same problems, which are observed in Ajara forests in general. These problems inter alia include: increase of the forest areas affected by old diseases and introduction of new diseases (colchic box tree disease). There are also certain problems emerging with respect to the trout populations. Due to the fact that the trout is a cold water fish, temperature growth has urged migration of its populations to a cooler environment, i.e. river head, where the space and required food are more limited, than in the tail race of the river. As a result of migration, major damage is inflicted on the young fishes,which is one of the reasons of the trout endangerment.

Due to its mountainous terrain and distinctly shaped out vertical zoning, shifts in the vertical ecological zones will have a great impact on Georgia's biodiversity. Significant changes are expected in high mountain ecosystem plant populations' distribution, which is already obvious in Svaneti mountainous zone.

1.3 Impact of Biodiversity Changes on Ecosystem Services and its Socio-economic and Cultural Outcomes

To date there are just several researches conducted in Georgia on economic benefits derived from biodiversity and ecosystem services (see chapter 1.1. and chapter 2.3). After the scoping study[9]a full

[9]TEEB Scoping Study for Georgia, 2012, UNEP, MoENRP, WWF- Caucasus.

study is planned in Georgia for economic assessment of the ecosystem and biodiversity values and integration of its outcomes in National reporting and statistical systems, agricultural, poverty alleviation, and such other relevant strategies. The NBSAP Georgia for the period of 2014-2020 provides for the respective tasks and actions to this effect.

According to the outcomes of the TEEB scoping study, the example below demonstrates change of ecosystem services in case of Agricultural Sector development under Business as usual - BAUscenario versus SEM-Sustainable Ecosystem Managementalternative policy introduction scenario.

The availability of natural resources and ecosystem services such as clean water, fertile soil, favorable climate, and biological pest control are essential for nearly 53% of Georgians who are engaged in agriculture. Degradation and depletion of these resources due to unsustainable agricultural practices in the past have already affected the livelihoods of significant parts of the rural (especially poor) population. Examples include the reduction of soil fertility due to erosion, water bogging of farmlands, and degradation of pasturelands widely observed in various parts of the country. 60% of agricultural lands has average or low fertility. Approximately 3 mln ha area (about 35%) is degraded due to erosion, 20% of irrigable area is affected by bogging or salinization. Natural populations of crops' wild relatives, especially the ones located in semiarid zone are adversely affected by overgrazing and desertification. Major part of local landraces of agricultural crops and indigenous species of domestic animals are facing threat of genetic erosion. Agricultural development is one of the main priority areas supported by national policy and bilateral and multilateral assistance projects. According to the BAU scenario, agricultural sector is expected to develop with associated environmental impact process. In case of sustainable management of ecosystems, the environmental impacts could be minimized by implementation of balanced preventive environmental policies and measures. These include the following: increasing agricultural productivity within sustainability thresholds through investment in agricultural knowledge, science and technology; through the promotion of methods such as optimal crop rotation, terracing, sustainable pasture land management, biological pest control, farm diversification (such as agro-tourism), encouragement of organic farming through appropriate fiscal and legal measures.

The key messages that we might take from the analysis of the agricultural sector (BAU versus SEM) are as follows:

- Sustainable farming practices under SEM have a potential to be profit-maximizing strategies in the medium to long term as intensive farming can affect ecosystem services (like soil fertility) which the sector depends on.
- Poor agricultural practices lead to impacts on other sectors such as tourism (through run-off and eutrophication of water bodies, and reduced water availability owing to poorly maintained irrigation infrastructure) and forestry (through unsustainable pasture management)
- Specific areas where farmers' skills and knowledge should be enhanced include pesticide and chemical fertilizer application limits, biological pest control, soil conservation, water use efficiency, food safety, crop rotation and farm diversification, pasture management.

- Agriculture is also linked to tourism in that there is the opportunity to promote low impact agro- tourism.
- The diversity of local endemic crop varieties is threatened by intensive monocultures. This the loss of an ecosystem service (maintenance of genetic diversity) that is valuable to Georgia as a nation but potentially to the global community
- Local, small-scale subsistence farming contributes to the historic make-up of Georgian society and thus contributes to cultural services which would be otherwise lost under intensification and the assimilation of small holdings into larger farms
- Such subsistence farming also provides a source of revenue and subsistence for poorer rural families; the substitution of such direct sources of sustenance for alternatives bought in the market increases the susceptibility of these families tothe vagaries of market price fluctuations and supply variability, with an associated reduction in food security.
- The full ramifications of the introduction of GMOs should be assessed, particularly in light of the trend in consumers to boycott such produce in some of the nations that might import Georgian agricultural produce.
- By contrast, the opportunities to enter the market for organically-certified produce should be appraised as part of plans to expand the agricultural sector.

The TEEB scoping study similarly assessed Energy, Tourism, Agriculture, Mining, and Forestry sectors and identified core sectors of Georgian economy applicable for the full TEEB study, in order to provide for the planning of the named sector development, considering preservation of ecosystem services.

2. National Biodiversity Strategy and Action Plan, its implementation, and the mainstreaming of biodiversity

2.1 National Targets for Biodiversity 2011-2020

On May 8, 2014, the Government of Georgia endorsed an updated National Biodiversity Strategy and Action Plan for the period of 2014-2020. The documentformulates a comprehensive policy and defines national priorities in order to transform Georgia into the country, where by the year 2030 ``*it will be a country with population living in harmony with nature, biodiversity will be commonly valued, biological resources - conserved and wisely used. This will provide natural continuity of ecosystem processes, healthy environment and benefits essential for all people* ``.

Under the updated NBSAP for Georgia, 21 national goals are set for protection of biodiversity, which are targeted at preservation of the values of biodiversity, raising public awareness regarding

significance of biodiversity and benefits derived therein, integration of biodiversity aspects, enhancement of the biodiversity status and mitigation of threats to biodiversity.

Table 2.1 outlines national goals of Georgia in line with strategic targets of Convention on Biodiversity and Aichi Targets.

Table 2.1. National Goals for Protection of Biodiversity

Global Strategic Goals	National Goals of Georgia	Respective Aichi Targets
Global Strategic Goal A: **Address the underlying causes of biodiversity loss through integration of biodiversity issues into governmental activities and public life**	**National Goal A1.** By 2020, at least 50% of the population of Georgia is informed about biodiversity, knows about the ways it is threatened, and is acquainted with the steps necessary to mitigate those threats, and is aware of the economic value and benefits biodiversity provides to society.	**1**
	National Goal A2. By 2020, significantly greater number of people, and especially of local population, is interested and effectively taking part in decision making processes that contribute both to conservation and sustainable use of biodiversity and to biosafety.	
	National Goal A3. By 2020, sustainable use and the economic values of biodiversity and ecosystems are integrated into regional development, agricultural, poverty alleviation and other relevant strategies and national accounting and statistical systems; positive economic mechanisms of encouragement have been put in place and incentives posing threat to biodiversity have been eliminated or reformed.	**2, 3**
	National Goal A4. By 2020, an effective and fully functional national biosafety system has been put in place ensuring adequate protection of the national biodiversity against any potential negative impact of genetically modified organisms.	**1, 7**
Global Strategic Goal B: **Reduce the direct pressures on biodiversity and promote sustainable use of biological resources**	**National Goal B.1.** By 2020, negative factors directly affecting threatened natural habitats have been significantly reduced through the sustainable management of at least 60% of these habitats, including at least 60% of forests, 80% of wetlands and 70% of grasslands.	**5**
	National Goal B.2. By 2020, alien invasive species have been assessed with regard to their status and their relative hazards; their pathways have been evaluated and identified, and measures are in place to prevent their introduction and establishment through management of these pathways; no new alien species have been recorded.	**9**
	National Goal B.3. By 2020, pollution of natural environment, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem functioning and biodiversity.	**8**
	National Goal B.4. By 2020, management of agricultural ecosystems and natural grasslands is improved	**7**
	National Goal B.5. By 2020, the impact of fisheries and aquaculture on fish stock, species and ecosystems does not exceed	**6**

	ecological safety limits	
	National Goal B.6. By 2020, a national system of sustainable hunting is in place which ensures viability of game species	**7**
Global Strategic Goal C: **Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity**	**National Goal C.1.** By 2020, status of biodiversity has been assessed (state of species and habitats) through improvement of scientific and baseline knowledge and establishment of an effective monitoring system	**12**
	National Goal C.2. By 2020, status of species - including 75% of "Red List" species - has been considerably improved through effective conservation measures and sustainable utilization	
	National Goal C.3. By 2020, forest biodiversity is safeguarded through introduction of the best forestry practices	**11**
	National Goal C.4. By 2020, at least 12% of the country's terrestrial and inland water areas and 2.5 % of marine areas are covered by protected areas; areas of particular importance for ecosystem services are effectively and equitably managed via an ecologically representative system and other effective conservation measures; development of the protected area network and its integration into the wider landscape and seascapes is ongoing	**11, 5, 14, 15, 18**
	National Goal C.5. By 2020, genetic diversity of indigenous species of plants and animals and endemic cultivated plants is maintained; strategies have been developed and are being introduced for safeguarding their genetic diversity	**13**
	National Goal C.6. By 2020, anthropogenic pressure on the Black Sea and inland waters is minimized; integrity and functioning of aquatic ecosystems are preserved	**11**
Global Strategic GoalD: **Enhance the benefits to all from biodiversity and ecosystem services**	**National Goal D.1.** By 2015, the Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (the Nagoya Protocol) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) have been ratified and their implementation is initiated	**16**
	National Goal D.2. By 2020, potential impact of climate change on biodiversity is assessed; resilience of ecosystems has been enhanced through relevant environmental policies and activities	**15**
Global Strategic GoalE: **Enhance implementation of biodiversity strategy through participatory planning, knowledge management and capacity-**	**National Goal E.1.** By 2020, knowledge has been enhanced on the values, functioning, status and trends of biodiversity and the consequences of its loss and the corresponding scientific basis has been improved	**19**
	National Goal E.2. By 2020, teaching of biodiversity aspects is improved at every stage of formal and informal educational systems, a continuous teaching system is introduced and equipped with appropriate educational resources	

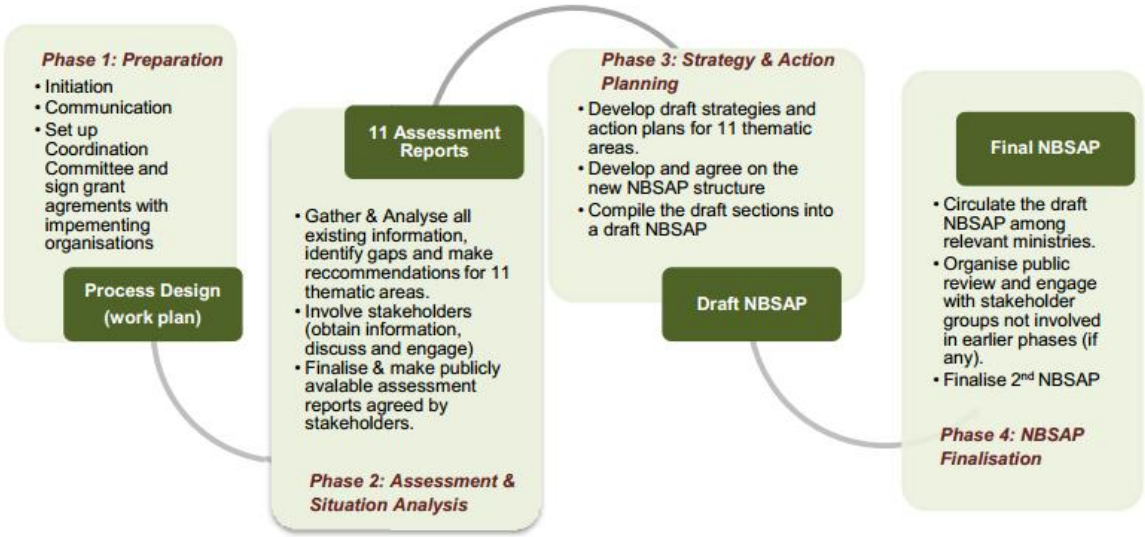
building	**National Goal E.3.** By2020, traditional knowledge and needs relating to conservation and sustainable utilization of biodiversity are incorporated and reflected in legislation and strategies.	**18**

2.2 National Biodiversity Strategies and Action Plan for Georgia 2014-2020

The first NBSAP in Georgia was adopted in 2005. The document covered a 10-year strategy of biodiversity conservation, while the action plan was elaborated for a 5-year period, keeping in mind that in 5 years the document would be subjected to revision to reflect current achievements and altered circumstances. It was a reasonable approach, since by that time numerous sectors in Georgia were already going through remarkable institutional changes and reforms. Moreover, process of endorsement of the NBSAP was rather delayed (elaboration of the document commenced in 1999 and it was finally approved in 2005) and shortly after its official endorsement, certain sections of the document required revision.

The need of updating NBSAP 1 became obvious after COP10 of CBD held in 2010 in Nagoya, Japan, where Strategic Plan for Biodiversity 2011-2020 was adopted together with Aichi Biodiversity Targets urging the parties to review, and as appropriate update and revise, their NBSAPs, in line with the above-mentioned documents. In 2011, The Biodiversity Protection Service of MoENRP, with the support of GIZ's project – "Sustainable Management of Biodiversity – South Caucasus", launched an intensive process of updating the NBSAP. Initially, the document update process concept was prepared based on the "CBD guidelines for updating and revision of the Strategic Plan for the post-2010 period". Guidelines for development of national strategies and action plans (CBD Resolution IX/8) were also taken into consideration. At the next stage, thematic reports were prepared on NBSAP 1 implementation and situation analysis, which were followed by strategies and action plans by thematic chapters that finally translated into updated NBSAP.

Figure 2.1. NBSAP Update Process: Stages and Main Outcomes, Source: NBSAP Revision Process in Georgia, Working Paper 72/2014, GIZ, IUCN



NBSAP updating process was an example of successful cooperation between various sectors – ministries and governmental agencies, NGOs and universities. The process was coordinated by the supervision committee under the direction of MoENRP. The following leading conservation organizations were represented in the committee: WWF - Caucasus Program Office, IUCN Caucasus Cooperation Centre, and National NGOs - NACRES, GreenAlternative. NBSAP 1 implementation was assessed and updated strategies and action plans by thematic areas were prepared by the NGOs and Ilia State University:

Implementing Organizations	Thematic Areas
Regional Environmental Center of Caucasus (REC Caucasus)	- Management/governance of biodiversity - Biosafety
Ecovision	- Education and public participation
WWF-Caucasus Program Office	- Protected areas - Forest ecosystem biodiversity
NACRES	- Assessment/valuation and sustainable use of biological resources - Conservation of species and habitats - Biodiversity and climate Change
Ilia State University	- Biodiversity of inland waters - Biodiversity of the Black Sea
Elkana	- Agrarian biodiversity and natural grasslands

In course of the NBSAP 1 implementation assessment and NBSAP 2 development process, thematic working group meetings and interviews were held with stakeholders. Moreover, four national workshops were held and the final draft NBSAP was placed on the MoENRP's website for public review. Notably special efforts were made by the MoENRP to involve all stakeholders in the document elaboration process, though more could have been done in terms of local population involvement. It would be advisable to organize presentations and public hearings in the Regions of Georgia, and especially in national "biodiversity hot spots". To ensure even wider public outreach and greater publicity, the MoENRP plans to develop regional strategies and action plans which is already initiated in Kakheti Region. It is intended that the processes of regional BSAP development will have stronger local participation both from local communities and local governments, and that the latter will eventually have increased roles and responsibilities in biodiversity conservation activities.

The updated NBSAP includes an overview of Georgia's biodiversity followed by the vision and the overall national targets for safeguarding Georgia's biodiversity. These are followed by thematic chapters that describe the situation for Georgia's biodiversity in more detail under the following headings: Species and habitats, Protected areas, Forest ecosystems, Agricultural biodiversity and natural grasslands, Inland water ecosystems, The Black Sea, Cross-cutting issues and governance, Communication, Education and Public Awareness.

Following the thematic chapters, the strategy and actions are outlined in the form of a table of national targets, indicators and specific objectives for Georgia along with critical assumptions

organized under the 5 CBD strategy goals (Strategic Plan of Biodiversity 2011-20120). Each national target for Georgia has relevance to one or more Aichi Targets, which is indicated. Under the targets and objectives, a number of activities are included that should help achieve the objectives, targets and eventually, the Strategic Goals. The time frame and implementing organizations are also indicated for each activity. The last section of the document is dedicated to plan implementation and resource mobilization issues.

As opposed to the NBSAP-1, the updated National Biodiversity Strategy and Action Plan includes a situational analysis, strategic approaches and actions in the following new areas: (i) Black Sea (ii) Inland water ecosystems (iii) Forest ecosystems, (iv) Natural grasslands (v) Cross-cutting issues and governance, which were partially reflected or totally ignored in the NBSAP 1. In comparison with the first strategy, NBSAP 2 more effectively utilizes a holistic, cross-cutting and ecosystem-based approach. The revised strategy and action plan create solid background for strengthening cross-sectorial cooperation and establishment of partnership. As a result of intensive involvement of stakeholders, the list of organizations in charge of NBSAP implementation has been substantially extended, and includes the respective ministries, private sector, NGOs, Universities and media. The document clearly spells out functions of each sector.

One of the main goals of the NBSAP is creation of background for fulfillment of obligations undertaken under the European Union Association Agreement and facilitation of harmonization with European environmental policy and strategies. To this effect, the following measures are planned: legislative changes, protection of global and European significance habitats and species, establishment of the "Emerald Network", enhancement of the country's involvement in the regional process of sustainable forestry, such as "European forests" and reconciliation of the Georgian forestry policy, legislation and standards with EU requirements.

In order to address the underlying causes of biodiversity loss (Global strategic goal A, national targets A.1-A.4) Under the NBSAP, it is planned to organize awareness campaigns for public in general and specific target groups such as media partners, decision-makers, users of biological resources, teachers, schoolchildren, students, women's and community groups, etc. by using various means of communications, organizing trainings, courses and workshops, updating the existing web-page of the biodiversity resource center, enhancement of the quality of statistical information available on biodiversity, adopting legislative changes for maximizing public involvement in the decision making process. It is planned to conduct an economic valuation of the country's biodiversity and ecosystems using TEEB (The Economics of Ecosystems and Biodiversity) and integrate its results into the national accounting and statistics systems, improve the relevant institutional and regulatory framework, adequately reflect biodiversity aspects in EIAs prepared for infrastructural projects, adopt a Biosafety regulatory legislation, establish the respective monitoring and control mechanisms.

In order to reduce the direct pressures on biodiversity and promote sustainable use of biological resources (Global strategic goal B, national targets B1. – B6.) Package of actions involves creation of the legislative and institutional framework for sustainable use of forests, agrarian ecosystems,

grasslands, and inland ecosystems, introduction of the effective law enforcement mechanisms and regular monitoring systems, cultivation of fast-growing forest plantations, conducting forest fire fighting and pest prevention actions, prevention of invasive alien species' introduction, assessment and regulation of their introduction and establishment, mitigation of environmental pollution from agricultural activities and implementation of pilot projects for restoration of especially degraded/polluted grasslands, mitigation of inland water body pollution, assessment of the status of agrarian ecosystems and pastures, implementation of pilot projects for sustainable management of grasslands and bio farm development, assessment of food fish stocks and monitoring and establishment of safe harvest quotasfor commercial fishes, development of the national strategy of sustainable hunting and adoption of relative changes to the legislation, establishment of the hunters' certification system.

In order to Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity(Global strategic goal C, national targets C1.- C6.) the following activities are planned: Establish the status of Georgia's biodiversity through species inventories and introduction of relevant monitoring systems, implement effective species-specific conservation measures including reintroductions and encouragement of natural growth, development and implementation of conservation plans for the following endangered species: (gazelle, deer, chamois, feral goat (*Capra aegagrus*),chiropterans, brown bear,otter, *Viperakaznakovi,* Caucasian salamander, leopard, sturgeon,swimming birds and birds of prey), upgrading existing seed banks so that they include at least 75% of threatened plant species, mitigation of human-wildlife conflict, conservation of forest ecosystems' biodiversity through introduction of the best practices of sustainable forestry. Special attention is devoted to further development of protected area system and enhancement of its management efficacy. For the purpose of conservation of endemic species of cultivated plans and indigenous species and landracesenhancement of their on farm and ex-situ conservation is planned together with raising of the level of recognition of local species and traditional products. For the purpose of conservation of the Black Sea and inland waters' biodiversity, creation of the new marine protected area is planned, together with the following activities: Develop and implement a conservation management plan for cetaceans, define the conservation status of marine fish species, assess the composition and populations of fish species in inland waters and conduct inventories of water invertebrate fauna.

In order to Enhance the benefits to all from biodiversity and ecosystem services (Global strategic goal D, National targets D.1 – D.2) the updated NBSAP provides for ratification of international agreements on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization and enactment of national legislation for their implementation, study of climate change impact on biodiversity in the most sensitive regions and especially in protected areas, elaboration of recommendations and their incorporation in sectorial and local development plans for addressing the most pressing issues, for the purpose of conservation of biodiversity – assessment and introduction of application of mechanisms (REDD+ and CO_2 international market) suggested by the Convention on Climate Change.

In order to Enhance implementation through participatory planning, knowledge management and capacity building(Global strategic goal E. National targets E.1 – E.3) – in this regard the updated

NBSAP provides for classification of Georgia's habitats and creation of an updated database for prioritized habitats, improvement of professional knowledge and scientific base of forestry, rangeland management, pastures, hunting, fishing, and protected areas, for the national Curriculum - development of national concept and recommendations onteaching biodiversity aspects, capacity building for the pre-school and secondary school teachers, improved incorporation of biodiversity aspects in the curricula of higher and professional education, creation of sustainable "providers" of informal education, and restoration of the traditional knowledge related to biodiversity (incl. agricultural biodiversity) conservation and sustainable use and its integration in legislation.

The updated NBSAP, which will be thoroughly analyzed by all interested ministries and will be finally adopted by the Government of Georgia includes clear statement of requirements for integration of biodiversity aspects in other sectorial strategies under development, and in such sectors as forestry, agriculture, tourism, fishing and hunting, in course of reforms underway in regional development and education systems. It is relatively easier to incorporate biodiversity aspects in development planning for such sectors, which are completely or partially managed by the MoENRP (forestry, climate change, hunting and fishing). Integration of biodiversity aspects in economic sectors will take more time and efforts. Detailed information on activities planned under the NBSAP for provision of integration of biodiversity aspects in other sectors and cross-sectorial plans is presented in chapter 2.4.

2.3 Implementation of the Convention on Biological Diversity at the National Level

The present chapter outlines information on fulfillment of commitments undertaken under the Convention on Biological Diversity in Georgia, within the period of 2010-2014 *(in the period following the 4-th national report, which in turn covers the period of 2005-2009*).

Management and Legislation

In June of 2010, Georgia ratified the European Landscape Convention. Pursuant to the requirements of this convention, the party has to provide for preservation of landscapes, as part of cultural and natural heritage and introduce landscape planning, which is of great significance for Georgia since it is a country distinguished by its high historical and aesthetic values and is rich in original natural-cultural landscapes.

The process of ratification of Nagoya Protocol on "Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization" is ongoing. Joining the mentioned international treaty is especially remarkable for the country as rich in genetic resources as Georgia. Over 2000 species of Georgian flora have direct economic value, as timber resources and food for humans and animals. 1200 species of vascular plants are used as medicinal herbs. Unfortunately, this genetic treasure is decreasing in accelerated pace. Therefore, it is important for Georgia to become part of international treaties on use of genetic resources, such as Nagoya Protocol and International Treaty on Plant Genetic Resources Important for Food and Agriculture (ITPGRFA).

The Georgia - European Union Association Agreement, which was executed in June of 2014 includes important commitments for conservation of species and habitats and sustainable use of biological resources. One of the most significant commitments is harmonization of the legislation of Georgia relating to conservation of biodiversity with EU Council Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora and Council Directive 2009/147/EEC on the conservation of birds. Moreover, the country has to provide for identification of the respective habitats and their inclusion in the "Emerald Network", as well as identification of important bird habitats and carrying out adequate measures for their conservations. The country is committed to establish a monitoring system to monitor conservation status of protected habitats and species and carry out special conservation activities with respect to protected species.

Georgia has already made progress to this effect: with technical assistance of the GIZ, elaboration of the Draft Law of Georgia "on Biological Diversity" is ongoing for the purpose of harmonizing the national legislation with EU Council Environmental Directives. The draft law will establish a legal background for creation of Emerald sites and Special Protected Areas for bird species. The draft law determines grounds for identification of such territories, their inclusion in the European network, their conservation and monitoring. The draft law includes provisions aimed at enhancement of legal protection at the national level of critically endangered species and those species, which are strictly protected under international treaties and EU directives. The draft law also provides legal framework for accessibility of genetic resources and relative traditional knowledge and equitable sharing of benefits arising from their utilization. Currently, this issue is not regulated by Georgian legislation. In accordance with the principles of Nagoya Protocol, utilization of genetic resources in Georgia will be accessible based on the relevant preliminarily communicated consent and bilaterally agreed conditions. The draft law provides for significant changes aimed at regulation of biological resource use, including hunting and fishery.

In September of 2014 a law "on Genetically Modified Living Organisms"was adopted, according to this law, in Georgia introduction of genetically modified organisms into natural environment (planting/seeding, cultivation) is barred by the legislation. Distribution of genetically modified organisms in the distribution network is allowed, provided that they are registered in Georgia and have appropriate labels. Application of genetically modified organisms for scientific research purposes is also permitted in closed systems based on the special license.

Regional Cooperation

Within the scope of biodiversity conservation plan, Georgia is actively cooperating with Caucasus Ecoregion countries. In course of 2011-2012, with extensive participation of experts and stakeholders the Ecoregion Conservation Plan for the Caucasus, which was initially adopted in 2006, was subjected to update in line with Aichi biodiversity goals[10]. The document specifies 56 hot-spots and 60 corridors prioritized for conservation Ecoregionwise. The Ecoregion conservation plan provides for activities in the following areas: establishment of protected area network, enhancement of transboundary

[10] http://d2ouvy59p0dg6k.cloudfront.net/downloads/ecp_2012.pdf

connectivity, restoration of degraded ecosystems, harmonization of policies and legislation, coordination of scientific researches and monitoring activities, environmental education and raising awareness. The Regional Biodiversity Council facilitates coordination of activities at the Ecoregion level.

The Transboundary Joint Secretariat in South Caucasus (TJS) assists Environmental Ministries/Protected Area Management Structures of Georgia, Azerbaijan and Armenia in strengthening regional cooperation and development and harmonization of the nature conservation sector. The TJS was founded in 2007, under the Ecoregional program "Sustainable Management ofBiodiversity, South Caucasus", funded by Federal Ministry for Economic Cooperation and Development of Germany (BMZ) through the KfW Development Bank. The TJS contributes to development of tools for sustainable funding of policy and strategic documents and protected areas.

With backup of BMZ/ KfW, regional programs are ongoing in Caucasus Ecoregion for promotion of the protected areas' development. With BMZ support and in cooperation with Azerbaijan Government, reintroduction of goitered gazelles is underway in Vashlovani protected areas. The same project supports bottomland forest (tugai) rehabilitation and improvement of sustainable management of protected areas and grasslands in Iori-Mingechauritransboundary priority conservation area.

Economic valuation of biodiversity

In 2012 Georgia became one of the pilot countries for TEEBScoping Study[11]. Under the scoping study, which was conducted with participation of the MoENRP, UNEP, WWF-Caucasus Program Office, five core sectors of Georgian economy were identified, which are applicable for a more detailed TEEB study, these are energy, tourism, agriculture, mining, and forestry. The study highlights the substantial dependence of these driving forces of Georgian economy on natural capital and the services it provides. Under the scoping study, a guide was elaborated for comprehensive study of ecosystems and economy of biodiversity, which should serve as demonstration of tight links existing between economic development and biodiversity and integration of the values of natural capital into economic policy.

Earlier, under the "Protected Areas 2012 – Ecoregion of Caucasus" project, the WWF-Caucasus Program Office conducted two pilot assessments for revealing the input of Borjom-Kharagauli and MtiralaNational Parks in economic development. Under the UNDP/GEF "Catalyzing Financial Sustainability of Georgia's Protected Areas System" project, an additional study was conducted to assess the significance of Tusheti protected areas. The above-mentioned studies have revealed significance of these protected areas for tourism, hydro energetics, mineral water production and

[11] http://www.teebweb.org/countryprofile/georgia/

agricultural development. Establishment of national parks has considerably contributed to attraction of investments in the service area and triggered their social-economic development.

Under the NBSAP it is planned to determine economic values of biodiversity and ecosystems at the national level and to integrate its outputs in national accounting and statistical systems, as well as in development, agricultural, poverty alleviation, and such other strategies.

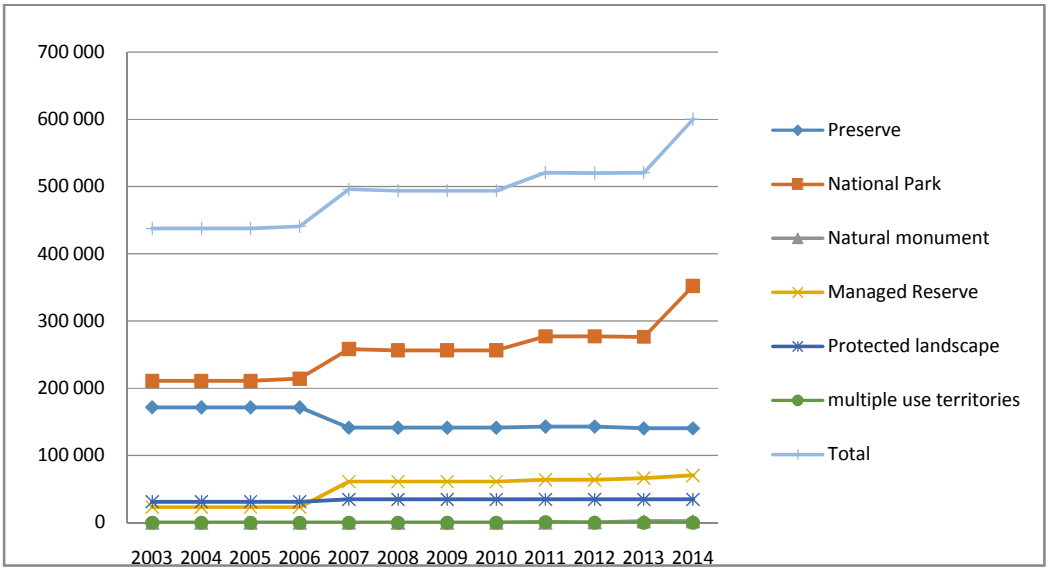
Protected Areas

Within the period of 2010-2014, there were three new national parks (Machakhela, Javakheti and Pshav-Khevsureti), 7 nature reserves (Kartsakhi, Sulda, Khanchali, Bughdasheni, Madatapa, Sataplia and Assa) and 27 natural monuments founded in Georgia. Therefore, as compared to the year 2010 space of protected areas has increased by 104 643 hectares and as of 2014 it constitutes 9% of the total area of the country.

Table 2.2. Protected Areas of Georgia (As of January 2015).

Protected Area	IUCN Category	Quantity	Area (ha)
State Reserve	I	14	140672.3
National Park	II	11	352566.4
Natural Monument	III	41	2257.7
Nature Reserve	IV	19	70392.8
Protected Landscape	V	2	34708
Total		**87**	**600597.2**

Chart 2.2. Change in the total size of protected areas coverage (2003-2014), Source: Biotrends, Results of NBMS, Indicator R1- Total size of protected areas coverage 2014, www.biomonitoring.moe.gov.ge



Map 2.1. Protected Areas of Georgia (as of January 2015), Source: Agency for Protected Areas www.apa.gov.ge

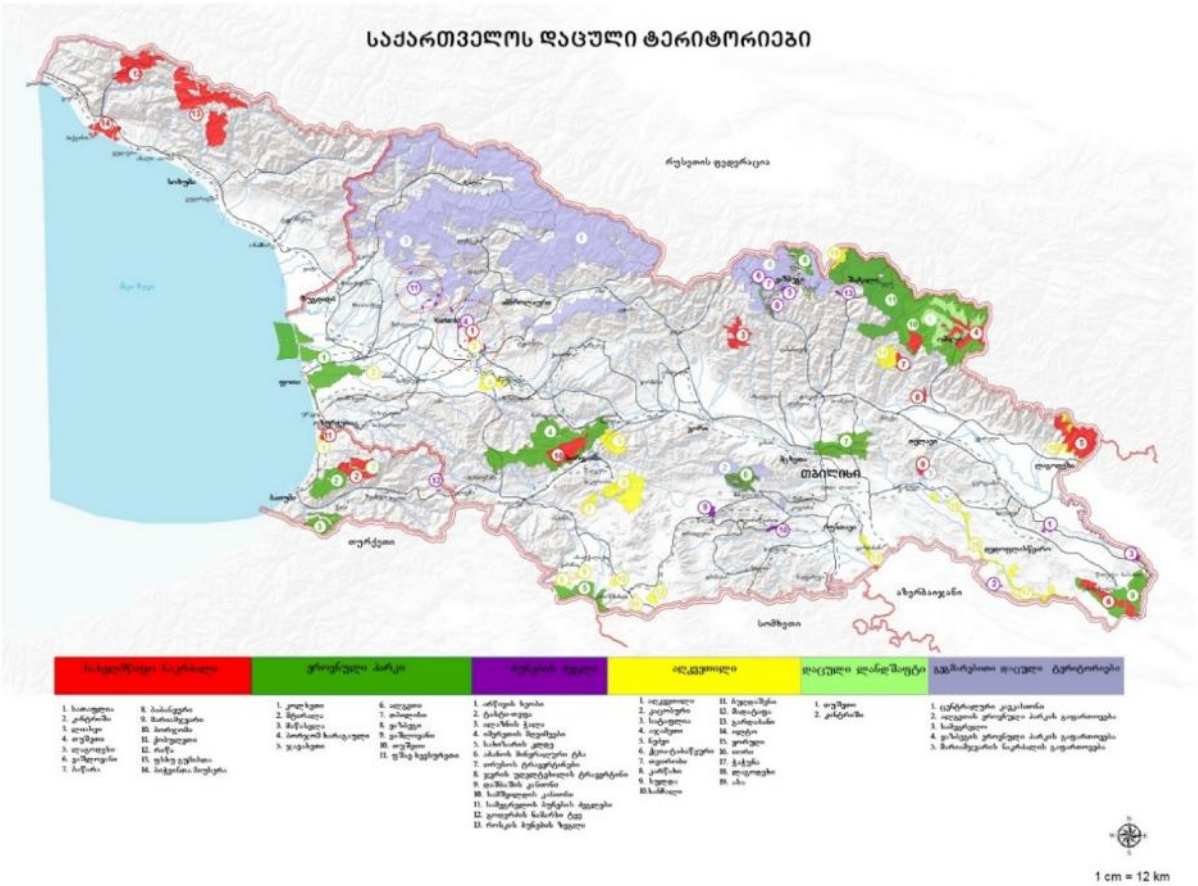
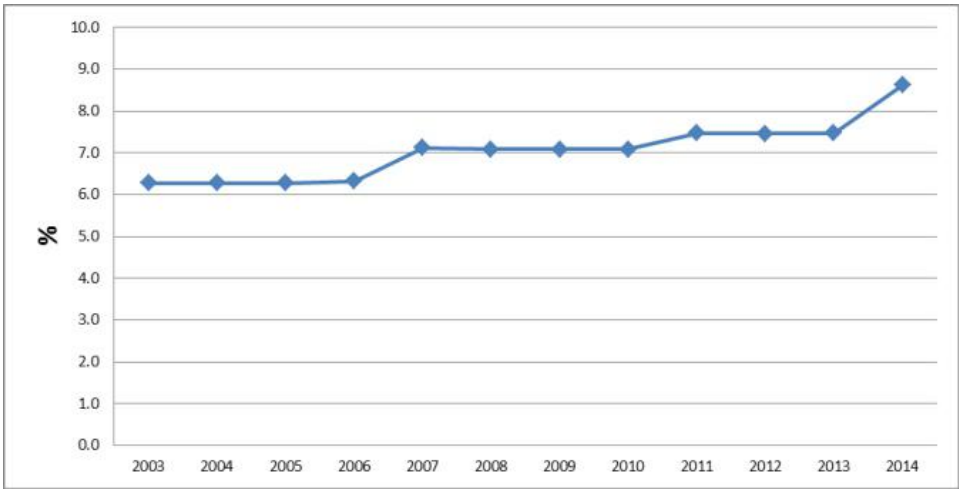


Chart 2.3: Change in the portion of protected areas in the country area within the period of 2003-2014, Source: Biotrends, Results of NBMS,Indicator R1- Total size of protected areas coverage 2014.
www.biomonitoring.moe.gov.ge



Despite of considerable extension of the protected area network, there are still a number of biodiversity hot spots and sensitive areas remaining beyond its borders. Establishment of corridors for connecting separate protected areas is still pending. To this effect, priority conservation places and corridors are already identified in Caucasus. Establishment of Ecocorridors in Lesser Caucasus will be supported by the regional project of "Ecological Corridors in Caucasus", which is implemented by the WWF Caucasus Program Office with financial support of KfW and BMZ. The project aims at integration of nature conservation measures at the landscape level and establishment of protected area connecting ecological corridors. The project is mainly focused on introduction of sustainable land and forest utilization practices within the boundaries of ecological corridors in close cooperation with MoEPNR, local population and self-governments, which will be facilitated by establishment of Ecocorridor Fund.

Major part of challenges existing in the protected area system is basically associated with underfunding. Caucasus Nature Fund (CNF) is a fairly effective mechanism for extending subsidiary sustainable funding to protected areas of Caucasus and in particular – to those of Georgia. It has been

operating since 2008[12]. In Georgia, the Fund supports Lagodekhi, Borjom-Kharagauli, Algeti, Javakheti, Kazbegi and Kintrishi protected areas by providing financial support for operating costs as well as capacity-building tools. The CNF also assists National parks in strengthening management capacity in the following areas: long-term planning, monitoring of biodiversity, sustainable development and ecotourism. With CNF support, a standard was set for management plans, and in Borjom-Kharagauli National Park - a participatory monitoring system was established for endangered species. This pilot project will be used as a model for establishment of monitoring system in the protected areas regionwise. CNF funds support pasture use planning in traditional use zones in protected areas, and ensures that sustainable tourism plans are developed as part of the overall management planning for the protected areas which can provide alternative and more sustainable economic opportunities to local people.

Under the UNDP/GEF project on "Catalyzing Financial Sustainability of Georgia's Protected Areas System" a ten year (2012-2022) investment plan was prepared, which will assist the APA in identifying and raising investment funds.

For the time being, management plans, which are main tools required for protected area management, are only adopted for Tusheti, Vashlovani, and Javakheti protected areas, and Borjom-Kharagauli and Mtirala national parks. Other protected areas are being managed by means of provisional regulations. Management plan elaboration is in progress for Lagodekhi protected areas and Ajameti nature reserve. Draft management plan is already prepared for Imereti Caves Protected Areas. In development of protected area management plans according to the new methodology, Georgia is assisted by the "Strengthening of Management of Protected Areas of Georgia" (TWINNING) project backed by EU. The project also contributes to familiarization with EU acquis with regard to protected area management and introduction of effective mechanism for involvement of local actors in preparation and implementation of management plans.

With backup of BMZ/KfW, the Support Program for Protected Areas in the Caucasus – Georgia (Ecoregional Program Georgia, Phase III) is ongoing, which is focused on development of Pshav-Khevsureti National Park, development-extension of Kazbegi and Algeti National Parks, development and recategorization of Kintrishi protected areas. Besides, the program aims to improve natural resources and protected areas management, while at the same time improving the socio-economic situation of adjacent local rural communities.

The Global Environmental Fund (GEF)/UNDP) supports broadening of Ajara protected areas and advancement of their management. The project contributes to development of Machakhela national park and transboundary cooperation with Jamil protected area in Turkey, active involvement of the local population in protected areas management activities and raising awareness for activation of joint

[12] http://caucasus-naturefund.org/our-program/what-we-fund/

flexible approaches aimed at sustainable conservation of biodiversity and continuous improvement of economic conditions of rural population.

With assistance of the Czech Development Agency, projects were implemented for improvement of Imereti Caves' management capacity, in Tusheti solar power systems were installed for the population living in the protected area. Currently, the Agency is supporting development of protected landscapes in Tusheti Region.

At the present time, Georgia is part of the joint program on „Establishment of the Conserved Area Emerald Network in South Caucasus and Central and East Europe", which is in progress in seven states of Central and East Europe and South Caucasus and is backed by the EC. Under the program, 21 hot-spots in terms of biodiversity conservation are already revealed and associated scientific data and maps are prepared. As a result of project implementation, in 2018 Georgia is expected to include its first areas in the "Emerald Network".

Inland Water Ecosystems

``Promoting Sustainable Hydropower / Dam Development at River-Basin-Scale in the Southern Caucasus`` project, within the WWF Global Freshwater Program backed by the Norwegian Government is significantly contributing to assessment of freshwater biodiversity and revealing critical habitats. Under the project, freshwater ecosystems of the Black Sea (Georgia) and Kura–Araxes basins were assessed. As aresult of surveys conducted under the project 35 freshwater critical habitats were revealed in Caucasus Ecoregion, 18 of them belong to Georgia. Out of this number, only 32% is included in the protected area network at the ecoregion level.

Based on assessment of freshwater ecosystem services, the following recommendations were elaborated for their sustainable utilization: strengthening cross-sectorial cooperation, adopting sectorial guidelines for assessment of environmental impact of hydropower engineering, evaluation of existing and planned projects, assessment of rehabilitation and enhancement of effectiveness of the existing hydro power stations, strengthening coordination of freshwater ecosystem beneficiaries, introduction of the river basin management system.

The Program of Integrated Natural Resources Management in Watersheds (INRMW) of Georgia for the main rivers' Rioni and Alazani basins was funded by the USAID, and implemented by the GLOWS Consortium within the period of 2010-2014. Under the project the following aspects were assessed: natural resource management policy, legislative base and practices, social-economic status and existing environmental issues in Rioni and Alazani watersheds and were prepared sustainable management plans for natural resources of watersheds. The project has supported a small grant program for local community organizations, whereby small projects were implemented for introduction of sustainable management of water resources.

Agrarian biodiversity

The gene bank collections of Agricultural University, Lomouri Agricultural University and Botanical Garden have been supplemented with new samples. A National Center for "Agro - Vine and Fruit

Planting Material Production" was established, which possesses a rich collection of Georgian vine and fruit tree species. Since 2011, planting material is being handed out to the farmers free of charge. With BP support, the project was implemented for production of the seed of local grain breed – Akhaltsikhe (Meskhetian) "Red Doli" and its distribution among Samtskhe-Javakheti farmers. Restoration and popularization of the "Red Doli" was supported by the EU Project on "Implementation of adaptive measures to climate change in South Caucasus arid and semiarid ecosystems for provision of conservation and sustainable use of agrarian biodiversity", which was implemented by the Regional Environmental Center of Caucasus (RECC). Under the project, status of agrarian biodiversity is semiarid ecosystems, and traditional agricultural practices and local knowledge were assessed and recommendations were elaborated for preservation of agrarian biodiversity in climate change setting.
With backing of ICARDA, a database was created in gene bank of Agricultural University, which includes information on 2000 samples of field crops; database of vine sorts kept in the collection of Gardening, Viticulture and Winery Institute was created under the IPGRI project - „Conservation and Sustainable Utilization of Genetic Resources of Vine in Caucasus and Northern Part of the Black Sea Basin". Catalogues of these database have not been published and information included in them is not freely accessible. Information on genetic resources of plants exported from Georgia is available in the USDA Germplasm Resources Information Network: http://www.ars-grin.gov/).

For the purpose of on-farm conservation of the local animal breeds (Georgian Mountain Cattle, Tushuri Sheep, Megruli Goat, Kakhuri Pig, five local populations of hen) a pilot-illustrative farm was established in Kakheti Region. The project was implemented by the Biological Farm Association "Elkana" with financial support of the Social Transformation Program (MATRA) of the Embassy of Netherlands in Georgia and Armenia.

Excessgrazing poses significant threat to natural grasslands, which constitute 27,9% of agricultural lands, the above-mentioned is especially dangerous for semiarid ecosystems. Introduction of the degraded pasture restoration and sustainable pasture management practices is supported by the project for "Sustainable management of pastures in Georgia to demonstrate climate change mitigation and adaptation benefits and dividends for local communities" backed by UNDP and EU. The Project objective is to rehabilitate over 4,000 ha of degraded pastures and 300 ha of migratory routes and to introduce sustainable pasture management practices in Vashlovani protected area.

An electronic catalog of agrarian biodiversity of Georgia was produced, which contains 824 indigenous and local selective species of domestic animals.The named catalogue will form background for inventory of genetic resources important for food and agriculture, creation of legislative base for utilization of these species and fulfillment of commitments regarding Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS)assumed under the Nagoya Protocol. The Catalogue was prepared by Biological Farm Association "Elkana", with financial support of GIZ.

Excessgrazing poses significant threat to natural grasslands, which constitute 27,9% of agricultural lands, the above-mentioned is especially dangerous for semiarid ecosystems. Introduction of the degraded pasture restoration and sustainable pasture management practices is supported by the

project for "Sustainable management of pastures in Georgia to demonstrate climate change mitigation and adaptation benefits and dividends for local communities" backed by UNDP and EU[13]. The project is ongoing under the EU Regional Initiative Clima East, which assists governments of Eastern Neighborhood Countries in mitigation of climate change impacts and in introduction of new innovative methods of grassland management. In Georgia Clima East promotes enhancement of management capacity and conservation of grasslands in Vashlovani protected area.The Project objective is to rehabilitate over 4,000 ha of degraded pastures and 300 ha of migratory routes and to introduce sustainable pasture management practices in Vashlovani protected area.

Forest Biodiversity

Major part of Georgian forests is included within various type protected areas. According to the data of 2014, 65,5 thousand ha forest area is covered by state reserves,151.9 thousand ha – by national parks, 31.1 thousand ha- by nature reserves, 17.6 thousand ha – by natural monuments and 6.7 thousand ha – by protected landscapes. Overall, protected areas cover 256.8 thousand ha of forest ecosystems.

In 2013, with active involvement of stakeholders the "National Forest Concept for Georgia" was prepared. The goal of the Concept should be to establish a system of sustainable forest management that will ensure: improvement of the quantitative and qualitative characteristics of Georgian forests, protection of biological diversity, taking into account their ecological value, and effective use of their socio-economic potential.

In reforming forestry sector and introduction of sustainable forest management principles Georgia is supported by international organizations. In particular, the GIZ Georgian-German technical assistance project – "Sustainable Management of Biodiversity – South Caucasus" contributes to institutional reforms in the forestry sector, development of the forest monitoring system by application of remote sensing technology, setting a forest management information system, development of sustainable forest management plans, development and introduction of Master's programs in the forestry sector.

Main threats to the forest ecosystems include unsustainable utilization of forest resources and illegal forest exploitation. In its efforts for introduction of sustainable and efficient forest management practices and mitigation of forest-related illegal activities, Georgia is supported by ENPI FLEG program, which is implemented by the WB, IUCN, and WWFin the European Neighborhood countries with backing of the EU and ADA. The ENPI FLEG encourages development of an updated version of the forest code for harmonization with the forestry policy, conducting assessments for voluntary certification of forests and introduction of basic principles of FSC standards, analysis of sanitary state of forests in the protected areas, development and implementation of the forest management plan in the selected pilot forest land (Tianeti), elaboration of the locally managed

[13] http://www.ge.undp.org/content/georgia/en/home/operations/projects/environment_and_energy/pastures/

multifunctional forest management plan after the example of Tusheti protected landscape, restoration of subalpine forests in Ajara, strengthening higher education system in the forestry sector. Under the program, The Economics of Ecosystems and Biodiversity TEEB survey will be conducted for Ajara forests, together with the regional valuation (Georgia, Armenia, and Azerbaijan).

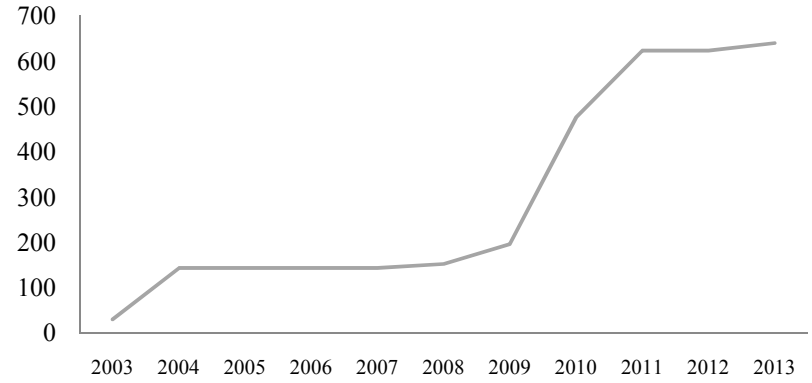
Several pilot projects were implemented for adapting forests to climate change impacts. The projects which inter alia envisage: planting 250 ha of forests by using local species of flood-plain forests and medium height mountains – by WWF Caucasus Program Office, restoration of 87 ha of degraded arid forests with local species (Ash, PinusEldarica) – supported by KfW, were carried out in the former pasture area, under the Project for "Climate Tolerant Rehabilitation of Degraded Landscapes" assisted by Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety of Germany(BMUB). Restoration of wind belts in 92 ha area semiarid ecosystems– implemented under the "Sustainable Management of Biodiversity – South Caucasus" project supported by GIZ.

According to experts' opinion, about 60,000ha area of Georgia is covered with artificial forests, these forests partially include exotic and environmentally adapted species (e.g. Pinusnigra), which form homogenous stands. As compared to natural forests, which are formed with local species, these monocultures are relatively poor in terms of biodiversity. Such forests are transformed into close to natural forests (by planting local species and encouragement of natural regeneration) enrich their biodiversity and considerably benefit to mitigation of their vulnerability towards climate change. To this effect, restoration of the 150 ha monoculture forest area is already ongoing in Tsavkisi and Khashuri on initiative of the WWF – Caucasus Program Office, the project is backed by the EU.

Under the project for "Sustainable Livelihoods and Responsible Attitude to Environment", which is backed by the UNDP and Government of Finland, assistance focuses on promoting sustainable livelihoods, responsible attitude to environment, disaster risk reduction and restoration of burnt forest (80 ha) in the areas of Akhaldaba and Tsaghveri of the Borjomi municipality in Georgia, which were heavily damaged by forest fires during the 2008 armed conflict.

Overall, within the period of 2003-2013, 639 ha area of forests was restored, which constitutes 0,02% of the gross forest area.

Chart 2.4. Reforsted area (ha) within the forest fund of Georgiaby years, Source: Biotrends, Resulst of the NBMS, *Indicator R5 – Reforestation/Afforestation,* 2014



Biodiversity Monitoring

Since 2008, developmnet of the national system of biodiversity is ongoing for assessing the status of biodiversity, intensity of threats affecting it and effectiveness of implemented measures. Biodiversity monitoring concept has been developed and 25 indicators under three types(state, pressure and response) have been selected, a methodology of data collection and analysis by indicators has been developed. Moreover, data collection in accordance with individual indicators is initiated, appropriate equipment is acquired, registration forms are prepared, taxa and species to be monitored are singled out. A website of the national system for Biodiversity Monitoring of Georgia has been created[14], which discloses, in the form of Biotrends, findings of surveys conducted by indicators. Findings per the following indicators are already available: intensity of fishery, total area of protected areas, forest area, forest diseases and forest fires, reforestation/afforestation, area under organic farming,financial resources for nature conservation, and fragmentation of landscape.

Under the biodiversity monitoring system, recording of certain endangered and game species by application of internationally practicable methods of quick quantitative analysis has been initiated in 2012.

Education, Awareness-raisingand Public Participation

As a result of reforms carried out in the educational sector, the content of education and learning outcomes related to the environmental and biodiversity issues, on the one hand, are integrated into the "Early learning and development standards" and pre-school (under 6 years) programs and on the other hand, are included interdisciplinary into the different subjects of national curriculum of competences (the National Education Plan 2011-2016) at all three levels: primary, basic and secondary (7-18 years age groups).

[14] http://biomonitoring.moe.gov.ge/

One of the priority areas of national curriculum is formation of environmental awareness and literacy in students, i.e. development of the healthy attitude to the environment, which means that student must understand the personal responsibility to the processes going in environment, be able to participate in its protection and restoration. In the elective courses the great importance is attached to the teaching of biodiversity and conservation approaches.

In Georgia about 11 universities offer different levels of vocational and higher education in the neighbouring specialties of Biodiversity and Environment protection.

Communication on biodiversity issues became more intense and focused on various social groups at the local level. Starting from the year 2009, the Biodiversity Protection Service of the Ministry of Environment is conducting awareness raising campaigns – "Garden Birdwatch" countrywide, which involves schoolchildren and teachers of 107 public schools.

The Agency for Protected Areas (APA) and protected areas' administrations are conducting workshops, trainings, lectures, they organize contests, media tours and ecobanks, and moreover, various type reference information regarding Georgia's biodiversity and protected areas is being prepared and disseminated. The visitors' infrastructure has been considerably improved. According to the conducted survey, within the period of 2009-2011 awareness of the population regarding protected areas has been raised by 15%. Therefore, number of visitors to the protected areas of Georgia is manifesting a growth trend.

Despite of the named progress, according to the experts, public awareness regarding biodiversity issues is still underdeveloped[15]. The above-mentioned is mainly resulting from: low level of education and competence in this area, low civil responsibility, and lack of motivation and effectiveness of public and civil sectors. According to the research conducted during NBSAP update, low public awareness is considered as one of the root causes of biodiversity loss. The level of public interest and involvement in decision making process that may affect biodiversity is low as well, especially at the local level.

Increasing NGOs' and Community Organizations' involvement in solution of environmental problems is supported by the Global Environmental Fund small grant program in Georgia, and 45% of its portfolio is targeted at conservation of biodiversity. At the present time, there are 32 NGO and Community organizations engaged in program implementation.

2.4 Integration of biodiversity aspects in respective sectorial and cross-sectorial strategies, plans and programs

The National Environmental Action Plan (NEAP) of Georgia, which was approved in January, 2012, includes the following chapters: (i) Biodiversity and protected areas; (ii) Forests and forestry; and (iii)Black Sea, which are directly associated with biodiversity protection strategy and action plan. It was of great importance to reconcile the updated NBSAP with the already adopted NEAP. This task was successfully achieved in the

[16]Assessment ofEnvironmentEducationinGeorgia, 2014, LEPL EnvironmentalInformationandEducationCentre, GIZ

process of NBSAP preparation, which includes more in depth analysis of biodiversity-related priority issues determined under NEAP. The updated NBSAP includes a more detailed action plan for achieving goals and objectives set under the NEAP, such as:

- Rehabilitation, protection and conservation of viable populations and habitats of selected endangered species;
- Improvement of effectiveness of hunting and fishery management to ensure sustainable use of fauna resources;
- Development of an effective protected areas network;
- Improvement of the effectiveness of the Protected Areas management through the capacity building of its administration and introduction of financial sustainabilitymechanisms;
- Creation of proper data bases for biodiversity conservation and sustainable management of biological resources by developing the relevantnationalbiomonitoring system;
- Development of background for establishment of a sustainable forestry system;
- Mitigation of unsustainable and illegal forest use (logging);
- Conservation and preservation of commercial marine living resources of the Black Sea;
- Conservation and management of the Black Sea and its coastal zone biodiversity and habitats;
- Mitigation of eutrophication.

Integration of biodiversity aspects across the sectors and in national development plans is one of the most considerable challenges for Georgia. Though, there are certain positive shifts apparent in this respect. NEAP is one of the tools applicable by the MoENRP for involvement in cross-sectorial planning activities. The same approach may be used for integration of aspects provided for by the NBSAP, examples whereto are already available. Namely, priorities identified under the NBSAP are to certain degree reflected in the agriculture and forestry development plans and policies.

The following information concerns status of integration of biodiversity aspects in the existing development plans and strategic documents.

Socio-Economic Development Strategy „Georgia 2020"[16] and Regional Development Program of Georgia 2015-2017[17] are focused on economic development of the state, promotion of investments and enhancement of business environment, reduction of unemployment and development of infrastructure. Given such setting for development, integration of biodiversity conservation aspects in national and local development plans and spatial development planning, and maintaining balance between economic development and conservation of biodiversity, is associated with certain difficulties. Despite of above-mentioned, socio-economic and regional development strategies point out significance of nature conservation and sustainable utilization of natural resources. Forest resources protection and introduction of sustainable forestry practices are especially highlighted and it is emphasized that preservation of forest ecosystem services will benefit to improvement of socio-economic status of thepopulation and reduce costs induced by forest degradation. Therefore, the following activities are planned under the 2015-2017 Regional Development Program: forest inventory and establishment of effective system for planning forestry-economic activities; implementation of forest maintenance and reforestation measures; clarification of the forest fund

[16]Approved by the Governmental Resolution №400, of June 17, 2014

[17]Approved by the Governmental Resolution №1215, of July 9, 2014

territories by means of state forest fund registration to prevent fragmentation and reduction of the forest territory.

Special attention is drawn to improvement of solid waste and effluent management and mitigation of pollution, which is also crucial for conservation of biodiversity.

According to the **National Forest Concept for Georgia**[18], the national forestry policy is aimed at establishment of a system of sustainable forest management that will ensure: protection of biological diversity, effective use of the economic potential of forests taking into account their ecological value, public participation in forest management related issues, and fair distribution of derived benefits. The overarching guiding principle of the Concept is sustainable management of forests, priority shall also be given to meeting the needs of the local population, and everybody's principally free access to forest resources. Restoration of degraded forests and afforestation are identified as priority areas of forestry policy.

Preservation of biodiversity is one of the main directions of **"Rural - Agricultural Development Strategy for the years 2015-2020"**[19]. To this effect, the following activities are planned

- Introduction of „good agricultural practices", which will promote mitigation of environmental pollution through optimal application of chemical fertilizers and substances;
- Refinement of agrarian ecosystem and natural grassland management systems;
- Introduction of the system for biofarm establishment, encouragement, sustainable management and certification.

The document places special emphasis on preservation of agrarian biodiversity and endemic species. The following actions are determined to this end: creation of an effectively manageable genetic bank; detailed inventory and restoration of local species and forms; informing farmers and other stakeholders of agrarian biodiversity and endemic species.

In the field of biodiversity preservation, Agricultural Development Strategy envisages strengthening cooperation with MoENRP and associated agencies of neighboring countries.

Apparently, the goals concerning conservation of biodiversity and introduction of sustainable rural-agricultural practices specified under the updated NBSAP of Georgia are for the most part integrated in the Agricultural Development Strategy of Georgia.

It is remarkable that agriculture and forestry play significant part in current socio-economic development of Georgia. In Georgia about 3,007,6 thousand ha is covered with forest fund,

[18]Approved by the Resolutionof the Parliament of Georgia of December11, 2013, this document serves as a basis for development of forestry sector legislation and institutional arrangements and refinement of the existing one.
19Approved by the Resolution #167 of the Government of Georgia, of February 11, 2015

agricultural lands occupy 3,025.8thousand ha area. Therefore, natural environment is to great extent affected by these sectors, and especially by the forestry sector, which provides firewood for major part of rural population, which remains as the main means of heating in the country.

Georgia already has some schemes in place for integration of biodiversity aspects across the sectors, though given the incomplete institutional and legislative framework, and scarce human and financial resources, these mechanisms are still unable to ensure adequate integration of environmental policies, including biodiversity aspects. There is still no strategy for sustainable development, which could be an essential tool for environmental policy integration.TheupdatedNBSAP specifies actions like introduction of Strategic Environmental Assessment system, development of national guidelines for the integration of biodiversity conservation into sectorial and cross-sectorial policies and strategies, modification of the spatial planning system, updating the Environmental Impact Assessment system, establishment ofemissionnorms with full regard to biodiversity conservation.

The EIA is a very effective tool for ensuring adequate consideration of environmental issues in development projects. This is especially true in light of the implementation of major infrastructural projects implied by the country's need of rapid economic development and poverty reduction. However, the current legislation fails to provide for sufficient consideration of biodiversity in the EIA process. The existing EIA procedures call for update: list of activities under EIA should be revised and comprehensive EIAs must be carried out for all development projects that may have a potential adverse impact on biodiversity. To this effect, it would be advisable to establish screening and scoping procedures, which are not envisaged by the current legislation.

With regard to specifics of the biodiversity of Georgia, a handbook on integrating biodiversity aspects into EIAs that considers the national context and local conditions should be developed based on the guidelines and methods developed under the auspices of the CBD and other biodiversity-related agreements.

In Georgia, the national legislation does not require application of **Strategic Environmental Assessment,** which in many countries is an important tool for ensuring environmental and biodiversity aspects' mainstreaming in development process. The NBSAP provides forestablishment of Strategic Environmental Assessments (SEAs) for national plans, programmes and legislation development processes that take account of biodiversity and ecosystem services.

Under the Georgia - European Union Association Agreement, Georgia is committed to harmonize national legislation with EU requirements concerning EIA and SEA, with due regard to the EU directives and Espoo Convention "Cross-border context of environmental impact assessment". For fulfillment of abovementioned commitments, under the "Green Economy in the Eastern Neighborhood" Project, updating of EIA-related legislation is in progress with assistance of the United Nations Economic Commission. This process is expected to complete by the end of 2015.

Spatial planning is another effective tool for mainstreaming biodiversity into sectorial and cross-sectorial plans. The process of spatial planning provides a good opportunity for different sectors and stakeholders to coordinate and communicate between each other. The current system of spatial planning should be reviewed and amended with the intent of integrating biodiversity concerns, which in turn requires mapping of biodiversity hot-spots.

Public participation in decision making processes is a considerable asset required for incorporation of environmental and biodiversity conservation aspects in national and local development plans. The existing regulations and schemes do not ensure effective public participation in decision-making processes. The legislation fails to create the obligation of public consultations before the adoption of policy, legislative and strategic documents. The existing procedures of public participation in the planning of the utilisation of biological resources (such as forestry activities, hunting and fishery management plans) fail to ensure public participation. Current set durations for public consultations are not sufficient and no public consultations are being obligatorily organised on the ground.The updated NBSAP specifies a set of measures aimed at strengthening public engagement in decision making process, which may have impact on biodiversity, such as establishment of partners/biodiversity support groups in the regions, legislative changes for strengthening public participation, consolidation of local self-government units, NGOs and Community Organizations and supporting their participation in decision making process, provision of free access to the biodiversity-related information, monitoring of public participation and involvement at the local levels and conducting independent assessments.

The Second National Action Programme to Combat Desertification, which was approved by the Resolution #742 of the Government of Georgia of December 29, 2014 is particularly focused on consistent fulfillment at the national level of commitments undertaken under the Convention to Combat Desertification, The Convention on Biological Diversity and The Framework Convention on Climate Change and to this effect envisages drawing up a joint national action plan by 2017 in order to implement all of the three conventions, as well as taking actions for informing public and decision makers of interaction existing between desertification/land degradation, biodiversity conservation and climate change. The Second National Action Programme to Combat Desertification incorporates actions directed at conservation of biodiversity that inter alia include: sustainable grassland management, identification and conservation of plant and animal species threatened by desertification, promotion of conservation of indigenous plant species, carrying out pilot projects for biofarm development and restoration of polluted soil.

Some signs of climate change can already be observed in Georgia, which manifests by increased spreading of phytopathologic diseases (in Ajara), shifts in the vertical ecological zones of the forests in high mountain ecosystems (in Svaneti) and changes in the distributions of plant and animal populations that depend on them, more frequent fires and disease/pest outbreaks (in Borjomi-Kharagauli). The magnitude of the impact of climate change on forest ecosystems was evaluated in the process of preparation of Georgia's Third National Communication to the UN Framework Convention on Climate Change. The **Strategy on Climate Change** of **Georgia** provides for

development of action plans for sustainable management of ecosystems' adaption to climate change. The NBSAP and the National Strategy on Climate Change deem advisable to assess the potential of application and introduction of the respective international mechanisms (REDD+ and CO_2international market) suggested by the Convention on Climate Change for encouragement of biodiversity conservation in Georgia, analyze climate change impact and conduct monitoring in the protected areas , and especially in the most vulnerable regions (arid and semiarid ecosystems, high mountains, Black Sea coast).

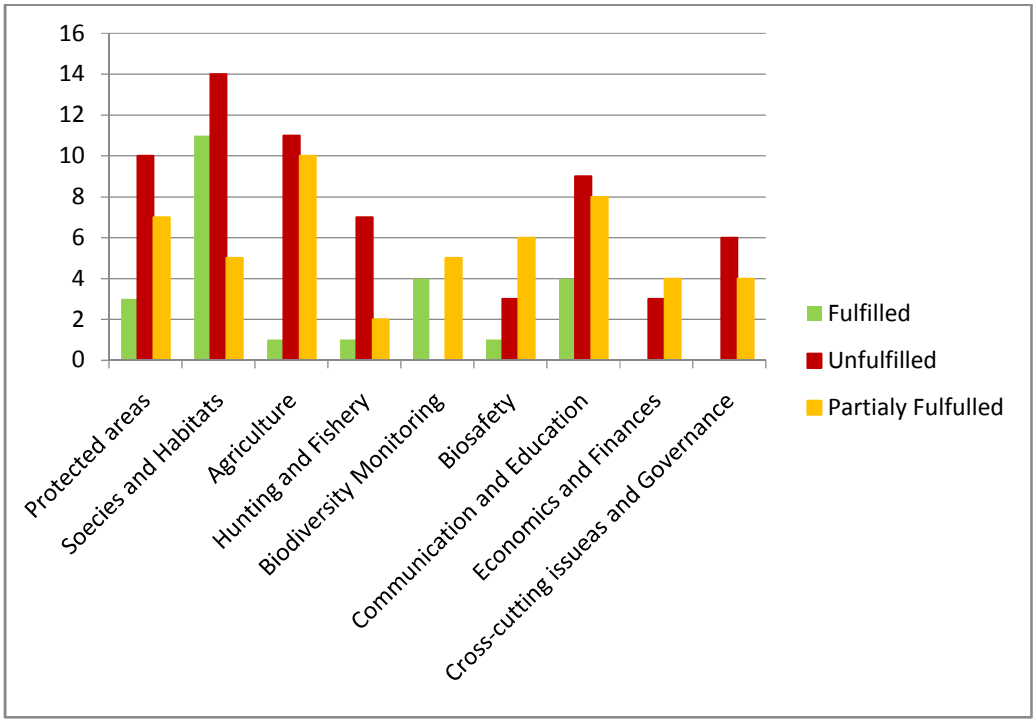
2.5 Implementation of the Biodiversity Conservation Strategy and Action Plan

Detailed information on implementation of the biodiversity conservation strategy and action plan in Georgia within the period of 2005-2010 is available in the Fourth National Report – Georgia, while the information on actions carried out within the period of 2010-2014 is outlined in sub-chapter 2.3 of the present report.

At the first stage of updating biodiversity strategy and action plan, status and outcomes were assessed for actions determined under the NBSAP 1 which are relevant to the following thematic areas: Protected areas, Species and habitats, Agricultural biodiversity, Hunting and fishery, Biodiversity monitoring, Biosafety, Environmental education, public awareness and involvement, Financial-economic program, Legislative aspects.

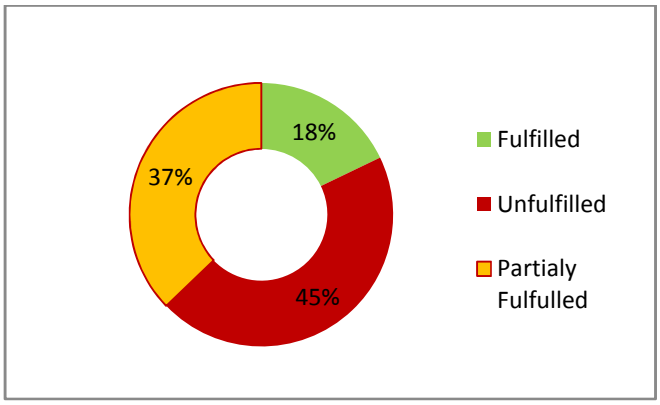
The chart 2.5 below represents performance status of actions scheduled by thematic areas:

Chart 2.5 NBSAP 1 (2005-2010) performance status by thematic areas



Out of 140 actions planned under NBSAP 1, 25 were fulfilled, 52 - partially fulfilled, 63 – unfulfilled.

Chart 2.6. NBSAP 1 (2005-2010) performance status



The main achievements of the 1st NBSAP include:

- Development of the system of protected areas
- Preparation of the National Red List of Georgia based on international criteria and categories
- Development of conservation management plans for endangered species and groups of species and launching of their implementation
- Initiation of the national biodiversity monitoring system
- Ex-situ and/or on-farm conservation of several endemic and endangered plant species and crops

- Launching of the Georgian biodiversity clearing house mechanism

The NBSAP 1 performance status assessment has revealed that despite of considerable progress achieved in this respect, many of the activities envisaged under NBSAP-1 were not accomplished, while those that were fully or partially implemented were done so largely by NGOs with the support of external donors. It also became clear that the 1st NBSAP was designed in a way that would facilitate its implementation primarily by NGOs and research institutions by attracting foreign funding. The role of the state institutions, especially those other than the Ministry of Environment and Natural Resources Protection, in respect of the implementation was minimal or not clearly formulated. These aspects were fully considered in the strategy and action planrevisionprocess.

The following were considered as main impediments to NBSAP 1 implementation: lack of funds, insufficient public awareness, low level of perception and involvement, inadequate information awareness on the status of biodiversity, which resulted in complication of priority setting and planning, poor cross sectorial cooperation and deficit of human resources.

3. Progress towards the 2020 Aichi Biodiversity Targets and contributions to the relevant 2015 Targets of the Millennium Development Goals

3.1 Progress in Achievement of Biodiversity Strategic Plan2011-2020 and Aichi Biodiversity Targets

In the beginning of 2014,Georgia's national goals and associated measures are determined in line with global strategic plan and Aichi targets. Therefore, only minor part of activities provided for by the NBSAP 2 are initiated or completed so far. Although, Georgia has already achieved certain progress in fulfillment of Aichi targets, which is summarized in table 3.1 below.

In accordance with Aichi target 17, Georgia has already adopted an updated National biodiversity strategy and action plan as a policy instrument and commenced its implementation.

Table 3.1. Georgia's Standing in relation to Aichi Targets

Global strategic goals	Aichi targets	Actions undertaken and outcomes achieved	Progress evaluation
Strategic Goal A. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society	**Aichi target 1:** By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	- Communication on biodiversity issues became more intense and focused on various social groups at the local level. Starting from theyear2009, the Biodiversity Protection Service of the Ministry of Environment is conducting awareness raising campaigns – "Garden Birdwatch"countrywide, which involves schoolchildren and teachers of 107 public schools. - The APA and protected areas' administrations are conducting workshops, trainings, lectures, they organize contests, media tours and ecobanks, and moreover, various type reference information regarding Georgia's biodiversity and protected areas is being prepared and disseminated. The visitors' infrastructure has been considerably improved. According to the conducted survey, within the period of 2009-2011 awareness of the population regarding protected areas has been raised by 15%.Therefore, number of visitors to the protected areas of Georgia is manifesting a growth trend. Within the period of 2007-2014, number of visitors of the protected areas has increased from annual 8 thousand to 400 thousand.	

	Aichi target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	- A contribution of three protected areas to economic development has been assessed and their importance for tourism, hydro power and mineral water production and agricultural development has been revealed. Establishment of national parks has considerably contributed to attraction of investments in the service area and triggered their social-economic development. - As a result of the Economics of Ecosystems and Biodiversity(TEEB) pilotsurvey, a roadmap is prepared for comprehensive analysis of ecosystems and economics of biodiversity, and its implementation is scheduled within the period of 2015-2016	
	Aichi target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions		
	Aichi Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the	There has been significant progress with certification and labelling schemes that enable traders, processors and consumers to choose products that have been produced in accordance with sustainable production principles. In 2011 "Caucascert" Ltd received European accreditation, and thus is authorized to issue certificates valid in the EU.In 2011, 71 producers were certified as organic according to international standards in Georgia; among them is the company	

	impacts of use of natural resources well within safe ecological limits.	Hipp Ltd which is supplied with organic apples by 1,103 smallholder farmers. The "Fairwild" scheme for certifying ecologically sound harvesting of wild plants has been implemented in Georgia; a center for wild plant certification has been established. Efforts have been made to establish voluntary forest certification and to introduce main principles of Forest Stewardship Council (FSC). A national sustainable forest management standard has been prepared for Georgia (WWF-CauPO,GIZ). In close cooperation with CITES secretariat, a sustainable system was established for collection and cultivation of *Galanthusworonowii*, which has ensured minimization of international trade impact on this species.	
Global Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use	Aichi target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	-As of the year 214, a 256.8 thousand ha area of forest ecosystems is included in the protected areas network - Overall, within the period of 2003-2013, 639 ha area of forests was restored, which constitutes 0,02% of the gross forest area. - There are 18 critical freshwater habitats revealed in Georgia, with total area of 2 422 241 ha; 625 081 ha (25.81%) of this area is covered by various category protected areas. -By establishment of Pshav-Khevsureti and Machakhela National Parks, East Caucasus high mountain ecosystems (75,842.7 ha) and Lesser Caucasus forest ecosystems (8,733ha)were included in the protected area network. -Wetlands of JavakhetiPlateau (Khanchali, Madatapa and Bughdasheni Lakes, Kartsakhi and Sulda swamps and wetland meadows) were included in Javalheti protected areas (16 209, 42 ha).	
	Aichi target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally	- For fishing industry, commercial fish stocks are annually assessed in the Black Sea, based on which harvest quotas are set. Harvest quota is a specified number allowed for fishing by license holders during the fishing season.14 fish species are harvested in the Black	

	and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	Sea waters of Georgia, demand on anchovy is highest and its harvest volume has increased 7-fold within the last 5-year period, though it does not exceed the set limit. Other fish species are also harvested within the limits of set quota; - In inland waters of Georgia, there are valid fishing licenses for 5 lakes and 4 reservoirs. Out of them, management plan for sustainable fishery is developed for 4 lakes and 1 reservoir; - Commercial fish stocks are assessed for 30 lakes and reservoirs of Georgia; - Status of sturgeon's migration and spawning habitats has been assessed together with additional possibilities of strengthening sturgeon conservation in Georgia and sturgeon conservation plan is under elaboration.	
	Aichi Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	- There is a reform ongoing in forestry sector, the named reform aims at establishment of a system of sustainable forest management and effective use of its economic potential taking into account protection of biological diversity and ecological value of forests. "National Forest Concept for Georgia" was approved in 2013 and Forestry code is under elaboration, which is expected to be completed by the end of 2015. - Guidelines are under elaboration for development of the sustainable forest management plan, and sustainable forest management plans are under preparation for Tianeti forestry and Tusheti protected landscape; An inventory of 400 ha forest area has been conducted in Dedoplistskaro and a management plan has been prepared (GIZ), development of the management plan based on forest inventory is also planned in Akhmeta forestry. - Legal framework is under elaboration for provision of sustainable management of aquaculture; - Area of certified biofarms in Georgia has increased from 130 ha- year 2005, to 1.999 ha - year 2011. In 2011, area of biofarms constituted 0,8% of agricultural lands of the country (source:	

		www.biomonitoring.moe.gov.ge) - In September of 2014 a law "on Genetically Modified Living Organisms"was adopted, according to this law, in Georgia introduction of genetically modified organisms into natural environment is barred by the legislation. Application of genetically modified organisms for nutritional purposes and fodder as well as for scientific research is permitted. Genetically modified pharmaceutical products are not yet regulated.	
	Aichi Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	Untreated municipal wastewater still remains as the main source of pollution of surface freshwater resources in Georgia, which is caused by malfunction in municipal wastewater collection and treatment systems. Within the period of 2010-2013 rehabilitation works were executed for wastewater collection systems, these works are still ongoing. Construction of the new wastewater treatment plants is planned, as well. Though, due to heavy investment expenditures, this process will be carried out gradually, in accordance with the Wastewater Management Strategy approved by the government (governmental decree #638, 10.04.14). Together with other countries of the Black Sea Region, Georgia is undertaking actions in the Black Sea under the "Convention for the Protection of the Black Sea against pollution" (Bucharest Convention). Georgia is engaged in the Black Sea water quality and monitoring network, which covers 120 monitoring stations, including 5 stations of Georgia. Starting from the year 2010, Ajara coastal zone is subjected to regular measurements of bacteriological parameters of water.	
	Aichi Target 9 By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	Introduction dynamics of 12 invasive plant species (out of the 50 most dangerous species for biodiversity) was analyzed in 5 protected areas in Georgia and their impact on biodiversity was assessed. Based on the collected data, the level of invasion of these species was determined and respective controlmeasures were developed.	

Global Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity	**Aichi Target 11:** By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	As compared to the year 2010, space of protected areas has increased by 104 643 hectares and as of 2014 it constitutes 9% of the total area of the country(in comparison with the year 2001, coverage of protected areas has increased from 4% to 9%). Priority conservation protected area connecting corridors are already identified. Establishment of Ecocorridors is ongoing in Lesser Caucasus. 5 protected areas(Tusheti, Vashlovani, and Javakheti protected areas, and Borjom-Kharagauli and Mtirala national parks) are being administered in accordance with management plans. Establishment of the Emerald Network is in progress. 21 hot-spots in terms of biodiversity conservation are already revealedand associated scientific data and maps are prepared.	
	Aichi Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	The status of about 1200 Caucasus flora species is assessed (including 60% of endemic species of the Georgian flora); the Red List of the endemic plant species of the Caucasus is published. A Regional Strategy of Caucasus Plant Conservation is developed (2012-2020); In Tbilisi National Botanical Garden "Caucasus Regional Seed Bank" is established, where the seeds of over 800 plant species are kept (about 20% of Georgian flora). In cooperation with Kew Botanical Gardens (Great Britain) creation of wild plant seed collections for ex-situ conservation is ongoing in Georgia and Millennium seed banks. From 2012, monitoring of 14 species included in the national Red List of Georgia has commenced (including: marine mammals, bats, both species of Capra, Chamois, wild goat, deer brown bear, Caucasian grouse, Caucasiansnowcock, trout). Increased number of deer is recorded inLagodekhi andBorjom-Kharagauliprotected areas, number of deer populations is reaching 800 individuals.	

		Currently, the process of reintroduction of Goitered gazelle is in progress in Vashlovaniprotected areas. Moreover, the program of restoration of Capra aegagrus is launched in Borjom-Kharagauli National Park.	
	Aichi Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	Based on the gene bank collections of Lomouri Agricultural University, field and garden crops' specimen are being conserved and documented Collections of vine, fruit, nuts and berries are kept in the Gardening, Viticulture and Winery Institute. On-farm conservation of 6 local grain landraces (*Triticumcarthlicum*Nevsky*, Triticumaestivum*L.*, Hordeumvulgare var. nudum, Secalecereale*(L.) *M. Bieb, Panicummiliaceum*L.*, Setariaitalica (*L.*) Beaur),* 5 leguminous plant landraces *(Cicerarietinum*L.*, Viciafaba*L.*, Lens culinaris*Medic.*, Vignaunguiculata*L.Walp.*,* and*Lathyrussativus*L.*)* and flax*(Linumusitatissimum L.)*was carried out in SamtskheJavakheti Region. For the purpose of on-farm conservation of the local animal breeds (Georgian Mountain Cattle, Tushuri Sheep, Megruli Goat, Kakhuri Pig, five local populations of hen) a pilot-illustrative farm was established in Kakheti Region. An electronic catalog of agrarian biodiversity of Georgia was produced, which contains 824 indigenous and local selective species of domestic animals.	
Global Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services	**Aichi Target 15:** By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change	For mitigation of climate change impact and introduction of new innovative methods of grassland management in Georgia, Clima East promotes enhancement of management capacity and conservation of grasslands in Vashlovani protected area. Under the project, a 4,000 ha area of pastures and 300 ha area of sheep migratory routes will be rehabilitated. Restoration of 87 ha of degraded arid forests with local species (Ash, PinusEldarica) was carried out in the former pasture area,	

	mitigation and adaptation and to combating desertification.	under the Project for "Climate Tolerant Rehabilitation of Degraded Landscapes" (GIZ). Restoration of wind belts in 92 ha area of semiarid ecosystems– was implemented under the "Sustainable Management of Biodiversity – South Caucasus" project supported by GIZ. For increasing resilience to climate change, restoration of the 150 ha monoculture forest area is ongoing in Tsavkisi and Khashuri on initiative of the WWF – Caucasus Program Office, the project is backed by the EU. Within the framework of preparation of the Third Communication to National Climate Change Framework Convention (UNFCCC) of Georgia, project proposals were elaborated for reforestation activities in various regions of Georgia, which inter alia includes: - restoration of degraded sub-alpine forests and enhancement of carbon dioxide storage by forests in Ajara; - Cultivation of soil protecting forests on the eroded slopes and establishment of forest nurseries in ZemoSvaneti.	
	Aichi Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation	Nagoya protocol ratification procedure is ongoing. A draft law "on Biodiversity" is prepared and is under consideration by stakeholders, which inter alia includes the aspects of access to genetic resources and the fair and equitable sharing of benefits arising from their utilization	
Global Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building	**Aichi Target 18:** By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological		

	resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.		
	Aichi Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	- In Georgia about 11 universities offer different levels of vocational and higher education in the neighboring specialties of Biodiversity and Environment protection. - An internet resource Georgia Biodiversity Databasewww.biodiversity-georgia.ne is created, which contains information on species of Georgia's inland and freshwater ecosystems. The webpage is hosted by Ilia State University. - Establishment of the unified national system of biomonitoring is ongoing for assessing the status of biodiversity. Out of the selected 25 indicators, outcomes are already available for 8 indicators. (www.biomonitoring.moe.gov.ge/)	
	Aichi Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization,	Development of resource mobilization strategy is planned for NBSAP implementation. Within the period of 2011-2013, allocations for nature conservation from the state budget have increased by GEL 9640,3 thousand, though they have decreased as against the assignments of the year 2010. During 2006-2013, financial resources allocated for nature conservation purposes barely exceeded 0,2% of the state budget.	

	should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	Assistance of donor countries and organizations plays significant part in biodiversity conservation, and constitutes approximately 20% of such expenditures. ***(Source: Biotrends, Reuslts of the NBSM, Indicator R7- financial resources for nature conservation;*** http://biomonitoring.moe.gov.ge/)	

3.2 Contribution to Achievement of Millennium Development Goals 2015

Georgia is a signatory of the Millennium Declaration and has started fulfilling its commitments to integrate the Millennium Development Goals within its national development strategies. In 2004 Georgia launched its baseline MDG Report that customized the globally set goals and targets to its national context followed by the progress report in 2005.

In 2014, was assessed the progress made towards the global development goals and how Georgia coped with the challenges from the standpoint of its national context.[20].

Within the last decade, the following objectives are set for fulfillment of MDG7 - Ecological Sustainability in Georgia:

7.1. Target 14: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources;

7.2. Target 15: Halve the proportion of people without sustainable access to safe potable water;

7.3. Target 16: Harmonization of the housing sector with international standards, including the development of social tenure component

Indicators of attaining target 14 include:

- Area of forested territories in the country's area;
- Total area (ha) of protected areas established for conservation of biodiversity;
- Energy consumption per GDP unit (kg.oil.equiv/ 1000 $) (GDP in nominal price);
- Carbon monoxide emission per capita (t/capita);
- Consumption of ODS per capita (ODP kg/capita).

Total area of Protected Areas comprises 8.62% of the country's territory. In recent years it has doubled (600.59 ha) compared to the 2004 coverage (265.85 ha). Currently, there are 87 Protected Areas including 14 Strict Nature Reserves, 11 National Parks, 19 Managed Reserves, 41 Natural Monuments and 2 Protected Landscapes. Management of these areas has significantly improved (for detailed information see chapter 2.3).

Forests in Georgia cover about 41% of the territory. The number is mostly consistent and not changed during last 10 years.

[20]MilleniumDevelopmentGoalsinGeorgia,NationalReport, UNDP, 2014, http://www.ge.undp.org/content/georgia/en/home/library/mdg/millenium-development-goals-in-georgia--2014.html

The "National Forest Concept for Georgia" was approved by Georgian Parliament in December 2013. This document serves as a basis for development of forestry sector legislation and institutional arrangements and refinement of the existing one. (For more detailed information see chapter 2.3)

3.3 National Experience of Implementing the Convention on Biological Diversity

In 1994 Georgia joined the Convention on Biological Diversity (CBD).The first strategy and action plan for conservation of biodiversity in Georgia was adopted in 2005. In 2014, the Government of Georgia endorsed an updated strategy and action plan for the period of 2014-2020. Following 2005, Georgia presented 2-nd, 3-rd and 4th National Communications to the CBD and prepared A Review of the Implementation of the Programme of Work on Protected Areas (PoWPA).

Remarkable progress has been achieved in development of the protected areas' system. Currently protected areas constitute 9% of the total country area.

Georgia became one of the pilot countries for TEEBScopingStudy.The preliminary study identified five core sectors of Georgian economy which are substantially dependent on natural capital and ecosystem services. A comprehensive study of biodiversity and economic values of ecosystem services is planned for these sectors.

Over the last two decades, environmental legislation has considerably developed and institutional capacity has improved as well. For the purpose of harmonizing the national legislation with EU Council Environmental Directives, the relative changes to the current legislation are under elaboration.

A legislation on provision of accessibility of genetic resources and equitable sharing of benefits arising from their utilization is under preparation.

International and local NGOs play significant part in conservation and preservation of Georgia's biodiversity. Georgia has repeatedly demonstrated an example of successful cooperation between public and private sectors aimed at conservation of biodiversity. A wide range of experts and stakeholders, which was represented by various ministries, NGOs, Universities, private sector and international organizations was engaged in the NBSAP update process.

Within the scope of biodiversity conservation, Georgia is actively cooperating with Caucasus Ecoregion countries. In course of 2011-2012, with extensive participation of experts and stakeholders the Ecoregion Conservation Plan for the Caucasus was subjected to update in line with Aichi biodiversity targets.

The following activities will materially contribute to strengthening conservationat the national level:

- Development of the resource mobilization strategy for NBSAP implementation, which will provide for all of the existing sources of funding, including state budget, donor countries and organizations, and updated innovative means of funding, such as partnership with private sector;
- Assessment of economic values of biodiversity and ecosystem services and integration of their outcomes in development strategies of 5 core sectors of Georgian economy;
- Further development of protected area system and establishment of the protected areas' network, enhancement of its management efficacy and provision of its financial sustainability;
- Reformation of forestry sector, establishment of a system of sustainable forest management;
- Further development and upgrading of the biodiversity monitoring system, which will contribute to effective planning of biodiversity conservation measures;

- Raising the level of communication, education, public awareness and participation with respect to biodiversity, existing threats and ways of their solution, as well as economic value of biodiversity and ecosystem services.

Annex 1. Process of preparation of the Fifth National Communication

1. **Reporting Party**

Contracting Party	**Georgia**
National Focal Point	
Full name of the institution	Ministry of Environment and Natural Resources Protection
Name and title of contact officer	Ioseb Kartsivadze, Head of Biodiversity Protection Service
Mailing Address	6 Gulua street, 0114, Tbilisi, Georgia
Telephone	+995 32 272 72 32
Fax	+995 32 272 72 31
E-mail	s.kartsivadze@moe.gov.ge
Contact officer for National Report (If different from above)	
Full name of the institution	
Name and title of contact officer	
Mailing Address	
Telephone	
Fax	
E-mail	
Submission	
Signature of officer responsible for submitting national report	Ioseb Kartsivadze
Date of Submission	10.06.2015

2. Procedure of the preparation of the report

The Fifth National Communication of Georgia to the CBD was prepared by the Ministry of Environment and Natural Resources Protection of Georgia, with technical assistance from the GIZ project – "Sustainable Management of Biodiversity – South Caucasus". The national communication is basically guided by the following thematic reports on various aspects of biodiversity and their generalized analysis, which were prepared at the initial stage of the biodiversity strategy and action plan update process:

1. Protected Areas of Gerorgia, Situation Analisis, WWF- Caucasus Programme Office, 2012;
2. Forest Biodiversity of Georgia, Situation Analysis, WWF- Caucasus Programme Office, 2012;
3. Agricultural Biodiversity, Situation Analysis, Biological Farming Association ELKANA. 2012;
4. Assessment and Sustainable Use of Biological Resources, Situation Analysis, Centre for Biodiversity Conservation and Research – NACRES, 2012;

5. Biodiversity and Climate Change Issues, Situation Analysis,Centre for Biodiversity Conservation and Research – NACRES, 2012;
6. Conservation of Species and Habitats, Situation Analysis,Centre for Biodiversity Conservation and Research – NACRES, 2012;
7. Management/Governance of Biodiversity, Situation Analysis, Regional Regional Environmental Centre for the Caucasus (REC Caucasus), 2012;
8. Biosafety, Situation Analysis, Regional Regional Environmental Centre for the Caucasus (REC Caucasus), 2012;
9. Black Sea Biodiversity, Situation Analysis, Ilia State University, 2012;
10. Inland Waters Biodiversity, Situation Analysis, Ilia State University, 2012;
11. Public Participation and Education, Situation Analysis, The Union for Sustainable DevelopmentECOVISION, 2012
12. Synthesis of the situation analyses prepared for the purpose of elaborating the second National Biodiversity Strategy and Action Plan, Mike Garforth, Sustainable Management of Biodiversity, South Caucasus, GIZ, 2013.

The following documents were also used for preparation of the national communication:

1. National Biodiversity Strategy and Action Plan of Georgia, 2014-2020;
2. Ecoregion Conservation Plan for the Caucasus, 2012 revised and updated edition, WWF, KfW,
3. Biotrends, Results of the National Biodiversity Monitoring System in Georgia,www.biomonitoring.moe.gov.ge
4. Zazanashvili, N. and Mallon, D. (Editors) 2009. Status and Protection of Globally Threatened Species in the Caucasus,. Tbilisi: CEPF, WWF;
5. Millenium Development Goals in Georgia,Progress Report, UNDP, 2014
6. Assessment of Environmental Education in Georgia, Environmnetal Information and Education Center, GIZ, 2014;
7. Climate Change Strategy of Ajara, Georgia's Third National Communication to the UN Framework Conventionon on Climate Change, UNDP in Georgia, 2013;
8. Upper Svaneti's Adaptation Strategy to the Climate Change, Georgia's Third National Communication to the UN Framework Conventionon on Climate Change, UNDP in Georgia, 2013;
9. I. Shavgulidze, NBSAP Revision Process in Georgia, MoENRP of Georgia, GIZ, IUCN and the Secretariat of the CBD, 2014;
10. UNEP and WWF, 2013. TEEB Scoping Study for Georgia. United Nations Environment Programme (UNEP), Geneva, Switzerland, A digital copy of this report can be downloaded at http://www.teebweb.org
11. Flores M., Adeishvili, M., 2012. Economic Valuation of the Contribution of Ecosystems in Protected Areas to Economic Growth and Human Well-Being in Georgia. Prepared by

ECFDC/GCCW/AMECO, UNDP/GEF project Catalyzing Financial Sustainability of Georgia's Protected Areas System;
12. Flores,M., Adeishvili, M., 2011. Valuation of the Contribution of Borjomi-Kharagauli and Mtirala National Parks Ecosystem Services to Economic Growth and Human Well-being. Prepared for WWF Caucasus;
13. Gurielidze Z., Kopaliania N., Devidze N., Dekanoidze, Ninua L., Javakhizhvili Z., Kerdikoshvili N., Paposhvili N., Report for the Black Sea Cetaceas Monitoring Programme, funded by Kolkheti Protected Areas DevelopmnetFund, 2014;
14. Report on the Chiropterans Monitoring, Field Reseraches Union Campester, 2014;
15. Basic research for development monitoring programme of the trout and salmon species, Ilia State University, 2014;
16. Gurielidze Z., Gavashelishvili A., Javakhishvili Z., Murtskhvaladze M., LevanNinua., Dekanoidze D., Rajebashvili G., Kerdikoshvili N., Paposhvili N., Modebadze M., Kopaliani N., Results of Monitoring of Selected Species, Ilia Stae University, Ministry of Environment and Natural Resources Protection, 2013.

Fifth National Report of Georgia to CBD were prepared by Anna Rukhadze, consultant for the GIZ project ``Sustainable biodiversity management in the South Caucasus``.

Annex 2: Additional Sources of Information

Information on biodiversity of Georgia is accessible on the following web-sites:

http://www.moe.gov.ge/;

http://www.apa.gov.ge/ge/;

http://forestry.gov.ge/;

http://www.biomonitoring.moe.gov.ge/;

http://www.biodiversity-georgia.net/;

http://www.chm.moe.gov.ge/.