Sustainable Management of Biodiversity, South Caucasus

Impact analyses on status of biodiversity in Armenia, Azerbaijan and Georgia, and at regional level (South Caucasus)

Natia Kobakhidze

Report

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Executive summary

The biodiversity of the South Caucasus is of global importance. The tremendous diversity (http://caucasus-naturefund.org/the-caucasus/caucasus-hotspot) of species in the region and many of its ecosystems are increasingly threatened. Pressure from exploitation of natural resources, poor management practices and illegal activities are causing loss of biodiversity.

Sustainable Management of Biodiversity in South Caucasus Programme (SMBP-GIZ) is helping South Caucasus countries to improve political, institutional and legal frameworks, while in selected areas it is introducing strategies on sustainable management and harnessing biodiversity. At regional level it is promoting international dialogue and cross-sector professional exchange.

The objective of the report is to analyze and document trends in the biodiversity “sectors” in general biodiversity protection and sustainable management, and more specifically forest management, pasture management and agricultural practices from 2008 until 2015 in the three South Caucasus countries and in the region in general.

Assessment was done by desk study, reviewing relevant documents and existing reports for each country, compiling materials showing progress in the field according to eight themes: international obligations/multilateral environmental agreements, strategic documents, ecosystems and species, sectors effecting biodiversity such as forestry and agriculture, biodiversity conservation – protected area system, vocational and higher education with the emphasis of forestry education, environmental education, biodiversity monitoring and financial mechanisms. Each theme was assessed according to sub-components. Conclusions (Chapter 5) summarise the trends according to these sub-components. Executive summary highlights main changes by country.

Armenia

Since 2008 Armenia has joined 8 more international conventions, agreements and protocol; became a party of 22 multilateral environmental agreements, including of those five related to biodiversity and follows to fulfil requirements (Chapter 2.2).


The trends in ecosystems of Armenia are evaluated qualitatively, there is no quantitative data: pressure on semi-deserts and steppes has increased from agriculture; expansion of this zone up to 50 m reduced lower part of the steppe belt, in addition, salinization and intensified erosion processes have been observed; arid open woodlands are also expanding; valuable forest areas are being diminished due to insufficient natural regeneration. Increasing pressure from grazing has caused changes in vegetation cover of meadows. The water resources of Lake Sevan have been exploited for years for economic purposes resulting in gradual deterioration of ecological situation of the lake. By 1999 the lake water level has dropped by 19.3 masl, inducing
loss of endemic ishkhan subspecies. At present, water level of Lake Sevan is increasing. The lake has been included in the list of Wetlands of International Importance of the Ramsar Convention. To conserve and maintain these ecosystems, their parts have been included in recently expanded protected areas system (SPNAs) (Chapter 2.6.1.1).

In 2007-2010, a comprehensive survey of the flora and fauna of Armenia, an assessment of the status of species in line with international standards was carried out. The Red Book of Armenia was republished. The number of high vascular plants in the Red Book has increased by 227 species (Chapter 2.4.3).

Negative trend has been registered in the status of following species: hare, wild boar, roe deer, and Caspian snow cock. 38 invasive species have penetrated into natural ecosystems. Certain positive trends have been observed in the populations of Caucasian leopard, Armenian mouflon, bezoar goat and a number of birds in Armenia. Reintroduction of the Caucasian red deer in Dilijan National Park is underway (Chapter 2.4.2).

Due to the economic and energy crisis and for industrial needs, forests in Armenia have been over - logged. Significant share of degradation was induced by illegal industrial timber harvesting, related to poor management and enforcement. Based on monitoring data, forest cover makes 10.17% of the country’s territory. In the last decade, with number of legislative, policy and institutional reforms in the forestry, Armenia is on its way to introduce sustainable forest management practice. In 2005 National Forest Programme (NFP) was approved. New Forest Code (2006) was adopted (Chapter 2.5.1.2). All forests in Armenia remain under state ownership. Community and private ownership are now included in the Code (Chapter 2.5.1.2). Information and monitoring systems for the forest sector have become important tools for forest planning, monitoring and reporting. National Forest Monitoring System (NFMS) based on remote sensing has recently been established. Forest Management Plans (FMPs) are developed for 90% of forest enterprises (FE), however FMPs are not mainly aimed at multi-functional forest use. National Forest Management Information System is operational in all 19 FEs. Monitoring data are being taken into account during the planning of annual harvesting; pre-harvesting planning and post-harvesting assessments have been introduced (Chapter 2.5.1.1). New departments have been established to fulfil these new responsibilities (Chapter 2.5.1.3). Capacity development measures are being conducted. Amendment to existing Forest Code introducing multi-functional zoning and multi-purpose use of forests is approved by Ministry of Agriculture (MoA) and submitted to National Assembly.

Agriculture remains one of the major economic sectors in Armenia covering about 70% of the territory of the country (the agricultural land area officially increased since 2004) ensuring countries food security, 36.3% of employment and preserving traditional way of life. At the same time agriculture sector is highly supported by the Government in recent decade including exemption from income tax, subsidies for returning of non-utilized agricultural land into cultivation, long term low interest credits for planting perennials etc. (Chapter 2.5.2.2). As of high migration from rural areas, the actual average size of the farms in Armenia is increasing and already in 2008 was twice larger than in of other countries of the South Caucasus (about 200,000 farms cultivating in average 3 ha arable land). During the last years Armenia was also developing its processing sector with improved export connections in different parts of the world and increasingly developing organic sector (Chapter 2.5.2.4). Armenia also works intensively to conserve its valuable landraces and breeds in gene banks and live collections the capacity and
management of which is improving (Chapter 2.5.2.5). The country also had attempts to set up sustainable pasture management systems; however their effective implementation is still far away (2.5.2.6). Environmental protection and conservation of natural landscapes, agro-tourism and development of organic agriculture are sub-targets of the MoA derived from the main target on modernization of agriculture and increase of competitiveness. To the conservation and rational use of agro biodiversity is also given importance in agricultural strategies (Chapter 2.5.2.5). In spite of this, spread of aggressive invasive species, rapid degradation of agricultural land, increasing pollution from the use of agrochemicals and land overgrazing and degradation are remaining the major environmental problems of the sector.

**Biodiversity conservation** in Armenia is implemented mainly in the protected areas - Specially Protected Nature Areas (SPNA). The system has expanded from 5% to 13.1% of the country’s territory, new categories have been introduced by legislation (II, III, IV) (according to IUCN categories) and currently the system is represented by I-IV categories of Protected Areas (PAs) (Chapter 2.6.1.1). PAs of global importance are being identified and the activities for designation are underway (Chapter 2.6.1.2). In spite of many developments, expansion and enhancement, the SPNA system does not adequately protect ecosystems with significant and threatened biodiversity, and ecosystem services. Legislation and institutional set-up is not adequate as well, and needs further improvement (Chapter 2.6.1.3 and 2.6.1.4).

**Vocational and higher education** are being transformed to meet the labor market demands and European standards. New list of vocational specializations and new educational standards have been established, based on which new curricula and educational plans are being developed; sustainable forest management, agrobiodiversity topics are integrated into curricula, pasture monitoring and management issues are also taught (Chapter 2.7.1). **Environmental Education (EE)** is recognized as the priority of the country and is becoming important part of the educational system. Measures to improve existing EE and **Education for Sustainable Development** curricula are underway (Chapter 2.7.2 and 2.7.3).

**Information and knowledge on biodiversity** is being improved. Active studies of the status of biodiversity, trends and consequences of its loss have been continued in Armenia in the last years. **National Biodiversity Monitoring System (NBMS)** with 18 biodiversity indicators has been designed; 8 indicators have been published. A NBMS is, nonetheless, not fully yet institutionalized.

**Financing conservation** is increasing but is still skimpy, it is envisaged in the Concept approved by the Government to develop innovative mechanisms, such as introduction of a system on payments for ecosystem services, which in practice will not replace the system of environmental and nature use fees, but will be applied in parallel with it (Chapter 2.9). The chapter reviews the sources of financing.

**Azerbaijan**

Azerbaijan signed and ratified more than 20 international and regional environmental Conventions but did not participate fully in the international and pan-European processes. The country is particularly noted for its active participation under the Caspian Environment Convention and the Caspian Environment Programme. In the last 3-4 years these process is improving with attaching high priority to cooperation with the EU (Chapter 3.2).
After 6 years, when the main biodiversity policy document NBSAP 1 (2006-2009) has expired, new National Strategy and Action Plan on Conservation and Sustainable Use of Biodiversity for period 2015-2020 – “NBSAP 2” (2015-2020) has been developed and submitted to the Cabinet for approval. Biodiversity aspects are incorporated in National development planning and strategic documents of other sectors. Country doesn’t have a Sustainable Development Strategy (Chapter 3.3).

It is impossible to reveal a trend of ecosystems other than forest, since they are not being monitored (Chapter 3.4.1). Although it is known that pressure is increasing from intensive agriculture development. Forest cover has expanded during last 15 years for 10.1% to 11.9% of the country’s territory.

Azerbaijan published 2nd edition of the Red Book, which includes considerably more species than previous one (plants – 337 instead of 140, animals 223 instead of 108). Hyrkanian tiger is considered extinct. Remarkable positive trend is recorded in the population size of goitered gazelle (increased by 28%), after being under special attention (Chapter 3.4).

Forestry sector in Azerbaijan has not been changed significantly. The Forest Code adopted in 1997 is regularly amended, mostly in terms to increase fines and price. Forests remain under the state ownership, issuing right for use of forest fund to individuals or legal entities; commercial cuts has been banned; wood materials are provided from sanitary fellings. Since 2002 forest inventory has begun in forest management units one by one. Efforts to improve methodology for inventory, to set up NFMS are underway. A positive development for the forests in Azerbaijan are the Government’s successful programmes - investments in gas supply to rural population, import of low price timber from Russia and the afforestation. The main driver of forest loss - clearing for wood fuels is declining with the increasing coverage of gas supplies to communities. 200,000 ha have been afforested since 2000 (Chapter 3.5.1.1). National Forest Policy and Action Plan has been identified in NFP (2015-2030) document, developed in 2013 according to sustainable forest management principles but has not been approved yet. Need of institutional capacity development is recognized by NFP (Chapter 3.5.1.2).

Agriculture of Azerbaijan makes only 6% of the GDP of the country (has dropped down since 1999), but provides more than 40% of the employment with about 850,000 rural households owning and managing 1.3 mln ha agricultural land (2.6 ha in average). Most of the arable lands are privatized and pasture lands are leased; thus 99% of production in the country is done by the private sector. Since 1990s the Government uses part of the revenues from oil boom for financing the agriculture sector, focusing on subsidizing intensification of wheat, rice, potato and livestock productions mainly, though provision of direct subsidies, fertilizers, cheap or free fuel (before 2007) and industrial seeds and the support has increasing trend. These Government policies resulted in the rapid growth of productivity with the yearly output by 15% average in plants and 20% in livestock sectors. Use of fertilizers has also risen by more than 33% from 2007 to 2014 (Chapter 3.5.2.2). Major environmental problems - desertification/land degradation caused by climate change, poor management practices of agriculture, e.g. overgrazing, improper use of winter and summer pastures (Chapter 3.5.2.6), overuse of fertilizers, as well as wind and water erosion, are increasing; orientation on monoculture production is threatening agrobiodiversity and their share is decreasing (Chapter 3.5.2.5). The Strategy for Agriculture Development 2015 – 2020 provides a number of actions designed to continue Government’s support to the development of agriculture. It also includes key-actions for environment
protection. Azerbaijan is harmonizing its legislation related to phyto-sanitary measures to Codex Alimentarius and EU rules and regulations, which should have a positive effect on use of agrochemicals in the country. Organic farming has increased by 13% since 2007 (Chapter 3.5.2.4).

**Protected areas** (here SPNAs) are tools for biodiversity conservation. System includes different types of territories. Only three of them correspond to internationally recognized – IUCN categories (I, II, IV). Since 1995 coverage of existing Soviet system – 5% has expanded up to 10.3% of the country's territory. A new category – national park has been introduced and nine national parks have been established (Chapter 3.6.1.1). There is no connectivity between SPNAs yet. Legislation needs development to be compatible with the international standards (Chapter 3.6.1.3). Institutional capacity building is required (chapter 3.6.1.4). Conservation areas of global importance have been identified; Ramsar sites are designated and expanded (Chapter 3.6.1.2).

**Education** system in Azerbaijan is transforming to become more compatible with the European standards. The Government introduced state programme on the education of Azerbaijani youth in foreign countries. Forestry vocational and higher education is recognized as the priority. New subject on ecology is incorporated in curricula of the institutions of higher education. Curriculum in MSc "Biodiversity and nature conservation" has recently been introduced at Baku State University. The Ministry of Ecology and Natural Resources (MENR) Institute for Training and Retraining carries out the retraining of the professionals (Chapter 3.7.1). While EE was unsystematic before, now it is incorporated in all levels of education. Preparation of text-books is underway. In order to deliver effective extracurricular EE for schools, it is planned to reorganize State Ecological Training and Education Centre and Environmental Education Centers (Chapter 1.2.8).

Different scientific institutions and NGOs collect data on biodiversity. In 2009 NBMS with 20 biodiversity indicators has been designed; 14 indicators have been calculated by Working Group established at MENR. NBMS has not been formally established and institutionalized yet (Chapter 3.8).

**Expenditures for nature conservation** have strongly increased (state budget of MENR). At the same time, however, the share in the overall annual budget dropped due to the drastic increase of the State budget. The chapter 3.9 reviews the sources of financing nature protection.

**Georgia**

Since 2008 Georgia joined 9 more international conventions, agreements and protocols. Currently, the country is a party of 31 Multilateral Environmental Agreements and steps are underway (Chapter 4.2). On June 27, 2014 The EU and Georgia signed the Association Agreement (AA), parliament of Georgia ratified AA . To implement AA including Deep and Comprehensive Free Trade Agreement (DCFTA), National Action Plan (2014-2017) has been adopted. For harmonization of environmental legislation with EU, road map has been developed. Law on “Living Genetically Modified Organisms” has been adopted; Draft Law “on Biological Diversity” has been developed with the consideration of EU directives (Chapter 4.2).
Before expiration of the main biodiversity policy document NBSAP 1, Georgia launched the NBSAP revision process to update its biodiversity policy in line with Global Strategic Plan 2010-2020. NBSAP 2 developed in a highly participatory manner, was adopted in 2014. The revision process was presented on COP12 of CBD, in South Korea, October 8, 2014. Biodiversity issues are incorporated in National development plans and strategies of other sectors (Chapter 4.3).

Assessment of the current state and trends in ecosystems is difficult, due to the lack of modern and effective tools for data collection, storage and analysis. Just the forest cover has been monitored by remote sensing technology and is estimated as 41% of the country’s territory. Main threats to different ecosystems remain unchanged and are even growing; damage of the forest species by the invasive fungus disease has been increased (Chapter4.4.1). National system of habitat classification has been elaborated in compliance with modern systems; Under AA, Georgia took commitment to establish a monitoring system in order to monitor conservation status of protected habitats and species. Monitoring of the species has begun in PAs; increase of deer population has been recorded; restoration of the goitered gazelle on lori Plateau is underway; population size of sturgeon has decreased by 37 times; number of populations of Caucasian salamander, Caucasus viper, several species of bats have been decreased within the last decade. Seed banks and accessions for genetic resources have been restored; 17% of Georgia flora species and 3,075 samples of field and vegetable crops, as well as, 1,519 specimens of vine, fruit, nuts and berries are stored in the gene banks (Chapter 4.1.2). The Red list has not been revised since 2006.

Forestry sector went through several policies, legislative and institutional reforms during last decade. Policy development was initiated several times, but was never finalized. All of those reforms induced loss of qualified personnel, uncertainties in legislation, poor governance and finally unsustainable forest management. From 2007 government policy was mainly oriented towards the short-term revenue maximization from extraction of resources while neglecting the importance of nature conservation and sustainability: inventory was ignored and the licenses for the long-term commercial forest use were issued on the bases of auction. Forest Code (1999) was amended several times; in 2010 important issues were removed that created the foundation of forestry, as well as the foundation of conservation and sustainable use of ecosystems. In 2011 social cutting was introduced, which has increased trend. Control electronic system to combat illegal logging has been established (Chapter 4.5.1.2 and 4.5.1.1). The current Government (from 2012) changed attitude towards the forest sector. Strengthening of forestry has been prioritized among the functions of the Ministry. A “Forest policy service” (forestry department of the Ministry of Environment and Natural Resources Protection) has been created; policy, management and supervision functions have been separated, while in 2011 – 2012 all this function were concentrated in one agency (Chapter 4.5.1.3). An issuing of the long-term forest use license has ceased. Existence of management plans based on inventory before the initiation of forest use activities has become obligatory (Chapter 4.5.1.1). The public has become more involved in forest-related processes (Chapter 4.5.1.4). In 2013, with active involvement of stakeholders the “National Forest Concept for Georgia” was adopted by the Parliament. This is the first officially approved policy document declaring strategic role of forest resources and recognizing sustainable management of forests as the guiding principle. “National Forest Programme” process has been launched to involve the stakeholders in policy,
legislation and strategy development, coordination and resource mobilization processes. Forest sector reform strategy development is underway. Draft of the New Forest Code based on new policy is being developed, that includes national principles, criteria and indicators for sustainable forest management (Chapter 4.5.1.2). Forests remain under the state ownership, but the new Code introduces different forms of property.

The Georgian agriculture sector which occupies 44% of the territory of Georgia is characterized by high fragmentation (in average 1.25 ha agricultural land), high social dependency (about 52% of workforce still depends on agriculture), low productivity, low development/increase rate and high diversity of products. Most of the agricultural land is privatized in Georgia; however pasturelands still remain under state ownership and are leased to individual farmers with long term leasing contracts.

The current Government (from 2012) drastically changed the attitude towards the development of the agriculture sector. The main consideration is given to improving amelioration infrastructure, promoting agriculture cooperatives, implementation of the small farmers’ assistance project (subsidizing), access to cheap credits for agricultural enterprises, creation of state extension service, etc. (Chapter 4.5.2.2). Organic farming development in Georgia is still in the starting stage (Chapter 4.5.2.4). Inventories of agricultural biodiversity has been conducted, new gene bank and several live collections has been established, however, loss of local landraces and the related knowledge still remains problematic (Chapter 4.5.2.5). Land degradation, related to improper farming practices (burning agricultural lands, uneven distribution of livestock on pastures), collapsed infrastructure and climate change, still remains one of the major problems for Georgian agriculture. In spite of some attempts to improve agriculture (Chapter 4.5.2.5) and pastureland management (Chapter 5.5.2.6) from the side of the state as well as various international support programmes, including planting the windbreaks, no tangible progress is made so far. In PAs, developments of pasture management plans are underway in order to identify permeable number of livestock, as a condition for leases. Since 2014 Georgia officially banned introduction of the GM propagation material for agricultural production, however appropriate control mechanisms are still missing.

The main instrument for protection and conservation of biodiversity is the development of a protected areas (PA) system, which succeeded in Georgia with receiving the Law “on PA System”, based on universal values and country’s circumstances that is in compliance with internationally recognized categories. Soviet system comprising country’s 2.4% have been transformed, new PA s of new categories (I-VI) has been designated and constitute 8.7% of the country (Chapter 4.6.1.1).Conservation areas of global importance have been identified; Ramsar sites are designated (Chapter 4.6.1.2). Elaboration and approval of management plans are underway. Administrations of new PAs have been created; boundaries are demarcated, in most national parks visitor infrastructure is developed; number of visitors is being increased and correspondingly, own revenues have increased as well. The Agency of Protected Areas (APA) gained right to retain revenues and finance relevant activities. There are still conflicts with “development” projects, especially due to hydro-power plant constructions, which not only hampers the designation of PAs, but also takes lands from existing ones, even being of global designation (Chapter 4.6.1.4). The country needs spatial planning with PAs system’s plan and a development PAs network to ensure connectivity among isolated PAs and strengthen system through including it in the social-economic context.
The education system is being transformed to meet the European standards. Need for development of new educational standards and new curricula plans is increasing, mainly related to forestry sector. Academic education in forestry, implemented at Ilia State University has been enriched with new curricula and teaching materials and invited foreign professors; vocational educational programs according to international standards are being developed (Chapter 4.7.1). EE is becoming important part of the educational system (Chapter 4.7.2); cooperation between Ministry of Education and Sciences and MoENRP through its newly created Environmental Information and Education Center has strengthened; cross-cutting standard for “Environmental Education for Sustainable Development”, has been developed and will be reflected in all three levels of general education in all subject programs and the activities within the framework of non-formal education (Chapter 4.7.3).

Certain State, scientific and non-governmental organizations have been implementing separate biodiversity monitoring and inventory activities under the framework of different donor-supported projects, but the data have not being systematized and collected on the national level. NBMS with set of 26 indicators has officially been established; 12 indicators have been calculated/recalculated, and published on the official web-page of the MoENRP; refinement and institutionalization of NBMS is underway.

Financing nature protection by state has substantially increased from 2005, since 2009 trend was decreasing; since 2012 state allocations for nature protection is increasing; no economic incentives has been introduced. Chapter 4.9 describes financial resources for nature protection.

On a regional level trends are summarized in conclusions (Chapter 5): the basic legal and planning framework for biodiversity conservation is in place and is moving towards the harmonization with the European legislation; biodiversity policy (NBSAP) is in place or is under approval; in-situ and ex-situ conservation measures have improved; budget for nature protection and PAs have increased, but still remains quite low; efforts to become forestry sector oriented on sustainable forest management is underway; spending for the agriculture sector have increased in the state budgets of the countries, at the same time use of agrochemicals, as well as overgrazing and land degradation due to poor management practices have an increasing trend; academic and vocational education and training in the forestry and agriculture have gained high demand from the governments; human capacity building measures through the introduction of new standards in curricula for forestry professional and high education is underway; environmental education is being incorporated into all levels of education. Sharing experience on biodiversity planning, nature resource management and strengthening biodiversity conservation through implementation of Eco-regional Conservation Plan in South Caucasus countries with support of international organizations is underway.
Table of Content

Executive summary ................................................................. iii
List of Tables ........................................................................ xv
List of Figures ........................................................................ xvi
List of Abbreviations ................................................................ xvii
1. Introduction ...................................................................... 1
2. Armenia .......................................................................... 3
   2.1 General Information ....................................................... 3
   2.2 International obligations ................................................ 4
   2.3 Biodiversity-related Strategic Documents ....................... 6
   2.4 Trends in the state of ecosystems and species ................. 9
      2.4.1 Ecosystems .............................................................. 9
      2.4.2 Species .................................................................. 13
      2.4.3 Red Book ............................................................... 16
   2.5 Trends in the sectors effecting biodiversity .................... 17
      2.5.1 Forestry ................................................................. 17
         2.5.1.1 Management practices ....................................... 19
         2.5.1.2 Legislation and policy ........................................ 25
         2.5.1.3 Institutional set-up ............................................. 29
         2.5.1.4 Public awareness and participation ..................... 31
      2.5.2 Agriculture ............................................................ 33
         2.5.2.1 Institutional set-up ............................................. 34
         2.5.2.2 Policy ............................................................... 35
         2.5.2.3 Arable lands management .................................... 36
         2.5.2.4 Organic farming ............................................... 37
         2.5.2.5 Agrobiodiversity ............................................... 38
         2.5.2.6 Pasture management .......................................... 41
   2.6 Protected Areas System ................................................ 44
      2.6.1 Coverage and Representativeness ......................... 44
      2.6.2 Conservation areas of global importance .................. 47
      2.6.3 Legislation and policy ............................................. 48
      2.6.4 Institutional set-up and management ....................... 51
   2.7 Education ................................................................... 54
      2.7.1 Vocational and higher education ............................. 54
3.9 Financial mechanisms ........................................................................................................ 123

4. Georgia .......................................................................................................................... 127
  4.1 General Information ................................................................................................. 127
  4.2 International Obligations ......................................................................................... 128
  4.3 Biodiversity-related Strategic Documents ............................................................. 130
  4.4 Trends in the state of ecosystems and species ......................................................... 136
    4.4.1 Ecosystems ....................................................................................................... 136
    4.4.2 Species ........................................................................................................... 139
    4.4.3 Red List ......................................................................................................... 143
  4.5 Trends in the sectors effecting biodiversity ............................................................... 145
    4.5.1 Forestry .......................................................................................................... 145
      4.5.1.1 Management Practices ............................................................................ 145
      4.5.1.2 Legislation, Policy, Strategies ................................................................. 153
      4.5.1.3 Institutional set-up .................................................................................. 159
      4.5.1.4 Public participation and public awareness .............................................. 162
    4.5.2 Agriculture ....................................................................................................... 164
      4.5.2.1 Institutional set-up .................................................................................. 166
      4.5.2.2 Policy ....................................................................................................... 167
      4.5.2.3 Arable lands management ....................................................................... 170
      4.5.2.4 Organic farming ....................................................................................... 172
      4.5.2.5 Agrobiodiversity ...................................................................................... 173
      4.5.2.6 Pasture management ............................................................................... 177
  4.6 Protected areas system ............................................................................................. 179
    4.6.1 Coverage and Representativeness ................................................................... 179
    4.6.2 Conservation areas of global importance ......................................................... 183
    4.6.3 Legislation and Policy ...................................................................................... 183
    4.6.4 Institutional set-up and management ............................................................... 185
  4.7 Education .................................................................................................................. 191
    4.7.1 VET and Higher education ............................................................................. 191
    4.7.2 Environmental Education (EE) .................................................................... 193
    4.7.3 Education for Sustainable Development (ESD) ........................................... 196
  4.8 Biodiversity Monitoring ........................................................................................... 198
  4.9 Financial mechanisms .............................................................................................. 202

5. Conclusions .................................................................................................................... 208
  5.1 Armenia .................................................................................................................... 209
5.2 Azerbaijan .................................................................................................................. 216
5.3 Georgia ..................................................................................................................... 222
6. References .................................................................................................................. 228
7. Appendices .................................................................................................................. 236
Appendix 1 - Multilateral Environmental Agreements (MEAs) ratified by the Republic of Armenia ................................................................. 236
Appendix 2 - Main institutional structures of the RA forest management sector ........ 238
Appendix 3 – Map of SPNAs of Armenia ........................................................................ 239
Appendix 4 – IBAs in Armenia ...................................................................................... 240
Appendix 5 - Protected Areas in Armenia ...................................................................... 241
Appendix 6 - Multilateral Environmental Agreements (MEAs) ratified by Azerbaijan .... 244
Appendix 7 - List of the Specially Protected Nature Areas of the Republic of Azerbaijan .... 246
Appendix 8 - Important Bird Areas (IBA) in Azerbaijan .................................................. 248
Appendix 9 - Multilateral Environmental Agreements (MEAs) ratified by Georgia ........ 252
Appendix 10- List of Priority Habitats of Georgia ........................................................... 254
Appendix 11 - Discussions/details form different sources on forest cover in Georgia .... 255
Appendix 12 - Map - Critical freshwater habitats ............................................................ 257
Appendix 13 - Map of PAs of Georgia ............................................................................ 258
Appendix 14 - PAs of Georgia ....................................................................................... 259
Appendix 15 - Important Bird Areas of Georgia ............................................................. 262
Appendix 16 - Georgian Protected Areas Categories ..................................................... 264
Appendix 17 - Assessment of Environmental Education in Georgia, LEPL ................... 265
List of Tables

Table 1: NEAP 2 - Activities under the field of biodiversity, RA ................................................................. 7
Table 2: Strategic Directions of the “NBSAP 2” (2016-2020), RA .............................................................. 8
Table 3: Changes in annual harvesting plan on the bases of remote sensing, RA ........................................... 24
Table 4: Goals of NFP, RA .......................................................................................................................... 25
Table 5: SPNAs according to IUCN categories, RA ......................................................................................... 46
Table 6: Environmental payments, RA .......................................................................................................... 63
Table 7: Main goals of the NBSAP 1, Azerbaijan ......................................................................................... 70
Table 8: Key directions of the NBSAP1, Azerbaijan ...................................................................................... 70
Table 9: Main goals of the NBSAP 2 (draft), Azerbaijan ................................................................................. 70
Table 10: The main goals of the NFP, Azerbaijan ......................................................................................... 90
Table 11: Objectives of NFP, Azerbaijan ....................................................................................................... 90
Table 12: Priority Objectives (desired future) of the National Forest Policy, Azerbaijan ......................... 91
Table 13: Area under organic farming and its share in the total area of agricultural land 2005 - 2013 (in ha and %), number of producers ................................................................................................................. 102
Table 14: Protected Areas of the Republic of Azerbaijan (As of March 2015) .................................................... 108
Table 15: Total state budget and expenditures of MENR for nature conservation ........................................... 126
Table 16: Law on Living Genetically Modified Organisms ................................................................................ 128
Table 17: Six priorities of NEAP 1, Georgia .................................................................................................... 130
Table 18: Ten issues of NBSAP 1, Georgia ...................................................................................................... 131
Table 19: Biodiversity-related targets under NEAP 2, Georgia ....................................................................... 132
Table 20: Strategic directions of NBSAP 2, Georgia ....................................................................................... 133
Table 21: Georgia, NBSAP 2 – I international recognition ............................................................................ 134
Table 22: Actions to conserve biodiversity in the Second National Action Programme to Combat Desertification ................................................................................................................................. 134
Table 23: Actions to protect forest resources in Regional Development Program 2015-2017 ......................... 135
Table 24: Main reasons for unsustainable forest management in Georgia; Source: Situation Analysis for NBSAP 2, 2012 ....................................................................................................................................... 153
Table 25: The principles of the Forest Concept, Georgia .................................................................................. 157
Table 26: Thematic Working Groups within the NFP, Georgia ........................................................................ 157
Table 27: Objectives of the Forest Sector Reform Strategy ........................................................................... 159
Table 28: Number of farms and their size, Georgia .......................................................................................... 165
Table 29: Seven directions of the Strategy for Agricultural Development in Georgia ................................... 169
Table 30: Protected Areas of Georgia (As of January 2015) ......................................................................... 181
Table 31: National Forest Concept on forest education: .................................................................................. 192
Table 32: USAID, “Biodiversity Analysis Update for Georgia” (2009) report on NBMS ................................. 199
Table 33: Budget of the Ministry of Environment and Natural Resources Protection, 2010-2014, (GEL mln) .................................................................................................................................... 204
List of Figures

Figure 1: Land classification of RA.......................................................... 4
Figure 2: Forest breaches, RA ................................................................. 18
Figure 3: Forest fires, RA ................................................................. 20
Figure 4: Reforestation (ha), RA.......................................................... 21
Figure 5: Agricultural land types .......................................................... 33
Figure 6: Protected Areas coverage and representativeness, RA .............. 45
Figure 7: Ratio of different categories of SPNAs, RA................................ 46
Figure 8: Dynamics of the amount of nature protection and nature use fees 63
Figure 9: Distribution of lands according to land cover ....................... 67
Figure 10: Volume (in tons) of fish caught on quota (2009-2012) .......... 78
Figure 11: Changes of the population size of goitered gazelle (Gazella subgutturosa), Azerbaijan 79
Figure 12: Forested area, Azerbaijan ................................................ 82
Figure 13: Wood residues from sanitary and maintenance felling .......... 84
Figure 14: Reforestation/afforestation, Azerbaijan ............................ 86
Figure 15: Forest fires, Azerbaijan .................................................... 87
Figure 16: Agricultural land types, Azerbaijan ..................................... 94
Figure 17: Cultivation of agricultural crops (1,000 ha) ....................... 95
Figure 18: Livestock breeding (1,000 heads) ....................................... 95
Figure 19: Application of mineral fertilizers ...................................... 100
Figure 20: Coverage of Specially Protected Nature Areas (SPNA), Azerbaijan 107
Figure 21: Trend in total environmental expenditure .......................... 125
Figure 22: Distribution of lands according to land cover (2004), Georgia 128
Figure 23: Forest area in Georgia between 1990-2010 ....................... 137
Figure 24: Changes of the population size of certain species ............. 142
Figure 25: Harvested timber according to different types of felling, thds m$^3$ 146
Figure 26: Illegal loggings, thsd m$^3$ ................................................. 150
Figure 27: Forest fires ................................................................. 151
Figure 28: Reforestation/afforestation measures .................................. 152
Figure 29: Land use - agriculture lands, Georgia ............................. 165
Figure 30: Use of fertilizers and pesticides, Georgia ......................... 171
Figure 31: Coverage of Protected Areas, Georgia (January 2015) ........ 179
Figure 32: Financial resources ....................................................... 203
Figure 33: Environmental revenues – fees/permits/licenses .................. 205
Figure 34: Environmental revenues – fees/permits/licenses (GEL thsd) ... 206
### List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>Association Agreement between the European Union and the European Atomic Energy Community and their Member States, of the one part, and Georgia, of the other part</td>
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<tr>
<td>AAC</td>
<td>Annual Allowable Cut</td>
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<tr>
<td>ABS</td>
<td>Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization</td>
</tr>
<tr>
<td>ADA</td>
<td>Austrian Development Agency</td>
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<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>ADS</td>
<td>Armenia Development Strategy</td>
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<td>AMD</td>
<td>Armenian Dram</td>
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<tr>
<td>ANAU</td>
<td>Armenian National Agrarian University</td>
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<tr>
<td>ANR</td>
<td>Agency of Nature Resources (Georgia)</td>
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<tr>
<td>AOS</td>
<td>Azerbaijan Ornithological Society</td>
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<tr>
<td>APA</td>
<td>Agency of Protected Areas (Georgia)</td>
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<tr>
<td>AREP</td>
<td>Azerbaijan Rural Environment Project</td>
</tr>
<tr>
<td>ASPB</td>
<td>Armenian Society for the Protection of Birds</td>
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<tr>
<td>BDD</td>
<td>Basic Data Directions</td>
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<tr>
<td>BMA</td>
<td>Bio-resources Management Agency (Azerbaijan)</td>
</tr>
<tr>
<td>BMUB</td>
<td>German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety of Germany</td>
</tr>
<tr>
<td>BMZ</td>
<td>Federal Ministry for Economic Cooperation and Development of Germany</td>
</tr>
<tr>
<td>BP</td>
<td>British Petroleum</td>
</tr>
<tr>
<td>BPS</td>
<td>Biodiversity Protection Service (Georgia)</td>
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<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
</tr>
<tr>
<td>CEPF</td>
<td>Critical Ecosystem Partnership Fund</td>
</tr>
<tr>
<td>CIMMYT</td>
<td>International Center for Agricultural Research in the Dry Areas</td>
</tr>
<tr>
<td>CITES</td>
<td>Convention on International Trade in Endangered Species of Wild Fauna and Flora</td>
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<tr>
<td>CNF</td>
<td>Caucasus Nature Fund</td>
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<tr>
<td>COP</td>
<td>Conference of Parties</td>
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<tr>
<td>CPAF</td>
<td>Caucasus Protected Areas Fund</td>
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<tr>
<td>DAAD</td>
<td>German Academic Exchange Service</td>
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<tr>
<td>DCFTA</td>
<td>Deep and Comprehensive Free Trade Area</td>
</tr>
<tr>
<td>DES</td>
<td>Department of Environmental Supervision (Georgia)</td>
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<tr>
<td>DNEM</td>
<td>National Department of Environmental Monitoring</td>
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<tr>
<td>DPA</td>
<td>Department of Protected Areas (Georgia)</td>
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<tr>
<td>EBA</td>
<td>Endemic Bird Area</td>
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<tr>
<td>EE</td>
<td>Environmental Education</td>
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<tr>
<td>EEC</td>
<td>Environmental Education Center (Azerbaijan)</td>
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<tr>
<td>EESD</td>
<td>Environmental Education for Sustainable Development</td>
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<tr>
<td>EI</td>
<td>Environmental Inspectorate (Georgia)</td>
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<tr>
<td>EIEC</td>
<td>Environmental Information and Education Center (Georgia)</td>
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</tbody>
</table>
ENPI  European Neighborhood and Partnership Instrument
FLEG  Forest Law Enforcement and Governance Program
ENPI-SEIS European Neighborhood and Partnership Instrument for Shared Environmental Information System
EPR  Environmental Performance Review
ES  Ecosystem Services
ESD  Education for Sustainable Development
EU  European Union
FAO  Food and Agriculture Organization of the United Nations
FD  Forestry Department
FDI  Foreign Direct Investment
FE  Forest Enterprises (Armenia)
FMP  Forest Management Plan
FPS  Forest Policy Service (Georgia)
FSC  Forest Stewardship Council
GCAD  Georgian Center for Agro-business Development
GCCW  Georgian Centre for the Conservation of Wildlife
GDP  Gross Domestic Product
GEF  Global Environment Facility
GIS  Geographical Information System
GIZ  Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
GoA  Government of Azerbaijan
GoG  Government of Georgia
GoRA  Government of Republic of Armenia
GPADP  Georgia Protected Areas Development Project
IBA  Important Bird Area
IBiS  Integrated Biodiversity Management in South Caucasus
ICARDA  International Center for Agricultural Research in the Dry Areas
IFI  International Financial Institution
ISO  International Organization of Standardization
ISU  Ilia State University
ITPGRFA  International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN  International Union for Conservation of Nature
KFW  German Development Bank
LEAP  Local Environmental Action Plan (Azerbaijan)
LEPL  Legal Entity of Public Law (Georgia)
LLC  Limited Liability Company
masl  meter above sea level
MEA  Multilateral Environmental Agreement
MEDU  The Ministry of Education of the Republic of Azerbaijan
MENR  Ministry of Ecology and Natural Resources (Azerbaijan)
MoENRP  Ministry of Environment and Natural Resources Protection (Georgia)
MoA  Ministry of Agriculture
<table>
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<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tr>
<td>MoES</td>
<td>Ministry of Education and Science (Georgia)</td>
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<td>MoNP</td>
<td>Ministry of Nature Protection (Armenia)</td>
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<td>MoTAES</td>
<td>Ministry of Territorial Administration and Emergency Situations (Armenia)</td>
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<td>MoU</td>
<td>Memorandum of Understanding</td>
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<tr>
<td>MP</td>
<td>Management Plan</td>
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<td>MTEF</td>
<td>Medium – Term Expenditure Framework</td>
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<tr>
<td>NAS</td>
<td>National Academy of Sciences</td>
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<tr>
<td>NBMR</td>
<td>National Biodiversity Monitoring Report</td>
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<tr>
<td>NBMS</td>
<td>National Biodiversity Monitoring System</td>
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<tr>
<td>NBSAP</td>
<td>National Biodiversity Strategy and Action Plan</td>
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<tr>
<td>NEA</td>
<td>National Environment Agency (Georgia)</td>
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<tr>
<td>NEAP</td>
<td>National Environmental Action Plan</td>
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<tr>
<td>NEP</td>
<td>National Education Plan</td>
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<tr>
<td>NFA</td>
<td>National Forest Agency (Georgia)</td>
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<tr>
<td>NFMIS</td>
<td>National Forest Management Information System</td>
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<td>NFMS</td>
<td>National Forest Monitoring System</td>
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<td>NFP</td>
<td>National Forest Programme</td>
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<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>NPRESSD</td>
<td>National Program on Environmentally Sustainable Social and Economic Development</td>
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<td>NQF</td>
<td>National Qualifications Framework</td>
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<tr>
<td>NR</td>
<td>National report</td>
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<td>NWFP</td>
<td>Non-wood forest products</td>
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<td>ÖBF</td>
<td>Österreichischen Bundesforste</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
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<td>PA</td>
<td>Protected Area</td>
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<td>PEBLDS</td>
<td>Pan European Biological and Landscape Diversity Strategy</td>
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<td>PEEN</td>
<td>Pan-European Ecological Network</td>
</tr>
<tr>
<td>PoWPA</td>
<td>CBD - Programme of Work on Protected Areas</td>
</tr>
<tr>
<td>PPP</td>
<td>Public-Private Partnership</td>
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<tr>
<td>PSA</td>
<td>Product Sharing Agreements</td>
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<td>PSR</td>
<td>Pressure-State-Response Model</td>
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<tr>
<td>RCAPP</td>
<td>Research Centre for Agriculture and Plant Protection</td>
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<tr>
<td>RA</td>
<td>Republic of Armenia</td>
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<tr>
<td>CETEC</td>
<td>State Ecological Training and Education Centre (Azerbaijan)</td>
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<tr>
<td>SCA</td>
<td>State Conservation Areas</td>
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<tr>
<td>SCLC</td>
<td>State Committee on Land and Cartography (Azerbaijan)</td>
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<tr>
<td>SDF</td>
<td>State Department of Forestry (Georgia)</td>
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<td>SDPA</td>
<td>State Department of Protected Areas (SDPA)</td>
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<tr>
<td>SEI</td>
<td>State Environmental Inspectorate (Armenia)</td>
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<tr>
<td>SEIS</td>
<td>Shared Environmental Information System</td>
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<td>SFM</td>
<td>Sustainable Forest Management</td>
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<tr>
<td>Abbreviation</td>
<td>Full Name</td>
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<tr>
<td>SFMB</td>
<td>State Forest Monitoring Board (Armenia)</td>
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<td>SFMC</td>
<td>State Forest Monitoring Center (Armenia)</td>
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<tr>
<td>SFSS</td>
<td>State Food Safety Service</td>
</tr>
<tr>
<td>SIAM</td>
<td>State Inspectorate of Agricultural Machinery (Armenia)</td>
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<tr>
<td>SMBP</td>
<td>Sustainable Management of Biodiversity Program (GIZ)</td>
</tr>
<tr>
<td>SNCO</td>
<td>State Non-Commercial Organization</td>
</tr>
<tr>
<td>SoE</td>
<td>National Report on the State of the Environment</td>
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<tr>
<td>SOCAR</td>
<td>State Oil Company of the Azerbaijan Republic</td>
</tr>
<tr>
<td>SOFAZ</td>
<td>State Oil Fund of Azerbaijan</td>
</tr>
<tr>
<td>SPNA</td>
<td>Specially Protected Nature Areas (In Armenia and Azerbaijan)</td>
</tr>
<tr>
<td>SPPRSD</td>
<td>State Programme for Poverty Reduction and Sustainable Development (Azerbaijan)</td>
</tr>
<tr>
<td>TEEB</td>
<td>The Economics of Ecosystems and Biodiversity</td>
</tr>
<tr>
<td>TSU</td>
<td>Tbilisi State University</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNCCD</td>
<td>United Nations Convention to Combat Desertification</td>
</tr>
<tr>
<td>UNECE</td>
<td>United Nations Economic Commission for Europe</td>
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<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Program</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
</tr>
<tr>
<td>USDOL - ITAP</td>
<td>United States Department of the Interior - International Technical Assistance Programme</td>
</tr>
<tr>
<td>VAT</td>
<td>Value Added Taxes</td>
</tr>
<tr>
<td>WWF</td>
<td>World Wide Fund for Nature</td>
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<td>YSU</td>
<td>Yerevan State University</td>
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</table>
1. Introduction

Context: GIZ – SMB Programme

The biodiversity of the South Caucasus is of global importance. The tremendous diversity of species in the region and many of its ecosystems are increasingly threatened. There is considerable pressure from the exploitation of natural resources by the local population, as well as by the private sector and the governments. Meanwhile, forest clearance for various purposes, as well as, through illegal logging, combined with excessive concentrations of livestock, unsuitable agricultural practices and uncontrolled wild plant harvesting, are causing the degradation and destruction of social and economic structures underpinning livelihoods, and a loss of biodiversity in rural areas.

At the national level the SMB Programme is helping to improve political, institutional and legal frameworks, while in selected areas it is introducing strategies on sustainable management and harnessing biodiversity. At regional level it is promoting international dialogue and cross-sector professional exchange.

In early 2015 a Programme Evaluation was conducted for the SMBP. As a consequence of this evaluation it was decided to end the SMBP in November 2015 and to commence a follow-up programme "Integrated Biodiversity Management, South Caucasus" (IBiS) from December 2015 onwards.

For assessing the contribution of SMBP to the general development of the biodiversity sectors and as a baseline for IBiS a thorough analysis was undertaken on the development in the biodiversity “sectors” in the three South Caucasus countries and in the region in general. The underlying assumption is that (positive) developments in the sector can plausibly (not: causally) be linked to the work of SMBP, as SMPB is one of the major player in the sector in the three countries.

Objective of the Consultancy:

The task of the consultant is to analyze and document trends in the biodiversity “sectors” in general biodiversity protection and sustainable management, and more specifically forest management, pasture management and agricultural practices from 2008 until 2015 in the three South Caucasus countries and in the region in general.

This report is expected to be used for final assessment of SMBP achievements to overarching results and as a baseline for IBiS.

Methodology:

Assessment is done by a way of a desk study analysing relevant documents - national reports to CBD secretariat, data from the national biodiversity monitoring reports, national state of the environment reports, environmental performance reviews, and sector analyses carried out by local or international organisations or the respective governments, provided by GIZ-SMBP and collected by the consultant as well. When available, data was taken directly from government statistical services (See references).

Themes, according to, which analysis are undertaken in order to document the trends, were agreed with GIZ – SMBP and are as follows:

- International obligations/Multilateral environmental agreements,
- Strategic documents (biodiversity policy and other sectoral documents),
- Ecosystems and species,
- Sectors effecting biodiversity –
  o Forestry (management practices, policy, legislation, institutional set-up, public awareness and public participation),
  o Agriculture (policy, institutional set-up, arable lands management, organic farming, agrobiodiversity, pasture management).
- Biodiversity conservation - protected areas system (coverage, legislation, policy, institutional set-up),
- Education (vocational and higher with emphasis of forest education, environmental education and education for sustainable development),
- Biodiversity monitoring,
- Financial mechanisms.

Analysis has been done according to identified themes for each country through compilation of materials from existing reports showing progress in the field.

A basis of the assessment was only desk review of the existing reports; fact finding and check reliability of the data was not the task of the consultant. If discrepancy appeared between data from different sources, consultant did cross-check depending on availability. In some cases interviews were also carried out.

**Structure of the Report:**

Report is structured according to the countries: Armenia (Chapter 2), Azerbaijan (Chapter 3), and Georgia (Chapter 4).

Structure of the report is identical for each country (sub-chapters are similar). Sub-chapters represent the themes which were analysed (eight themes), each theme was assessed according to sub-component. (Table of content represents the whole structure of the analysed themes and sub-components).

Progress in each field/theme is shown through the compilation of information from different documents arranged in chronological order (see references).

Conclusion (Chapter 5) summarises common findings on regional level followed by details on the trends for each country according to above-mentioned eight themes.
2. Armenia

2.1 General Information

Armenia is located in the southern Caucasus and is the smallest of the South Caucasus Countries, covering 29,743 km² with 3,010,600 population; comprises 11 marzes (provinces) that have their provincial capitals. By 2011 statistical data, 98% of the country population is of Armenian nationality.

About half of Armenia’s land area is at the elevation of 2,000 meters above sea level (masl) or higher and only three percent of the country lies below 650 meters. 44% of the territory of Armenia is a high mountainous area not suitable for inhabitation. The degree of land use is strongly un-proportional. The zones under intensive development make 18.2% of the territory of Armenia with concentration of 87.7% of total population. The poorly developed zones make up 38.0% of the country, where only 12.3% of total population resides with a very low density. Most of the population lives in the western and north-western parts of the country, where the two major cities, Yerevan and Gyumri, are located. The zones under intensive development are provided by engineering-transportation infrastructures. These zones offer the highest number of public services, more human resources and financial opportunities. At the same time, the poorly developed areas have rich natural resources with preserved unique natural ecosystems, beautiful landscapes, clean water, air, and more biological resources.

Location of the country in the intersection of three biogeographical provinces, diversity of climatic conditions and active geological processes have resulted into formation of diverse ecosystems and rich biodiversity with high level of endemism.

Armenia is a globally significant center of origin of agrobiodiversity. The wild relatives of numerous cultivated plants and of a number of domestic animals have been preserved in Armenia.

Armenia is located in two “biodiversity hotspots,” the Irano-Anatolian and the Caucasus Hotspots as well as, the critically endangered Global 200 ecoregion, according to the map of ecoregions developed by WWF.

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1 According to data of the current registration based on 2011 population census.


2.2 International obligations

Armenia has signed and ratified 22 international environmental conventions and protocols thereof (14 whereof were signed and ratified in the last decade) which are essential prerequisites for elaboration of the national environmental policy, strategies, and concepts, in compliance with sustainable development approaches promoting environmental protection and biodiversity conservation. (Appendix 1 - Multilateral Environmental Agreements (MEAs) ratified by the RA).


The activities implemented in the frames of environmental conventions are coordinated by the RA Ministry of Nature Protection with involvement of NGOs, scientific structures and the civil society.

In 2011, the RA Government adopted the decision #1594-N on “Adoption of a list of activities aimed at fulfilment of the commitments by the Republic of Armenia based on a number of international environmental conventions”, which is a five-year action plan (2012-2016). Its aim is to ensure coordinated implementation of respective activities derived from 15 environmental conventions.

The following conventions are in the lists of the mentioned decision:

- The UN Convention on Biological Diversity: 4 activities including establishment of new SNPAs for protection of biodiversity and valuable ecosystems, analysis of national legislation and development of respective legal acts for establishment of a biosphere reserve in Armenia.

- The Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat: 5 activities including development of a national program and action plan on conservation and use of wetlands of Armenia, mapping and development of a management plan for Khor Virap State Sanctuary, assessment of biological and
socio-economic values of wetlands of Armenia.


- The EU Convention on the Conservation of European Wildlife and Natural Habitats (Bern): 3 activities including implementation of works on establishment of the Emerald network of potential sites of special environmental interest in Armenia, dissemination of information regarding the need to protect wild flora and fauna species as well as the threatened natural habitats, in particular through establishment of the Emerald network.

- The Bonn Convention on the Conservation of Migratory Species of Wild Animals: 4 activities including analysis of the species occurring on the territory of Armenia, which are included in the Appendices I and II of the Convention, development of proposals on inclusion of new species in the list, development of a draft protocol decision of the RA Government on “Adoption of the concept of migratory species of wild animals on the territory of Armenia and the national action plan”, establishment of an information and mapping database on ecological peculiarities and distribution of migratory species of wild animals occurring on the territory of Armenia.
2.3 Biodiversity-related Strategic Documents

During the recent years environmental measures in Armenia have been implemented with consideration of fundamental provisions and activities stipulated in a number of strategic documents, which contribute to biodiversity conservation and sustainable use. Main documents are following:


Recently adopted documents:

- The Program on Sustainable Development of Armenia (2008) for 2008-2012;
- Sustainable development strategy of rural community and agriculture of the Republic of Armenia for the period of 2010-2020;
- Armenia development Strategy (2014- 2025) – adopted by the decision #442-N (27 March 2014) of the RA Government;
- Strategy and National Action Plan on Development of the Specially Protected Nature Areas of the Republic of Armenia - was developed in 2013-2014;

**NBSAP-1**: was developed in accordance with the requirements of the Convention on Biological Diversity (CBD) and includes clear mechanisms of program implementation, monitoring and assessment.

The NBSAP has been planned for a span of four years (2000-2004). This period of time is considered enough to realistically control the impact of the NBSAP and to revise the plan at the end of it. However, the strategy and the action plans proceeding from it have not been revised and no implementation analysis has been carried out. “It is obvious that the development of a new version of the BSAP in the coming years is a priority” – is stated in the 4th National Report to CBD, 2009.

The main goal of the NBSAP-1 was “To ensure the conservation, sustainable use and regeneration of the landscapes and biological diversity of the Republic of Armenia for sustainable human development”. To reach this goal, 13 tasks had been identified and, according to each of them, a detailed action plan had been elaborated.

The measures fully proceed from the requirements of the implementation of the Convention and biodiversity conservation, covering several important spheres, including the improvement of the legislation and the institutional system, certain practical activities aimed at biodiversity conservation and use, etc. However, on the whole, the full-scale implementation of the NBSAP was not realistic, due to the shortage in the resources and short planned time-frame.
The country had not had and does not have sufficient human, material-technical and especially financial resources in order to implement all the actions of the NBSAP-1.

NEAP 2 - The Second National Environmental Action Programme was developed in 2006-2007 and was approved by the Government of Armenia in 2008. The document includes actions connected to the biodiversity conservation. Analysis shows that the actions in the field of biodiversity conservation are really important priorities for the country (2008-2012) that should create favourable conditions to improve the state of biodiversity conservation. Priority activities are grouped into policy, legislation and institutional capacities; economic and financial mechanisms and management of biodiversity and bio-resources, including forest sector.

Table 1: NEAP 2 - Activities under the field of biodiversity, RA

- Inventory of more valuable areas of Armenia from the biodiversity perspective, determination of the biodiversity protection mechanisms for those areas.
- Implementation of state accounting of biodiversity and creation of state cadastre according to the marzes of Armenia, including preparation of the annotated lists of flora and fauna species and basic ecosystems.
- Establishment of biodiversity monitoring system and database.
- Analysis of the PAs, elaboration of proposals on the system improvement from the prospective of biodiversity and valuable ecosystems representation, creation of new protected areas, including protected biosphere areas and ecological corridors.
- Inventory and situation assessment for rare and endangered species of flora and fauna, amendment and publication of the Red Book of Armenia.
- Identification of the most used and useful species of plants and species of hunted animals in the regions of the Republic, assessment of the resources of the most significant flora and fauna species, development of norms/quotas for collection/hunting of the most important plants and animals species.
- Examination and analysis of international experience in the assessment of impact of various sectors and natural factors of the economy on the natural ecosystems, localization and piloting of impact assessment methodologies, development of methodological guide-lines applicable for Armenia.
- Development and introduction of mechanisms for fair distribution of the benefits obtained from the use of genetic resources and their availability.
- Improvement of industrial fishing mechanisms and restoration of valuable populations of fish species.
- Clarification of 2009-2012 implementation time-scales designed for the measures stemming from and included in the National Forest Programme.
- Development and introduction of the pilot project on the fight against pests and fire prevention in the most vulnerable forests as a result of climate change.

Armenia Development Strategy (ADS) (2014-2025) – adopted by the decision #442-N (27 March 2014) of the RA Government was developed with consideration of the developments

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attributed to the global financial-economic crisis and new realities. The plan is aimed at the establishment of a strategic coordinated framework for development of the policies in various sectors and branches, which ensure country development, through consolidation of national capacities and consideration of existing experience and current conditions as well as global development challenges.

Being the primary guide of the Government, ADS is based on the following four priorities:

**Priorities of ADS 2014-2025**

- 1. Growth of employment;
- 2. Development of human capital;
- 3. Improvement of social protection system;
- 4. Institutional modernization of the public administration and governance.

It has been mentioned in the Plan that during 2009-2011 the developments in the environmental sector of the RA were mainly in the frames of the priorities of sustainable development and in accordance with the NEAP-2. Safeguarding of a balanced nature protection environment through running a resource-efficient economy was taken as a cornerstone of the environmental component of sustainable development.

In following years an objective will be set up, which will ensure the reduction of the environmental risks along with the efforts of the RA Government aimed at high rate of economic growth; in particular the biodiversity conservation risks, which are conditioned by the impact of a number of branches, mainly agriculture, forest economy, industry, energy production sector and urban development. *Biodiversity problems and the ways of their solution are not directly reflected in this document.*

**State Strategy and Action Plan on the Conservation, Use and Reproduction of Biological Diversity of the Republic of Armenia (2016-2020) (NBSAP-2)** - In a new generation of NBSAP the following strategic directions of biodiversity conservation and use have been identified:

**Table 2: Strategic Directions of the “NBSAP 2” (2016-2020), RA**

- Improvement of biodiversity-related legislation and management system;
- Improvement of conservation of biodiversity and ecosystems and restoration of disrupted habitats;
- Reduction of direct pressure on biodiversity and promotion of its sustainable use;
- Removal of core reasons for biodiversity loss by regulating cross-sectoral relations and increased public awareness;
- Intensification of scientific researches, knowledge management and creation of potential in the sphere of biodiversity conservation and sustainable use of natural resources

Statements of policy and strategic documents will be discussed in a relevant sector’s chapter.
2.4 Trends in the state of ecosystems and species

2.4.1 Ecosystems

Below are main types of ecosystems represented in Armenia and trends in their state during the last decade.

**Semi-deserts and Arid open woodlands:** Semi-deserts are located in all the submontane and lower mountain belts, at an altitude of 400 – 1,000 (1,300) masl and are often mosaic ecosystems. The vegetation is characterized by a distinctive species composition.\(^5\)

Local population uses this ecosystem as winter and spring pastures. 80-90% of the semi-deserts territory are used as arable lands, and are often irrigated. The affect of faulty irrigation system and agriculture development on the natural ecosystems are extremely negative, which have resulted in a higher degree of soil erosion, salinization and pollution.

Saline ecosystems are mainly not protected in Armenia. Artificial drying of saline marshes induced natural ecosystem degradation and extinction in semi-desert zone; saline marshes have been present in this zone before mid-20th century (due to use of soils for agricultural purposes as well as for improvement of sanitary-epidemiological situation). At present, the remaining marsh areas have been spontaneously drying, the loss of habitats of a number of wetland plants and birds is observed along with the decomposition of the whole wetland ecosystem.\(^6\)

Over the last five years it has been observed that the semi-desert zone has expanded up by profile by about 50 m, due to the intensified process of soil erosion and desertification.

As for the enhancement of PA Law to expand the system in order to protect representative ecosystems, some of semi-desert ecosystems became part of PAs after amendment of law on SPNAs. *Nowadays, total of 623.14 ha of semi-desert ecosystems and habitats are under protection.*\(^7\)

Juniper open forests are more widely spread, from the lower to the upper mountain belts (2,200 masl and higher). There are a number of endemic and rare species in the arid open forests and shibljaks.\(^8\)

The open forests are used by the local population mainly as a wood source, and the slopes covered with a low density of woody vegetation are used as spring, and summer pastures. The flora includes many medicinal and edible (fruit-berry) plants, which are collected by locals for personal and commercial use (selling in local markets).

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The anthropogenic influence on the arid open forests and shibljaks is not very high, except for the threat to juniper open forests in terms of wood usage by locals and grazing.

In recent years, expansion of the areas covered by this ecosystem has been observed first of all at the expense of penetration of typical species of open woodlands and shibljak, as well as due to the reduction of forest cover density at the lower timberline.9

**Mountainous steppes, meadow steppes, tragacanths.** The steppe ecosystems are the most widely spread in Armenia and cover approximately 37 %t of the land.10 These are spread on all the forestless slopes and plateaus of the medium mountain belt (1,000 – 2,400 masl). Tragacanth steppes and tragacanths as one of the most widespread ecosystem types, has high biodiversity value - holds many endemic and rare plants and animal species.

The majority of the territory of the steppes, especially the flat slopes and the valleys, have been cultivated/ploughed and are being used for irrigated and unirrigated agriculture. Most of the remaining steppe and even the steep slopes are used as pastures and infrequently, as hayfields. Besides, there are lot of medicinal and edible plants in the flora of the steppes which are being gathered by the local population for sale in the domestic market and personal use.

Only separate areas of mountainous steppe remained as natural areas on very steep and stony slopes as well as in small patches between mountainous plateau fields.

Over the last five years the reduction of the lower part of steppe belt has been observed due to the expansion of semi-desert vegetation. Penetration of typical steppe species into meadow-steppe zone is taking place with reduction of its altitudinal limits. At present the steppes have lost their typical features and functions in Armenia.

Recently, due to expansion of PAs system, steppe ecosystems are protected in a number of SPNAs with the total territory of 61,391.7 ha, which makes up 15.8 % of the total SPNAs territory.11

**Forests** are distributed irregularly across Armenia: Forests are mainly found on steep, extremely indented mountain slopes, at 550-2,400 masl. Armenian forests are primarily broad-leaved.12

According to the clarified data obtained by GIZ in 2011 through remote sensing method the forest cover of the Republic of Armenia makes 332,333 ha or 11.17 % of the total territory of Armenia.13

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10 Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID
12 Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID
The forest ecosystems hold the most diverse and rare wildlife of Armenia. As all forests do, Armenian forests accumulate CO2, thereby providing a “carbon sink,” which can potentially generate income (as part of carbon markets). Forests also stabilize soil, hold water and slowly release it, ameliorating floodwaters and providing a cushion against drought. Also, they are a source of irrigation water, potable water, and provide water for electricity generation.\textsuperscript{14}

However, due to the present anthropogenic pressure on forest ecosystems including overuse of forests, irregular loggings, grazing, hay-making, land occupations and etc., the valuable forest areas are being reduced. Natural seed regeneration of the main valuable forest species such as oak and beech is not satisfactory. The stands dominated by \textit{Pinus kochiana}, \textit{Taxus baccata}, \textit{Corylus colurna} and other rare tree species have reduced, which at present occur in the form of patches and sporadic trees. The steppe-meadow vegetation types are often replacing valuable forests.

In recent years in the logged forest areas and adjacent territories the instability of ecosystems has been observed with increase of wind-fallen or snow-fallen trees, activation of soil erosion, landslides, avalanches, drying of springs, formation of dust clouds and other processes, which cause serious damage to communities and areas of agricultural significance.

Forest covered areas dominate in the SPNAs under the RA Ministry of Nature Protection. Recently more forest covered areas have been added to the PA system of Armenia: forests occupy 110,269.2 ha, which makes 28.5 % of the total territory of SPNAs.\textsuperscript{15}

\textbf{Subalpine and alpine meadows and subalpine high grasses.} The meadow ecosystems in Armenia can be found in all the mountain chains (mainly above 2,200 masl) and can be represented by alpine and subalpine meadows and subalpine high grasses, depending on the altitude of the site and other natural conditions.

Sub-alpine meadows are found at 2,300-2,800 masl and support a distinct assemblage of grasses, particularly in northern regions. Almost 500 plant species have been recorded in this habitat.

Alpine meadows are found at the highest altitudes, above sub-alpine meadows, up to 4,000 masl (on Aragats Mountain) and cover about 28 % of the land area of Armenia. They are the principal pasture lands in the country. Climatic conditions can be severe, with long, cold winters. Snow cover lasts up to nine months, and permanent snows may be found in some areas.

Meadow ecosystems are very rich in biodiversity, although endemic species are not very abundant. Meadow ecosystems are important for summer pastures and hay fields.

\textsuperscript{14} Ecodit (2009): Biodiversity Analysis Update for Armenia/ USAID

Population also uses them for a variety of edible and medicinal plants. Because of the high humus content in the soil (15-20%), they act as good CO\textsubscript{2} sinks.\textsuperscript{16}

The gradual increase in grazing pressure has caused significant changes in vegetation cover and species composition.

In order to preserve meadow ecosystem SPNA system expended in last years. The sub-alpine and alpine meadows make 87,516.24 ha, which is 22.6 % of the total territory of SPNAs.\textsuperscript{17}

**Petrophilous ecosystems (rocks, cliffs, screes).** Highly rocky habitats are very typical for Armenia. This type of sites with their typical ecosystems have very rich biodiversity, since they include species which can be found on all the mountain belts on the one hand, and are typical only of rocky habitats on the other. It is very difficult to determine the total area of these ecosystems, since these rocky areas can be found practically everywhere, but they very seldom occupy large territories.

The petrophilous ecosystems are practically not used by the local inhabitants. Medicinal and edible plants can be found in the flora of the ecosystems, but because of the nature of the site their gathering is usually limited. Anthropogenic influence on the petrophilous ecosystems is not usually much expressed.\textsuperscript{18}

**Wetlands and waterways** cover 6.17% of the total territory of Armenia (1,774 km\textsuperscript{2}). Of these, 5.51% (1,584 km\textsuperscript{2}) consists of open water (lakes, ponds, rivers, reservoirs, canals); 0.52 % (150 km\textsuperscript{2}) is temporarily flooded area (saline lands); and only 0.14 % (42 km\textsuperscript{2}) covered in permanent marshes, fens, and peatlands.\textsuperscript{19}

Wetlands are among the most threatened habitats in the country.

In Armenia six river basin management areas have been defined. Over the last five years draft management plans for a number of river basins have been developed. Upon their integration respective watershed management plans should be developed for sustainable use and protection of water ecosystems.\textsuperscript{20}

The water resources of Lake Sevan have been used for years for economic purposes resulting in gradual deterioration of ecological situation of the lake. By 1999 the lake water level has dropped by 19.3 m in comparison with its initial mark. In order to prevent the lake eutrophication processes and improve the situation in the lake since 2002 the works on

\textsuperscript{16} Ecodit (2009): Biodiversity Analysis Update for Armenia/ USAID
\textsuperscript{19} Ecodit (2009): Biodiversity Analysis Update for Armenia/ USAID
increase of the water level have started. As of January 1, 2014 the water level of the lake increased by 3.84 m in comparison with the mark of January 1, 2002.\textsuperscript{21}

In total, the marshes and peat areas in Armenia occupy 42 $\text{km}^2$.

Lake Sevan and recently, Lake Arpi and Khor Virap wetland area were added to the list of wetlands of international importance under the Ramsar Convention. These three water objects are also included in the system of SPNA of Armenia. In total, the surface of water and wetland areas in the system of SPNAs became 127,254.08 ha or 32.9 % of the total area of SPNAs, the majority of which (124,759.0 ha) is on the territory of Sevan National Park.\textsuperscript{22}

2.4.2 Species\textsuperscript{23}

Over the last 10 years more than 50 new species for the science have been described, which are rare species.

\textit{Plants}

Flora of Armenia represented by 3800 plant species of vascular plants which belong to 160 families and 913 genera.

At present the flora of Armenia includes 144 endemic species (3.8% of total flora). In previous list out of described 124 species 9 have been removed due to discovery of wider distribution and based on taxonomic studies 29 species have been added.

\textit{Animals}

According to recent data in the fauna of Armenia the vertebrates are represented by 549 species, including 93 mammals (instead of previously mentioned 83), 357 birds (instead of previously mentioned 353), 53 reptiles, 7 amphibians and 39 fish species. Invertebrates have not been studied completely so far. The fauna of Armenia is notable for high endemism (about 500 species making about 3% of the fauna, instead of previous data – 200 species, 2% of the fauna).

\textit{Positive changes}

The status of some species is sustainably good, for such as, bear (\textit{Ursus arctos}), wolf (\textit{Canis lupus}) and golden jackal (\textit{Canis aureus}) and some populations of rodents. Positive trends are observed in the populations of Caucasian leopard (\textit{Pantera pardus ciscaucasica}), Armenian mouflon (\textit{Ovis orientalis gmelinii}), bezoar goat (\textit{Capra aegargus}) and a number of birds.

\textsuperscript{23} All information connected to species is taken from Fifth National Report of the Republic of Armenia to the Convention on Biological Diversity (2014), Ministry of Nature Protection of the Republic of Armenia
According to WWF data in 2004 in Armenia 2-3 leopards, 150-200 mouflons and 1500-2000 bezoar goats were registered, whereas 4-6 leopards, 350-400 mouflons and 3200-3500 bezoar goats were registered in 2014.

According to ASPB (“Armenian Society for the Protection of Birds” NGO) data, before 2002 the number of individuals of the only one population of black vulture (Aegypius monachus) in Armenia on the territory of Khosrov Forest State Reserve has been decreasing. However, 4 pairs of black vultures (Aegypius monachus) were registered during 2000-2002, 6 pairs in 2003, 7 pairs in 2004, 7-8 pairs during 2005-2008 and 11-12 pairs in 2013-2014.

The avifauna of Lake Sevan has started to rehabilitate. Thanks to the increased water level and formation of shallow littoral areas the living conditions for a number of bird species have been improved and feeding areas have been rehabilitated, especially of wetland species such as Egretta garzetta, Ardea ralloides, Nicticorax nycticorax, Plegadis falcinellus and species of Haematopodidae. After 60 years of absence the great cormorant (Phalacrocorax carbo) has started nesting in the area again.

During the winter inventory in Lake Sevan in 2013 a large number of waterfowl was registered, in particular of the Eurasian Coot (Fulica atra) and Red-crested pochard (Netta rufina). At the same time the reduction of quantities is registered for the species, which are connected mainly with the littoral zone.

Over the last five years significant progress has been registered in the field of ex-situ conservation of biodiversity. Thus, during 2008-2013 the number of accessions in the Laboratory of Plant Gene Bank and Breeding of the ANAU has increased in 24%, the collection of the “Scientific Center of Vegetables and Technical Crops” SNCO under the RA Ministry of Agriculture has increased 3.5 times, whereas the collection of the Institute of Botany of the RA NAS – 2.8 times. In the National gene bank of plant genetic resources for food and agriculture the number of accessions has increased 8 times during 2008-2013.24

Species Reintroduction:

Special action plans on rehabilitation of the main threatened species (including Armenian mouflon, Caucasian leopard, Sevan ishkhan and others) have been developed and at present are being implemented.

A project on reintroducing the Caucasian Red Deer in Armenia with the main goal to set up a viable breeding group of the species in Dilijan National Park is underway (2013 – 2020).

In 2013 by the order of the RA President a Council on Rehabilitation of Ishkhan Stock and Development of Fish-Breeding in Lake Sevan was established. The RA Government approved also a complex program on ishkhan rehabilitation and fish breeding development in Lake Sevan. A pilot project “Recovery of populations of endemic species (gegharkuni and summer bakhtak) in Lake Sevan” started in 2013, through cooperation between the state and

private sectors establishes new fish-breeding farms (net cages) on the surface of the lake for reproduction and reintroduction of a part of the reproduced endemic fish species.

**Negative trend:**

After publication of the Red Book of Armenia (2010) the status of some species registered even worsened, due to agricultural use of lands, as in recent years in many areas of Ararat plateau large farms, fruit orchards and vineyards are being established on previously uncultivated lands.

To date 35 plant species of economic importance are known to have become extinct in Armenia and a number of plant species of great interest are under the threat of extinction.

According to the specialists of the Scientific Center of Hydroecology and Zoology of the RA National Academy of Sciences, almost 50% reduction has been observed for hare, 90% for wild boar and 30-40% for roe-deer. According to WWF data reductions of the numbers made 20% for hare and 70% for wild boar, whereas the status of roe-deer is rather good.

Due to the reduction of small natural lakes used as fish farms and increase of the number of concreted fish-breeding ponds the number of waterfowl species has reduced.

In 2014 it was not possible to find the species *Ammoperdix griseogularis* and *Bucanetes mongolicus* registered on the territory of Armenia in 2004 as well as *Rhodospiza obsolete* registered in 2013. The status of the Caspian snowcock (*Tetraogallus caspica*) is concerning as its areal is shrinking over years.

Due to the elimination of green areas in cities and some other areas the number of wood-peckers and other birds nesting in tree hollows has reduced.

In the invertebrates a global trend is observed, which is the reduction of the number of pollinating insects and mass outbreaks of agricultural pests conditioned by numerous factors including the anthropogenic and climatic factors. During 2011-2014 the southern forests of Armenia were severely damaged by *Euproctis chrysorrhoea*, in 2014 in a number of areas in Armavir and Kotayk as well as in foothill areas the outbreaks of *Ocnogina loevii armena* have been registered. The latter has not even been registered in Armenia as a serious pest and its last mass outbreak was observed in 1939.

The fish community of Lake Sevan has changed radically. Due to the drop of the lake water level two subspecies out of four, of endemic ishkan (winter ishkan and bojak) disappeared and the number of other fish species critically reduced and are now under the threat of extinction.

The commercial fish species of Lake Sevan have also been subject to serious changes. The stock of whitefish, which is the main commercial specie, has reduced. Over recent decades the trend on reduction of quantitative indicators of commercial fish species has continued.

The fish fauna of the lake has significantly changed. The alien species goldfish (*Carassius auratus*) and common carp (*Cyprinus carpio*) have penetrated into the lake.
In the period of water level increase two new fish species were identified in the lake: *Alburnoides bipunctatus armeniensis* in 2010 and *Pseudorasbora parva* in 2011.

**Invasive species**

In recent years the study of invasive plants on the territory of Armenia has been implemented by botanists of Armenia for the first time. The most alarming is dissemination of 77 aggressive species, out of which 38 have penetrated into natural ecosystems and threaten local plant diversity.

**2.4.3 Red Book**

In 2007-2010, a comprehensive survey of the flora and fauna of Armenia, an assessment of the status of species in line with international standards was carried out. The Red Book of Armenia was republished. 452 plant species (11.89% of the flora of Armenia), 40 species of fungi (1.05% of the biota of Armenia) and 308 (153 vertebrates and 155 invertebrates) animal species (2% of the fauna), which are in more critical state, are registered in the Red Book of Armenia.

In the revised version of the Red Book of Plants in comparison with the first edition of the Red Data Book, the number of high vascular plants has increased by 227 species. New species were added as:

- the species were assessed according to international criteria (IUCN),
- the areas of species distribution reduced,
- the number of populations and the number of individuals in populations reduced, and
- new species were identified, which are very rare.

Reassessment of 387 plant species included in the first edition of the Red Data Book (1989) resulted in removal of 159 species from the list due to the following:

- the species has relatively wide distribution in Armenia with no direct threats to its existence,
- new habitats were identified, there is no more direct threat to existence of the species, and
- the presence of the species in Armenia is not proved by factual materials.

*Invertebrate animals and fungi were not represented* in the Red Book of the Armenian Soviet Socialist Republic (1986).
2.5 Trends in the sectors effecting biodiversity

2.5.1 Forestry

A large area of forests was overlogged in 1930-1950 for industrial needs and annihilated in 1990s as a result of the economic and energy crisis. Between 1990 and 2005, Armenia lost 18.2% of its forest cover, 3,000 has of which were primary forest, the most biodiverse forest. The two primary threats to forest resources are unsustainable collection of fuel wood for heating and cooking; and illegal industrial timber harvesting. The first is related to poverty and lack of access to alternative fuels; the second is related to a poorly managed commercial timber resource, weak law enforcement, and corruption.

The Ministerial Report, 2003-2005 (MoNP, 2006), states that as a result of the energy and economic crises, about 40,000 hectares of forest have been cut in recent years (2003-2005), of which about 7,000 ha were clear cut; about 27,000 ha of forest was cut to provide fuel wood. The 3rd National Report to CBD (2006) states that in recent years there has been a reduction in illegal use of forest resources and mainly this can be attributed to the improved electricity supply and development of gas supply infrastructure.

As stated in the Ministerial Report (MoNP, 2006), in 2003, according to assessments by national and international experts, the total timber production (commercial) amounted to 847,000 m³, yet only 63,000 were officially recorded. Reliable data on where and how much timber is being cut, is not available, largely because most of it is done illegally. Also, National Forest Research and Experimental Center estimated that in 2001 the total area of natural forest logged was about 20,000 ha and that about half of this was cut without official permits. They also estimate that the legal cut in natural forest for all purposes, including firewood, was about 65,000 m³ and the illegal cut was about 500,000 m³.

According to the 5th NR, surveys implemented among population of Armenia by the “State Forest Monitoring Center”, SNCO in 2010, the demand for fuelwood made 709,851m³, which exceeds more than 20 times the volume of legally harvested wood. Illegal loggings and illegal wood marketing have been practiced in Armenia for about two decades. According the 5th NR, based of information provided by “State Forest Monitoring Center”, during 2008-2012, significant reduction in the volumes of illegal loggings was observed, which is mainly conditioned by development of the natural gas supply system. According to the data of “Hayantar”, SNCO, the trend of illegal logging reduction continued also in 2013. In 2014 volume of illegally harvested timber is increased. In different sources data on illegal loggings are given in number of cut trees, or forest breaches and only from 2008 is provided logging in volumes (m³) by National Statistical Service of RA.

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26 Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID
28 Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID
Despite that logging volumes differs from those presented in the “Environment Statistics of Armenia”\textsuperscript{29}, both reports in general, demonstrates trend of reduction of illegal logging until 2014. By the official data the volume of illegal loggings in the country has reduced twice. However, the long-term negative changes of the ecological status are observed in the areas, which have been subject to intensive loggings: the oak and beech having higher economic value are replaced by the relatively low-value hornbeam. Naturally, the forest density is also reducing. Besides the visible threat, the loggings resulted in extinction of the plant cover species of the forest, including those registered in the Red Book.\textsuperscript{30}

All criteria for assessing the degree of forest ecosystem degradation - forest areas partly or fully destroyed by fire, areas with lost natural resistance due to pests and diseases, dying or dead forests, forest areas with no capacity of natural regrowth, completely logged forest areas and sparse forests located on large eroded surfaces - characterize the current status of forest ecosystems in Armenia.\textsuperscript{31}

As per data for 1993 (latest stock-taking had place), forest lands in the RA cover 459,900 ha, where forest cover comprise 334,100 ha (11.2 \% of the country’s territory), including 283,600 ha of natural forests, and 50,500 ha of artificial forests. However, large-scale deforestation in the last two decades has brought about crucial negative qualitative modifications; in particular, the level of forest integrity has dropped, and unacceptable modifications in the composition of species have taken place.\textsuperscript{32}


\textsuperscript{32} Republic of Armenia (2012): “Rio+20” National Assessment report
According to the clarified data obtained by GIZ in 2011 through remote sensing method the forest cover of the Republic of Armenia makes 332,333 ha or 11.17 % of the total territory of Armenia.  

2.5.1.1 Management practices

A study on deforestation in Armenia (June, 2007), prepared by the Economy and Values Research Centre was the first attempt to assess the volume of illegal logging and how it is intertwined with the wood processing industry. The report found that in Armenia, deforestation is largely due to the illegal logging of forests to obtain wood for construction and fuel. The study revealed that 9% of households in Armenia use wood as fuel for cooking and heating, and more than 300 small, medium, and large wood processing companies operating in Armenia use ten times more wood than the volumes set by the state for annual cutting.

At present around 70% of the natural forests of Armenia is old and disintegrated. 36% (13.5 million m$^3$) of the overall timber stock is located in mature and old forests. The latter are located in areas which are relatively difficult to access. There is a need to combine forest exploitation with increase in economic efficiency of forests and implementation of ecological activities. According to the latest data of forest survey (1993), the total stock of timber of forest resources is 41.74 million m$^3$, and annual growth is 354,000 m$^3$.

In the state forest enterprises (FE) there are 300 ha of nursery forests (out of which 192 ha is irrigable), which are in a very unfavorable state. A considerable part of its does not operate; as for the rest, only 15-20% of their capacity is used. The variety of the seedlings has also been reduced (not more than 10-12 varieties).

As far as forest management has relied on outdated information from last forest stock-taking of 1993, planning in the forest management have been almost suspended.

Irregular forest use harmed (and is continuing today) the forests of Armenia greatly, having at the same time a negative impact on the other fields of forestry management. Unsustainable felling, as well as other factors: pest, diseases, fire induced degradation induced degradation of forest. There was lack of forest-pathological studies and monitoring data on pests and diseases.

According to 5$^{th}$ NR to CBD, 2014, in total during 2003-2013 the works on chemical control of forest pests and diseases with use of aviation were implemented on a territory of 76,786 ha, out of which about 23,242.5 ha during 2009. The major part of the mentioned activities is implemented as chemical control with use of aviation (22,828 ha), which in many cases is destructive for existence of a number of forest fauna species. In 2014 the chemical control of
forest pests and diseases with use of aviation was implemented in forest areas of Vayots Dzor, Kotayk and Aragatsotn Regions of Armenia.

By statistical data and 5th NR, during 2003-2014 the highest rates of forest fires were observed in 2006, 2010 and 2011. By official information (based on data of National Statistical Service of the RA), 230 cases of forest fire were registered during 2009-2014 with total territory of 1,751.5 ha. These two sources provide different numbers, but the trend is same.

Figure 3: Forest fires, RA

The main cause of the majority of forest fires is the burning of adjacent agricultural areas.

The provision of the degraded forests ecosystems rehabilitation, sustainable use and development of the forests use capacities has been stipulated as the key objective in “National Forest Policy and Strategy” document. As a specific target have been identified the reduction of illegal logging of the forests (in 2008 as compared with 2005 by 30%) and implementation of wide-scale forest rehabilitation activities.

“Forest restoration and protection measures were implemented on 32,065 ha of forest land” – is stated in the “Armenia development strategy – 2014-2025”. Referring to the 5th NR to CBD, According to the official data during 2009-2013 in “Hayantar” SNCO and SPNAs (Dilijan and Arevik National Parks) reforestation and afforestation activities have been implemented on the territory of 1,756.5 ha that again differs from the data of Statistical Service.
"Such a low indicator is attributed to limited financial resources allocated from the state budget for reforestation and afforestation activities. At the same time it should be mentioned that the activities implemented in the frames of the projects financed by international organizations make a significant proportion in the volumes of reforestation and afforestation works.\(^{36}\)

Based on the information provided in the Statistical Yearbook – natural resources and environment booklets 2009 and 2014 intensity of afforestation activities (area) has decreased to compare the trend from 2004 – 2008, but in 2012 and 2013 planted area again has increased.

According to the official web-site of the RA Government, the works on forest rehabilitation will continue in Armenian regions also during 2015.

Development of nurseries is necessary for expansion of the volumes of reforestation and afforestation works, establishment of anti-erosion forest belts and improved effectiveness of implemented activities. A modern nursery in Hrazdan Forest Enterprise of “Hayantar” SNCO has been established. The nursery is for growing planting material with closed root system. The planting material is already grown there including tree species of pine, ash, maple and others.

In 2013-2014 on the territory of the Institute of Botany of NAS RA a nursery for threatened forest species has been established, which provides about 22 forest species including 8 valuable and threatened species. Planting material from the nursery will be used later for rehabilitation of forest habitats of threatened flora and fauna species.

From 2011, there are also attempts to transform monoculture forest stands into forest stand highly resilient to climate change.

Solution to the problem of conservation, protection, reproduction and sustainable use of the forests of Armenia is an important priority for the socio-economic development of the Republic and demands improvement of the legislation regulating the field and scientifically sound forestry management.

In the RA Forest Code forest management planning is stated as the basis for implementation of forestry measures and forest use. Management plans (FMPs) are developed according to the "Instruction on Development of Forest Management Plans" adopted by the RA Government. The forest management plans define the planning and implementation of the locations, volumes and time-frames of complex measures on forest conservation, protection and use for a 10-year period. They should be revised once in 10 years for further implementation.

Inventory of the forest fund, study of qualitative and quantitative features and of species and age composition, analysis of ecological state of forests as well as planning of activities on forest rehabilitation, conservation, protection and use are in the list of the planned complex measures implemented for running of the state forest economy. Considering those requirements the developed FMPs include a description of biodiversity of the given area and forest conservation measures based on the purpose of forests.

However, in the FMPs no special conservation measures are planned for the forest areas, which have the richest and most unique biodiversity or provide essential ecosystem services.

In 2004 and 2005 FPMs have been developed for 5 forest enterprises. Significant progress has been done with development of FMPs for almost all forest enterprises of the country after 2006. In 2008 FMPs for about 46,000 hectares have been developed and approved. At present FMPs are present for about 90% of forest enterprises.

In the forests of Armenia (except for State Nature Reserves) the wood harvest is done within the limits of the harvest levels and site allocations of the Annual Allowable Cut (AAC) determined by the FMPs, through “sanitary” and “forest regeneration” cuttings. According to the FMP each tree in a woodlot allocated for cutting is clearly marked at the base and numbered in colour using the paint; parallel to this, relevant characteristics of the marked tree (species, diameter and scale) are provided in the record book. The harvest of tree stands as well as secondary forest products, wind-thrown trees and fallen wood is carried out based on issuing of a special document – tree cutting permit or “ticket”. Logging is considered illegal if there is no mark at the base of the tree and no color numbering on a tree stem.

The lack of management plans in some FEs results in forest use without appropriate justifications. The management plans do not define respective regimes of SPNA management and protection (13 forest sanctuaries); consequently at present no respective regimes are applied.

The scales of complex measures on forest reproduction and forest rehabilitation such as seed production, soil preparation, afforestation, irrigation, agro-technical service, maintenance and others are still not sufficient. The pest and disease control without regular forest pathological surveys cannot be prevented and regulated. The technical means and equipment as well as the measures on public notification are not sufficient for prevention of forest fires.

The FMPs are mainly not aimed at multi-functional forest use; the use of non-wood forest products by local population is not regulated. Related clear estimates and planned activities are not sufficient (except secondary forest use). In the FMP integrated measures on safeguarding integrity of ecosystems and ecological processes as well as ecosystem services are not defined; clear quotas of use of natural resources (non-wood resources) and biological diversity are absent. While planning special functional peculiarities are not taken into account, the activities are mainly planned according to the forest significance. However, in various forest areas within the same category of purpose-oriented significance different functional zones of active economic intervention, recreation, tourism development, strict protection, rehabilitation and others should be designated dependent upon the state of the given area in the given period.40

Numerous measures aimed at forest conservation are envisaged by forest legislation of the RA, though it is not sufficient for conservation of entire biodiversity of forest ecosystems. At present biodiversity conservation is extremely urgent and important, including in mature and over-grown forests. If a specific forest area has high conservation value, then the need of its guaranteed conservation during forest management is obvious. However, this has never been a target for forest enterprises and on contrary less exploited forests have been considered the main reserve for wood harvesting. At present, the works on sustainable forest management and designation of high conservation value forests in Armenia are commencing. It is planned to implement these in the frames of donor-supported projects. European Neighborhood and Partnership Instrument East Countries Forest Law Enforcement and Governance II Program (ENPI- FLEG II, 2013 - 2016) and Mainstreaming Sustainable Land and Forest Management in Dry Mountain Landscapes of North-Eastern Armenia (GEF/UNDP, 2014 – 2017).41

A lot has been done to develop and improve forest management practices with the support of GIZ SMBP:

National Forest Monitoring System (NFMS) based on remote sensing technology has been established at State Forest Monitoring Center (SFMC), SNCO under MoA: Setting of the system started in 2011; SFMC is equipped, personnel are trained. First results were published in the annual report of SFMC, 2011.

From September 2013 monitoring of changes and intensity of logging for whole country is being carried out via Remote Sensing technology (based on interpretation of procured RapidEye MS satellite images of RA forested areas) and calculation of the modified areas by SFMC\(^{42}\); data is entered into the SFMC’s database.

Forest monitoring data (intensity of logging) is used for annual planning and improving forest management.

### Table 3: Changes in annual harvesting plan on the bases of remote sensing, RA

<table>
<thead>
<tr>
<th>Year</th>
<th>Harvesting Plan Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>90,000 m(^3)</td>
</tr>
<tr>
<td>2012</td>
<td>42,000 m(^3)</td>
</tr>
<tr>
<td>2013</td>
<td>36,000 m(^3)</td>
</tr>
<tr>
<td>2014</td>
<td>24,000 m(^3)</td>
</tr>
</tbody>
</table>

Published data obtained by remote sensing on forest cover has been used to adjust management plans of state forest enterprises especially regarding annual logging volume: annual harvesting plan reduced from 90,000 m\(^3\) in 2011 to 42,000 m\(^3\) in 2012. Official forest statistics and maps have been corrected based on this data on forest cover. Monitoring data has been used in annual planning for 2013 and 2014 also: planned logging volume was reduced from 42,000 m\(^3\) in 2012 to 36,000 m\(^3\) in 2013, and was further reduced for 2014 by 12,000 m\(^3\) to 24,000 m\(^3\) (by 33%).

Results of forest monitoring are being submitted and discussed annually in State Forest Monitoring Board (SFMB) coordinated by Ministry of Territorial Administration and Emergency Situations (MoTAES); in 2015 coordination of the SFMB has shifted from the MoTAES to the Ministry of International Economic Integration and Reforms and the board members list has been updated. Forest monitoring reports are transparent and are being published on MoTAES’s web-page.

In 2012 National Forest Management Information System (NFMIS) has been designed; in 2014 Programming of operational functions of NFMIS has been completed for all 19 FEs. All 19 FEs are equipped with work stations using NFMIS online.

Extension module - “Forest Annual Planning” has been developed. Chief Foresters of all 19 FEs, heads of “Hayantar” Division, representatives of SFMC, and representatives from the MoA are being trained in harvesting planning.

*Forest Inventory manual* \(^{43}\) according to instruction to FMP is developed and all FE are provided with it. All FE are trained in improved forest management.

Sevqar forest enterprise (FE) is a model enterprise. They have developed a new FMP taking into account guidelines for multi-functional zoning\(^{44}\) and planning of forest roads; as well as an annual harvesting plan based on the new methods (*multifunctional zoning, pre-harvesting planning and post-harvesting assessment, digital data*).

According to new “NBSAP-2” (2016-2020), “Forest management measures alone, directed to the improvement of forest condition from the production aspect, are not sufficient for the

\(^{42}\) Annual Report 2013 of “Forest State Monitoring Center”, SNCO - Monitoring of changes and intensity of logging by Remote Sensing


preservation of forest biodiversity. The forest management plans should take into consideration not only the condition of “high-value ecological forests”, but also the condition of economically valuable and “mature” forests, which ensure the existence of many representatives of forest biodiversity. For this purpose, the forest management plans have to be reviewed, and the forest areas with high ecological value should be taken into consideration in the process of establishment of new specially protected nature areas.\footnote{Ministry of Nature Protection of the RA (2015), State Strategy and Action Plan on the Conservation, Use and Reproduction of Biological Diversity of the Republic of Armenia, 2016-2020 (draft ) GEF/WB}

2.5.1.2 Legislation and policy

The fundamental principle of Armenia’s National Forest Policy (2004) is that forests are a national inheritance and should serve future generations as well as the present. The “National Forest Policy and Strategy of the RA" was developed in 2003. Main goal is to ensure the restoration and sustainable use of degraded forest ecosystems and the development of useful qualities of forests.

Action Plan for Mitigating Actions to help address the problems associated with Illegal logging was developed and approved by Government (protocol decision N38, September 30, 2004) with objective to reduce the volume of illegal loggings while keeping economic and social aspect in focus.

In 2005 National Forest Programme (NFP) of RA (Resolution N1232-N of the Government of Armenia, July 21, 2005) was developed.

Table 4: Goals of NFP, RA

| • Protect forest ecosystems; |
| • Rehabilitate degraded forest ecosystems, |
| • Continuous and effective use forest resources and, |
| • Implementation of the policy on sustainable forest management. |

Important objectives of the program include the activities on mitigation and prevention of illegal loggings, eradication of economic and social causes of illegal loggings, improvement of environment, institutional improvement, scientific-educational development and capacity building. The Programme includes a number of actions that address conservation of forest ecosystems and promote reforestation/forest restoration activities; and promotes a vulnerability assessment of forests under climate change regimes.

A National Coordinating Council has been created aimed at the successful implementation of the NFP. The Council includes the following main parties: Ministries of Agriculture, Nature Protection, Finance, Economy, Territorial Administration of Armenia, as well as scientific and non-governmental organizations functioning in the field, international donor organizations, etc.
In order to achieve the strategic objectives of the RA National Forest Policy the Forest Code was developed; the National Assembly adopted new Forest Code (in 2005, the first Code was adopted in 1994), which regulates the protection and use of forests, including conservation of biodiversity within forest areas.

According to the Armenian Forest Code, all forests are state property and Government is responsible for their use, forests are managed by state agencies. To expand the area considered managed forest, community and private ownership are now included in the Code.

The Forest Code preserves State ownership over forest lands, but encourages establishment of new forests on community and private lands, and sets out a process to obtain rights of ownership.

The article 23 promotes the establishment of forests in non-forested areas and in the areas without natural regeneration – the areas are provided to a forest user free of charge if the user is going to establish forest in that area at own expenses. After becoming a forest, the area becomes the property of forest user. This is a major change - Forest Statute did not allow for the development of forest-based enterprises by the private sector or local communities. However, community forest management is still at a very nascent stage in Armenia.

According to the Forest Code, forests in Armenia fall into the following categories, based on their main purpose: protection forests, forests of special significance, and production/industrial forests. In particular a new category of forest target significance has been stipulated – “industrial forests”, as well have stipulated the idea of setting up community forests.

The Code provides for increased forest management functions of regional and local governing bodies. Pursuant to this Code, forests of protection significance also includes the 200m of latitude area of their upper and lower borders; the forests growing in semi-desert, grassland, forest-grassland strips, which are more vulnerable to negative impacts of anthropogenic, biotic (pests, diseases) and climatic (temperature, precipitation, humidity) factors. Harvesting of wood and secondary forest products, use of non-wood forest products, activities on reproduction of fauna, implementation of scientific-research activities, forest use for health, sport, recreation and tourism purposes could be applied in the forest.

From an economic standpoint, forests are the most important natural ecosystem in Armenia. Wood and non-timber products provide an important contribution to the budget of Armenia. As it is described in Biodiversity Analysis report, USAID, 2009, “a new category, “industrial forests,” has recently been created and is expected to be approved by Government in early 2009. These forests would allow commercial logging based on a Government approved Forest Management Plan (FMP). Although no forests have yet been delineated as industrial

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forests. Government expected this new category to have a positive effect on illegal timber harvesting. Commercial timber harvesting will be easier to patrol since specific areas will be designated for these activities, and will not be allowed in other forests. Community forests are expected to contribute to improved management and protection by providing a means for communities to benefit from forests.”

Also, to prevent illegal use of forest resources, a Government Resolution "On introducing the state monitoring system of forests" (June, 28, 2005) created a new entity, the State Forest Monitoring Center (SFMC), which is responsible for monitoring and combating illegal logging in Armenia. While there has been progress on the policy front, most of those interviewed for this report stated that policies were in place, but they are not being implemented and illegal cutting for fuel wood and unsustainable commercial timber harvesting still occur.

According to the Proceedings of the Urgent Environmental Issues of Armenia conference (2008), in spite of the new Forestry Code, establishment of a Forest Monitoring Center, and reforestation initiatives, many hectares of forest are still being lost to illegal logging, to create agricultural land, and for construction and mining. The Proceedings state that no “radical measures have been taken to prevent and punish illegal logging.”

The RA Governmental decision #1535-N from 2011 had some positive impact on prevention of illegal loggings. According to it the households living near the forests are allowed, at their expenses, to harvest and take for free up to 8 m³ of residual fuelwood.

RA Government has issued decision #1441-N of November 15, 2012 on Establishment of New Forest Belts nearby Lake Sevan.

According to Scoping study of economic significance of ecosystems and biodiversity (TEEB) of the forestry sector of Armenia, there are problems to be solved:

**Policy and legislative problems**

<table>
<thead>
<tr>
<th><strong>Policy:</strong></th>
<th><strong>Legislation:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The state forest policy is not aimed at multifunctional forest use and ecosystem approaches in forest management.</td>
<td>According to the Code the forest use in the forests in the structure of SPNAs is regulated by the RA Law on specially protected nature areas. However, the category of production forests does not support sustainable forest management given the mountainous character of forests in Armenia and the presence of mainly forests of protection significance. Regulations such as those aimed at mitigation of climate change and increase of resilience, high</td>
</tr>
<tr>
<td>The services provided by ecosystems are not considered as alternative directions of forest management; respective programs on valuation and provision of ecosystem services as well as generation of financial flows have not been adopted and implemented. There are no provisions on ESs in the forestry sector policy and</td>
<td></td>
</tr>
</tbody>
</table>

48 Ecodit (2009): Biodiversity Analysis Update for Armenia/ USAID  
49 Ecodit (2009): Biodiversity Analysis Update for Armenia/ USAID  
Conservation and sustainable use of forest resources is considered to be one of the main priorities of the state. Being concerned with the current situation, the RA Government has included the issue of prevention of ecosystems and bio-diversity degradation among the priorities of the country.  

*Forest Law Enforcement and Governance (ENPI- East -FLEG II)* process is underway, aimed at putting in place improved forest governance arrangements: development of sound and sustainable forest management practices, including reduction of the incidence of illegal forestry activities assessment of 2 forest sanctuaries in the structure of “Hayantar”, SNCO in terms of legal use of forest resources with proposals on improvement of management and law, preliminary GIS mapping of Gyulagarak and Ijevan-Hazelnut Sanctuaries, draft charters and draft governmental decision on the revision of the boundaries and approval of charters of Gyulagarak and Ijevan-Arjatkhleni Sanctuaries, development and implementation of two pilot projects on alternative forest use by communities aimed at local livelihood improvement and sustainable use of forest resources in Koghb and Dsegh communities; set public monitoring of the forest; legal and institutional review of the sector is underway, human resource capacity building to address FLEG issues as well.

Information and monitoring systems for the forest sector have become important tools for forest planning, monitoring and reporting in the wake of the fast developments in the forestry sector. In cooperation with the RA MoA, the RA SFMC and “Hayantar”, SNCO, GIZ SMB-Programme contributed to legal and policy reforms, setup of a national forest monitoring, the establishment of new standards for forest management planning, sustainable forest management practice and their implementation in pilot forestry units and set up of a *National Forest Management Information System (NFMIS)*.

Amendment to *Forest Code* introducing multi-functional zoning and multi-purpose use of forests is approved by MoA and submitted to National Assembly.

5th NR suggests: Considering the fact that the forests in Armenia cover mountainous slopes and have protection significance as well as that the wood demand exceeds several times the

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forest productivity rate and cannot be fully met by the country resources, it is necessary to rank the environmental significance of forests higher than their socio-economic significance. In this regard, the state forest management system should be considered as a donation, partially self-financing and non-profit sector requiring continuous investments aimed at forest protection and rehabilitation.

In the Armenia Development Strategy (2014-2025) forest issue is also addressed: “Forest national program will be revised and implemented with the aim of forest plantation and restoration in the forests and forests’ lands in the republic, as well as improvement of quality indicators of the existing forests and founding new forests. Improvement of control mechanisms against illegal forest logging will be carried out in parallel with forest plantation and rehabilitation activities”.

2.5.1.3 Institutional set-up

Until 2004 the forest sector was regulated by the Ministry of Nature Protection (MoNP) - governing and regulatory functions covering forests were combined under one entity.

As of 15 January 2004, a Government decree delegated responsibility for forest management to the MoA. The Government placed “Hayantar”, SNCO that held the forestry regulatory function from MoNP under the MoA. This is a significant change, and many in the environmental community hoped that it would allow the MoNP to provide oversight and to regulate, without creating a conflict of interest (MoNP has been no longer in charge of timber production).

The only forest sector responsibility that remains with the MoNP is environmental supervision (inspections), vested with separated subdivision - State Environmental Inspectorate. The MoNP remains responsible for protected areas (PA) policy, strategy, development of management plans, and management of PAs of international and national importance; 14 forest sanctuaries (today already 13) come under the jurisdiction of the MoA; Whether this delineation of responsibilities will be a benefit for biodiversity conservation or if it will make protection, management, and use more difficult remains to be determined.

Nowadays, 75% of the forests of Armenia are under management of the MoA and 25% (forests in SPNAs) under management of the RA MoNP.

In the MoA Forestry Division is responsible for development and implementation of forest policies in the field of protection, reproduction and use of forests in the RA and monitoring the implementation of measures in forest management and use of forests.

The approval of the measures on protection, reproduction and use of forest resources is vested with the RA MoA. The annual allowable cut volumes are planned and approved upon getting respective proposal from “Hayantar”, SNCO. FMPs are developed according to the RA Forest Code and the “Instruction on Development of Management Plans for Forest Enterprises” (approved by the RA Government N130-N, 10.08.2005).

“Hayantar”, SNCO, comprises head office (13 departments) and its 19 (former 22) “Forestry” branches - Forest Enterprises (FE), SNCOs, located in the Marzes.
Forest of SPNAs (Dilijan and Sevan National Parks, Khosrov Forest State Reserve, Zangezur Biosphere Complex including Arevik National Park and Shiahogh State Reserve as well as 7 state forest sanctuaries) – are managed by the Bioresources Management Agency and respective subordinate SNCOs - all under the RA MoNP.

State Forest Monitoring Center (SFMC), SNCO, under MoA was established in 2005 upon the decision of Government (#1152-N, July 28, 2005) for state monitoring of forest and prevention of illegal loggings. Center is responsible for data collection, storage, processing, analysis and dissemination of information; reports to State Forest Monitoring Board.

MoA is responsible for the overall planning of forest use. It receives information from "Hayantar", based on the FMP. A new regulation on cutting limits is currently in progress. Forest use planning is based on 10 year FMP. Based on these management plans, "Hayantar" drafts annual harvesting plan; MoA revises and approves. In this whole process, data are aggregated on the FE level. Implementation of the above mentioned activities is under responsibility of the FE’s. To initiate a felling operation, an FE sends a compartment-based request to the forest use department of “Hayantar”. Such a request can be accepted, modified or rejected by the Forest Use Department. After acceptance, a forest use ticket is issued. The FE employs a contractor for the felling operations. Handling of the contractor is under responsibility of FE. Up to now, there is no contractor’s database. Contractors usually come from local villages. After implementation, the FE submits felling reports to Forest Use Department. Furthermore, Forest Use Department oversees legal documentation of the planned felling and checks implementation based on samples. Implementation is often troubled by overuse, which can be liability of the FE or the contractor, or due to illegal logging activities. If overuse is detected, a penalty tenfold of the estimated damage value can be handed out. “Hayantar” provides an annual summary report on logging – aggregated to FE level – to the SFMC. SFMC demands also to be part of the planning process and the creation of FMPs. MoA forest division head would like to see an increased role and responsibility at the FE level. This would, however, require increased capacity development for FEs. The planning process is in need of improvement. As part of this process, new management plans are underway.53 (Appendix 2 - Main institutional structures of the RA forest management sector).

In 2014, TEEB scoping study for forestry sector was initiated in Armenia. It clearly demonstrates the advantages of sustainable forest management. Study identified alternative policy scenarios and provided steps to be taken in order to improve the effectiveness forest sector management.54

Identified Institutional problems according to “Scoping study of economic significance of ecosystems and biodiversity (TEEB) of the forestry sector of Armenia”:

53 Barth, Ruecker, 2014 - National Forest management Information System (NFMIS) – Progress of 1st Development Phase and Preparation of Second Phase – GIZ, SMBP
Institutional problems

The functions of “Hayantar”, SNCO and SFMC, SNCO under the MoA, and Bioresources Management Agency and State Environmental Inspection under the MoNP in the field of control and monitoring of forest biological diversity and illegal loggings still need clarification.

The revision of the current status of “Hayantar” SNCO is the key for reforms of forestry sector management as the current status of SNCO limits the opportunities and mandate of the main forest management entity of the country when it comes to decision making and their implementation. It is suggested to restructure the SNCO as state forest service or state forest committee.

The structure of “Hayantar” SNCO does not meet its objectives, respective necessary structural units are missing (for example, departments on SPNA management, development of forest management plans, ecotourism, multi-functional forest use and others), capacity is low (lack of qualified specialists and equipment..).  

It should be mentioned, that in the current structure of “Hayantar”, SNCO new departments are established: Forest Inventory and Cadastre; Management of Specially Protected Areas.  

2.5.1.4 Public awareness and participation

As stated in Biodiversity Analysis, 2009, USAID, in developing of forest-related strategic documents participated not only the relevant department, but also all the interested organizations.

The Ministry of Agriculture has proposed a series of activities geared at increasing the involvement of civil society and other economic sectors in forestry, providing up-to-date information and raising awareness of stakeholders regarding important forestry issues.

In 2014 the project Public Monitoring of Forests of Armenia started in the frames of the ENPI-FLEG II project. The aim of the project is to identify illegal activities in the forests of Armenia with their registration, compilation and presentation to the public. For public monitoring of forests on the territory of Armenia local groups of activists established by “Geoinfo” Scientific-Application Center” organization with representation of NGOs, environmental organizations and local population.

According to “EcoLur” – information NGO web-site, “In Armenia within 2010-2014 forest fires reduced 15 times. Director of ”State Forest Monitoring Center“ SNCO of the RA MoA said about this during the round table entitled ”What We Lose and Get in Forest Sector in Terms of Climate Change” which took place at “EcoLur” press club. In 2010, 800 ha of forest lands was burnt, 775 ha of which was forested, in 2014, 54 ha was burnt, 28 ha of which was forested. At the end of 2014 a project was invested in “State Forest Monitoring”, SNCO by GIZ which allows to realize monitoring of forest fires due to satellite images. That project enables to realize awareness in those communities where fires of pastures are recorded

more often which are nearer the forest border".\textsuperscript{57}

According to TEEB scoping study for forestry sector, the cooperation is not sufficient in involvement of communities and local population in forest management and decision-making processes, more active measures on awareness rising are needed.

Country aims to support public participation in all processes. Armenia Development Strategy (2014-2025) states “Activities for implementing comprehensive measures for ecological education, public awareness and public participation will become more intensive”.

2.5.2 Agriculture

The agriculture is one of the main economy sectors in Armenia and the main business of population in rural areas. Agriculture has a strategic role in the provision of food security in Armenia, which is included in the National Security Policy of the Republic of Armenia. It provides 36.3% of the total employment in the country. Nearly ¾ of Armenia is located in the range of 1,000-2,500 masl. Agricultural land accounts for about 70% of the total land base of the country. Half of the agricultural lands are pastures. Hay-making areas make 10% and pastures make 49%. Even though arable land is only about 22% of agricultural land, one third of it is not used because of various reasons, such as being located far from populated areas, having irrigation issues or not being very profitable.

Figure 5: Agricultural land types

According to the World Bank Country Study conducted in 2007, the average farm size in Armenia was 1.4 ha; 97% of agricultural output is produced by these family farms. However, today as a result of low profitability of farming, many families from rural areas migrate from Armenia, letting neighbors cultivate their land or selling it. This allows estimating that the total number of farms could be about 200,000 and the size of an average farm about 3 ha. As of 2011, about 84% of arable land and only 1% of pastures belong to family farms and agricultural enterprises. The rest is state or community owned.

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61 World Bank Group (2007): Integrating Environment into Agriculture and Forestry Progress and Prospects in Eastern Europe and Central Asia – Armenia, country review
According to the land balance of Armenia no significant changes have happened in the structure of agricultural lands in recent years. However, the rate of use of new areas for agriculture has increased to some extent at the expense of not-used cultivated lands\textsuperscript{63}.

Today the absolutely major proportion (more than 98\%) of the gross product from agriculture is ensured by the private sector.

The works on observation of distribution of the aggressive invasive species have started only in recent years. Intensive dissemination of the *Ambrosia artemisiifolia*, *Silybum marianum*, *Ailanthus altissima* and *Robinia pseudoacacia* mentioned species has been observed, however no measures on control are implemented. The legislation on introduction of alien species is not regulated. For the species of agricultural significance the permits are issued by the MoA without assessing the risks of biological invasions\textsuperscript{64}.

The MoA has declared that farm consolidation is very important – this will contribute to more productive farming because of a higher level of specialization and economies of scale.

In fall 2014, MoA with the support of international organizations initiated the first Agricultural Census in Armenia since the independence. The census will provide information on structure of agriculture, land, machinery, available resources and their use on the national and regional level.

### 2.5.2.1 Institutional set-up

The main institution that is responsible for implementation of policies aimed at development of agriculture is the MoA of the RA. It enforces legislation and ensures policy implementation in the field of agricultural development. MoA has separate Divisions and State Agencies, such as the *State Food Safety Service* (SFSS), “*Licensing Center*” and the *State Inspectorate of Agricultural Machinery* (SIAM). The SFSS by the MoA ensures conformity of food products with the standards and controls veterinary and sanitary services. “Licensing Center” Agency organizes the process of issuing licenses for manufacturing biological preparations and licenses for manufacturing and sales of agro-chemicals. The SIAM supervises the use of agricultural machinery and equipment Organizational structures that are responsible for the implementation of agricultural policies are not limited to the state entities linked to the MoA. There are also many international organizations and bodies that have an important role in this process. Organic certification in Armenia is provided by Ecoglobe, an internationally recognized certification provider that has an accreditation of the Unites States Department of Agriculture (USDA) National Organic Program. It provides certificates to organic food producers and constantly controls the conformity to the standards in place. For the last years, the MoA finances extension services (*Regional Agricultural Support Centers*) as a part of the Ministry that operates on the regional level and provides


advisory services to farmers and agricultural businesses. In addition, there are some of the research institutions within the MoA.  

2.5.2.2 Policy

The Government has selected a liberal way of supporting agro-food sector and prefers not to intervene in the market activities, and does not set any price limitations on agricultural goods.

After the collapse of the Soviet Union land was privatized in Armenia, but most of rural population was looking for employment possibilities in the capital or migration to other countries, mainly to Russia. So youth from rural areas was leaving the country, and elderly people were not able to implement heavy agricultural work. Farm plots were small, so the farmers were not able to supply necessary volumes of agricultural products to the market. Instead, agricultural production was turned into subsistence farming. To stop the decreasing volume of agriculture production, tax exemptions for agriculture were introduced. Agricultural producers had income tax exemption, were not paying land taxes and irrigation fees. This made farmers return to the land and consider farming as a main activity.

About two decades ago the Government adopted a scheme of customs duties (tariffs) to promote exports of agricultural goods, since Armenian agro-food imports were nearly two times greater than the corresponding exports. The main goal was also to stimulate agricultural processing - tariffs were set for import of processed agricultural goods, while imports of raw materials for agro-food processing were not taxed. Exports of agricultural products, whether raw materials or processed goods, are tax exempted.

Due to land fragmentation many plots located in remote areas were not cultivated. Due to a reform of land use areas of agricultural land increased from 1,391 to 2,122 ha (in 2007). Besides this the MoA proposed subsidies for returning of non-utilized agricultural land into cultivation. One of the long-term objectives of the MoA is improvement and expansion of the irrigation networks in Armenia.

The MoA introduced advisory extension services in rural areas - Regional Agriculture Support Centers - which will give possibility to farmers to get an advice on any agriculture-related issues (farming practices and marketing).

“Sustainable development strategy and action plan of rural communities and agriculture of the Republic of Armenia for the period of 2010-2020” defines the main directions of the state agrarian policy and the measures on their implementation: Environmental protection and conservation of natural landscapes, agro-tourism and development of organic agriculture are in the list of sub-targets derived from the main target on modernization of agriculture and increase of competitiveness; development of agricultural cooperatives; improvement of the scientific-education and advisory system in agrarian sector. To the conservation and rational

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The use of agrobiodiversity as an important component of genetic resources is given importance in agricultural strategies.\textsuperscript{66}

The most recent developments in terms of agricultural policy are: a) \textit{supporting agricultural cooperatives} and b) \textit{working towards implementation of agricultural insurance system} c) \textit{establishing advisory extension services in rural areas}.

2.5.2.3 Arable lands management

According to NEAP -2 (2008), due to the scarcity of cultivated land areas in Armenia, steep slopes, broken relieves, areas prone to landslides, floods, bogging are used thereby causing land degradation and intensification of landslides. The lands that degrade due to a variety of reasons easily lose their restorative capacity thereby, resulting in decreased biological productivity and increased economic loss. Combating land degradation is considered a top priority in Armenia.\textsuperscript{67}

Fragmentation of agricultural land in the aftermath of land privatization, which considerably limits the utilization of this land as a means of production, also hinders efficient farming.

In Soviet times thousands of tons of mineral fertilizers and pesticides were used in the country every year. As a result, agriculture created an ecologic pressure on the environment. For the last years, agriculture moved to extensive ploughing. As it mentioned in 4\textsuperscript{th} NR, 2009, for the last decade, the use of mineral fertilizers has been reduced more than 10 times, and that of organic fertilizers - about 18 times. At the same time, according to the data from the National Statistical Service of the RA the import of pesticides raises up year by year, which results in additional soil and water contamination.

The adverse influence of agricultural activity on the natural environment is especially reflected in: degradation of farmlands, soil erosion, salinization, overwetting, changes in the vegetation of natural grasslands, disappearance of many vascular plants, larger scales of pest infestation and diseases; wrong practices of agricultural melioration, farming and cattle breeding also contribute to those.

One of the goals of the “\textit{Agricultural Sustainable Development Strategy}” of Armenia (2006) was the protection of the gene pool of agricultural plants (particularly crop wild relatives) and animals and the efficient use in selection.

However, due to various factors at present about 33\% or 150,000 ha of arable lands is not used for the targeted purpose. This threatens wild biodiversity as the abandoned cultivated areas are covered by aggressive weeds and become a center of their reproduction and a source of their dissemination in cultivated fields and natural ecosystems. In Armenia about 11\% of land degradation is the result of human activity, out of which about 10\% is conditioned by improper agricultural practices.\textsuperscript{68} These processes bring about soil erosion and secondary


\textsuperscript{68} World Bank (2012): “Climate Change and Agriculture” - country report
salination, degradation of natural ecosystems as well as change and loss of biodiversity, which is eventually expressed in significant quantitative and qualitative changes of ecosystem services.

RA MoNP is a co-implementer of the following activities of the action plan aimed at implementation of the main provisions of the new Agriculture Development Strategy for 2010-2020:

- Implementation of activities to prevent degradation (worsening) and desertification of agricultural lands and especially pastures;
- Development and implementation of a methodology on receipt and provision of data on land monitoring;
- Development and implementation of a program on protection and balanced use of agricultural crops and their wild relatives in Armenia;
- Implementation of measures on reduction of vulnerability of agriculture conditioned by the climate change.

2.5.2.4 Organic farming

The Republic of Armenia “Law on Organic Farming,” adopted in 2008, regulates the production, preservation, processing, transportation and sale of agricultural products and materials as well as the storage of wild plants, and defines the principles of and legal grounds for the management of organic agriculture, main demands related to the circulation of products, directions of state support, and duties of the authorized body. Legal acts/by-laws (in total, seven) have been adopted to ensure implementation of the Law.

A local private and independent organic certification body, Ecoglobe Company, operates in Armenia from 2002. In 2008 it received an international accreditation issued by the German Accreditation Organization (DAkkS, former DAP), and in 2009 Ecoglobe was accredited by the National Organic Program of the USDA. Due to the mentioned two accreditations, producers certified by Ecoglobe Company are able to enter the EU and US markets of fresh and processed organic food products.

As a result of increasing awareness of organic food on the local market and abroad, during last two years Shen NGO recorded a noticeable increase in the prices of certain organic products; the price of apricots increased by 20%, the price of raspberries - by 65%, and the price of peaches – by 15%. As of today there are numerous organizations that promote organic food production and marketing in Armenia. Shen benevolence NGO (Rural Development Agency in Armenia) and Green Lane agricultural development NGO provide consultancy and training for specialists in the fields of plant protection, animal husbandry and general quality control activities; CARD foundation, Swiss Development Agency and GIZ SMB Project have implemented several projects to support the organic producers’ marketing activities. To demonstrate the growth of organic agriculture in Armenia - in 2003 only 110 ha of land were reported as cultivated under organic crops, in 2009 it reached 1695 ha. Out

of this, 300 ha are certified areas of agricultural land, 450 ha – in transition towards certified agricultural areas, and 800 ha – wild collection areas by Ecoglobe. The remaining 145 ha is certified by SGS Organic (which has been active in Armenia since 2011). Shen NGO reports 30 varieties of organic crops produced by 57 farms in Armenia\(^\text{70}\).

Approaches for sustainable production and marketing of wild collection products are introduced: sustainable collection and processing techniques area applied, collectors and processors are trained, they increased their income and turn-over of companies is increasing due to proper marketing, and sustainable production contributed by PPP projects.\(^\text{71}\)

### 2.5.2.5 Agrobiodiversity

Armenia is considered the Western Asia center of cultivated plant origin (soft and durum wheat, pea, lentil). The high concentration of wild progenitors of cultivated plants represents a very rich gene pool for the creation of new crop varieties resistant to diseases, drought, and cold - this is of great importance given the global impacts that climate change is expected to have on crop production. Armenia is also an ancient center for livestock breeding and is the native land of the wild ancestor of sheep - the Armenian mouflon. Armenia also contains habitats of endemic races of goats and horses originated from the Armenian Plateau\(^\text{72}\).

The sub-sectors of agriculture, such as crop production, live-stock breeding, bee-keeping and fishery as well as a number of important sub-sectors of the light and food industry depend on the wild plants and endemic animal species.

Before 1950 more than 20 local varieties of wheat have been cultivated in Armenia. At present in some farms 2-3 traditional local varieties of wheat are being cultivated, the others were removed from cultivation due to low productivity. The majority of the local varieties have not been conserved in the seed collections.\(^\text{73}\)

“The efficient conservation of genetic resources used for agrobiodiversity and especially food production and agriculture management, is hindered by the absence of a national strategy and a comprehensive national program” – states 4\(^\text{th}\) NR to CBD, 2009.

**A legislative framework for biosafety does not exist.** This is a significant gap in the framework for biodiversity conservation, and remains unchanged.

Issue of genetic resource accessibility and fair distribution of the benefits obtained from their utilization is not yet regulated.

The protection and use of genetic resources used for food and agriculture is implemented according to the priorities defined in the *Sustainable Development Strategy of Agriculture* (2010), which emphasizes the conservation of the old local varieties and wild relatives of

\(^{70}\) Shen - NGO (2012): Milestones of Organic Agriculture in Armenia

http://www.shen.am/PDF/Milestones%20of%20Organic%20Agriculture%20in%20Armenia.pdf


\(^{72}\) Ecodit (2009): Biodiversity Analysis Update for Armenia/ USAID

cultivated plants, enhancement of the capacities of genetic banks, establishment of plantations and breeding units of the species having economic value as well as the balanced use of natural resources. However, the works on breeding in Armenia are implemented in the directions of full-scale and adaptive breeding. At present only a limited number of old traditional varieties is cultivated along varieties imported from abroad and locally bred ones. The number of cultivated varieties registered in the State Register of Breeding Achievements increased during 2008-2013, with significant increase especially in the number of new varieties of vegetables (85%). This sector has been out of supervision, the presence of new imported varieties is a risk factor also for wild biodiversity.

The efficient management of agrobiodiversity is in the focus of two fields, agriculture and nature protection. Agrobiodiversity conservation in natural habitats is regulated by the MoNP, which is the coordinator for the CBD. The conservation of agrobiodiversity in gene banks and separate seed and animal collections, its use with the aims of selection, as well as the issues of the conservation and restoration of biodiversity of natural grasslands and pastures are coordinated by the MoA, which is also the coordinator of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). The scientific-research work on agrobiodiversity issues in Armenia is financed by the MoES, in accordance with the assessment of independent experts and taking into account the development priorities of each field. On the principles of base financing, Armenian National Academy of Sciences (NAS) contributes to the comprehensive research and conservation work on agrobiodiversity, which is implemented in scientific institutions under the supervision of the NAS.

To ensure reliable protection of plant genetic resources Sustainable Development Strategy of Agriculture\textsuperscript{74} emphasizes the need for the following activities:

- Development and implementation of the program on conservation and sustainable use of genetic resources of agricultural crops of Armenia and their wild relatives with support of the RA Government and donor organizations and together with the MoNP of the RA
- Capacity building in terms of necessary equipment and technical means for the organizations having collections of genetic resources
- Creation of field collections of local and selected varieties of fruits and grape through rehabilitation of collection orchards, acquisition of specimens of Armenian origin from the genetic banks of other countries and establishment of new orchards
- Expand possibilities for maintenance and reproduction through biotechnologies (in vitro) of the plants with vegetative propagation
- Promote improvement of habitat management (\textit{in-situ}) of plant genetic resources through inventory of their distribution, plant communities and their species composition, clarification of distribution zones, stock-taking and monitoring

• Development and implementation of projects on on-farm protection of the plant genetic resources
• Ensure duplication of unique genetic resources and their storage in a genetic bank of a foreign country to reduce the risks of secure maintenance

Funded by the state and donor organizations a number of scientific-research projects aimed at research of genetic resources, their use in the selection process, their *ex-situ* and *in-situ* conservation are implemented:

• Study of the collections of the global genetic fund of *Solanaceae* cultivated plants (2010 – 2012);
• Reproduction of collections of cultivated plant of regional priority (2011-2012);
• Conservation and use of apricot genetic resources (2011 – 2014);
• Study, assessment, reproduction and enrichment of *ex-situ* collections of the plant genetic resources, improvement of documentation system and pre-selection activities (2012-2014);
• Study of some valuable native varieties of grape and their clones (2012-2014);
• Acquisition, regeneration, description, documentation and conservation of genetic resources of cultivated plants of local origin and their wild relatives (2012 – 2014).

At present in the agricultural scientific entities under different institutions of Armenia there are about 13,220 accessions in seed collections of different institutions: Seed collection of Armenian National Agrarian University Foundation (ANAU) stored in the “Agro-biotechnology Scientific Center” Branch and the Laboratory of Plant Gene Pool and Breeding store mainly the species of local origin and varieties of local breeding. “Scientific Center of Farming” SNCO and the “Scientific Center of Vegetables and Industrial Crops” SNCO under the MoA, Gyumri Breeding Station are represented also by the accessions of the International Center for Agricultural Research in the Dry Areas (ICARDA), International Maize and Wheat Improvement Center (CIMMYT) and the breeding nurseries, which are used for breeding purposes to get the best lines and varieties. Scientific Center of Farming” SNCO is has revised its *ex-situ* conservation strategy and focused on conservation of local breeding varieties of cereals and legumes.

In above mentioned projects the used methods on conservation and study of biodiversity imply participation of land owners in conservation measures and application of guidelines and methodologies on collection of specimens developed by international organizations. Ecosystem approach and the concept of involving all stakeholders in conservation and use of genetic resources are well applied in the projects financed by the Federal Ministry for Economic Cooperation and Development of Germany (BMZ), the German KfW Development Bank and the German Agency for International Cooperation (GIZ). Strategies and methodologies are developed on the basis of the mentioned principles; they will serve to decision-making in the environmental field.75

According to the “Wheat seed production development plan 2010-2014 for the Republic of

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Armenia” there is need for local adapted varieties with high productivity, as the imported varieties in most cases are not adapted to local agro-ecological conditions and lead to low productivity. Conservation and sustainable use of cereals agrobiodiversity to create new cultivars or to improve existing ones is strategically important, as cereals, particularly wheat and barley, are central to the Armenian agriculture. *In-vitro* tests have shown that some Armenian varieties of wheat and barley have higher adaptive traits regarding expected draught and salinity stress.

2.5.2.6 Pasture management

The natural pastures of the republic cover around 30% of the total territory and are on 600m (semi-desert) - 2700-3500m (alpine zones) altitude and are characterized by the diversity of fodder plants, the majority of which are the representatives of grain-crops – around 300 species. Natural grasslands and pastures usually belong to the state; they are not subject to privatization and are managed by relevant state authorities.

Use of land under pastures increased dramatically after 2004. This was a result of the increase in the total agricultural land by 52%. The reason for this was the alienation of community reserves in late 2004. Auctions were conducted and community land was sold at a price lower than a market price for the land.

With the purpose of protecting the natural pastures, hay meadows and forest biodiversity a special attention was drawn on the issue of sustainable use of pastures in NBSAP-1 (2000 – 2004): development of regulations for the use of the most vulnerable cenosis; preparation of guidelines for farmers about the volumes of grazing; identification of the best proportion of surfaces of pastures and grasslands and pastures in the various landscape zones; implementation of the rehabilitation programs of natural pastures and grasslands, especially alpine meadows was envisaged.

The state of the natural pastures and grasslands is extremely concerning in Armenia. Situation is not improved according to 4th NR, 2009: The overgrazing of grasslands also contributes to erosion, as a result of which the area of natural grasslands is steadily declining. The natural grasslands of Armenia have degraded substantially during the last two decades, since during the whole pasture period the livestock in the Republic is fed with natural fodder. Because of low productivity and small quantity of livestock in today's farms, as well as due to the lack of finance, livestock grazing takes place mainly in near-village pastures, hence remote summer and alpine grasslands remain unused. The majority of community near-village pastures is currently overexploited and subjected to different types of degradation, from change of the plant cover to creation of erosion centres which are also a result of landslides and torrents. As a result of continuous inefficient use of natural grasslands

76 Hovhannisyan,N.; Yesayan, A.; Dallakyan,M.; Esoyan, S.; Manukyan,I.; Davtyan, H. - Center of Excellence in Applied Biosciences, Yerevan State University (2015): Project on identification of wheat and barley genetic resources adaptive traits to sustain the forecasted climate change – GIZ, Sustainable Management of Biodiversity, South Caucasus

and lack of attendance, a part of them (about 150, 000 ha) has become useless. There is currently acceleration of water erosion and enlargement of marshes in the natural grasslands. The difficulties of plant diversity conservation in grasslands are connected with the imperfection of the mechanisms of their management by local authorities and village dwellers, and the lack of means for carrying out monitoring and restoration activities.

*According to 5th NR, 2014, the pastures of Armenia occupy 1,118,000 ha (in all landscape zones), out of which only 30% is used effectively.*

At present in the structure of annually produced livestock breeding products about 70% of milk, more than the half of meat and the total quantity of wool come from use of pasture fodder. In addition, being a source of fodder, the sub-alpine and alpine meadows are the most valuable part of the genetic pool and gen-fund of the flora of Armenia.

Despite the importance of natural grasslands in Armenia at present their biological and economic situation is far from being satisfactory. The studies show that nowadays about 57% of pasture lands in Armenia is degraded (eroded, trampled and decomposed). Its main cause is not so much the unfavorable natural-climatic conditions, but unsustainable use of pastures as well as almost complete absence of maintenance and improvement measures. In addition, at present the community nearby and distant pastures are used very disproportionally. The remote pastures are underused or almost not used, whereas the nearby pastures are severely overloaded. In addition to that there is cruel practice of the population to burn meadows and pasture in autumn. *Description of this situation is being remained the same since 3rd and 4th report to CBD, except of some interventions.*

*Armenia Development Strategy (2014-2025) sets out to develop differentiated taxation, which will contribute to the targeted and sustainable use of arable land and pastures and will protect their organic layers.*

Since 2005 several projects have been implemented addressing pasture improvement issues:

Within the framework of “ICARDA – regional program of agriculture of development of mountainous countries” a range of new technologies for the surface and root improvement of natural fodder fields have been developed with the purpose to improve the pastures in the fodder diversity and extremely burdened state in Gegharkunik and Tavush marzes.

Under the “Natural resources management and poverty reduction” program Improvement (fertilization) of natural grasslands in about 100 communities of Tavush and Gegharkunk marzes has been carried out, as well as work to rehabilitate irrigation systems: rehabilitation of on-farm canals, installation of drainage pipes, construction of animal watering sites, installation of gabions to prevent water erosion, etc. Management plans for 100 communities have been developed.

At present the activities on sustainable pasture management are limited by development and implementation of community pasture management plans in some regions of Armenia. Thus, in 2011-2014 in the frames of the project “Community Agricultural Resources Management and Competitiveness”, for 49 communities the Plans on Pasture Management and Live-Stock Breeding Development have been developed in a participatory approach and activities on
sustainable pasture management have been implemented in 67 communities.

From 2013-2015 under the framework of GIZ SMB Project integrated concept for monitoring and management planning on regulation of sustainable pasture management\(^78\) is introduced in Sisian Region, in Tavush region is being carried out. Community-based pasture monitoring and management system is developed\(^79\); representatives of 32 communities, local government bodies - agronomists, members of community councils, veterinaries, and farmers are trained in development and application of sustainable pasture management procedures; pasture management plans were revised. Method is widely used. Pasture Monitoring Manual\(^80\) and pasture management guidelines are published; monitoring manual and management guidelines have been officially approved by university council, and are currently in use as a methodical and teaching materials at ANAU.

The results of successful implementation will guarantee the reproduction of the new monitoring model in other regions of Armenia too, to improve pasture management planning, implementation methods, to ensure solutions not only to the issues of fodder provision required in the area of animal breeding, but to a more important issue, which is the regulation of reduction in vulnerability risks, protection and sustainable management of biodiversity.


\(^{79}\) Strategic Development Agency” NGO (2014): Piloting Pasture Management Plan in Selected Communities of Sysian Region on the Basis of Pasture Monitoring Manual for Armenia. GIZ- Sustainable Management of Biodiversity, South Caucasus

2.6 Protected Areas System

Biodiversity conservation in Armenia is implemented mainly in the specially protected nature areas (SPNA), where 60-70% of the species composition of the flora and fauna is concentrated including the overwhelming majority of rare, critically endangered, threatened and endemic species. Despite of many developments, expansion, enhancement, the protected area system does not adequately protect ecosystems with significant and threatened biodiversity, and ecosystem services.

2.6.1 Coverage and Representativeness

Expansion of PA system

In the beginning of 21st century, the protected area system of Armenia covered a total area of approximately 141,600 ha, representing 5 % of the national territory. Including Sevan National Park, the total area reaches 311,600 ha or more than 10 % of the national territory. Although these figures reflect the area defined as protected, only a small proportion of the state reservations/sanctuaries have been actually established.

The establishment of the first protected areas dates to 1958 when the first three state reserves — Khosrov, Dilijan, and Shikahogh (Bartazi) — and several state reservations/sanctuaries were established. The Lake Sevan National Park was first created in 1978 in recognition of the global conservation importance of this unique alpine lake ecosystem. Its status and management have been revised several times, and effective management of the park has started later.

Five state reserves had been established in Armenia for that period, covering in total approximately 68,500 ha (or 1.5 % of the county’s territory). Twenty-two state conservation areas/state reservations/sanctuaries (SCA) had been declared in Armenia, covering a total area of approximately 87,000 ha (or 3.5 % of the county’s territory). However, almost none of the SCAs identified for establishment had actually been created. No natural monuments had been created in Armenia: The MoNP was preparing a prioritized list of sites to be proposed for the establishment of natural monuments81.

In many cases, only a small portion of state reserves had enjoyed a significant degree of protection, while large areas had been negatively affected by human activity, including exploitation of natural resources, grazing, industrial development, urban settlements, and tourism. Some protected areas were in a better condition due to lower pressure from human activity along their boundaries. These included Khosrov Reserve, a site of high regional conservation importance, where more than 50% of all plant species in Armenia have been recorded.

In 2008, according to the data reported in 4th NR to CBD and Biodiversity Analysis from 2009, USAID, the total area of specially protected nature areas (SPNA) was approximately 308,000 hectares (including the surface area of Lake Sevan). This is equivalent to approximately 10%

of the total territory of Armenia and 6% if the surface of Lake Sevan is excluded. However, the exact area covered by PAs was imprecise since the boundaries were not well defined.

For this period the PA system of Armenia included three state reserves (Khosrov Forest, Shikahogh, Erebuni), 25 reservation/sanctuaries, two national parks (“Sevan” and “Dilijan”) and their borders had being clarified under the works being carried out since 2005 by state budget. Programs for establishment of 6 more PAs (“Arevik” State Reserve, “Arpi (Gnishik)” and “Jermuk” National Parks, “Kirants” and “Vorotan” Parks of Nature, “Arayi Mountain” Reservation/Sanctuary) were underway.

In the period of 2009-2014 the number of SPNAs and their total territory have significantly increased with establishment of the new protected areas; a new list of natural monuments with 232 natural monuments was adopted by the RA Government (decision #473-N, May 2, 2013). The list includes 106 geological, 48 hydrogeological, 40 hydrological, 17 natural-historical and 21 biological natural monuments. “Zangezur” Biosphere Complex”, SNCO, was established (decision #1465 - N of the RA Government from December 19, 2013), which includes Arevik National Park, Shikahogh State Reserve, Plane Grove, Zangezur, Khustup, Boghakar and Sev Lich State Sanctuaries. This “Complex” is aimed at support to creation of a biosphere reserve in Syunik Region, which will include Shikahogh State Reserve along with its buffer zone, the administrative territories of 5 self-governing communities and some selected areas in Chakaten forest area of Kapan Forest District of “Hayantar” SNCO. Existing PAs will be linked through ecological corridors.

Figure 6: Protected Areas coverage and representativeness, RA

At present in Armenia the total territory covered by SPNAs in Armenia makes 387,054 ha, which comprises 13.1% of the total territory of Armenia. At present the SPNAs of Armenia are as follows:

- 3 state reserves (Khosrov, Shikahogh and Erebuni), which cover the territory of 35439.6 ha making 1.19% of the total territory of Armenia;
• 4 national parks (Sevan, Dilijan, Arpi Lake and Arevik), which cover the territory of 236, 802.1 ha making 7.96 % of the total territory of Armenia;
• 232 natural monuments;
• 27 state sanctuaries, which cover the territory of 114, 812.7 ha making 3.95 % of the total territory of Armenia.\textsuperscript{82}

Table 5: SPNAs according to IUCN categories, RA

<table>
<thead>
<tr>
<th>Protected Area</th>
<th>IUCN Category</th>
<th>Quantity</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Nature Reserve I</td>
<td>I</td>
<td>3</td>
<td>35,439.6</td>
</tr>
<tr>
<td>National Park II</td>
<td>II</td>
<td>4</td>
<td>236, 802.1</td>
</tr>
<tr>
<td>Natural Monument III</td>
<td>III</td>
<td>232</td>
<td></td>
</tr>
<tr>
<td>State Sanctuaries IV</td>
<td>IV</td>
<td>27</td>
<td>114, 812.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>387,054</td>
</tr>
</tbody>
</table>

(Appendix 3 - Map of SPNAs).

Representativeness of PAs

Until recent two habitat types (forests and Lake Sevan) represented 91% of the lands included within Armenia’s SPAN system. Important habitat types such as desert-semi desert, wetlands, steppe, meadow, steppe meadow and high mountainous ecosystems, that represent approximately 80 % of Armenia’s total landmass, that are ecosystems important for most of Armenia’s critically endangered flora/fauna were absent or under-represented .

Today, through designation new categories, new areas and extension of some existing ones, PA system is represented almost all types of ecosystem (semi-desert – 0.2%, steppe – 15.8%, forest – 28.5%, sub-alpine and alpine meadows – 22.8%, water and wetland 32.9%) spread in Armenia (Figure #6).\textsuperscript{83}

2.6.2 Conservation areas of global importance

Ramsar sites

Armenia became a signatory of the Ramsar Convention on Wetlands in 1993, designated Ramsar sites - Lake Sevan and Lake Arpi, with a total surface area of 492,239 ha. Khor Virap Marsh (52.8 ha) was declared a Ramsar site and state sanctuary in 2007. Two more wetlands (Pond Ardenis and Relict Mires of Lori Upland) are on the Ramsar 'shadow' list.

Despite Lake Sevan being a Ramsar site and a main part of a National Park, Sevan is one of the most endangered ecosystems of the country, but Seven is in the agenda of priorities of government and several conservation and rehabilitation measures have being taken by state.

Important Bird Area (IBA)

According to 5th NR, 2014, 18 Important Bird Areas (IBA) have been designated, where all threatened species of birds of Armenia have been taken under protection. IBAs are key sites for conservation – small enough to be conserved in their entirety and often already part of a protected area (PA) network - and if not, the IBA selection process can help a country set priorities for conservation of PAs, The Birdlife affiliate in Armenia is Armenian Society for the Protection of Birds (ASPB). After years of field research and data compilation, ASPB identified 18 IBAs in Armenia. (Appendix 4 - Map of IBAs). The IBA map largely coincides with the map of specially protected nature areas (SPNA) of Armenia, published under the “Protected Areas Programme 2012 - Caucasus Ecoregion”. There are still gaps between the IBAs and the planned network of PAs.

Emerald network

A new protection category is being developed in Armenia - areas and ecosystems, which are not included in SPNAs, but have globally or nationally important biodiversity (including endangered plants) will become “Important Plant Areas” (a preliminary list of 16 Important Plant Areas has been developed) and areas important for biodiversity as a whole, will be included in the “Emerald” network. 13 areas have been identified to be included in the Emerald Network, being established in Armenia in the frames of the Convention on the Conservation of European Wildlife and Natural Habitats. 8 of them are included in the systems of SPNAs of Armenia (Khosrov Forest State Reserve, Sevan, Dilijan and Arpi Lake National Parks, Khor Virap, Plane Grove, Aragats Alpine and Ijevan State Sanctuaries). Emerald Network will be an ecological network in Armenia for joining international ecological networks, in particular the Pan-European Ecological Network (PEEN). Khosrov

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85 http://wwf.panda.org/?151081/map-of-specially-protected-nature-areas-of-armenia
Forest State Reserve after being awarded with the European Diploma on Protected Areas in 2013 by the European Committee of Ministers is considered a core area in the PEEN.  

### 2.6.3 Legislation and policy

The Armenian system of protected areas was established to conserve the national natural and cultural heritage, including important habitats and species, as well as landscapes, cultural and natural monuments, and important geological formations. In particular, several protected areas were created to preserve the habitat of unique, rare, and endemic species listed in the Armenian Red Data Book.

The Law on Protected Areas (1991) had defined the following categories of protected areas, state reserves, state conservation areas/reservations/sanctuaries, national parks, and natural monuments are considered protected areas. This system followed the former Soviet system of strict nature reserves (“zapovedniks”) and conservation areas, which permit broader use. Sevan National Park is a departure from this system. The absence of an adequate legislative framework significantly hampered the effectiveness of the entire system of protected areas, and many reserves have not been formally established. In addition, activities not consistent with the sites' management objectives were taking place.

On the other hand, some notable Armenian protected areas, such as the Khosrov and Erebuni state reserves, have enjoyed a significant degree of protection throughout the Soviet era as well as into present times. Because the establishment of SCAs has largely remained on paper — only a general government resolution on their establishment has been approved, with no boundaries identified nor regulations prepared for any of the 22 SCAs — these protected areas do not enjoy any type of special protection.

Comprehensive revision of existing legislation was inevitable and was considered as one objective of NBSAP-1(1999).

An important step forward in Armenia’s PA development was the “Strategy on Developing Specially Protected Areas and National Action Plan 2003-2010,” (approved in 2002 by Government Decree No. 54). During implementation of the National Action Plan substantial progress was made in the improvement of environmental legislation, PA management effectiveness, and capacity building.

A serious shortcoming of the “Strategy on Developing Specially Protected Areas and National Action Plan of Armenia” was the absence of provisions aimed at the creation of ecological networks which are considered primary in the practice of PA development and which are the conceptual basis for the Programme of Work on Protected Areas (PoWPA) of CBD. There is no clearly formulated concept of development of the PAs network in the

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87 Chemonics International Inc. (2000): Biodiversity Assessment for Armenia, USAID

88 Chemonics International Inc. (2000): Biodiversity Assessment for Armenia, USAID

89 Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID
Republic; however, the development of its elements has partially been planned in the Action Plan.90

The Law on “Specially Protected Nature Areas” (2006) defines SPNAs as, “designated by Law, areas of terrestrial land (including surface and underground waters) and the appropriate air space, and separate natural objects that have environmental, scientific, educational, healthcare, cultural, historical, recreational, tourist, and aesthetic value, and a special regime of protection is established for them.”91 PAs in Armenia are classified by: Importance: international, national, and local and Categories: state reserves, national parks, natural monuments, and state sanctuaries. PAs of international and national importance are exclusively under State property, while PAs of local importance could be situated on and could be the property of local communities. Lands belonging to other owners than State can be included in the recreational and economic zones of National Parks in order to provide their integrity and protection regime. According to this Law, PAs of international and national importance should be exclusively managed by the responsible authority, MoNP.

SPNAs of different categories can be included in the ecological network through ecological corridors and buffer zones. The status of SPNAs is defined according to the requirements of the RA Law on Specially Protected Nature Areas, and their objectives and regime peculiarities are set forth in the SPNA charters approved by the RA Government Decrees.92

The fulfilment of the requirements defined by the Charters of SPNAs (the protection regime of Natural Monuments is defined by their passports) is ensured by State Non-Commercial Organisations (SNCO).

State Reserves (SNCO) in Armenia are non-commercial state organisations with the status of legal person that implement environmental, scientific and social-cultural activities. The protection of State Reserves is implemented by their protection services. National Parks (SNCO) are non-commercial organisations with the status of legal body. They carry out environmental, scientific-research and scientific-cognitive (eco-educational) activities in compliance with the Constitution of RA, RA Civil Code, RA Laws on the State Non-Commercial Organisations and Specially Protected Nature Areas, their Charters and other legal acts. State Sanctuaries do not have a status of legal body, and their objectives and regimes are defined by their Charters. 13 forest sanctuaries are included in the structure of Forest Enterprises; their management does not have certain legal regime and does not differ from the management of forest enterprises with no status of legal body. (Appendix 5 - Protected Areas in Armenia, details)

The 2006 Law was certainly a step forward. However, this legislation still required refinement particularly regarding landscape level conservation. The law refers to concepts such as

91 Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID
“corridor” and “biosphere reserve” while providing little legal guidance regarding their form and functions.

The 2006 law provides for sustainable use of certain SPNAs (although the mechanism for this to occur is still uncertain. Management Plans are required to be participatory, with the involvement of stakeholders. That SPNA management envisages a balance between protection of biodiversity and socio-economic development of the local population and integrating this into SPNAs, is a significant change…but again, it is difficult to predict how local populations will obtain socioeconomic benefits from SPNAs.93

Current economic activities in PAs are limited to national parks and the reserve-park complex SNCOs. Activities that can provide economic benefits include recreation and other types of tourism and sale of fuel wood (after sanitary felling). However, SNCOs lack specialized divisions and staff to oversee these activities. Therefore, income generating activities are currently limited to land rent to third parties (PA land is rented to private parties in accordance with a contract).

Fees are not collected at entrances to national parks or at entrances to other SPNAs.

In addition, community use of PA natural resources is limited to fuel wood collection after sanitary felling. To date, there are no opportunities for communities to earn income.

Community benefit concepts and activities are still in early stages in Armenia. To be successful in conserving biodiversity, management of PAs must address inequitable access to economic opportunities. A top-down, command-and-control approach is, however, still common in Armenia’s PA community.94

Since 2011 about 50 governmental decisions were developed and adopted by the RA Government along with 20 decisions aimed at improvement of legislation related to the SPNAs:

Regulatory and institutional framework relevant to establishment and functioning of sanctuaries has been developed; draft RA Law on “Amendments to the Law of the Republic of Armenia on Specially Protected Nature Areas” (2014) and updated “National Strategy and Action Plan on Development of Specially Protected Nature Areas of the Republic of Armenia” (approved by the RA Government decision № 1059-A as of September 25, 2014) provide new opportunities for introduction of new categories of protected areas in the system of SPNAs, in particular the “protected landscape” (category 5 by the IUCN), which can contribute to active participation of communities in environmental processes as the local self-governing bodies will have an important role in the management of those SPNAs.95

93 Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID
94 Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID
The main strategic directions of development of the system of SPNAs are defined with special emphasis that SPNAs are “the zones of stability as well as of maintenance and restoration of ecosystem services” and their functioning is not only aimed at protection of natural heritage, but also at improvement of well-being of local population. It is emphasized that ESs are of economic value and they need to be integrated in the national system of economy.

In comparison with the acting Law (2006) the revised draft more clearly regulates the protection regimes and allowed forms of use in SPNAs, including ecotourism, the competences of their management as well as the provisions on buffer zones, ecological corridors, natural monuments, biosphere reserves and protected landscapes.

The draft Law envisages wider opportunities for local self-governing bodies in terms of participatory management especially for the categories of natural monuments and protected landscapes.

According to the draft Law (Article 7, provision 5) the SPNAs located in forest lands (except reserves and national parks) can be managed by the authorized body dealing with the management of forest sector.

Regarding compensations, mechanisms of compensation should be aimed at land owners in the process of expansion of the boundaries of existing SNPAs as well as during establishment of new SPNAs and ecological corridors.

New draft NBSAP-2 (2015) also refers to country’s ecological network, compensation payments to land users for limitations imposed on economic activities, as well as the issues of land alienation for the creation of new SPNAs.

2.6.4 Institutional set-up and management

According to Biodiversity Assessment, USAID, 2000, the MoNP was responsible for the supervision of all protected areas in Armenia. The direct management of protected areas was either:

- Carried out by MoNP directly, (as in the case of Lake Sevan National Park, and Erebuni and Sev Lich state reserves, through Protected Areas Department) ;
- Assigned to the "Hayantar" (Forestry Department, part of the MoNP), which was directly responsible for the management of 3 state reserves (Dilijan, Shikahogh, and Khosrov,) and 16 of the 22 state conservation areas/reservations/sanctuaries
- Under the jurisdiction of the Ministry of Agriculture, as in the case of 6 state conservation areas ; one - under the Institute of Physics

It should be noted that in 2000 actual management of state reservations was practically non-existent.96

Already in 2008, MoNP is responsible for all three state reserves, two national parks and only eight sanctuaries. A number of PAs are under the responsibility of other organizations: 14

96 Chemonics International Inc. (2000): Biodiversity Assessment for Armenia, USAID
state sanctuaries are managed by the “Hayantar”, (SNCO of the MoA, from 2004), and one state sanctuary is managed by the Institute of Physics (Ministry of Economy and Natural Resources); for two state sanctuaries management authorities had not been defined. Management authority for all 230 natural monuments has not yet been established.

Within the MoNP, there were three subdivisions with responsibility for SPNAs:

- The Division of Biodiversity and Water Conservation, in particular, plays a substantial role in selecting the PA regime
- The State Environmental Inspectorate’s (SEI) responsibilities for the inspection and verification regime, which is implemented based on the annual management plan. The annual management plan is prepared by the Inspectorate and approved by the Minister; the agreement is signed between the Inspectorate and PA administrations. In some cases (severe violations, complaints), inspections can be done at times other than stipulated by the annual plan
- The Agency of Bio-resources Management (BMA) is responsible for the supervising and coordinating SNCOs’ main PA management functions: (cadastre, scientific activities, monitoring, programs, projects, budget, legal acts…). The PAs Management Department is part of the Agency.

RA Law on SPNAs defines the authorities of the RA Government; state authorized management body, regional authorized bodies of state management and local self-governing bodies in the sphere of SPNAs:

**RA Government** - The authorities of the RA Government in the field of establishment, designation, management, conservation and use of SPNAs include development of policy and approval of strategy, approval of state programs in the sphere of conservation and use of SPNAs, approval and revision of SPNA management plans of international and republican significance, approval of SPNA charters, approval of orders on running state cadastre, monitoring and use of SPNAs and others.

**State authorized management body** - The authorities of the state authorised management body (MoNP) in the field of establishment, designation, management, conservation and use of SPNAs include development of state policy and strategy of the conservation and use of SPNAs, management of SPNAs of international and republican (national) significance, as well as approval of management plans for SPNAs of local significance, development of SPNA charters and others. The authorities in the sphere of SPNA management vested with the MoNP RA are implemented through structural and separated subdivisions of the Ministry (ABN, SEI, Department of Environment Protection, etc.), as well as through other SNCOs in the structure of the Ministry.

**Regional bodies of state management** - Regional bodies of state management take part in the development of state programs and management plans for SPNAs, assist conservation activities etc. They are represented by respective divisions of regional (Marz) administration (Environmental departments).

**Local self-governing bodies** - The authorities of local self-governing bodies include participation in development of state programs and management plans for SPNAs of
international and republican significance located within administrative boundaries of communities and provision of SPNA conservation regime. Alongside with the mentioned, local self-governing bodies are vested with authorities to submit proposals to the authorised state management body on the establishment of SPNAs within the administrative boundaries of communities, as well as preparation of their management plans, organisation of management, conservation, use and monitoring.\textsuperscript{97}

State sanctuaries that are managed by “Hayantar”, SNCO have no clear delineation of boundaries. They are managed as forests under the Government FMP (this is not an individual FMP for each forest, but an overall plan for managing Armenia’s forests). This plan differs considerably from Government’s protected area management plan.

IUCN’s categories are equivalent in Armenia’s PAs name only (reserve, national park). The situation on the ground in Armenian reserves and national parks does not actually correlate with IUCN categories Ia and II. Conservation and active management of Armenia’s PA is limited. \textit{While the situation has improved there are still large gaps in conservation and management.}\textsuperscript{98}

1\textsuperscript{st} management plans were elaborated for Sevan and Dilijan National parks (approved in 2007). The “Methodological guidelines to developing management plans for specially protected nature areas” was adopted by the decree of the Minister of Nature Protection (27.10.2008, N364 - A).

The Government of Armenia has adopted the Resolution “\textit{On the procedure of establishment of specially protected nature areas}” (22.01.2009, N 72-N), which provides standards for the establishment of protected areas of different categories and designation, in accordance with the guidelines of the IUCN.

In 2011-2014 methodological guidelines on “\textit{Establishment of institutional relations for clarification of the roles and responsibilities in the sanctuary management system}”, was developed.

The monitoring program in Sevan and Dilijan National Parks which was approved by the MoNP is currently being introduced.

\textsuperscript{97}Gevorgian, A.; Abovyan, P. (2010) : Assessment of Management Effectiveness and Law Enforcement in Forest Sanctuaries in Armenia. ENPI-East – FLEG

\textsuperscript{98}Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID
2.7 Education

Soon after independence, Armenia has expressed his readiness to be integrated into the European educational processes; in 2005 Armenia joined the Bologna process and in 2010 Torino process.

In 2010 the RA National Assembly ratified the 2011-2015 State Programme on Education Development, which, based on the already implemented reforms of the education system and the documented achievements, aims at further advancement there of through prioritization of directions of the current phase of sector development.99

The education sector in Armenia is considered to be important as one of the preconditions for sustainable development of the country, reproduction and development of the human capital. Thus, developments in this sector are one of the development priorities of the country: Increasing the quality and effectiveness of education at all levels of the educational system, increasing the relevance of different levels to international standards and ensuring affordable/accessible education for all groups of the population - are priorities for the development of the sector.100

2.7.1 Vocational and higher education

One of the mid-term priority set out in RA Government Program for 2008-2012 (approved by the RA Government Decree No. 380-A, April 28, 2008), was development of education and science to face the challenges of the 21st century; There is an emphasis on importance of quality if professional/vocational education at the current phase of social and economic development of the RA.

A series of interventions is implemented in accord with the principles of those both - Bologna and Torino Processes aimed at improvement of professional education quality, enhancement of capacities required for development of professionals that meet the labour market demands and European standards.101

As a result of the reforms implemented in the area of middle vocational education the new list of vocational specializations and new educational standards have been established, based on which new curricula and educational plans are being developed; during the recent years the of vocational education facilities has been re-operationalized.

Reforms in the area of higher and post-graduate professional education are implemented in alignment with the principles of Bologna Process. Within the scope of the implemented reforms the new list of higher education specializations has been approved. The three-tier system of higher education has been introduced; higher education standards have been revised, for a number of specializations the educational plans have been modified as per the

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module principle. The RA National Qualifications Framework (NQF) has been adopted, which will ensure compatibility of national qualifications with Europeans.

The National Centre for Professional Education Quality Assurance has been established.

Torino process (2010) showed that sectors better linked to economic activities like construction and agriculture do not attract students, despite the fact that they provide better employment opportunities.\textsuperscript{102}

Country report (\textit{March 2015}) also indicates on lack of skills in horticulture, agronomy, veterinary, food processing and technologies. Education system moved from these specialties towards more demanded business and IT related skills, so agriculture and food processing got neglected. Vocational institutions providing agriculture related skills are under-funded, experimental laboratories do not exist and very little practical skills are taught.\textsuperscript{103}

NBSAP-2 (2015) also underlines that the existence of reliable data to identify, analyze and estimate the changes happening in biodiversity requires continuing research and monitoring, which is based on the availability of specialists, institutions, methodology, material and technical resources and sufficient financial resources. The financing of scientific research and trainings of specialists in the field of biodiversity in Armenia is highly insufficient at present.

In line with government’s strategy of vocational education, vocational training package including the curricula package in sustainable forest management is developed; staff of all 19 FEIs are trained in new forest management planning, SFMIS tools, technologies, annual harvesting planning.

Model curricula for trainings in different subjects of forestry (Sustainable forest management (level 1, level 2), Pre-commercial thinning, Road construction and maintenance, Afforestation and reforestation, Biodiversity issues on landscape and stand level in Armenian forestry, Biodiversity issues on detail level in Armenian forestry, Commercial thinning for chainsaw operators, Chainsaw operators training course - level 1, level 2) at ANAU is elaborated and provided by GIZ-SMB Project.

At ANAU is taught pasture monitoring and management methods by using “Manual for Monitoring of Pastures”\textsuperscript{104} and “Guidelines for Development and Implementation of Sustainable Management Plans for Pastures and Grasslands”\textsuperscript{105} developed on the bases of

integrated concept for monitoring and management planning on regulation of sustainable pasture management.

Since 2013 agrobiodiversity topic is integrated into university curricula of Yerevan State University (YSU) and ANAU and existing curricula have been revised: teaching guide\textsuperscript{106} on agrobiodiversity and students hand-book\textsuperscript{107} are developed and provided to Universities.

Internship programs in environmental management and biodiversity conservation are introduced among ANAU, SFMC, and NGOs.

\textbf{2.7.2 Environmental education (EE)}

Law “\textit{On Ecological Education and Training of Population}” is enforced in Armenia since 2001. The Law regulates the principles and the legal, organizational, financial and economic bases of the policy in the field of environmental education of the population. It covers environmental education for six levels, from pre-school to post-graduate and for the public. However, implementation of this law is limited. Status of EE is described in 3rd NR to CBD, 2006: “Teachers are not trained in environmental education, and environment-related teaching tools are limited. In addition, university students are opting for majors in areas such as business, marketing, and engineering over environment-related subjects since jobs in environmental fields are limited and seen as lower paid and lower status. ... Armenia lacks modern curricula for EE, methodological manuals, and appropriate infrastructure for implementation of EE; Environmental NGOs are active in EE, yet the activities are not coordinated or continuous”.

In 2003 MoNP developed “\textit{Strategic Program on Ecological Education of the Republic of Armenia}” which includes an Action Plan taking into consideration various levels of EE.

According to 4\textsuperscript{th} NR to CBD, 2009, a number of by-laws regulating the field, which are necessary for the implementation of the law and by which the mechanisms of EE in educational institutions have to be defined, have not been developed and adopted yet. Country considered necessary improvement of whole EE system. The point is that EE has to serve not only for education and awareness, but also, which is extremely important nowadays, for preparation of specialists.

The EE and training system is managed by the Ministries - MoNP and MoES.

That period in relation to EE is characterized with non-efficient cooperation of state competent authorities of the EE system; less important on the secondary education level; no subjects about nature in elementary school; only a few subjects with information on environmental issues, with very little time allocated by the syllabus.


In State-owned higher educational institutions, for the last few years, modernisation of syllabi of environmental education occurred, harmonization of the specialization process with international requirements was underway, new chairs of ecology were established; public awareness activities were mainly implemented by environmental NGOs, the Aarhus Center in Armenia contributed to public EE.\textsuperscript{108}

The implementation of EE in Armenia is recognized as the country’s priority, as well as the commitment within the scope of a number of international conventions on education and environmental protection.\textsuperscript{109} Uninterrupted EE is an integral part of the RA education system, which in line with the RA Law on “Environmental Education and Training of the Population” is included in all levels of education, as well as in non-formal education.

In 2009 the “Concept on Establishment of Comprehensive and Unified National System of Education, Training and Awareness on Environmental Protection” has been ratified, the purpose of which is to create necessary preconditions for improving the quality of EE and training, formation of environmental consciousness and mentality among the society and raising the level of awareness on environmental issues. To implement the Concept the Action Plan for 2011-2015 has been approved, with aim to contribute to the establishment of the comprehensive and unified national system of environmental education, training and awareness rising.

\textbf{2.7.3 Education for Sustainable Development (ESD)}

Armenia joined the process implemented within the framework of Education for Sustainable Development (ESD) Decade. Currently the education development policy in Armenia is based on the \textit{UN Strategy for Education for Sustainable Development}. The main topics of the UN ESD are included in the curricula of natural and social subjects at all levels of education through integrated courses.

Below are listed changes due to implementation ESD strategy described in “Rio+20” National Assessment Report, 2012:

A separate age-appropriate section is devoted to ecological education within the Preschool Complex Curriculum; Around 24 courses in Ecology has been introduced in higher education institutions; In 2008, the RA MoES approved a manual for higher education institutions on Economy and Practice of Sustainable Development: Global Processes and Armenia, which has been developed by the YSU with the support of UNDP; Within the framework of state subsidies, a certain number of seats are allocated for students undergoing their master and postgraduate education specialized on topics related to the core themes of sustainable development; In 2011, UNESCO Chair of ESD was established in the Centre of Ecological-Noosphere Studies of the RA National Academy of Sciences (NAS), in order to support the process of education for sustainable development in Armenia; In 2012 Chair of Ecology –


Sustainable Development was established in the State Pedagogical University of Armenia, as well as a Centre for Sustainable Development was established in the YSU with the support of OSCE.

Since 2001 the international educational programme, which is implemented in 17 countries, on SPARE (a school programme on energy and resource use) has been carried out. Since 2010 the programme is included in the list of school subjects and is taught as a separate subject. Within the framework of the project energy-saving initiatives were also implemented. In 2012 MoES with support of GIZ developed a 4-year action plan for the integration of environmental education in the educational system of Armenia. 6 modules for environmental education as a product of EE Campaigns have been developed: Exploring Biodiversity in Rivers and Streamlets (2010), Exploring Biodiversity in Forests (2011), Exploring Biodiversity in Meadows and Pastures (2012), Biological Diversity in Rural and Urban Areas (2013), Waste Management (2014), Endangered Species (2015).

In November 2014 Environmental Education Network (EEN) has been formally established. Representatives from the Ministry of Education and Sciences and the Ministry of Nature Protection are focal points of the Network. EE and ESD standards, curriculum in national K-12 system, as well as Armenia’s legislation and policies on EE are reviewed; recommendations are prepared and presented to EEN. EEN based on these recommendations is planning to prepare amendments to existing laws and by-laws.

110 Schwarz S., Gharajyan L., Eberherr Th.(2015): “Environmental Education in South Caucasus Schools”, GIZ-Sustainable Management of Biodiversity Program, South Caucasus
111 Gabriel M. (2013): Manual for teachers on Biodiversity in Rural and Urban areas”
2.8 Biodiversity monitoring

According to BD Analysis, USAID, 2009, “There is no institution that is currently undertaking regular, strategic monitoring of Armenia’s biodiversity resources; “complex monitoring” activities are not implemented in Armenia’s SPNAs. Monitoring that does occur is not “purpose-oriented” and it occurs irregularly; this was due to “insufficient financing, lack of qualified staff as well as an insufficient legislative and scientific-methodological basis. The absence of biodiversity monitoring has a negative impact on the effectiveness of fauna and flora protection and management.” The report also noted that the lack of accurate, updated information and the lack of a coordinated inventory and monitoring constrain good decision making on biodiversity resources.

According to situation described in the 4th NR to CBD, 2009, biodiversity monitoring is being carried out only on SPNAs, on some species, irregularly: The Government of Armenia has approved the resolution “On defining the procedure of organizing and implementing the monitoring of SPNAs” (30.08.2007, N 1044-N). By the decree of the Minister of Nature Protection (14.02.2008, N62), the “Activities ensuring the implementation of the program of introducing a biodiversity monitoring system in Sevan and Dilijan National Parks and ensuring GIS exploitation” has been approved; a number of short-term courses have been organized for the staff of national parks, about the determination of biodiversity monitoring indicators and introduction of the preliminary phase of the monitoring program.

Government of Armenia considers that in order to be solved a primary problem - overuse of bio-resources, it is necessary to introduce biodiversity accounting, inventory and monitoring system. Non-existence of state registration and state cadastre of biological diversity; absence of monitoring and database; scarcity of financial resources for implementation of nature-conservancy measures are major challenges.

European Environmental Agency prepared Armenia Country Report (2011) to identify the options of introducing European Neighbourhood Partnership Instrument (ENPI)-for Shared Environmental Information System (SEIS) project in Armenia, with objectives identification and further development of environmental indicators; one of the selected priority direction was biodiversity conservation. Based on this assessment: Despite the fact that the requirements and procedures for implementation of monitoring and information exchange, including inter-agency cooperation, are not completely incorporated in the relevant legal acts, the flora and fauna cadastres developed within the above-mentioned laws and the information included in those cadastres can be included in the shared environmental information system, becoming its inseparable part. In order to include complete and reliable information on fauna and flora in SEIS, as a first step, it is necessary to improve the procedures for exchange of information between the agencies and public.

During 2006-2010 considerable progress was made in introduction of a contemporary environmental monitoring system in Armenia. The Government of Armenia adopted the “Concept Paper on Development of State Environmental Monitoring in Armenia and 2007-2011 Action Plan”. This action plan includes activities on capacity building and technical equipping of organizations involved in state monitoring of various components of the environment. Annual allocations from the state budget to the “Environmental Impact Monitoring Centre”, SNCO under the MoNP are gradually increasing. However, unfortunately no biological monitoring is currently being conducted by this organization.  

According to 5th NR CBD, 2014, State stock-taking and monitoring of biodiversity components is almost not implemented, which does not allow predicting changes of their status and making realistic and justified decisions regarding their conservation and use.

In order to get reliable information for identification, analysis and assessment of the status of biodiversity and its changes it is necessary to implement continuous studies and monitoring, which depends on availability of respective specialists, structures, methodologies, material-technical and financial resources. Active studies of the status of biodiversity, trends and consequences of its loss have been continued in Armenia in the last 5 years, which is presented in sections 1.3 and 1.4 of the 5th NR, and part is brought in relevant chapter of the herein report.

In 2009 with support of GIZ – SMBP began work on developing National Biodiversity Monitoring System (NBMS). In 2010, 8 forest indicators were defined, and 1 - “Forest cover” was developed and tested. 1st time result of the indicator was published in annual report 2011 of the SFMC.

Today, 18 biodiversity indicators for the NBMS are defined; methods for data collection are developed and tested for 14 indicators.

From 2011 until today overall 8 indicators and partly 1 (Forested area, Intensity of tree cuttings, Extent of forests impacted by forest fires, Extent of forests impacted by forest diseases and pests, Total area of pasture lands (part of the indicator – Total area of agricultural lands), Intensity of pasture use, Total area of burned natural pastures, Zoobenthos community (Macroinvertebrate community) and Index, Phytoplankton community and Index) out of 18 are published.

NBSAP-2 (2015) also underlines that the existence of reliable data to identify, analyse and estimate the changes happening in biodiversity requires continuing research and monitoring, which is based on the availability of specialists, institutions, methodology, material and technical resources and sufficient financial resources. The financing of scientific research and trainings of specialists in field of biodiversity in Armenia is highly insufficient at present.

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120 “Published” in the Armenian context means presentation in a governmental information event or publication on government webpage or reports (GIZ – SMB Project).
Whereas, at present, active research on biodiversity condition, trends, as well as consequences of biodiversity loss are ongoing in Armenia.\textsuperscript{121}

\subsection*{2.9 Financial mechanisms}

Essential part of financial resources for conservation biodiversity is provided by donor organizations.

NBSAP-1 suggested awarding grants for development and application of environmentally safe technologies, as well as developing and implementing tax privileges for the organizations using such technologies.

Some incentive mechanism for conservation and sustainable use of biodiversity and its components were enforced from 90-ties:

- \textit{Exemption from land tax}: According to “Law on Land Taxation” (1994), the state reserves and reservations, national parks, municipal parks, botanical gardens and lands under state forests are exempt from land tax.

- \textit{Privileges on income tax}: According to “Law on Income Taxation” (1997), the agricultural products, including products and industries related to conservation of biodiversity or its components, are exempt from income tax. These include: seeds of trees and bushes; seedlings of trees and bushes; bushes; fish industries; bee breeding.

- \textit{Privileges on VAT}: According to “Law on Value Added Tax” (1997), the realization of agricultural products (seedlings and saplings of trees and bushes, young fish, etc.), produced in Armenia is exempt from VAT.

The Government Resolution \#880 (January 16, 2005) has the following provisions:

- development of plans on financial mechanisms for implementation of the main environmental conventions, including improvement of bio-resources fee system, provision of favorable credits, promotion of private sector involvement, establishment of environmental trust funds;

- development of methodological approaches for economic assessment of natural resources, that will fully consider environmental value of the resource in the developed economic tools (system of environmental fees, compensation regimes, penalties for caused harm and overuse of resource)

Financing from state budget sources was envisaged for:

- SNCOs, implementing biodiversity conservation, (protected areas, forest fund, etc.)

Activities aimed at restoration of Lake Sevan ecosystem (construction of hydro technical structures for increasing the level of the lake, activities to combat desertification, activities to restore endemic fish species, etc.)

“Law of the RA on Specially Protected Nature Areas” (2006), introduced economic incentives for the users of SPNAs - entrepreneurs, owners and population of buffer zones: long-term pay-off budget loans for ecologically clean productions; exemptions from nature use fees for conservation and rehabilitation of unique and valuable plant and animal wild species; and also other economic incentives set fourth pursuant to the legislation of RA.

Environmental funds has been established:

- In 2004 by the decision #891-N of the RA Government (10.08.2004) the Forest Rehabilitation and Development Fund was established (circulating amount 3,553.4 million AMD) with the main aim to support rehabilitation of forests in Armenia and create favourable conditions for development of forests in Armenia.

- Since 2005 the Environmental Protection Fund is operational (accumulating payments under mining concession contracts) for implementation of works on reclamation, levelling, landscaping, planting and construction works in the areas damaged due to mining activities. As of 01.04.2013 more than 422.5 men AMD has been already accumulated in the fund.

- Since 2005 the Target Environmental Fund has been functioning, which is an extra-budgetary account (from the voluntary payments, donations and contributions made by legal and physical entities). In the period of 2005-2012 more than 300 mln AMD has been transferred to the fund, which has been used for implementation of a number of important environmental programs and measures.

- In 2011 by the decision #517-N of the RA Government (28.04.2011) the Foundation on Lake Sevan Restoration, Protection and Development was established with the aim to support mobilization of necessary resources for restoration, reproduction, protection, natural development and use of Lake Sevan as the strategic reserve of freshwaters in the Republic of Armenia as well as for securing water cleanness.

According to the RA Law on Nature Protection and Nature Use Fees (1998) the nature protection fee is an obligatory payment to the state or community budget for implementation of nature protection measures, use and (or) sale of natural resources, which are considered state property. According to the same law the nature use fee is a payment to the state budget for efficient, complex use of natural resources considered state property or a compensation payment for use and (or) sale of these natural resources. One of the types of nature use fees, are fees for use of biological resources,122

Government Resolution #46 (January 19, 2006) approved new set of fees for use of bio-resources, including timber use fees depending on type of tree, herb, edible, technical,
decorative plants, forest areas for grazing, etc. there was suggestion, that this categorization of fees would allow decision-makers and forest users to implement proper management without harming biodiversity.

All types of environmental charges, fees and compensations for environmental damage were accumulated in the state budget and used in a highly centralized manner. The main shortcoming of the existing system was that the charges collected for the purposes of funding environmental protection measures and programmes were only partially used for that purpose.\textsuperscript{123}

Along with the efficiency enhancement of inspectoral supervision operations and the economic growth of the country, substantial increase has been recorded and is still being traced in line of cash flows to the state budget through nature protection and nature use payments, thus establishing favourable conditions for financing various projects and activities aimed at resolution of critical environmental issues within the country, (although a part thereof, unfortunately does not return to the environment).\textsuperscript{124}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure8.png}
\caption{Dynamics of the amount of nature protection and nature use fees}
\end{figure}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|}
\hline
Year & Environment protection fee (Mln Drams) & Nature use fee (Mln Drams) & Livestock use fee (Mln Drams) \\
\hline
2003 & 400 & 300 & 200 \\
2004 & 600 & 500 & 400 \\
2005 & 800 & 700 & 600 \\
2006 & 1,000 & 900 & 800 \\
2007 & 1,200 & 1,100 & 1,000 \\
2008 & 1,400 & 1,300 & 1,200 \\
2009 & 1,600 & 1,500 & 1,400 \\
2010 & 1,800 & 1,700 & 1,600 \\
2011 & 2,000 & 1,900 & 1,800 \\
2012 & 2,200 & 2,100 & 2,000 \\
2013 & 2,400 & 2,300 & 2,200 \\
2014 & 2,600 & 2,500 & 2,400 \\
\hline
\end{tabular}
\caption{Environmental payments, RA}
\end{table}

Environmental payments do not correspond with the damage caused. Comparison of the rates of nature protection payments for environmental pollution, with corresponding payments effective in other countries reveals the fact, that the rates effective in Armenia are too low. Therefore, such rates do not have sufficient impact on the behavior of economic operators. Such relatively low rates of environmental payments do not allow for applying them as a more efficient instrument for reduction of negative impacts on the environment and for ensuring efficient (sustainable) use of nature resources. Low rates of environmental payments do not promote the polluter-enterprises to take steps towards reduction of pollution. In practice, it is more profitable to pay the environmental fees, rather than to acquire and install new safe (green) technologies and equipment, which is more costly. However, it should be noted, that given the limited availability of all financial sources in the country,


\textsuperscript{124} Republic of Armenia (2012): “Rio+20” National Assessment report
In recent years, the problems of target use of environmental and nature use fees have been tackled in Armenia through the following:

1. Respective amendment of the RA Law on the RA Budget System (entered into force in 2011) has stated that “The expenses envisaged by the annual state budget for environmental programs for each year cannot be less than the sum of actual incomes from environmental and nature use fees of the budget two years ago”.

2. Expansion of the limits of enforcement of the RA Law on Target Use of Environmental Fees Paid by Companies. In the frames of the law enforcement the environmental fees paid by large mining companies are allocated to affected communities to finance environmental and public health measures. In the frames of implementation of the RA state budget during 2004-2012, the amount of subventions allocated for implementation of environmental programs in 2004 was 131.4 thousand AMD and in 2012 it reached 277.1 thousand AMD. At the same time since 2012 twenty six communities have been using the right to get respective subventions for implementation of environmental programs.125

As it is seen from the definitions of the law, and dynamics in payments, the nature use and nature protection fees do not include amounts paid for any ecosystem services (ES); incomes from the forestry sector do not include amounts for provision of ESs or their maintenance and the amounts coming from use of non-wood forest products (NWFP) and multi-functional use of areas (ecotourism, recreation, green funds and others) are miserable. Relations connected with ecosystem services are still not regulated by the RA legislation.126

In 2013 the RA Government adopted the “Concept on Establishment of Innovative Financial-Economic Mechanisms in the Field of Environment” (protocol decision N16 of the RA Government , April 25, 2013) as well as the Action Plan based on the Concept (protocol decision N 47 of the RA Government , November 14, 2013). In the list of activities proposed by these documents (which are subject to implementation till 2018) adoption of the RA Law on Ecosystem Services is considered as a preferable option.127

The aim of the concept is to solve the issues of underestimation of biodiversity and ecosystems, mitigate the negative impact on environment and ensure effective (sustainable)

use of natural resources as well as to increase environmental investments and financial resources. The concept emphasizes the issues of awareness about ESs, development of market relations, economic valuations, decision-making as well as integration of ESs in national economy. The proposals of the concept are aimed at regulation of legislative relations connected with ESs, economic valuation of natural capital and development of a methodology on economic or cost valuation of ESs. In particular, it is suggested to introduce a system on payments for ecosystem services, which in practice will not replace the system of environmental and nature use fees, but will be applied in parallel with it.

On economic valuation of biodiversity and ESs and their integration in national economy recently a number of pilot projects have been implemented by different international organizations; so far their results have not been made widely available.

At present the draft RA Law on Ecological Policy is under development, which emphasizes the provisions related to ecosystem services.

The plans of socio-economic development of regions as well as the management plans of SPNAs and forest enterprises will be revised to incorporate the calculations on benefits provided by ESs.

Biodiversity conservation and sustainable ecosystem management are still underestimated as a guarantee for viable nature and healthy life.128

Armenia Development Strategy (2014-2025) referring to data, that compensations received from the current level of nature use and environmental payments are 32-40 times lower than the actual damage caused, set forth the following main directions towards which environmental policy should be revised:

a) Draft and include the methodology for assessing the component of environmental pollution and overuse of natural resources in the main macroeconomic forecasts (indicators).

b) Gradual increase of environmental protection and nature use fees, which on the one hand will enable improving effective use of natural resources and on the other hand will bring additional revenues to the state budget, thus directly increasing budget financing of environmental protection activities.

c) Revision of nature use payments’ rates enacted within the current system of taxes and permits (limitations) to create incentives (especially in nature use organizations) for transition to “green economy” with the purpose of making the cyclical use of resources (material) economically beneficial. Creation of economic incentives due to targeted use of tax and financial leverages in order to transit to close type interior use and prevention of tailings.

A differentiated taxation system will be developed, which will contribute to the targeted and sustainable use of arable land and pastures and will protect their organic layers it is necessary to develop incentive mechanisms for environmentally friendly operations.129

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129
3. Azerbaijan

3.1 General Information

The Republic of Azerbaijan, covering 86,600 km², is situated in the Alp-Himalayan mountain belt. The three mountain ranges are the Greater and Lesser Caucasus, and the Talysh Mountains, together covering approximately 40% of the country. The highest point in the country is on Mount Bazarduzu (4,466 masl) situated in the Greater Caucasus. Eight large rivers flow from the Greater and Lesser Caucasus Ranges into the central Kura-Araz lowlands. Lowlands and plains make up the other 60% of the country. The average height of the country is 657 masl, however, 18% of the country is below sea level. The eastern part of the country is bordered by the ~800 km coastline of the Caspian Sea.

Azerbaijan is the most densely populated among the Southern Caucasian republics. The total population increased by 7.82 %, from 8,897,000 according to national wide census carried out in 2009 to 9,593,000 in 2015. At the present, 53.1% of population live in urban area and 46.9% in rural area. Some 80% of the population is concentrated in valleys and low lands, where industrial centres are located; the greatest concentration of the population is found in the coastal areas, with more than 4 million people located in and around the capital, Baku. Farming is more convenient and irrigation more developed, while around 20% live in mountainous and forested areas.

The country consists of 1 Autonomous Republic, 66 regions, 77 cities, 258 settlements, 1,700 rural districts and 4,253 rural settlements.

Azerbaijan is situated at the juncture of several bio-geographical areas (the Eastern Palaeartic, Turan, the Mediterranean, Asia Minor, and the Middle East) and contains species of European, Central Asian and Mediterranean origin. The country forms an integral part of the Caucasus Ecoregion, a region with exceptional levels of biodiversity (WWF’s Global 200). The biological diversity of the Caspian Sea (the largest inland body of water in the world) and its coastal zone makes the country particularly significant. One of the most important characteristics of the Caspian Sea’s biodiversity is the relatively high level of endemic species among its fauna.
3.2 International Obligations

According to EU funded study, 2013, Azerbaijan signed and ratified more than 20 international and regional Conventions related with the environment. The country is particularly noted for its active participation under the Caspian Environment Convention and the Caspian Environment Programme.

Azerbaijan does not yet publish state-of-the-environment reports. This is contrary to the country’s obligations under the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, to which Azerbaijan is a party.

Azerbaijan failed to submit two mandatory national reports in 2006 and 2008 to the CBD. Azerbaijan did not submit a country report to the Food and Agricultural Organization (FAO) for the 2010 Forest Resources Assessment.

According to EPR II, MENR does not participate fully in international and pan-European processes, such as the Convention on Biological Diversity, the Pan European Biological and Landscape Diversity Strategy (PEBLDS), ForestEurope (previously MCPFE) and the UNECE/Food and Agriculture Organization of the United Nations European Forestry Commission. Although it has submitted some reports, it is essential for the Ministry to follow some of the key biodiversity and forestry discussions and negotiations in order to participate in the decision-making and priority-setting meetings. Although it has submitted some

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134 AETS consortium (2013): Country Environmental Profile of Azerbaijan - EU
reports, it would be essential for the Ministry to follow some of the key biodiversity and forestry discussions and negotiations in order to participate in the decision-making and priority-setting meetings of these processes.

The 2006 Presidential Decree on Additional Actions in Regard to the Issues Emerging from International Conventions and Agreements on Environment sets the main priority actions for the years 2006–2010 for most of the MEAs to which Azerbaijan is a party.

Azerbaijan attaches high priority to cooperation with the European Union (EU). Azerbaijan was included in the EU Neighborhood Policy in 2004. The National Indicative Programmes for the periods 2007–2010 and 2011–2014 define priority areas and related objectives for which the EU is providing grant-financed technical assistance. The harmonization of its legislation with EU law is an important component of Azerbaijan’s cooperation with the EU. While in recent years EU legislation has usually been studied and taken into account when drafting new legislation, the Government has approved the Plan of Actions on Approximation of Legislation with that of the European Union for the period 2007–2010, which will systematically compare EU with national legislation. Many EU directives in environmental areas have already been translated into Azeri.\(^{136}\)

Since 2008, in 2011 country joined one more - European Landscape Convention. (Appendix #6 - Multilateral Environmental Agreements).

3.3 Biodiversity-related Strategic Documents

Azerbaijan implemented its first environmental policy, the **National Environmental Action Plan (NEAP) for 1998–2003** , to respond to identified urgent environmental problems after the collapse of the Soviet Union. As a direct result of the NEAP, Local Environmental Action Plans (LEAPs) were introduced in the country, involving public participation and stakeholder dialogue and assistance to local and regional authorities with policy formulation and priority-setting.

After that the main environmental policy document has been the **National Programme on Environmentally Sustainable Social and Economic Development for the period 2003–2010** (endorsed by the Presidential Decree No. 1152., 2003) The National Programme covered the environmental aspects of the country’s overall development strategy and was accompanied by an **action plan covering the years 2003–2010** for its implementation. The action plan focused on five major areas, namely environmental protection and use of natural resources; global environmental problems; industrial complexes; agriculture and tourism; and education, science and culture. Several action plans were developed for sub-sectors like waste, hazardous waste,.. by different implementation structures.

The National Programme and its action plan were further complemented by the ‘**Comprehensive Action Plan on Improvement of the Environmental Situation’ for the period 2006–2010**, which dealt with improving the environmental situation in various areas.

The National Programme has expired in 2010 and it was decided to formulate an ‘**Additional Action Plan on the Improvement of the Ecological Situation in the Republic of Azerbaijan’ for 2011–2014** instead of a new National Programme of environment protection. Several uncompleted environmental actions have been reintegrated into the additional Action Plan 2011 -2014 which address a large number of environmental issues by more than 65 projects clustered in 7 action areas. However, they present a series of add-on actions and cannot replace a coherent, unified programme or policy on environmental protection.\(^{137}\)

A second NEAP was developed, but not adopted. Azerbaijan suffered more in environmental terms than most former Soviet republics as a result of the economic and industrial policies dictated from Moscow over seventy years. But since acquiring the economic means to address the problems it inherited, Azerbaijan has made a serious attempt to deal with these while also seeking ways to avoid future environmental hazards arising from the continuing rapid development of its energy resources.\(^{138}\)

In 2006, after three years since it’s preparation, **National Strategy and Action Plan of Republic of Azerbaijan on Conservation and Sustainable Use of Biodiversity for period 2006–2009 (NBSAP 1)** was approved by the order of the President of the Republic of Azerbaijan N 1368 March 24, 2006.

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\(^{137}\) AETS consortium (2013): Country Environmental Profile of Azerbaijan - EU

\(^{138}\) The Caspian Information Centre (2012): Awakening from Azerbaijan’s Environmental Nightmare
Table 7: Main goals of the NBSAP 1, Azerbaijan

- Eradicate poverty
- Ensure regulation of environmental balance,
- Achieve sustainable development and
- Secure access of future generation to genetic resources through
- Conservation and sustainable use of biodiversity

Table 8: Key directions of the NBSAP1, Azerbaijan

- Conservation of genetic resources of plants, animals and micro-organisms, their valuable species, varieties, and breeds:
- Development and implementation of short-term and long-term programmes on sustainable use of biodiversity;
- Conservation of rare and endangered plant and animal species as a priority considering importance of the ecosystem approach, paying attention to local traditions and cultural values;
- Development of database on biodiversity gene pool available in the country following the international standards;
- Introduction and wide-scale application of modern technologies by using financial resources and environmental experiences of international and regional organizations;
- Creating opportunities for active participation of communities in the evaluation of the impact of anthropological activities on the environment;
- Ensuring wide dissemination of ecological knowledge and consistent and continued environmental education by identifying legal, economic and organizational bases related to the environmental awareness of the population;
- Equitable benefit sharing generated from biodiversity

After four year of conclusion of NBSAP 1, being without main biodiversity policy, the GoA with support of UNDP and GIZ-SMBP started process of developing National Strategy and Action Plan of Republic of Azerbaijan on Conservation and Sustainable Use of Biodiversity for period 2015-2020 - NBSAP 2. Georgian experience on process was shared on regional workshop and directly to consultants, government and UNDP by GIZ – SMBP Georgian team. Draft NBSAP 2 was finalized with participation of all relevant stakeholders in the 2015, and submitted to the Cabinet for approval.

Table 9: Main goals of the NBSAP 2 (draft), Azerbaijan

- Sustainable use of genetic resources;
- Conservation of biodiversity;
- Poverty alleviation;
- Maintenance and restoration of functioning ecosystems;
- Sustainable development;
- Ensuring transition to a “green economy”;
- Promotion of environmental education;
- Restoration of endemic and rare species;
- Development of the protected areas network; and
- Reducing the threats to biodiversity.
The National Strategy and Action Plan has eleven Strategic objectives, Operational Objectives linked to the Global Aichi Biodiversity Targets.

The NBSAP 1 had 13 Strategic objectives, which are very similar to the 11 identified in NBSAP 2. NBSAP 2 has two Strategic objectives that cannot be found in NBSAP 1 and are responding directly to the needs identified in the Fifth National Report: (7) Increasing public participation in biodiversity conservation at the national and local level and (11) Strengthening institutional capacities in the planning, management and use of biodiversity.

The development of the strategic approach of NBSAP 2 was based inter alia, on the following recently developed strategic and policy documents:


Approved by the Decree of President of December 29, 2012; provides an overarching integrated framework for achieving sustainable socio-economic development in the country; has however now created the enabling framework for improving the mainstreaming of biodiversity into key production sectors; specifically identifies the measures that will be required to protect biodiversity, neutralize the negative impact of the fuel-energy complex on the environment, eliminate the pollution of the sea and its basin, protect marine and freshwater ecosystems, restore green areas and effectively protect the existing natural habitats and resources. Each State Agency responsible for overseeing the implementation of each production sector is now in the process of, or has already completed, revising their medium-term strategies and state programmes to more fully align with the objectives, outcomes and activities identified in the National Development Plan.

- **State Action Programme on Protection of the Environment to efficient use of Natural Resources 2014 - 2020**

MENR has elaborated, after the approval in 12/2012 of Vision 2020, the overall guiding development policy, with the ‘State Action Programme on Protection of the Environment to efficient use of Natural Resources 2014 - 2020’ a new environment policy which is submitted for approval by other ministries.¹³⁹

- **The State Programme for Poverty Reduction and Sustainable Development in the Azerbaijan Republic (SPPRSD, 2008-2015)**

Has a strong environmental component. Nevertheless, one of its nine goals (goal VII) is “improving the environmental situation and ensuring sustainable environmental management”. It aims to inter alia: increase the coverage of protected areas to 12% of the country; reduce greenhouse emissions in the power sector by 20%; and achieve 100% treatment of all sewerage and wastewater.

• The State Programme for the Socio-Economic Development of the Regions of the Azerbaijan Republic (2009-2013)

In support of the SPPRSD, this State Programme is implementing specific measures related to the treatment of wastewater, the construction of water supplies and the rehabilitation of the Caspian Sea environment and its coastal territories.\textsuperscript{140}

\textit{At present, before adopting the NBSAP 2, biodiversity conservation takes place according to abovementioned National Programs.}

Azerbaijan has no National Strategy on Sustainable Development. However, a general national commitment to sustainable development including environmental sustainability is expressed in the State Programme on Poverty Reduction and Sustainable Development (SPPRSD) 2008 – 2013 (one of its nine goals is improving the environmental situation and ensuring sustainable environmental management) and the new Vision 2020 (approved in December 2012), which are in line with the Millennium Development Goals.\textsuperscript{141}


\textsuperscript{141} KANTOR Management Consultants S.A. Consortium (2015, draft ):Environmental Integration into Sector Policies; National Assessment Report Azerbaijan - EU
3.4 Trends in the state of ecosystems and species

3.4.1 Ecosystems

Azerbaijan forms an integral part of the *Caucasus Ecoregion*, a region with exceptional levels of biodiversity (WWF’s Global 200). Azerbaijan also shares the largest inland body of water in the world, the Caspian Sea, with four other countries (Russia, Iran, Turkmenistan and Kazakhstan). One of the most important characteristics of the Caspian Sea’s biodiversity is the relatively high level of endemic fauna species.

Construction of highways and pipelines in the areas rich with biodiversity which resulted from countrywide economic development within the last years seriously impacts on ecosystems by causing fragmentation, intensification of desertification and even local climate changes.\(^{142}\)

**Semi-desert and Grassland Ecosystems:** Semi-desert ecosystems cover 32% of Azerbaijan’s territory, and are found from 27 masl (the height of the Caspian Sea) to 1,300 m (in the Orta Araz gorge). Grassland ecosystems are found in this semi-desert zone, where annual precipitation is 200-400 mm. Grassland ecosystems cover 33% of the territory of the Autonomous Republic of Nakhichevan, mainly occurring along the Araz River.\(^{143}\)

Fragments of different desert ecosystems, including saline semi-desert systems occur and are being expanded due to desertification and associated salination induced by to over-use of lands, the arid climate, intensive irrigation and inappropriate drainage or irrigation systems.

Salination has affected large areas of grassland in Nakhichevan (up to 10,000 ha), particularly in the districts of Sadarak and Julfa.\(^{144}\) Little efforts have been made to restore these lands over recent years, and as a result these lands are no longer suitable for agriculture and are reverting to marshes. Semi-desert areas of Absheron peninsula underwent upon overgrazing impact. Intensive grazing of the pastures results in decreasing of vegetation and, stagnation and variation of plant species in ranges and subsequently, generation of poisonous and harmful grasses and enhancement of erosion processes and finally, degradation of proper ecosystem.

The conversion of the lowland grasslands into agricultural land through ploughing is fragmenting many remaining areas of natural steppes. A number of steppe ecosystems are also being further fragmented by the extensive network of irrigation channels, particularly in the Kura-Araz plain.\(^{145}\)

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**Forests:** Over the last 15 years, forest cover expanded up to 110,030,700 ha from 871,800 ha in Azerbaijan (i.e. the forested area of the Republic have increased from 10.1 % to 11.9 % of the country’s territory).\(^{146}\) (since 2008 - by 0.4%).

The upper limit of the forests is between 1,800-2,000 masl. The lower limit is largely dependent on the level of human impact on the forest, which can be intensive at low altitudes. Beech \((Fagus\ spp.)\), oak \((Quercus\ spp.)\) and hornbeam \((Carpinus\ spp.)\) are dominant species. Deciduous forests are dominant covering some 88% of the forest area, followed by bushes with 10% and coniferous forests with 2%.\(^{147}\)

35% of current Azerbaijan territory was covered with forests in XVIII-XIX centuries. At that time the forests covered mountain slopes and lowland areas situated outside of arid areas. At the present, only tree remnants preserved in these areas. Riparian forests and tugai along Kura and Araz rivers, woodlands and shrubwoods of Garabagh plain became extinctive and coastal forest areas of Samur-Davachi lowlands are now being lost.\(^{148}\)

The forest cover in Nakhichevan Autonomous Republic has declined dramatically over the last century, from some 30,000 ha of forest recorded in 1917, to around 2,500 ha today.\(^{149}\)

Main threats to the forest ecosystems in Azerbaijan include: illegal logging of economically valuable species (walnut, oak especially in Talish mountains); unsustainable logging for fire wood, grazing, fires most occurring as a result of the burning of maize fields in winter and grass in summer. Almost 200,000 ha of forest was planted, sowed, or have regenerated naturally between 2000 and 2013.\(^{150}\)

**Mountain Ecosystems:** Mountain meadow ecosystems cover 10% of the territory of Azerbaijan. Alpine meadow is found between 2,000-4,500 masl. The subalpine meadows of the north-east Greater Caucasus, the Garabag volcanic plateau and ranges, Shahdag, and Murovdag are covered with grain crops, along with meadow-steppe plants.\(^{151}\)

Alpine and sub-alpine meadows in Nakhichevan are highly diverse, supporting over 890 plant species, including rare and endemic plants.

**Inland water ecosystems:** The wetlands and lakes provide an important stopover for migrants, and over-wintering birds, and are estimated to support between 20,000 – 100,000

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birds during the annual migrations. The lakes also support a diversity of plant species. The following wetland ecosystems of Azerbaijan have a particular biological importance: Lakes Agzibir, Gush, Mahmudchala, Agchala, Hajigabul, Sarisu, Jhandargol Lake is situated on the border with Georgia and the Kura Delta.\(^{152}\)

The construction of hydrological dams on the major rivers flowing into the Caspian Sea, has created obstacles that effectively fragment the riverine habitat for some species (for example, as a result of the construction of the Mingachevir and Bahramtapa reservoirs on the Kura and Araz rivers). This has reduced the breeding areas for sturgeons and has resulted in a decrease in their population.\(^{153}\)

Some natural lakes in Azerbaijan (such as Mehmans, Garasu and Marso) have almost completed dried out as a result of over-extraction, and others have been severely impacted as a result of the construction of irrigation and drainage systems (such as Bozgobu and Sarisu lakes). Many of these lakes were once important breeding grounds for fish. Lowland lakes are generally fed from drainage channels (as the main rivers are regulated) and this increases their salinity, and dramatically impacts aquatic life, including fish. A number of these lakes are also polluted with outflows from industrial and domestic sources, and may be contaminated with oil from unsealed wells; the ecological situation of these wetlands is becoming acute.\(^{154}\)

**Caspian Sea:** The Caspian Sea is of global importance due to the high biodiversity, large number of endemic species and the presence of globally threatened bird and fish species, including the economically important sturgeon. The region is also a migration route for millions of birds moving from Africa and the Mediterranean to Central Asia and India. To date 446 bird species have been recorded in the Caspian, of which 120 species breed, 62 species over-winter, and 278 species migrate through. 1 mammal, 54 fish and 257 invertebrate species are endemic to the Caspian Sea.\(^{155}\)

The situation in the Caspian Sea is a matter of both national and international concern. As a closed system, this sea is particularly vulnerable to human impacts, and its biodiversity is at risk from a number of factors, including the recent accidental introduction of *Mnemiopsis leidyi*, pollution loads and over-fishing (particularly of valuable fish, such as sturgeon).

The Caspian Sea not only suffers from oil pollution, but also from a massive inflow of other pollutants originating from the industries in the river basins of its tributaries, mainly the Volga and Kura-Araz basin. Even today, untreated municipal, industrial and agricultural wastes from some neighbouring countries still adds to the flow of the Kura


river (which is an important source of water for Azerbaijan) - via the Mingechevir Reservoir (which fortunately acts as a settlement area for some of the pollutants) - through Azerbaijan to the Caspian Sea.\textsuperscript{156}

Limited institutional capacities in the mapping and classifying of ecosystems and habitats, as well as in the development of thresholds to assess their threat status, means that it is not yet possible to objectively report on ecosystem and habitat trends in Azerbaijan.\textsuperscript{157}

### 3.4.2 Species

**Fungi**

A total 5,020 species of fungi have been described in Azerbaijan. Of particular note is the species *Terfesia transcaucasia*, which is endemic to Azerbaijan and is considered to be at risk of extinction.\textsuperscript{158}

**Plants**

Among the lower plants recorded from Azerbaijan, some 249 species of algae have been described from the Caspian Sea, and 197 are microscopic. 774 species of mosses are described. There are around 210 endemic lower plant species (including ten endemic species of lichen). Around 16 species of algae are endemic to the Caspian Sea.\textsuperscript{159}

Approximately 4,500 species of higher plants are recorded in Azerbaijan, which represents around 65\% of the flora of the Caucasus region, and 11\% of the world's flora. The main areas of plant diversity in Azerbaijan are the highlands of Nakhichevan (60\% of the species occur here), the Kura-Araz plain (40\%), the Devechi-Kuba region east of the Greater Caucasus (38\%), the centre of the Lesser Caucasus (29\%), Gobustan (26.6\%), the Lenkoran region in the Talish Mountains (27\%), and the Absheron region (22\%). 210 higher plant species are considered endemic to Azerbaijan. The Autonomous Republic of Nakhichevan is an important centre of plant endemism and supports over 50\% of the endemic plants found in Azerbaijan.\textsuperscript{160}

Azerbaijan is considered to be a center of origin for a number of globally important food crops. It is especially noted for fruit and nut trees, and the forests of the Greater and Lesser Caucasus Mountains and the Talish Mountains contain wild ancestors of apples, persimmons, walnuts, chestnuts, pistachios and many other species that have been widely

\textsuperscript{156} Azerbaijan National Academy of Sciences (2004): Country Study on Biodiversity of Azerbaijan Republic; First National Report to Convention of Biological Diversity


domesticated into many different varieties and strains. A wide range of Azerbaijan’s flora is used as fruits and vegetables. Some plants are recognized as important sources of pollen and nectar for honey, and others provide flavorings for natural beverages and teas. A number of plants are used to produce oils, doshabs (traditional food) and syrups. Around 800 plant species of medicinal value have been recorded in Azerbaijan, including 150 species used in pharmacology. Various construction and furniture materials are made from the wood of native forest species, including Hornbeam (*Carpinus* spp.), Georgian oak (*Quercus iberica*) and European yew (*Taxus baccata*).\(^{161}\)

**Animals**

Approximately 25,000 species (instead of 20,000 species mentioned in the first NR) of invertebrates have been recorded in Azerbaijan, of which 90% are within the phylum Arthropoda, of which a further 90% are insects.

Azerbaijan supports 667 species (instead of 623 species mentioned in the first NR) of vertebrates, including 101 (89) fish species, 10 amphibians, 54 (52) reptiles, 394 (363) birds and 107 (106) mammals.\(^ {162}\)

According to Birdlife International (2004), 253 breeding bird species have been observed within Azerbaijan.

The Caspian seal is the only resident endemic mammal. The number of endemic fish species in Caspian Sea is very high, and includes one lamprey species, 11 herring species, 24 species of Caspian gobies and five anadromous sturgeon species, all of which are fished commercially. The Convention on International Trade in Endangered Species (CITES) has now listed all sturgeon species as threatened, including all commercial Caspian varieties. The regulation of fishing licenses and quotas are also not always effectively administered by some of the Caspian littoral states. The volume of fish caught on quota between 2009 and 2012 is shown on figure # 10 below.\(^ {163}\)

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\(^ {162}\) note: number of species mentioned in the first National Report to CBD is in brackets

One amphibian, three bird species and 15 mammals are endemic species to the Caucasus.

The lakes and wetlands of Azerbaijan support high numbers of waterfowl species that migrate through or winter here. Fifty one\textsuperscript{164} Important Bird Areas (IBAs) hosting 31 globally threatened species, 9 biome-restricted species and 15 congregator species and one Endemic Bird Area (EBA) have been identified (Birdlife International).\textsuperscript{165}

\textit{Positive changes}

Population size of selected mammals is stable or slightly increasing in the time from 2004 to 2011.

The goitered gazelle inhabits mainly lowland plains and plateaus south of Baku but also foothills of mountainous areas near the border to Georgia. The species is globally threatened according to the IUCN (2015; status “vulnerable”). In Azerbaijan, considerable effort has been undertaken to support the local population. The data on the population of the goitered gazelle in Azerbaijan shows a steady increase in numbers of individuals. Since the start of the counts in 2004, the number increased by about 28\%.\textsuperscript{166} (Fig.#11).

\textsuperscript{164} Note: in some reports is mentioned 53 IBA, e.g. Ecodit (2010): The Biodiversity Analysis Update for Azerbaijan, USAID
More than 130 goitered gazelles have been reintroduced to their historical ranges – as part of a phased reintroduction programme - in Aqgol National Park, the Gobustan-Jangichay valley and the Acinohur –Sarija plain. Since 2010, goitered gazelles were released in Georgia for reintroduction to their historical range on Iori Plateau.\(^\text{167}\)

Population size of the East Caucasian Tur within protected areas of Azerbaijan is estimated at some 6,000 individuals. The data suggest a quite stable population size of East Caucasian Tur since the start of the censuses in 2006. The population of Mouflon within protected areas of Azerbaijan (Nakhchivan) is estimated at some 700 individuals. Since the start of the censuses in 2006, the numbers increased by 9\%\(^\text{168}\).

**Negative changes**

Disruption of natural habitats of animals lead to rapid extinction of a majority of them, especially invertebrates. Animals (such as striped hyena (*Hyaena* *hyaena*) from invertebrate ones accustomed to restricted areas undergo special danger. As a result of overmuch and unefficient use, wild vegetables and herbs, fruits and berries suffer, too. Plant and animal species have also been affected by hunting and over-collection, and by the impacts of parasites and diseases.

The *Hyrkanian Tiger* (*Panthera tigris ssp. virgata*), has not been observed for more than 25 years and is considered to be extinct. For 38 or almost one third of all mammal species there is either not enough information available to define their status or observations date back more than 10 years\(^\text{169}\).

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**Alien invasive species**

Population of the comb jelly (*Mnemiopsis leidyi*), an introduced species that invaded the Caspian through the Volga Don channel, has now multiplied to the extent that the biomass of the population has exceeded the general productive biomass of the sea. Introduction of *Mnemiopsis leidyi* into the Caspian sea caused seriously undermining economically and biologically important fish populations. This could also impact the rest of the food chain, as top predators, such as the Caspian Seal and sturgeon species, are reliant on healthy fish populations\(^ {170}\).

The introduced American raccoon (*Procyon lotor*) has now successfully spread into most of the forests of Azerbaijan. The invasive fall webworm (*Hyphantria cunea*) is also known to cause substantial damage to commercially grown ornamental trees and shrubs and to several agricultural crops\(^ {171}\).

Invasive plant species include the widely distributed common ragweed (*Ambrosia artemisiifolia*), buffalo bur nightshade (*Solanum rostratum*) and the Russian knapweed (*Acroptilon repens*) spreaded out in countrywide flora and squeeze out the local species seriously\(^ {172}\).

There is no other information about the number of invasive species in the reports.

### 3.4.3 Red Book

In August 2013, the 2\(^ {nd} \) edition of the *Red book of Azerbaijan* was published. The Red Book contains updated information on the status of rare, threatened and endangered wild plant and animal species for the entire territory of the country, including Azerbaijan's sector of the Caspian Sea. The current version of the Red Book lists 338 species of higher plants, 12 species of fungi, 23 species of lower plants and 223 species of fauna (including 74 insect species, 6 amphibian species, 14 reptile species, 9 fish species, 72 bird species and 42 mammal species).

This represents a significant increase in the number of rare, threatened and endangered species that were recorded in the 1\(^ {st} \) edition of the ‘Red Book of Azerbaijan’ (1989) - 108 animal species and 140 plant species – although this, may in part, be attributed to an improvement in the research and monitoring capacity of the Azerbaijan National Academy of Sciences (ANAS)\(^ {173}\).

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3.5 Trends in the sectors effecting biodiversity

3.5.1 Forestry

The Forest Fund (according to the Forest Code, 1997) is forest lands, including forest and non-forest soil lands not covered with the forest plants.

Forests in Azerbaijan perform particularly water conservation, soil protection, climate-regulating and biodiversity protection functions.

Deforestation has been a major concern of current Azerbaijan territory since the XVIII-XIX centuries. Due to land conversion, overgrazing, decrease in the supply of electricity, natural gas, and other types of fuels to smaller towns and rural areas and illegal logging forest cover has declined. Estimates include 1,300,000 m³ up to 1,800,000 m³ of fuelwood cut a year as of 2002 (GRID-Arendal 1998, ADB 2005). ADB (2005) and USAID (2010) estimate that there has been an increase in legal and illegal production of fuelwood since independence, coinciding with a decrease in the supply of electricity, natural gas, and other types of fuels to smaller towns and rural areas. In 2002, the average annual forest cut for sanitary and maintenance purposes, was estimated at 60,000 m³, and the illegal harvest was about two thirds of this level. 174 According to the 2002 Household Budget Survey, more than 33 % of rural households did not have access to natural gas, and 85 % use fuelwood for heating. After its establishment, MENR suspended forest commercial felling in 2003, and only forest residues are collected. But forest cover continued to decline largely due to illegal logging, which was estimated at 30,000 – 40,000 m³ annually (30-40% of all felling). 175 Unsustainable tree cutting and illegal harvest of economically valuable timber species (such as nut and oak) have fragmented in the past the forests ecosystems and destabilized soil complexes, leading to erosion. In addition, the decline in administrative control over livestock has contributed to encroachment of forestlands for grazing and serious degradation of forest resources exists in a number of areas, especially the lower mountains. 176 Excessive and illegal logging are the main threats to forest resources, which are also effected by forest fires, pests, diseases, and inadequate institutional capacity. 177

According to official figures, deforestation is in most recent years not any longer a major concern in Azerbaijan and since 2001 forest cover has increased by 0.3% - 0.4%. Forested land covers an estimated 936,000 ha (FAO, 2011) to 995,600 ha (official figures), according to ~11.8% (MENR) of the country’s area. 178

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175 The World Bank (2007): Integrating Environment into Agriculture and Forestry, Azerbaijan, Country Review
176 AETS Consortium (2013): Country Environmental Profile of Azerbaijan - EU
178 AETS Consortium (2013): Country Environmental Profile of Azerbaijan - EU
There are different data from different sources on forest cover, but all of them showing extension of forest cover. Based on official data forest cover in 2014 is 1,030,700 ha, 11.9% of the country’s territory.

According to Fifth National Report to CBD, 2014, total area of the lands of forest fund is 1,040,700 ha in Azerbaijan, and has not changed practically over the last 20 years, when the Forth Report to CBD, 2010, states, that forest fund is 1,213,700 ha. According to the official web-page of the State Statistical Committee of the Republic of Azerbaijan, Forest Fund is increased during 10 years from 1,038,800 ha in 2005 to 1,040,300 ha in 2014.\(^{179}\)

Forest resources make a profound contribution to economic development of the state, regions, and local forest-dependent communities. The main challenges of the Azerbaijani forestry were identified in the various national and international forestry related documents, consultations and the reports of forestry experts. Those include particularly, degradation of forest resources and deforestation; shortages in meeting the needs and demands of the society for goods and other socio-economic as well as the other environmental services of the forests; inadequate stakeholders’ participation and inter-sectoral collaboration in the forest management practices.\(^{180}\)

### 3.5.1.1 Management Practices

Forest Protection and Rehabilitation Units are currently responsible for developing forest management plans, which are approved by the Forestry Development Department and financed by the State budget. To develop a plan, an inventory is required to assess the state of forests; it can be used to determine the scope of future forestry-related actions. However, no national forest inventory has been made owing to lack of expertise. Data on forests and

\(^{179}\) State Statistical Committee of the Republic of Azerbaijan

wood production are provided by different institutions and have discrepancies. Forest management plans lack transparency due to the lack of reliable statistics.\textsuperscript{181} The last country wide inventory was done in 1988.\textsuperscript{182} Forest Inventory is an essential and integral component of forest management. In Azerbaijan, the current methods for forest inventory are based on the ground-surveys and aerial photo interpretation.\textsuperscript{183}

Forest enterprises carry out the whole process of reproduction and use of forest resources.

The volume of the maintenance and sanitary logging in the forests is planned on the basis of the annual allowable logging; site established by forest management. For each type of logging, the planned volume of harvested timber (for firewood and construction) is based on the allocated funding.

In recent years, in order to improve in the qualitative composition of forests only maintenance and sanitary logging of forests have been carried out. The average volume of maintenance and sanitary logging in Azerbaijan is gradually getting reduced.

The MENR states that from 50,000 to 60,000 m\textsuperscript{3} of forests are cut each year under this policy and the wood is sold to the military for their energy requirements. MENR Inspectorates monitor the amount of wood being cut, and sends an inspection team out to investigate if there are any out-of-the-ordinary increases. The country's wood needs are met by importing wood from the Russian Federation, approximately 500,000–600,000 m\textsuperscript{3} per year.\textsuperscript{184}

The forest land itself, however, can be used for commercial purposes as well as the non-wood products supplied by forests. Medium-term (1 to 10 year) contracts are provided by the Government for recreational/tourism activities in return for payment, and short (1 year) and medium-term contracts for agricultural purposes are provided in return for a 20 % payment from the revenue or in kind in the form of crops harvested. The lease is provided on the condition that forest saplings are planted on 20 % of the land that has been rented (about 100 ha are planted every year). When trees are planted, the fauna and their habitats are usually taken into consideration. The Forest Department monitors the commercial leases with staff from the ministry working in 40 offices in all regions. The funds obtained from the sale of wood and the leases amount to approximately US$ 1 million per year and are collected in a State forest fund, which is used to cover the costs related to forest management (e.g. equipment, uniforms and vehicles). Currently, 14 commercial enterprises are operating in the forests and provide revenue to the State of about US$ 300,000 per year, which also goes into a special State fund for management and staff expenses in the areas where these

\begin{footnotesize}
\begin{itemize}
\item\textsuperscript{181} The World Bank (2007): Integrating Environment into Agriculture and Forestry, Azerbaijan, Country Review.
\item\textsuperscript{182} (2005) :National Action Plan on Strengthening Capacity to Respond to Challenges of Biodiversity Conservation, Climate Change and Desertification / Land Degradation (2006-2015)
\item\textsuperscript{184} United Nations Economic Commission for Europe (2011): Environmental Performance Reviews, Azerbaijan, Second Review
\end{itemize}
\end{footnotesize}
commercial activities take place. Enterprises also harvest and sale non-timber forest products - wild fruit and carry out bee-keeping as well.¹⁸⁵

**A positive development for the forests** in Azerbaijan has been the Government’s successful programmes - investments in **gas supply, import of low price timber from Russia and afforestation**. Since 2005 it was prohibited by the MENR to use forest materials as firewood.¹⁸⁶ To 80% of the rural areas gas is supplied, and the use of forests for fuel has reportedly decreased. With this gasification, forests only need to meet two % of the population’s fuel needs, which is provided from sanitary and maintenance felling. Also wood residues for this felling is processed and sold. The main driver of forest loss - clearing for wood fuels – is declining with the increasing coverage of gas supplies to communities.¹⁸⁷

![Figure 13: Wood residues from sanitary and maintenance felling](source)

NGOs still have concerns that **illegal logging** of relict trees continues in some areas, and the Ministry recognizes that there is some illegal logging ongoing although on a lesser scale. Inspectors were provided by to monitor the areas concerned and establishing a rapid response team to perform inspections when there is a suspicion of tree felling or poaching in the forests. The Ministry confirms that the community has become more involved in conservation now, as there is a number people can call to report illegal hunting or logging activity.¹⁸⁸

¹⁸⁶ AETS Consortium (2013): Country Environmental Profile of Azerbaijan - EU
**Restoration/afforestation** is one of the most important aspects of forestry. The "*Rules on protection of the forest fund and reproduction of forests*" defines the purpose of forest reproduction: to afforest bare lands, improve forest species composition. For the purposes of establishing forests and woodlands in treeless areas, preventing land erosion, establishing shelter belts and creating green areas around cities land utilized for other purposes, particularly if unsuitable for agriculture, may be transferred to the forest fund.189

There is low forest cover in the country and a lack of commercial wood production. Since 2003, the Government has carried out some forest restoration and protection activities. Due to *National Program for Restoration and Extension of the Forests* in the country for 2003–2008, forest restoration works were carried out in an area of 59,184 ha (according to Fifth National Report, this amount is 53,215ha). In an area of 22,855 ha, planting and sowing works took place, 213 million crops were planted, and 1,127 tons of seeds were supplied during the implementation of the Programme.190

Also *Programme Greening and Landscape in Non-forest Areas* was established in order to *plant trees along the highways of the country and especially on Absheron peninsula* covering an area 1,556 ha. Re-afforestation measures were taken in the area of 10,131 ha, along with forestation and sowing works in the area of 2,746 ha. In the area of 7,385 ha, measures were taken for assisting natural re-afforestation.191

According to NBM Report developed by Working Group of MENP and GIZ-SMBP, the results show, that the annually reforested area as well as the accumulated extent of reforested areas increased significantly between 2000 and 2013. Almost 200,000 ha of forest was planted, sowed, or have regenerated naturally between 2000 and 2013. More than 46,000 ha of woodland were planted in this period. Data for this report was provided by Forestry Development Department.192

According to information provided on web-page of State Statistical Committee, data on planting and natural regeneration on forest fund lands are the same as in NBM Report, but this web-page also provides data on planting of artificial forests that is not included in NBM Report.

The figures below represent the results of NBM Report.

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The efforts on reforestations are a good indication of the commitment of the MENR toward restoration of forest habitat also in view of the commitments made in the Convention to Combat Desertification. It is on the other hand not clear how data are collected; the definition of each reforestation activity and whether the areas reforested are monitored over time.  

Forests are also occasionally impacted by fires, most occurring as a result of the burning of maize fields in winter and grass in summer. The outbreak of forest fires has however decreased over the period 2010-2013 (from 24 incidents in 2010 to 8 in 2013) as a result of increased enforcement and better education, is stated in the Fifth NR to CBD, but afterwards, in 2014 cases of forest fire was increased.

The Resolution of the Cabinet of Ministers of the Republic of Azerbaijan (№ 78, 2000) approved the "Rules on protection of the forest fund and reproduction of forests". The rules define the purpose of protection of forest resources from fires, illegal logging, violations of the rules of use of forest fund and from other harmful actions forests, disease, etc. The resolution also defines rules of the authority of the MENR and the local forestry as well as officials on conservation, protection and restoration of forests.

Although a number of directions for achieving the conservation of forest areas are envisaged such as measures for prevention of illegal logging and timber procurement, establishment of operational stations, chemical firefighting tools in order to prevent forest fires, evaluation of phytosanitary condition of forests, measures for protection against diseases and pests, training of highly skilled personnel etc., such measures for protection of forest resources and their ecological functions are not successful and variety of human-induced harmful effects are still exist.\footnote{Ministry of Ecology and Natural Resources of the Republic of Azerbaijan (2013, final draft): National Forest Programme (Forest Policy Statement and the Action Plan) 2015-2030 – supported by FAO}

Practice of grazing in the forest lands and overgrazing the pastures are increasing soil erosion. These issues together with the unsustainable use of the forest resources have been identified as pressing problems in the management of forests in Azerbaijan.

Resolution of the Cabinet of Ministers of the Republic of Azerbaijan (2000) has approved some basic rules for the forest cadastre including -the list of indicators for the national forest cadastre- rules on the state forest cadastre and -methods of economic evaluation of forests. The state forest cadastre contains information about registration, environmental, economic, quantitative and qualitative characteristics of the forest fund. Data from state forest cadastre are used for the management of forests and for transferring forest land into the other status.
However, **forest inventory** data being used for planning and management of the country’s forests is generally out of date. The last comprehensive forestry inventory was prepared in Azerbaijan in 1993\(^\text{196}\). Since 2002, inventories have been launched in forestry management units, one by one. The resulting data are not published but stored in the State information and archive database on environmental protection and the use of natural resources. It is planned to complete this inventory in all 40 units by end 2010. The second cycle of forest inventory is expected to start in 2012. In 2011, MENR intends to organize a forest inventory expedition in national parks.\(^\text{197}\) The state forestry sector has some difficulties on accessing to modern inventory tools and techniques to provide with reliable and up-to-date data for an appropriate and applicable planning and management of forest resources. Inventories for accurate data on forest resources, periodic validation and updating of existing figures are also being carried out in very low standards with old-fashioned and out of date methodologies in Azerbaijan.\(^\text{198}\)

Ongoing UNDP – “Sustainable Land and Forest Management in Greater Caucasus Landscape” Project is supporting to develop improved forest inventory methodology.

GIZ is supporting MENR in developing **National forest monitoring system** based on the remote sensing technology. Pilot study in Zaqatala and Balakan conducted in a pilot area of 100,000ha;\(^\text{199}\) process of setting up a National Forest Monitoring Unit (NFMU) has started, that comprised by 5 persons.

Rapid Eye satellite images are procured. Technical report on remote sensing methods for forest monitoring and inventory has been elaborated by University of Freiburg.\(^\text{200}\)

According to the methodology of creating NFM baseline, Ground truthing (150 GPS points) was implemented country-wide.\(^\text{201}\) GIZ-SMBP has elaborated a first draft of a concept to install national forest monitoring system. Forest cover baseline for country using Rapid Eye Imagery has been established.\(^\text{202}\) Shamakhi forest enterprise has been selected as pilot enterprise to develop sustainable forest management plan.

### 3.5.1.2 Legislation, Policy, Strategies

The **Forest Code approved by the Law of the Azerbaijan Republic № 692-IQD of June 22, 1997** established ownership and property rights, management rules, and responsibilities for

\(^{196}\) In some sources is indicated 1988  
\(^{197}\) United Nations Economic Commission for Europe (2011): Environmental Performance Reviews, Azerbaijan, Second Review  
\(^{199}\) Deutsche Forstservice GmbH (DFS) (2013): Final report Zaqatala and Balakan  
\(^{200}\) Kohk, B., FELIS, University of Freiburg, Germany (2012): Evaluation of remote sensing methods for forest monitoring and inventory, GIZ - SMBP  
forest use, protection, and rehabilitation. It also specified general administrative and criminal responsibilities for violation of regulations.203

All forests of the country are publically owned and managed by the state in accordance with the provisions of the Forest Code and the Law on Environmental Protection. Rules defined by the Law of Azerbaijan Republic "On Land Reform", forest and non-forest areas not covered with forest vegetation, for the purpose of their recovery, can be transferred to individuals and legal entities on a contractual basis, under the conditions specified by the Forest Code, for a period of one to ten years.

The regulation on "Forest areas leases for short-term (up to one year) use" approved by the Resolution of the Cabinet of Ministers, № 230 in 1998, governs leases of forest land on a short-term basis. Individuals and legal entities regardless of ownership and legal form for the purchase of the above right must apply to the MENR. Rights of forest users during the use of forest fund are governed by the Forest Code.

Forests and forest lands are not subject to privatization. Individuals and legal entities are only the users of forests which can be granted with the right of use of forest fund.204

The Forest Code continues to be the main legal instrument under which forest management is carried out, but there are also aspects of the Law on Environmental Protection that affect forest management. The Forest Code is regularly amended as the need arises; mostly in terms of increases in fines for illegal activities in forests and the price of wood proceeding from sanitary cuttings. Similar to the biodiversity sector, the forestry sector is also governed by relevant Decisions of the Cabinet of Ministers.205

NBSAP 1 (2006-2009) covered activities aiming conservation and sustainable use of forests and involvement of communities in forest management.

State Program on Reforestation and Afforestation in the Republic of Azerbaijan 2003 - 2008 was a Government policy towards expansion of the forested area.

The establishment and restoration forests road side areas is also represented in the Development Concept “Azerbaijan 2020: Outlook for the Future”.

It is required some land other than forest fund land; in this case, private initiatives and investments in new forest establishment and privately owned new plantation are crucial.206

Linkages and complementarities of forestry with the other the national, sectoral and regional development processes e.g. poverty reduction, agriculture, energy, tourism etc., plans and

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programs are weak and, integrated approaches of the sector with other sectors is not enough.

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

National Programme for the Restoration and Afforestation has expired and Azerbaijan does not at present have a policy framework in which to operate with goals and objectives for the sustainable management of its forests. Azerbaijan is a signatory to the Ministerial Conference for the Protection of Forests in Europe, now ForestEurope, and has agreed on principles on sustainable forest management for the pan-European region, the countries participating in the pan European forest process have agreed that a national forest programme constitutes a participatory, holistic, inter-sectoral and iterative process of policy planning, implementation, monitoring and evaluation at the national and/or sub-national level necessary for the further improvement of sustainable forest management. Azerbaijan, have committed themselves to applying sustainable forest management principles by using the comprehensive and safe means and instruments elaborated by ForestEurope. These include policy and operational-level guidelines, as well as principles for developing, implementing and evaluating national forest programmes.\footnote{United Nations Economic Commission for Europe (2011): Environmental Performance Reviews, Azerbaijan, Second Review}

In 2013 with support FAO National Forest Program (NFP) – National Forest Policy and Action Plan of Azerbaijan has been prepared for a 15 year period - from 2015 up to 2030.

NFP of Azerbaijan was intended to be formulated in order to cope with the local, national and global demands into comprehensive sustainable land use programs, poverty reduction and the economic development strategies.

Table 10: The main goals of the NFP, Azerbaijan

- Promote sustainably meeting of the public expectations from the country’s forests in a the long term;
- Provide means to harmonize the forest management policies into the government policy instruments and rapid structural changes and;
- Identify the challenges and means for development of institutional and legal framework for national forest management

Table 11: Objectives of NFP, Azerbaijan

- Develop institutional capacities and mechanisms on forest management with a particular attention to the demands and future needs that contribute the overall sustainable development of the country;
- Ensure the forestry sector renew appropriate policies and strategies for the implementation of concrete actions on the ground for the effective protection and sustainable management of the
The internationally approved sustainable forest management criteria and the general principles of the NFP were taken into account during the formulation of the National Forest Policy Statement and Strategies.

Priority objectives (nine) and the strategies (several under each objective) given under the Policy Statement, the activities under the Action Plan were elaborated based on the analysis of the current situation of the forestry in Azerbaijan, through various national stakeholders’ workshops, experts’ reports, and multi-stakeholder consultations. In the Action plan responsible agencies are identified, plan consists of measurable indicators, resources, implementation period.

Table 12: Priority Objectives (desired future) of the National Forest Policy, Azerbaijan

<table>
<thead>
<tr>
<th>Priority Objective</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Forest policy is well integrated with the national, regional and sectoral policies and is put high in the national development agenda.</td>
</tr>
<tr>
<td>2.</td>
<td>Given the first priority to preservation of ecological and protective functions of forests, sustainable management and use of forest resources is contributing to a better satisfaction of the needs of society at large and rural population in particular.</td>
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<tr>
<td>3.</td>
<td>Negative impacts on forests are reduced and forest resources and biodiversity are effectively protected and conserved.</td>
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<tr>
<td>4.</td>
<td>Forest areas and tree cover are significantly expanded through afforestation on suitable lands and restoration of degraded forest areas.</td>
</tr>
<tr>
<td>5.</td>
<td>Forests are managed in line with integrated multipurpose management plans, elaborated based on reliable information and modern methodologies for forest resource inventory, and assessment.</td>
</tr>
<tr>
<td>6.</td>
<td>People of Azerbaijan are aware of the benefits of forests and actively involved in sustainable forest management.</td>
</tr>
<tr>
<td>7.</td>
<td>Institutional capacity, financial mechanisms and regulatory (legal) framework for sustainable forest management are improved and strengthened.</td>
</tr>
<tr>
<td>8.</td>
<td>Enhanced forest education and research is providing essential backstopping to sustainable forest management.</td>
</tr>
<tr>
<td>9.</td>
<td>Climate change adaptation and mitigation concerns are integrated into forest management decisions and implementations.</td>
</tr>
</tbody>
</table>


3.5.1.3 Institutional set-up

According to the WB Country Review, in 2007, established in May 2001, the MENR is responsible for biodiversity and forest management through the Forestry Development Department, which coordinates forest protection and regeneration in regions financed.
through state budget allocations and the Forest Fund, made up of donations and fines imposed for Forest Code violations. Most of the Fund is used to pay for staff salaries and not enough remains for reforestation activities.\textsuperscript{208}

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

The Forestry Department has five Divisions (sectors) at the headquarters (Cadastre, Restoration and Afforestation; Enforcement of Legislation; Protection; Sapling and Seed Growing); the Centre of Protection against Pests and diseases, and a Coordination Centre and, 33 forest protection and rehabilitation enterprises (before was 32), 6 forest nurseries (before 3) and 2 forest planting enterprises (before 3) in the field level. The Forestry Research Institute is an associated unit of the Forestry Department, only one research institution, dealing with forestry in Azerbaijan. The Forestry Department is involved in forest management at the sub-national and national levels.\textsuperscript{209}

Monitoring of forest management is implemented by the National Monitoring Department on Environment, which also carries out functions related to enforcement of legislation and compliance. At present National Forest Monitoring Unit (Working Group to carry out forest monitoring based on Remote Sensing), established and with support of GIZ, will be equipped and trained.

The State Committee on Land and Cartography (SCLC) is the central executive body implementing land cadaster and monitoring. SCLC within its authority may monitor forested areas. (In 2015, SCLC abolished and functions were distributed among MENR, State Committee on Property Issues and State Border Service).

State Fire Control Service of the Ministry of Emergency Situations is an executive authority for fire combating activities. The establishment of fire prevention rules, reduction of fire risks, taking actions directed to fire prevention are implemented by the Fire Control Service. However, significant gaps exist in cooperation among the above-mentioned institutions; this kind of management creates obstacles for sustained governance of forests; local communities and municipalities are not involved in the management of forests.\textsuperscript{210}

\textsuperscript{208} The World Bank (2007): Integrating Environment into Agriculture and Forestry, Azerbaijan, Country Review
\textsuperscript{210} Abbasov, R. (2014): TEEB Scoping study of the forestry sector of Azerbaijan; FLEG II (ENPI-East)
Following the *Decree of the President on Tree Planting and Landscape Structure dated 13 June 2008*, an Open Joint Stock Company under the Ministry was established to provide services related to tree planting.

*Note: Education topic is discussed in the Chapter 3.8 “Education”.*

### 3.5.1.4 Public participation and public awareness

All the forests constitute the forest fund of the country. There is no opportunity for representatives of the private sector or local communities to participate in management of forests. The current system provides little or no incentive for stakeholders to conserve forest resources and manage them sustainably. The Forest Code reduces options for public participation and private business in the forest management. The draft of the program enables physical and legal persons to participate in the management of forest resources.

Draft National Forestry Program (NFP) for the period 2015-2030, enables physical and legal persons to participate in the management of forest resources, however also shows that all forest fund land is owned by the state in Azerbaijan, and public participation in forest management is not the issue of the public debate.\(^{211}\)

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\(^{211}\) Abbasov, R. (2014): TEEB Scoping study of the forestry sector of Azerbaijan; FLEG II (ENPI-East)
3.5.2 Agriculture

Azerbaijan is the most densely populated country in the South Caucasus with the increasing trend of population of 9.5 million (2015) and 46.9% of countrywide population living in rural areas.

Although agriculture makes only 6% of the GDP of the country (2010), it has a significant importance, as about 40% of the population relies on agriculture as the primary source for income and employment. Agriculture is also important in Azerbaijan in terms of food security and economic diversification, especially because of high actual poverty rates especially in rural areas, high prices on main commodity products and high rural poverty rates.

Azerbaijan has a land area of 8.6 million hectares of which around 4.8 million hectares (about 55%) is designated agricultural land, and about 1.9 million hectares of that (or 40% of agricultural land) is arable. At present about 850,000 rural households own the 1.3 million hectares of agricultural land distributed from state farms and produce over 90% of agricultural output in the country.

Figure 16: Agricultural land types, Azerbaijan

The primary crops produced in Azerbaijan traditionally were agricultural cash crops, grapes, cotton, citruses, tobacco and vegetables. However the character of agriculture changed following the transition. Given lower incomes, since 1990s' demand shifted from luxury products to locally produced goods, and at the same time products on patterns followed suit. In the early transition period, domestic demand focused on staples and products which could

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213 http://www.ruralpovertyportal.org/country/home/tags/azerbaijan
be produced on small farms and could be used for local consumption. Cash, industrial and export-oriented products like tea, fodder, cotton and pork started to decline dramatically while production of potatoes, fruits, vegetables, wheat, milk, beef and mutton soon recovered to pre-independence levels.

As an outcome of the State Program on “Reliable Provision of the Population with Food in the Azerbaijan Republic” the main priority of which for 2008-2015 was to improve the agricultural infrastructure, ensure macroeconomic stability and a stable environment for farmers, and secure the country’s food self-sufficiency, both plant growing and livestock have seen dramatic growth in value of productive output in the recent years. In the most recent eight years, according to official figures, plant output doubled and livestock output increased by 150%. That is equivalent to a 15% annual growth rate in plants and a 20% annual growth rate in animals.\textsuperscript{216} This effect does not happen without rapped increase in fertilizer and pesticide use subsidized by the state – in the period from 2007 to 2010 the state increased subsidies for fertilizers to rural producers more than 10 times.

\[\text{Figure 17: Cultivation of agricultural crops (1,000 ha)}\]

\[\text{Figure 18: Livestock breeding (1,000 heads)}\]

Source: State Statistical Committee

In general the government of Azerbaijan has prioritized a diversification on strategy using revenues from the oil boom to finance infrastructure projects and subsidies or provide rural inputs and support services.

\subsection{3.5.2.1 Institutional set-up}

In the Republic of Azerbaijan the Ministry of Agriculture (MoA) is responsible for provision of national agrarian policy including irrigation, livestock and natural pasture development that directly impact on desertification and soil erosion processes. In this context it is also concerned by forest management and reforestation.\textsuperscript{217} The MoA has 14 commodity-based

\begin{itemize}
\item \textsuperscript{216} Welton, G. et.al (2012): Comparative Analysis of the Agricultural Sector in the South Caucasus
\item \textsuperscript{217} AETS Consortium (2013): Country Environmental Profile of Azerbaijan - EU
\end{itemize}
research institutes with experiment stations around the country, and 9 Regional Agro-Science Centers that adapt and demonstrate technologies\textsuperscript{218}.

SCLC until 2015 was charged to improve cross-sectoral land management issues by land cadastre development and GIS implementation that reflect through mapping land degradation process, and preparation of land use schemes for agricultural, industrial and recreational purposes. (In 2015, SCLC abolished and functions were distributed among MENR, State Committee on Property Issues and State Border Service).

With regard to land and soil, MENR, the MoA and the SCLC shared responsibility. In the particularly sensitive area of pesticide use, the MoA advises farmers on what types of pesticides to use, but MENR is involved in inspection because the MoA does not have regional offices\textsuperscript{219}.

State Agency Committee for Amelioration and Water Management is responsible for improvement of irrigated land, and operation and maintenance of irrigation infrastructure.

In general, planning and implementation is done in line function by each ministry with little coordination and networking with other concerned ministries. Almost all of them have strongly centralized management structures where all decisions should be approved at highest level. In consequence, administration and internal processes are very slow and in line function.

Phytosanitary Control Service is established under the MoA. Laboratory of Expertise of the Plant Quarantine, National Control Laboratory of Toxicology, National Plant Protection Centre, 16 district and regional plant quarantine offices, 5 regional biological laboratories and 57 regional plant protection centers go into the structure of this service. The State Veterinary Service is established under the MoA and covers the whole country\textsuperscript{220}.

3.5.2.2 Policy

Property over the agricultural lands: as the results of agrarian reforms part of agricultural lands was given to private sector.

According to the tasks set by the "Land Reform" Law 19.6\% (1.7 million ha) of the total lands of the republic were privatized, 56.9\% stayed state-owned, 23.5\% was given to the municipal property.

In accordance with the law, there are no restrictions on the purchase and sale of land. At the same time, according to the \textit{Land Code} of the Republic of Azerbaijan lands, including agricultural lands could not be transferred to foreign legal and individual entities. According to the \textit{Land Code} of the Republic of Azerbaijan unused state lands are under the control of local

\textsuperscript{218} The World Bank (2007): Integrating Environment into Agriculture and Forestry, Azerbaijan, Country Review
\textsuperscript{219} United Nations Economic Commission for Europe (2011): Environmental Performance Reviews, Azerbaijan, Second Review
executive power offices, municipal lands are under control of municipalities. The lands can be rented by local and foreign legal and individual entities, as well as persons.

In the result of agrarian reforms, 2,239 collective farms, state farms and other agricultural enterprises were closed down and liquidated and instead of them different economies of organizational-legal forms. As a result of reforms conducted in this area:

- Starting 1999, the producers of agricultural products were exempted from all taxes, except the land tax;
- In the districts that were abolished as a result of agrarian reforms, as well as in the occupied districts, the debts of the economic subjects were forgiven and other favours were made;
- 50% of farmers’ costs for fuel, lubricants and fertilizers are paid by the state, state subsidies are granted for grain cultivation, "Agrolizing" Open Joint Stock Company was established to improve the machinery provision, machinery and fertilizers are provided to the producers via leasing on favourable terms;
- The share of private sector in agricultural production has increased to make up 99.7%.

The farm privatization reform in the mid-1990s led to the redistribution of land to some 850,000 small private farms of 2.6 ha on average. And it should be noted that more than 93% of agricultural production is produced on these small farms.221

The Government has elaborated and implemented some important programmes for agriculture development, as:

- National Program on Environmentally Sustainable Social and Economic Development for 2003-2010 (NPESSD)

Strategy for Agriculture Development 2015 – 2020 is developed, that fixes a number of initiatives leading to environmental integration/actions into Agriculture sector. The Strategy at least theoretically, pays a certain degree of attention to different agriculture problems related to environment and biodiversity.

The main focus of the agricultural policies implemented in Azerbaijan is state support policy to this sector. Government subsidies cover crop and seed production, fertilizer, agricultural

machinery and more recently livestock production. The main contribution of the government began since 2007:

- Farmers get 40 manats per ha that they plant.
- Wheat producing farmers get additional 40 manats per ha.
- Farmers are exempted from all taxes except land tax;
- The policy for discount of irrigation water is being continued;
- Government subsidizes livestock breeding;
- In wheat production, 50% of the costs for elite seed and 70 percent of the costs for the fertilizers are paid by the state.  

In order to extend entrepreneurship activities in the field of production of agricultural and food products, the state's financial support activities are being implemented.

As a result of agricultural policy agricultural production increased in last 10 years and the level of self-provision for most of the main food products has also increased (see charts # 17, 18 above). However the State Grain Fund can’t buy local wheat because of low quality. Besides this, to get the subsidies every year the farmers begin to plant wheat, even in areas where it is not economically efficient and don’t implement sowing rotation. So, annually planting of lands for wheat causes the yield to fall down, cost price to increase and environment to degrade.

National Program on Environmentally Sustainable Socio-economic Development for 2003-2010 (NPESSD) identified various measures in the agricultural sector: improved planting systems and advanced irrigation technologies to prevent erosion and salinization; national and regional schemes for the use of chemicals in agriculture; and banning technologies that may pollute and degrade the soil.


Azerbaijan became a member of the Codex Alimentarius Commission in 2011. The country is also a member of the International Organization of Standardization (ISO). Regarding sanitary and phytosanitary (SPS) issues, Azerbaijan has been working towards WTO accession and gradual harmonization with Codex Alimentarius and, to some extent, with EU rules. Using international assistance, it has improved laboratories and trained staff. Short- and long-term activities of the a national program for Rational Use of Pastures, the State Program on Prevention of Desertification and Efficient Utilization of Hayfields and Summer-Winter Pastures are quite general and thus unlikely to contribute to improving degraded pastures.

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There is a need to develop and introduce specific mechanisms for improved pasture management.224

The Strategy for Agriculture Development 2015 – 2020 provides a remarkable number of actions designed to continue Government’s support to agriculture development. It includes also key-actions for environment protection.

The main concern however related to the Azerbaijan development policies is that there is poorly developed institutional set up and procedures to follow up environmental protection measures laid down in various strategy documents.

3.5.2.3 Arable lands management

Azerbaijan is a land-poor country. After regaining its independence following the fall of the Soviet Union, Azerbaijan began the process of land privatization. In general, privatized agricultural land fell into one of three categories: “(i) agricultural enterprises, registered as legal entities, including agro-industrial enterprises, joint ventures, and agricultural cooperatives that employ people; (ii) peasant farms, a type of individual enterprise where the farmer is directly involved in production; or (iii) household or private farms, which are very small plots or gardens for personal or household use”.

Privatization and a later land reform led to an increase in production: farm output started to grow in 1998, with the highest growth in 2001 (about 12%). By 2005 land privatization was nearly complete,225 it led to the redistribution of land to some 850,000 small private farms of 2.6 ha on average. It should be noted that more than 93% of agricultural production is produced on these small farms. Small farmers contributed significantly to the economic recovery of the agricultural sector, but their small size and lack of mechanization are still problematic issues in achieving high yields.

During the last ten years the total sown area of agricultural crops has considerably increased (30.2%). 64 % of total sown area is used for production of cereals and dried pulses. This can be considered as the result of subsidy system implemented in Azerbaijan since 2007 in order to strengthen the food security level of the country.

As of the data from 2005 desertification / soil degradation process of different degrees was taking place in an area of 3,741,000 ha of a total of 8,640,000 ha of the country area. The main causes of desertification were water erosion (34.3%), irrigation (3.2%) and wind erosion (4.3%). Of the area subjected to desertification 1,520,600 ha (17%) have been slightly eroded, 881,300 ha (10.2 %) have been moderately eroded and 1339,200 ha (15.5 %) have most most of all suffered from erosion.226

By 2013 this figures show the increasing trend: it is estimated that 3.6mln ha (~42% of the territory of Azerbaijan) is subject to the damaging effects of erosion, while 0.6mln ha (~7% of the territory of Azerbaijan) is adversely affected by salinization, to the extent that it is now no longer suitable for agriculture. The salinization and erosion of soils tend to be a result of poor irrigation and drainage systems, overstocking of livestock, unsustainable levels of ground water extraction and ongoing deforestation.\textsuperscript{227}

Large-scale use of fertilizers, pesticides, and herbicides has also degraded arable lands. This has been mainly caused by uncontrolled imports of these chemicals into the country, as well as the poorly-informed use of these chemicals by local farmers.\textsuperscript{228}

**Figure 19: Application of mineral fertilizers**

![Graph of mineral fertilizers](image)

*Source: State Statistical Committee*

Per capita sowing areas decrease year after year as the reason of allocation of lands for non-agricultural economic objects and private buildings and land erosion, increase of the level of underground waters because of rise of the Caspian Sea level, insufficient melioration activities, violation of farming technology, etc. Approximately 47% of irrigated arable lands have become salty in difference degrees. Therefore, it is necessary to conduct land-reclamation activities in 657,000 ha of the irrigated plots of land.\textsuperscript{229}

### 3.5.2.4 Organic farming

Development of organic farming has a special importance for Azerbaijan because it reduces the use of synthetic fertilizers and pesticides, excludes use of gene-modified (GM) varieties, which can affect local genetic diversity of crops and domestic animals, as well as supports conservation of local breeds and varieties. Besides this, on expert’s opinion, Azerbaijan has

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a potential to be competitive on European markets by exporting organic tomatoes, pomegranates, hazelnuts.

Azerbaijan adopted the law on “Organic farming” in 2008, stipulating that products shall be marked as “ECO-transition” and “ECO” only though certification of the respective certification body. Following this, the Cabinet of Ministers approved detailed rules for crop and livestock production and processing, storage, transportation, certification and labelling of organic products in 2009. In 2010 The Cabinet of Ministers adopted “Rules for the implementation of scientific support in organic farming”.230

The monitoring in organic farms in Azerbaijan is implemented by MENR, and certification - by State Committee on Standardization, Metrology and Patents. The State Committee on Standardization, Metrology and Patent publishes the list of organic farms.

*The Strategy for Agriculture Development 2015-2020* of the MoA of Azerbaijan defined the development of organic agriculture as one of the measure for tackling specific environment problems. With regards to organic farming development the following priorities are defined: Use of adapted crops for increased resistance and resilience against droughts, water scarcity, temperature extremes, storms and disease, as well as use of native breeds to promote genetic diversity.

There are also some projects and initiatives to support organic farming development: in 2014 the MoA signed a grant agreement with FAO to support organic agriculture in Azerbaijan and recently also Azerbaijan State Agrarian University established a separate department of Organic Agriculture. Besides the state actors, Azerbaijan NGOs are also active in this regard. The main organization engaged in organic farming promotion is Ganja Agribusiness Association (GABA). GABA implemented projects in organic agriculture and established the first Organic Certification Body in the country - “AZEKOSERT”, and “Ecological monitoring of soil and environment” laboratory.231

According to statistics provided by the FAO, currently 332 farmers are engaged in organic farming in Azerbaijan. Two-hundred hectares are used for leguminous plants, 206 hectares for vegetables, as well as 755 hectares for orchards.232 This statistics is different from those collected by NBMS Working Group for calculation indicator R3: The data is provided by the annually updated data on organic farming worldwide published by ORGANIC WORLD (2013). The data was collected by GABA, a non-governmental organisation involved in the promotion and certification of organic farms. (See table below).

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Total area of organically farmed land as well as its share in total agricultural land is increasing from 2005 to 2013 by approximate by 13%.

### 3.5.2.5 Agricultural biodiversity

In terms of agricultural biodiversity Azerbaijan is considered to be part of the Western Asia center of origin of cultural plants and is especially important as it is the place of origin of some important crops and domestic animal varieties.

Azerbaijan is one of the ancient origins of grains, as well as fruit crops like almond, pomegranate and others. The species used in the agriculture and their wild progenitors have been widely represented in the country. However at present most of the old landraces are no longer used. A striking example is wheat, where only about 1% of some known 350 landraces is currently in use. Especially on large farms, the extensive use of modern varieties replaces old local varieties.

The Country Report (FAO 2006) lists almost 2,000 local crop-varieties or landraces. Only 400 of them have been used in the last decades. At present the major part of the agricultural area of Azerbaijan – 80 to 95% – is used for a few modern varieties of crop plants. Indigenous and local varieties are still important for fruits where their share is an estimated 45 % of the cultivated area.

Unfortunately no data is available on the number of livestock breeds including local landrace breeds. However a cattle breeding institute is maintained under the MoA, and there are sectors within the State agricultural enterprises dealing with cattle breeding and artificial insemination of landraces of domesticated animals. There is also a mid-term storage semen

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bank established in Azerbaijan Livestock Research Institute for the following species: Swiss, Simmental and Black-White cattle breeds; and Murrah buffalo breed.\textsuperscript{236}

The Institute of Genetic Resources coordinates the activities of other institutions towards a national inventory and database development for genetic resources and biodiversity of the country (country has about 14 live collections and gene banks of field crops, fruits, vegetable and fodder crops). The Botanical Gardens conduct research on the ecology and introduction of useful, rare and disappearing plants, and has collections of a number of important taxa.

Besides this there are scientific experimental stations in almost all of the regions of Azerbaijan and they have been able to obtain special landraces of each type of crop, which have adjusted to a particular eco-region. In addition, there are State and private landrace enterprises where the genes are stored and bred for both animals and plants.

Concerns remain as to the effectiveness of in situ and ex situ conservation activities, although they were a priority in the NBSAP for 2006–2009. The creation of protected areas has improved genetic diversity conservation and gene banks and live collections have been set up, but there is little genetic risk monitoring and conservation of genetic diversity needs to be addressed more prominently.

Azerbaijan ratified the CBD’s Cartagena Protocol on Biosafety but the draft biosafety law (draft law on safety during genetic engineering activity) was rejected by Parliament.\textsuperscript{237}

The GIZ-Program “Sustainable Management of Biodiversity, South Caucasus” (SMBP) (October 2011− September 2015) cooperates closely with the MENR, local NGOs and other international organizations in order to improve the condition of agrobiodiversity in Azerbaijan.

\textbf{3.5.2.6 Pasture management}

Pastures and meadows make up to 56\% of Agricultural land in Azerbaijan and are of high importance because of increasing livestock sector.\textsuperscript{238}

Pasture areas are divided into two groups depending on the season of use: winter pastures, normally found in the plains and lower mountain parts and are used during winter as well as in spring and autumn; summer pastures located in the mountains and used from May to October.

High summer pastures and most mid-altitude winter pastures are owned and managed by the State and leased to individuals or companies through grazing permits that usually last 10-15 years. 10 percent of the total pastureland is managed by local municipalities. Allocation of grazing rights is based on the number of animals, in theory, but specific laws on contracts or permits and monitoring to check adherence to official stocking rates are virtually absent.\textsuperscript{236}

\begin{footnotesize}
\end{footnotesize}
Recent monitoring of livestock shows that the number of animals per hectare is 10-50 times higher than the grazing norm in some areas, and even more in other areas. The 8,645,400 head of sheep and goats, as estimated in 2015 (azstat, 2015), need far more winter and summer pastures than are available. This is one of the main drivers of the fact that the grassland covers of the land of forest fund increased from 2003 till 2012 from 874,200 ha to 1,024,000 ha in 2012.239

As a result it is estimated that some 60% of winter pastures and 70% of summer pastures are now eroded, and significant areas of pasture land have become salt-effected marshlands. Overgrazing is evident at all altitudes in pasture areas, where original vegetation has been replaced by unpalatable or grazing-resistant species (e.g., weeds). Environmental pressures on pastureland are intensified by the declining practice of moving livestock between summer and winter pastures, and increased livestock density, especially in areas close to the villages (i.e., communal winter pastures). Under-utilization or abandonment of more distant pastures affects soil properties, alters the plant composition, and affects the animal species that depend on it. Degradation of high-altitude summer pastures contributes to the declining numbers of wild goats and chamois; overgrazing of low grasslands affects the native flora and fauna of steppe ecosystems.240

The Government is increasingly concerned by the situation. In May 2004, the State Program on Prevention of Desertification and Efficient Utilization of Hayfields and Summer-Winter Pastures (for 2004-2010) was introduced. However the program’s provisions are very general and it has not developed specific pastureland management mechanisms. In the frame of the Programme mainly survey activities were implemented up to now. The main reasons for this lack of action are the absence of a mechanism to implement the Programme in a coordinated way and differing priorities, with the Ministry of Agriculture prioritizing food security over land degradation. Furthermore, steps towards greater decentralization are a further barrier for effective control. Tax collection and supervision of pasture land take place at the local level, where MENR is not represented, and neither the MoA nor any other concerned Ministry has taken any action.241

In parallel a large rural environment project was realized 2005 – 2009 with support of the World Bank (Azerbaijan Rural Environment Project, AREP) to improve natural resource management and to prepare pasture management plans with the aim to protect biodiversity of global significance in two mountainous areas. Besides this FAO, UNDP, WWF, GIZ and other international organizations are working on development of manuals, concepts and software’s for sustainable pasture management, trainings of stakeholders and piloting the sustainable management systems. with support of GIZ-SMBP DUENE Institute in cooperation with Azerbaijan National Academy of Science has prepared “A winter pasture

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240 AETS Consortium (2013): Country Environmental Profile of Azerbaijan - EU
241 AETS Consortium (2013): Country Environmental Profile of Azerbaijan - EU
monitoring manual for all Greater Caucasus regions of Azerbaijan”. 242 Concept on “Sustainable Pasture Management in the South Caucasus”, 243 “Analysis of pasture resource use in Azerbaijan”, 244 Vision for sustainable pasture management and policy recommendations” (for Ismayilli/ Shamakhi project region in Azerbaijan) 245 are now available for negotiations between local farmers, local governments and national authorities.

However, the problem of overgrazing continues unabated as major and it is unlikely to change the situation until specific mechanisms of improved pasture management, economic alternatives and the right mix of incentives and disincentives are developed and introduced in rural areas.


3.6 Protected areas system

Protected areas are a key element of conservation policy.

According to biodiversity Assessment for Azerbaijan, in 2000 by USAID, The first protected area in the Caucasus was established in 1910 to protect the relic Eldar pine grove on the slopes of the Ellar-Ogli ridge in northwestern Azerbaijan. This reserve still exists today. For that time, 34 traditional protected areas existed in Azerbaijan. These were established during the Soviet era and follow the rigid model developed and used throughout the former Soviet Union. These are divided into strict nature reserves, or state reserves (“zapovedniki”), whose objective is to preserve ecosystems and their constituent species in a natural, untouched state. All human activities, even tourism and research, are prohibited without special permission; in fact, some manipulation to increase the populations of selected species has been carried out (e.g., supplemental feeding for gamebirds and deer). There were 14 strict reserves. In addition, 20 state conservation areas, whose objective is the preservation of elements of the natural landscape, including natural ecosystems. Within these areas, certain activities are permitted provided they are compatible with the protected area’s objective. Two state hunting reserves, totaling 50,000 ha, were also included under the country’s protected area system.246

3.6.1 Coverage and Representativeness

In 2000, Biodiversity Assessment for Azerbaijan (USAID) evaluates the situation of protected areas: “On paper, a total of 516,000 ha of lands are under some type of protection. This represents about 8 % of the total land area of Azerbaijan. This protected area system provides some coverage of representative ecosystems and ecoregions, although many protected areas are too small to effectively protect species with large home ranges. However, the status of these protected areas and the ecosystems and species that they are intended to protect is poorly known. Protected areas have local staff but generally lack resources, often including the means to pay staff salaries. As a result, management effectiveness of protected areas is severely reduced. A thorough inventory of the extent and status of natural ecosystems and individual species, both within and outside of protected areas, is sorely needed to develop an effective and representative protected area network for Azerbaijan. The inventory should include an assessment of the feasibility and effectiveness of current and proposed protected areas in conserving biodiversity, including the investment and reforms required to make such a system operational. This should include the consideration of a more flexible and adapted system of protected areas with a variety of management categories. In this context, it will be useful to review the case of Georgia, where a 1996 Law on Protected areas established several categories of protected areas, following IUCN criteria, and under which a modern system of protected areas based on broad ecoregions has been proposed.”247

Under SPNA we consider PAs, according to IUCN categories, despite of the management being implemented is not in full accordance with IUCN management categories.

246 Chemonics International Inc. (2000): Biodiversity Assessment for Azerbaijan, USAID
247 Chemonics International Inc. (2000): Biodiversity Assessment for Azerbaijan, USAID
The number of nature sanctuaries has significantly increased after 2000. National parks - new category of protected areas - have been established. The number of strict nature reserves has decreased since 2008 but only because several existing strict nature reserves were integrated into the newly established national parks. All national parks were established after 2001, while the majority of natural sanctuaries and all nature reserves already existed in 2001.

In 1995 nature reserves and nature sanctuaries (“zakaznik”) amounted 429,860 ha, 5% of the country’s territory.

**Figure 20: Coverage of Specially Protected Nature Areas (SPNA), Azerbaijan**

<table>
<thead>
<tr>
<th>Expansion of SPNAs</th>
<th>Share of different categories of SPNAs, as of 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protect areas, thsd ha</td>
<td>State nature reserves 23.4% (2.4% of Country)</td>
</tr>
<tr>
<td>Protect areas as % of country’s territory</td>
<td>National parks 36.1% (3.7% of Country)</td>
</tr>
</tbody>
</table>

*Source: The State Statistical Committee*

The area of all protected area has more than doubled from 2003. In 2003 first three national parks Shirvan National Park, Ag gel National Park and Zangazur National Park – total area 115,100 ha and one Gakh Nature Sanctuary (36,836 ha) were designated. PA system was expended by *151,936 ha and become 565,956ha – 6.5% of country’s territory*.

By 2008 total area of PAs was increased by 169,800 ha, become 735,760 ha - 8.5%.

In 2009 – 2012 only one national park - Samur-Yalama National Park (11,800 ha) and two sanctuaries (Aspachay and Rvarud – 69,421ha), with total area 81,221 ha were designated and PA system has become 892,546 ha – 10.3% of the country’s territory.²⁴⁸

One additional national park (Qizilaghaj) is under preparation, the territory of Zaqatala State Nature Reserve was expanded to the border of the Georgia.²⁴⁹

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After 2012 no new PA has been established. Azerbaijan’s current protected area system totals 892,546 ha (~10.3% of the country) and comprises nine National Parks (322,306 ha); eleven State Nature Reserves (209,083 ha); and twenty four State Nature Sanctuaries (361,157 ha) (national parks 3.7%, strict nature reserves 2.4%, nature sanctuaries 4.2%).

Table 14: Protected Areas of the Republic of Azerbaijan (As of March 2015)

<table>
<thead>
<tr>
<th>Protected Area</th>
<th>IUCN Category</th>
<th>Quantity</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature Reserve</td>
<td>I</td>
<td>11</td>
<td>209,083</td>
</tr>
<tr>
<td>National Park</td>
<td>II</td>
<td>9</td>
<td>322,306</td>
</tr>
<tr>
<td>Nature Sanctuary</td>
<td>IV</td>
<td>24</td>
<td>361,157</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>44</strong></td>
<td><strong>892,546</strong></td>
</tr>
</tbody>
</table>

Note: An updated map of SPNAs of the Republic of Azerbaijan was not possible to obtain.

(Appendix 7- Detail information on SPNAs)

In addition, 44,300 ha of specially protected nature sites of the country are occupied by Armenia. These are two state nature reserves and 4 state nature sanctuaries.

Despite of expansion of the coverage of protected areas, existing system is not sufficient for conservation of biodiversity and to develop and utilize country’s rich potential for eco-tourism.

Draft NBSAP 2 has Strategic Objective 4 is focused on development of effectively managed PA network through extension to 12 % in terrestrial areas and to 2% in coastal areas by establishment of new PAs and improvement of the connectivity of the PAs network by identification and protection of ecological corridors.

The Caucasus Eco-regional Conservation Plan was adopted at the 11th Caucasus Biodiversity Council Meeting in March 2011. It provides for Georgia, as well as Armenia and Azerbaijan, a comprehensive ecological network map with corridor planning both within the country and with neighbouring countries.

3.6.2 Conservation areas of global importance

Ramsar sites

Azerbaijan has acceded to the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitats in 1991 and submitted in 2001 two wetlands for inclusion on the Ramsar list of wetlands of international importance (Agh-Ghol - 18,000 ha and Ghizil-Agaj – 99,000 ha). The status of Ag-Gol State Reserve and Ag-Gol State Game Reserve was

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252 United Nations Economic Commission for Europe (ECE) (2015, draft): Environmental Performance Reviews (EPR)
upgraded to a national park and its area has been increased from an initial 4,400 ha to almost 18,000 ha. Wetlands around Lake Sarisu, Tufandagh glacier, Lake Mahmudchala and the Mingechevir water reservoir are to be added to the Ramsar list for the 40th anniversary of the Convention.253

Important Bird Area (IBA)

Birdlife International with the local NGO, the Azerbaijan Ornithological Society (AOS) has pinpointed 53 sites in the country as Important Bird Areas (IBA). The sites have been chosen for a number of reasons. IBAs of Azerbaijan provide habitat for all 24 IUCN Red List species of Birds occurred in Azerbaijan and 36 species of Red data Book of Azerbaijan. Between IBAs of Azerbaijan 20 are forest, 21 wetlands, 6 high mountains and 6 semi-desert and steppe. 8 NP, 12 Strict State Reserves and 9 Sanctuaries are IBAs so 29 of 53 have protection status. (Appendix 8 – Map and data of Important Bird Areas in Azerbaijan)

Emerald Network

In 2004, an agreement on an Emerald Network pilot project was signed by the MENR and the Council of Europe, the Secretariat of the Bern Convention on the Conservation of European Wildlife and Natural Habitats. The first phase of the pilot project has resulted in the creation of a systematized database for the established areas within the project and development of a report on the Emerald Network pilot project for the submission of proposals on protected areas for each biogeographical region. The second phase of the programme is currently ongoing in Azerbaijan.254

UNESCO World Heritage Sites

A proposal was submitted in 2006 to UNESCO’s World Heritage Convention to add Hirkan National Park to the cultural and natural heritage list. However, given that Hirkan’s forests are transboundary with the Islamic Republic of Iran, the Convention Secretariat recommended the submission of a joint proposal, and Azerbaijan is cooperating with the Islamic Republic of Iran in this regard.255

Biosphere Reserves

Feasibility assessment completed for a biosphere reserve in the Zaqatala-Balakan rayon.256

3.6.3 Legislation and Policy

Laws related to protected areas are: the Law on “Nature Conservation”, where State nature reserves and protected areas are defined. Another is the Law on “Protected Areas and Objects” setting out the tenets for the management and use of protected areas according to the conservation and sustainable use objectives of the Republic of Azerbaijan for these areas. These objectives include goals related to science, culture, education, tourism and recreation, amongst others. The “Land Code” of Azerbaijan also defines the types of lands that can be assigned as protected areas such as nature conservancy lands; nature reserve lands; health resorts; recreational lands and historical-cultural lands.


The 2008 Law on “Natural Treatment Areas and Resorts” is connected to the 2000 Law on “Nature and Protected Areas”. The new Law focuses on natural cures for patients but is linked to the development of protected areas. Law is still subject of changes.257

The Law of Azerbaijan establishes that specially protected natural areas and objects are the property of Azerbaijan Republic. Transfer of ownership of these areas and objects is prohibited. Protected area categories defined by the Law include those that are international, national and local importance. “Specially protected natural territories consist of state natural reserves, as well as biosphere reserves, national parks, natural parks, ecological parks, state natural sanctuaries, natural monuments, zoological parks, botanic gardens, dendrology parks and treatment and health resorts”. – (Consultant: definition of categories and terms due to English translation are unclear.)

According to the Law the funding of SPNAs must be allocated from the state budget, the environmental protection fund and other funds as envisaged by the legislation. Also, a set of Rules “On Creation and Usage of Special Funds and Means to Appropriately Manage and Protect SPNAs” has been endorsed by the Cabinet of Ministers of the Azerbaijan Republic with a view to developing the network of SPNTs, providing for their protection, conservation, restoration, development and ensuring other SPNA related activities.

Experts identified, that there is need to review and propose amendments to national legislation pertaining to protected territories in compliance with international standards; to

258 Law on the Azerbaijan Republic on Specially Protected Natural Areas and Objects – found out on www.ENECE.org
work out recommendations concerning revision of national legislation on specially protected natural territories and objects.\textsuperscript{259}

The major national policy framework on biodiversity, as required by the CBD, was set out in the “NBSAP 1”.

The expansion of the protected areas system was an objective within this policy and was carried out within the framework of the Convention on Biological Diversity and their guidance entitled “Towards Effective Protected Areas Systems – An Action Guide to Implement the Convention on Biological Diversity Programme of Work on Protected Areas”.\textsuperscript{260}

Azerbaijan also received assistance from the World Bank to set up national parks in connection with rural development projects as well as from Germany, WWF, Conservation International and the Critical Ecosystem Partnership Fund as part of regional protected areas initiatives such as the Caucasus Protected Areas Fund.

The Framework Convention for the Protection of the Marine Environment of the Caspian Sea is the first legally binding regional agreement signed by all five Caspian littoral States, laying down the general requirements and the institutional mechanism for environmental protection in the Caspian region. Currently, the Parties to the Tehran Convention are negotiating a biodiversity protocol, which should help in the further protection of this marine ecosystem and consolidate its role as a habitat for biodiversity of global importance, including through the designation of marine protected areas.

3.6.4 Institutional set-up and management

The MENR is a central executive body in the field of nature conservation and resource use. Its work is governed by the Agrarian Policy Department at the Cabinet of Ministers. A number of departments within the Ministry have nature conservation responsibilities: the Forestry Development Department, the Biological Diversity Conservation and Protected Areas Development Department, the Environmental Protection Department, and the Department for Development and Protection of Biological Resources in Water Basins. They also have their various agencies working at the regional level.

The institutional structure at the Ministry has changed since 2003. As a result of the 2003 restructuring of the civil Service, the Forestry Development Department and the Department for Protection of Biological Diversity and Protected Areas were removed from the composition of the apparatus and started functioning as subordinate organizations. In January 2007, three centers within the Department for Protection of Biological Diversity and Protected Areas were dissolved and the Center for Restoration and Clinics for Rehabilitation


\textsuperscript{260}United Nations Economic Commission for Europe (2011): Environmental Performance Reviews, Azerbaijan, Second Review
of the Wild Nature were established under Altiagaj National Park to enhance efficiency.\footnote{United Nations Economic Commission for Europe (2011): Environmental Performance Reviews, Azerbaijan, Second Review} Biodiversity protection and protected areas development are contained in one department, with various specialized sectors (divisions) operating under the department: Biological Diversity Protection and Rehabilitation; Rare and Endangered Flora and Fauna Protection and Wild Nature Rehabilitation; Specially Protected Nature Areas, Hunting Activity Development and Ecotourism; Control of the Execution of Legislation on Biological Diversity Protection; the Centre of Ecotourism and Hunting Activity Development; the Liaison (Coordination) Centre; the Epidemiological Control Laboratory on Wild Nature; National Parks; State Nature Reserves; and State Nature Sanctuaries.

This unit is responsible for drafting biodiversity related national policies and strategies (jointly with the Division of Ecology and Nature Protection Policy), legal revisions, biodiversity monitoring (together with the National Department for Monitoring of Environment), species conservation, use of wildlife resources (hunting, fishing, wild plant collection), strategy, policy and management of all protected areas. This unit also acts as a focal point for biodiversity related international conventions. Despite this realm of responsibilities, this is among the weakest units in the MENR. The unit lacks the scientific specialists necessary to effectively fulfill its responsibilities and shuns assistance from donors, NGOs or other qualified specialists.\footnote{Ecodit (2010): The Biodiversity Analysis Update for Azerbaijan, USAID}

The functions of the inspectorates and enforcement authorities with regard to protection of flora, fauna and protected areas are combined in MENR with the functions of regulation of their use. Each department responsible for the use and protection of certain natural resources (forestry, fishery, protected areas) has a special sector dealing with the supervision of compliance with the relevant legislative provisions. With the Department of Biological Diversity Protection and Specially Protected Nature Areas Development, it is the responsibility of the sector for the control of legislation on conservation of biodiversity and inspectors of protected areas. Competency of this Department was expanded in the period 2005–2006 to cover monitoring of compliance with and enforcement of hunting requirements. As a result, such performance indicators of its activity as the number of detected cases of non-compliance and the amount of fines and damage compensations have risen steadily since 2005. In addition to administrative fines and claims for environmental damage, the Department of Biological Diversity Protection and Specially Protected Nature Areas Development has relied heavily on criminal prosecution of offenders.\footnote{United Nations Economic Commission for Europe (2011): Environmental Performance Reviews, Azerbaijan, Second Review}

Azerbaijan, as a party to a number of biodiversity-related conventions, has made increased efforts since 2003 to comply with their obligations and in this way to improve nature management in a country where the exploitation of natural resources had caused significant loss of biodiversity. There remain, however, some issues to be addressed, particularly in the areas of biodiversity monitoring; policy development and goal-setting; biodiversity and forestry legislation; and, assessment and evaluation of implementation.
Considerable investments have been made to create protected areas with the major objectives being to protect rare, endangered and endemic species, as well as the development of tourism in the national parks. Yet, no management plans have been developed, apart from Hirkan National Park, which has had a management plan approved, and Shah Dagh National Park, which has a management plan in the pipeline – is stated in EPR, in 2011.²⁶⁴

In 2013, assessment shows, that all national parks have a management plan; four of them prepared with support from the international development partners. However, implementation is sometimes weak (communication WWF) and no business plan exists. Visitor’s numbers are still very low (p. ex. Shrvivan received last year 2,000 paying visitor’s) due to rudimentary touristic infrastructures and the recent creation of most of the national parks. Only few first steps for promotion and marketing of national parks, which allow more sustainable financing, have started.²⁶⁵

One of the priorities of the Azerbaijani government listed in the NBSAP is the development of eco-tourism. This priority is further highlighted by announcing 2011 as the “Year of Tourism” in Azerbaijan. Thus, as visitor services are not well developed in any of Azerbaijan’s 9 national parks, on a request of MENR, SMBP organized an introductory training for guides and visitor service personnel. To develop modern management approaches to PAs of new categories for Azerbaijan (National Park) in cooperation with USDol –ITAP trainings on effective visitor services in national parks was provided.²⁶⁶ A one week comprehensive training “Integrated management of National Parks” as a follow up of this training has been conducted.

Also, administrative and tourism infrastructure of Shahdag, Shirvan, Hirkan, Altiaqaj National Parks are improved.²⁶⁷

Every year, in the autumn and spring months, an inventory of mammal and bird species considered as priority species is carried out by MENR, the National Academy of Sciences and NGOs. Moreover, research fellows in the protected areas routinely monitor the biodiversity components of those areas. Data are collected and analyzed for the preparation of a final country report, which is prepared by the Biodiversity Conservation and Protected Areas Development Department at the Ministry. The report helps with the analysis of gains or losses in the number of various species.²⁶⁸ Fifth NR to CBD (2014) also refers to this.²⁶⁹

²⁶⁵ AETS consortium (2013): Country Environmental Profile of Azerbaijan - EU
Increasing numbers of gazelle have allowed starting the first reintroduction programmes since 2010.²⁷⁰

At the sub-regional level, the World Wildlife Fund (WWF) Caucasus office has been working on the creation of a database to assess and monitor biodiversity using indicators. This activity is carried out jointly with the authorities of the Southern Caucasus region responsible for environment with support from the MAVA foundation. An initial version of the database containing 2008–2009 data for monitoring of biodiversity and protected areas in Azerbaijan has been developed and is being tested.

Azerbaijan’s main focus in implementing the CBD is on conservation of its biodiversity through the establishment of protected areas. Since 2003, the protected areas have more than doubled from, but effective management is often still lacking.

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3.7 Education

The core place in the system of legal acts on education takes the “Law on Education of the Republic of Azerbaijan” from June 19, 2009\textsuperscript{271}.

Currently, educational system in Azerbaijan consists of pre-school education; school /secondary education 11-year, (primary level 1-4, secondary level I 5-9, or secondary level II – consists with lyceum 5-11 years or vocational school 1-2 years, vocational lyceum - 3 years college 2-3 or 3-4 years) and Tertiary level academic higher/university education (bachelor’s, master’s and doctoral/PhD).

Number of vocational education schools and pupils studying at them was reducing until 2003, (but current trend shows, that number is increasing again, but remains less the in 1990)

3.7.1 VET and Higher education

The Azerbaijan follows the European Credit Transfer System with rules approved by the Ministry of Education in accordance with the demands on state standards for higher education (\textit{approved by the decision No. 88 of the Cabinet of Ministries of the Republic of Azerbaijan of May 22, 2010}).

The tangible progress made in the sphere of education in recent years is largely due to the country’s policies towards socio-economic modernization; important steps have been taken to improve the country’s education infrastructure, resulting in better training conditions for over 1 million pupils. Reforms were undertaken to upgrade the quality of education. Important measures were taken to bring it into line with European standards. In addition, according to the “\textit{State Program on the education of Azerbaijani youth in foreign countries for 2007-2015}”, a total of 1,204 people were sent to receive education in foreign countries at the expense of the State Oil Fund. In total, 10,700 Azerbaijanis are financed from other sources and private initiatives to receive education abroad. Transition will be carried out to a 12-year general education system. Along with the unification of educational standards and deepening of the Bologna process, special attention will be paid to the international relations of educational institutions, especially universities, and their participation in international educational programs. A new state program on the education of students in foreign countries for 2015–2020 will be adopted.\textsuperscript{272}

Within vocational training, the following professions are trained: guarding hunter in protected areas, guide in national parks and forest warden in forestry.\textsuperscript{273}

In higher educational institutions, a number of environmental subjects have been included in curricula, such as theoretical ecology, environmental standardization and certification,

\textsuperscript{271} Roeld &Partner (2015): Legal assessment for the Reorganisation of Environmental Education Centers in Azerbaijan, GIZ

\textsuperscript{272} Development Concept “Azerbaijan – 2020: the Vision for the Future” approved by Decree of 29 the President, December29, 2012

\textsuperscript{273} United Nations Economic Commission for Europe (2011): Environmental Performance Reviews, Azerbaijan, Second Review
applied ecology, technical and technological bases of environmental protection, general ecology, environmental situation and problems in Azerbaijan, radioactive pollution, processing of industrial and household waste, environmental expertise, environmental monitoring, industrial ecology and urban ecology.


An ecology subject was included in the List of Subjects for the Bachelor's Degree of Higher Education, approved by Resolution No. 8 of the Cabinet of Ministers January 12, 2009. As a follow-up, the Ministry of Education (NEDU) developed and approved an educational standard for this subject. In the 2009/2010 academic year, Azerbaijan State Pedagogical University, Ganja State University, Baku State University, Azerbaijan State Economics University and Lankaran State University launched Bachelor-level education on Ecology.

In addition, training in Environmental Engineering was introduced at Azerbaijan State Oil Academy, Azerbaijan Technical University, Azerbaijan Architectural and Building University, Sumgayit State University, Azerbaijan Technological University and Mingachevir Polytechnic Institute.

Environmental education and training have improved but much remains to be done. Environmental issues have been introduced into preschool and school curricula, and a number of relevant subjects have been included in higher education courses. An educational standard for the subject of ecology has been approved. Training and retraining courses are organized on a regular basis for civil servants. However, existing curricula and teaching aids do not comply with the current requirements.

Forest education

Draft NFP deals with capacity building issues in forestry sector; the need of qualified staff is recognized. “Forestry education in Azerbaijan has a number of difficulties due to lack of faculties, absence of facilities in service training and training of the middle level staff (especially in the field units). All experienced foresters and high level decision makers of forestry service are graduated from the faculties in different cities of Russian Federation. Therefore, new forestry faculties and schools such colleges with modern equipment, qualified staff and technologies are needed on national level. In this regard, promotion and strengthening forestry related education and training possibilities at all level and, organize

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subject-specific courses and on job trainings for forestry staff is strictly necessary and to be facilitated" – is stated in the NFP (draft 2013).276

Research on forestry issues in Azerbaijan is practically not carried out. The Forestry Research Institute of MENR needs resources, including qualified staff, to conduct such research. In order to improve forestry education in Azerbaijan, Forestry School under the Ganja State University was created in 1995. However, this educational program does not have qualified staff and other resources required to meet basic standards of quality education in forestry.277

The forestry research unit should conduct with collaboration of MENR/FDD and with relevant institutions as well as with relevant international programs and institutions for its research programs and projects.278

Forestry Research Institute needs to be developed firstly by reorganizing its unfavorable situation and then, new research units with adequate and experienced staff should be created in different regions of the country.

To improve forest education is one of the strategic objectives #8 of NFP (draft) – "Enhanced forest education and research are providing essential backstopping to sustainable forest management".

To assist country with improvement of Forest education, GIZ-SMB Project supported with development of curriculum at Baku State University (BSU) in M.Sc. "Biodiversity and nature conservation" for the department of Bioecology of the faculty of Ecology and Soil Science; curriculum has been approved; for Azerbaijan State Agrarian University (ASAU) in Ganja "Forest Ecology" – as specification to be included in an existing M.Sc. in forestry has prepared. Cooperation has begun between BSU and Greifswald University as well as Klagenfurt University; also field staff in Zakatala-Balakany region were trained in gound truthing.

Agriculture education

Agricultural specialists on the university level are trained in ASAU BSU and Nakhchivan State University (NSU). In line with these there are also agrarian-oriented colleges and vocational schools (high schools). National Agricultural Research System includes totally 20 institutes: 13 research institutes Under MoA, 3 under the National Academy of Sciences, 2 under the Amelioration and Water Management OJSC and 2 under the Ministry of Ecology and Natural Resources.279

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GIZ- SMB Project with UNDP supported trainings of professional in pasture monitoring in Ismayilli and Lahij.

Retraining

The Academy of State Management under the President’s Office organizes annual short-term environmental training courses for senior management staff of governmental institutions. The MENR Institute of Training and Retraining runs two-four week training courses and one-two day retraining seminars for staff of the Ministry and its subordinating units. Topics included environmental monitoring, protected areas management, sustainable forest management, environmental impact assessment and protection of fish stocks.

3.7.2 Environmental Education (EE)

Law on Environmental Education and Enlightenment of the Population December 10, 2002, defines the legal, economic and organizational basis of the state policy connected with environmental education and enlightenment of population, and regulates relationships in this area. Until recently, environmental educational and training in the country was rather unsystematic in Azerbaijan. Over the past few years, however, the situation has improved. Environmental issues have been included in pre-school, a number of relevant subjects have been included in higher education courses. Some schools offer advanced courses in Ecology. An educational standard for the subject of ecology has been approved.

As a follow-up to the Decree of the President on Public Environmental Education of early 2003, the Ministry of Education has developed and implemented a five-year plan to support teaching environmental subjects in State educational institutions. A number of dedicated textbooks, education materials and visual aids have been published in accordance with this plan. The Additional Action Plan on Improvement of the Ecological Situation in the Republic of Azerbaijan for 2010–2014 foresees that the Ministry of Education (MEDU), in cooperation with MENR, should develop a State programme on EE and awareness-raising in 2011–2012.

In Azerbaijan, elements of EE are provided at the pre-school educational institutions; Environmental issues in schools are presented in courses on Natural History, Biology and Geography. The MEDU has launched the preparation of textbooks on “Ecology and use of natural resources”, “The fundamentals of ecology”, “Social ecology”, “Environmental law”, “Ecology and environmental protection” and “Environment, economy and life”. NGOs and some international organizations have launched initiatives on environmental education in schools in Azerbaijan.

Since 2011 with support of GIZ-SMB Project MEDU through EEC implements a country-wide educational campaign – “International Biodiversity Day” (IDB). In 2011-2015 IDB was implemented in 41 regions, participated in 450 schools with estimated 4500 pupils.

Given the lack of a conceptual approach to environmental education and the broader issues of Education for Sustainable Development (ESD) in schools, it is doubtful whether the majority of school graduates will gain a holistic understanding of environmental concerns. According to the 2010 4th NR to the CBD, environmental education and training has not yet been established in the country at the necessary level. The existing curriculum and teaching aids do not comply with up-to-date requirements.

The State Ecological Training and Education Centre (SETEC) of the Ministry of Education (MEDU) operate a series of environmental education centres (EEC) for children and youth in some districts. The Centre invites experts from the Azerbaijan National Academy of Sciences, governmental and non-governmental organizations to conduct environmental awareness-raising courses.281

The MEDU is currently developing new concepts for its Environmental Education Centers (EEC). In almost every administrative district of Azerbaijan, a governmental EEC is supposed to deliver extracurricular environmental education for school children. MEDU assesses structure, function and programmes of these centers as outdated and considers a major revision of their functions and institutional framework. The State Ecological Training and Education Centre (SETEC) plays a key role in this process as it is responsible for developing and testing a vision and road map for the country wide EEC re-organisation.

New strategy to foster practice oriented environmental education (in secondary education) now aims at improving the already existing EEC. 55 of these centres already exist on the regional level with the responsibility to provide extra-curricular EE. However, the structure and functions of these centers is critically perceived by MEDU. General options and international examples for the institutional and functional set-up of EEC and vision and road map has been developed by GIZ –SMB project.

In October 2015, a study tour to Germany with the objective to establish strategic cooperation between EECs in Azerbaijan and Germany has been conducted; 6 decision makers from Azerbaijan, including 2 from Baku EEC, participated.

3.7.3 Education for Sustainable Development (ESD)

Azerbaijan has not adopted a national strategy on ESD, as recommended by the UNECE Strategy on ESD. No inter-agency commission or expert group involving all stakeholders has been established in Azerbaijan to develop and promote the subsequent implementation of a national strategy.

3.8 Biodiversity Monitoring

Monitoring of Biodiversity is responsibility of National Department of Environmental Monitoring (NDEM), the Department of Protection of Biodiversity and Development of Special Protected Nature Territories and the Caspian Integrated Ecological Monitoring Department within the Ministry of Ecology and Natural Resources of Azerbaijan Republic. Within the NDEM the sector of biodiversity monitoring is responsible for the monitoring of all directions related to biodiversity (flora, fauna, PA and etc.). It also should develop methodologies for the other departments on how to collect needed data. Officially the system and structure is quite good but the different problems such as inefficient coordination, lack of methodologies, bureaucracy and low human capacity do not allow effective work within the DNEM.

The monitoring of mammal and bird populations are conducted annually (birds in January and mammals in October) in the specially protected natural areas by the aadministrations of protected areas.\(^{282}\) These data collection and monitoring activities allow MENR, in particular, to regular update population data on 126 bird and 30 mammal species. However, in the protected areas scientific staff who is responsible for the data collection and monitoring of the biodiversity and environment need to enhance their capacity. This has direct impact on the quality of the data collected and used.

Scientific institutions (research institutes within the National Academy of Sciences and universities) collect data on biodiversity and its conservation, including inventories of fauna and flora, description of habitats, assessment of genetic diversity, evaluation of limits for sustainable use, and testing of appropriate methods for ecosystem restoration.

Rich information is collected at the NAS Institute of Genetics, but due to lack of technical supply it is necessary to create a technical potential to establish an electronic database, its periodic update and dissemination.\(^{283}\)

Scientific and Research Fishery Institute under the MENR Department of Fisheries conducts annual marine expeditions in the Azerbaijan segment of the Caspian Sea to study the stocks of four sturgeon species, herrings and seals as well as forage reserves and hydrochemistry of the sea water. The Academic Institute of Zoology conducts regular fish and forage reserve surveys in two water reservoirs in Azerbaijan. Based on the results of the expeditions of these two institutions, the Department of Fisheries sets annual fishing quotas. Fish population data are not published but are available upon request. The data demonstrate the trend of decreasing fish populations in both the Azerbaijan segment of the Caspian Sea and freshwater reservoirs.

The last comprehensive forestry inventory was prepared in Azerbaijan in 1993.\(^ {284}\) Since

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\(^{284}\) note: in some (sources is indicated 1988 - e.g. (2005) :National Action Plan on Strengthening Capacity to Respond to Challenges of Biodiversity Conservation, Climate Change and Desertification / Land Degradation (2006-2015).
2002, inventories have been launched in forestry management units, one by one. However data were not published.

There were several attempts by other international organizations to develop national biodiversity monitoring system for the country.

The most recent and wider compared to the others was the system developed by WWF for the region which includes the data for the Azerbaijan as well. But this system is not used by the relevant governmental agencies and it includes only the indicators related to the (1) protected areas, (2) conservation priority areas and (3) forest areas. The system is web-based (http://www.wwfcaucasus.net/Index.aspx).

Other attempts were done by several NGOs and it did not work at the end due to the access to the data. And in general the aim of such systems was again limited monitoring of the biodiversity with concrete directions (birds, mammals and etc.).

In 2011, the Secretariat of the Framework Convention for the Protection of the Marine Environment of the Caspian Sea published the Caspian Sea: State of Environment report. The report highlights the main trends in the marine and coastal environment of the Caspian Sea. It provides a gap analysis, showing the needs and requirements of the countries, individually and collectively, in the areas of monitoring, information collection and management related to policy, decision-making and implementation of the Tehran Convention and its Protocols. The private sector also contributes to monitoring and research on biodiversity. For example, British Petroleum (BP) monitors biodiversity both on- and off-shore (including populations of fish, birds and mammals), and were also involved in biodiversity related activities such as the Trans-boundary Diagnostic Analysis, a workshop on Mnemiopsis, an investigation into the causes of mortality in Caspian seals and environmental data sharing.

Improvement of the environmental data collection, storage and availability, have been supported by the ENPI-SEIS - the Shared Environmental Information System - project implemented in 2010-2014, directed to modernization and simplification of collecting, exchange and use of data and information, necessary for development and implementation of ecological policy with the purpose to support environment protection in the territory of the countries - neighbors of EU within the framework of the program ENPI. Data on the on environment, including coverage of the SPNAs and forests are published on the web-site of the State Statistical Committee (http://www.stat.gov.az/source/environment/indexen.php).

Efforts to improve the national monitoring system have been made in the last years and are on-going, in particular for biodiversity monitoring, public information access has improved and the first SoE report is under preparation.

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287 AETS consortium (2013): Country Environmental Profile of Azerbaijan - EU
In 2009 establishment of the National Biodiversity Monitoring System (NBMS) was started with support of GIZ project “Sustainable Management of Biodiversity, South Caucasus”. The NBMS Working Group was established and assigned with the task to develop the NBMS. Based on international standards and experiences from other countries the NBMS Working Group selected a set of 20 indicators structured according to the “Pressure-State-Response-Model” (PSR) of the Organisation for Economic Co-operation and Development (OECD 2003, p.21).

Calculated 14 indicators under three different types include:

- **Pressure indicators (P):** 1) fragmentation of landscape, 2) river fragmentation and flow regulation, 3) intensity of (marine) fishery, 4) intensity of agricultural land use and 5) intensity of pasture land use.

- **State indicators (S):** 1) species diversity at national level, 2) population size of selected species, 3) IUCN Red List index, 4) agrobiodiversity and 5) extent of forests.

- **Response indicators (R):** 1) total extent of protected areas, 2) financial resources for nature conservation, 3) area under organic farming, and 4) extent of reforested areas.

All 14 indicators were calculated and compiled by the NBMS Working Group in the first National Biodiversity Monitoring Report (NBMR) 2012 of the Republic of Azerbaijan. In 2015, the report was updated for the year 2013. For 11 indicators new data was collected and necessary updates were made. However, for the indicators P1 (fragmentation of landscape) and P2 (river fragmentation and flow regulation), no changes were applied as it is considered to update these indicators every 5 years. For the indicator S2 (Population sizes of selected species), no data was available to be updated.

For the NBMS it is essential to provide time-lines for each of the indicators, as only they allow detecting trends and relevant changes. In some cases however the lack of data does not allow to create reliable time-lines yet. In those cases alternate methods are used for an initial assessment of the results.

The updated NBMS report is entirely based on data collected either by the Ministry of Ecology and Natural Resources (MENR) or by other published sources. It provides a comprehensive and official overview on the situation of biodiversity in Azerbaijan. This report however also shows that there is still a lack of essential data. This is especially true for all pressure and state indicators where reliable time-lines could not be provided (P1, P2, S1 S2, S4). In some cases essential data to calculate the indicators, for example the extent of pasture land, was not available at all. In other cases the available data was contradictory, and therefore showing the need for a consolidation of the methodologies for data collection and calculation.

The NBMS Working Group is the responsible body of MENR for collecting the necessary data and performing the monitoring; to date only two persons are left in Working Group and the mandate remains vague. Official institutionalization of the NBMS is needed. As it is mentioned above, the DNEM has a sector called Biodiversity Monitoring and this sector was involved in NBMS development process from very beginning. So the best option would be to officially hand over the system to this sector and support them to develop human capacity for the implementation of system. NBMS itself is a relevant issue in NBSAP 2 which states under strategic objective 2: "By 2020, the biodiversity monitoring systems will be improved".
3.9 Financial mechanisms

The legal foundations for the use of economic instruments for environmental protection and the main principles guiding environmental expenditure can be found in the 1999 *Law on Environmental Protection*. It establishes the legal basis for the introduction of a number of financial mechanisms to protect the environment, including payments for the use of natural resources, payments and charges for environmental pollution, economic incentives, funds for environmental protection, grants and the use of international funds allocated for environmental protection.

The Law on Environmental Protection envisages the utilization of economic incentives, including subsidies and other similar measures; introduces the possible use of ecological insurance as protection against the consequences of activities that represent a serious environmental risk.

The Law also identifies the sources for the financing of environmental programmes, which include State and local budgets, environmental protection funds, ecological insurance, payments for the use of nature, donations from physical and legal persons and grants and other resources from international institutions. Budgets at all levels should indicate separately their expenses for funding environmental protection measures.

*Environmental protection funds* can be established to finance environmental protection, rehabilitation and compensation measures. Sources of revenues for these funds include payments for nature use, property confiscation, sales of the results of illegal hunting, grants and donations and other sources that do not conflict with legislation. The Law identifies a number of areas in which these resources can be used, including the introduction of resource-saving technologies, rehabilitation of infrastructures, compensation for environmental damage, training, environmental auditing and the provision of incentives to those who work in the area of environmental protection. In any case, the financing of activities not related to environmental protection is prohibited.

**Environmental Funds**

There are a number of funds that are under MENR control. However, *these are all budgetary funds*, which are integrated into the overall State budget system. Collected revenues are part of the single Treasury account and released only at the approval of the Ministry of Finance on the basis of overall spending plans.

The two largest funds are the *State Fund for the Protection of the Environment* and the *State Fund for the Preservation and Rehabilitation of Forests*. By the State Fund for the Protection of the Environment, are financed research, education, infrastructure building and provision of incentives.

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In order to promote the development of protected areas, the so-called Special Funds of Relevant Agencies Established for the Management and Protection of Particularly Protected Natural Sites (State Fund on Protected Areas) were set up in 2008.

**Foreign direct investment and donor financing**

The development of hydrocarbon wealth has attracted large foreign direct investment (FDI) inflows. These have had a positive impact on the environmental performance of this sector, as investors have brought better environmental practices and technical expertise.

Participation in international conventions has facilitated access to external financing.

Public finances are very strong as a result of rapid economic growth and the exploitation of Azerbaijan’s oil and gas resources. Therefore, the significance of external assistance lies in knowledge transfer rather than alleviation of non-existent financial constraints. The involvement of development partners, including multilateral financial institutions, supports the improvement of project management practices and facilitates access to relevant expertise.

**Taxes**

According to the Tax Code, as amended in 19 June 2009, there are a number of taxes with environmental significance, including excises, the road tax, the land tax and the mining (royalty) tax.

The land tax depends on the size of the plot. A scoring system is used for agricultural land, according to which points are allocated on the basis of the use, geographical position and quality of lands.

A mining tax (royalty tax) is paid on the use of underground resources, including off-shore resources that are being exploited. Oil and gas are the most important natural resources in Azerbaijan. The rapid development of this sector in recent years has boosted economic growth and strengthened public finances, enabling increased public investment, including on environmental issues. Most hydrocarbon resources are exploited under Production Sharing Agreements (PSAs), which establish specific tax and customs obligations and arrangements to allocate the oil and gas obtained between the participating foreign investors and the State Oil Company of the Azerbaijan Republic (SOCAR).

The proceeds from the sales of the resources accruing to SOCAR accumulate in the State Oil Fund of Azerbaijan (SOFAZ). Other sources of revenue for SOFAZ include bonuses and dividends paid under PSAs, acreage fees paid by foreign investors for the use of the contract areas in connection with the development of hydrocarbon resources, and returns on the management of its assets.

**Penalties and pollution charges**

Resources from fines are earmarked for the financing of environmental protection measures. The Administrative Offences Code was amended, significantly increasing fines for offences.
Emission charges have been used as an economic instrument since the 1992 Presidential Decree No. 176 on the *Introduction of Payments for Natural Resources, Payments for Emissions of Pollutants into the Environment and the Use of Funds from these Charges*. It further includes *payments for water abstraction and discharge of wastewater*. Charges are differentiated according to the source of water.

Pollution charges were too low to motivate polluters to reduce emissions and introduce new technologies. MENR has asked the Cabinet of Ministers on a number of occasions for a revision of the current regime. However, such proposals have been repeatedly rejected.

Pollution charges and fines are the main sources of revenue for the State Fund for the Protection of the Environment.

*These economic instruments are not connected to the achievement of specific environmental targets, as part of policy packages that also combine elements of a regulatory nature, but have only a revenue-raising dimension.*

**Trend in Environmental spending**

Environmental expenditures include outlays by *Government agencies, the domestic private sector, foreign companies and donor organizations.*

A significant change took place in 2007–2008, when there was a very large increase in environmental investments, in particular on water and land protection. The rapid growth of investment drove the overall increase in environmental spending as a percentage of GDP. As a result of this strong investment effort, environmental investment accounted for some 55% of environmental spending in this period. Investment expenditures allocated through the State Investment Programme to MENR increased sharply around 20% of total environmental capital spending in the country.

**Figure 21: Trend in total environmental expenditure**

![Graph showing trend in total environmental expenditure](image)

*Source: State Statistical Committee of the Republic of Azerbaijan*

Although there has been a strong public investment effort regarding the environment in recent years, there is less clarity with regard to financial commitments over the medium term,
which complicates planning efforts by the agencies involved. While the current framework makes it possible to ensure the broad consistency of environmental actions with existing programmes, it does not yet provide a clear basis for multi-year programming, as financing arrangements are not sufficiently stable.

**Financial Resources for Nature Conservation**

This is one of the indicators set under the NBMS. Working Group calculated indicator based on data on expenditures for nature conservation provided by the MENR Department of Finance (2015) while data on the total expenditures of the Republic of Azerbaijan was provided by the State Statistical Committee of the Republic of Azerbaijan (2015).

Expenditures for the MENR categories increase significantly over the last years. In 2013, total expenditures are almost 9 times higher than in 2005. Given a total of AZN 19.1 billion for state expenditures in 2013, the total expenditures for nature conservation accounts 0.22% of the State budget.

**Table 15: Total state budget and expenditures of MENR for nature conservation**

<table>
<thead>
<tr>
<th>Years</th>
<th>Total expenditures (Total State budget)</th>
<th>Environmental expenditures for nature conservation (MENR)</th>
<th>Share in total expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>2.140.681</td>
<td>12.818</td>
<td>0.60%</td>
</tr>
<tr>
<td>2006</td>
<td>3.790.124</td>
<td>16.003</td>
<td>0.42%</td>
</tr>
<tr>
<td>2007</td>
<td>6.086.190</td>
<td>20.561</td>
<td>0.34%</td>
</tr>
<tr>
<td>2008</td>
<td>10.774.234</td>
<td>27.264</td>
<td>0.25%</td>
</tr>
<tr>
<td>2009</td>
<td>10.503.859</td>
<td>32.285</td>
<td>0.31%</td>
</tr>
<tr>
<td>2010</td>
<td>11.765.900</td>
<td>34.998</td>
<td>0.30%</td>
</tr>
<tr>
<td>2011</td>
<td>15.397.500</td>
<td>40.922</td>
<td>0.27%</td>
</tr>
<tr>
<td>2012</td>
<td>17.416.500</td>
<td>40.611</td>
<td>0.23%</td>
</tr>
<tr>
<td>2013</td>
<td>19.143.500</td>
<td>42.989</td>
<td>0.22%</td>
</tr>
</tbody>
</table>

Despite of total amount for nature conservation is increased within the last 8 years the share dropped from 0.60% to 0.22%, being the result of the strong augmentation of the total state budget. The results show, that the expenditures for nature conservation strongly increased from 2003 to 2013. At the same time however, that the share in the overall annual budget dropped to 38% of the value in 2005.


290 note: this data is different from those of the web-page of State Statistical Committee
4. Georgia

4.1 General Information

Georgia, a mountainous country covering 70,000 km², is situated between the south slope of the Caucasus Mountains, the east coast of the Black Sea, and the northern edge of the Turkish Anatolia plain. Forests cover 40% of the country (2.8 million ha), largely in the Greater Caucasus Mountains (Georgia’s northern border), the Lesser Caucasus (its southern border), and in intervening lowlands and foothills. Likhi mountain range divides the country into eastern and western halves. The western border of the country is formed by the 315-km-long Black Sea coastline.

Georgia is divided into nine administrative regions ("mkhare") and two autonomous republics: Adjara and Abkhazia; the latter representing the breakaway region occupied by separatist forces.

The principal landscapes of the Caucasus include foothill and mountain forests and subalpine meadows of the Greater and Lesser Caucasus, treeless mountain upland plateaus of the Lesser Caucasus, humid lowland forests of western Georgia, and the arid steppe and deserts of eastern Georgia.

Located at a biogeographical crossroads where the flora and fauna of at least three biogeographic provinces converge, Georgia has high levels of biodiversity. Georgia also possesses rich agricultural biodiversity that is gradually being replaced by more cosmopolitan varieties.

Unlike most countries, the human population in Georgia is declining due to increased emigration, reduced immigration and consistently low birthrates. According to United Nations data, the population was 4.3 million in 2008, a decline in 1% from 2007, and continuing to decline.

The total population increased by 2.32%, from 4,382,000 inhabitants in 2008 to 4,483,000 in 2013. Little over half (53.1%) of the Georgian population lives in towns. The capital and largest city is Tbilisi (population 1,175,000 in 2014). The other main cities are Kutaisi (pop. 197,000) and Batumi (pop. 161,200).

The Caucasus is 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.

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291 Economic Commission for Europe, Committee on Environmental Policy (2015, draft): Third Environmental Performance Review
292 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity
4.2 International Obligations

According to SOE-2 (2007-2009), Georgia was party to 24 international environmental agreements. Since 2008 country joined 9 more international conventions, agreements and protocols. According to 5th National Report to CBD (2015), Georgia is party of 31 Multilateral Environmental Agreements (Appendix # 9).

According to Biodiversity Assessment Update (USAID, 2009), “The focal point for biodiversity-related international treaties in Georgia is the MoENRP. A MoENRP staff member assigned to each convention ensures the development and submission of the country reports and other related activities. The GoG tries to meet requirements of all signed treaties, but mainly relies on implemented activities of international and national NGOs and international donor funded projects. There is no dedicated state budget for implementation of the conventions. One of the main barriers is the lack of capacity”.

In June, 2008 Georgia ratified Convention on the Conservation of European Wildlife and Natural Habitats (Bern 1979); in September, 2008 Cartagena Protocol on Bio-safety was ratified, and entered into force in February, 2009. To fulfill the commitment, legislation (including law and subsidiary acts) on “Living Genetically Modified Organisms” have been developed with support of GIZ –SMB project and endorsed in September 2014.

Table 16: Law on Living Genetically Modified Organisms

| According to the draft Law, in Georgia introduction of genetically modified organisms into natural environment (planting/seeding, cultivation) is barred. Distribution of genetically modified organisms on the market is allowed, if they are registered in Georgia and have appropriate labels. Application of genetically modified organisms for scientific purposes is also permitted in closed systems based on the special license. |

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Georgia joined the protocol for the Protection of Biodiversity and Landscapes of the Black Sea of the Convention on the Protection of the Black Sea Against Pollution in 2009. In April,
2009 the Strategic Action Plan for the Rehabilitation and Protection of the Black Sea was adopted by the various relevant ministers of the Black Sea countries. Biodiversity protection is a significant part of these documents.\(^{293}\)

In June, 2010, Georgia ratified the European Landscape Convention, that entered into force in 2011.

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; preparation of the legal framework for ratification is underway.

The EU and Georgia signed the Association Agreement (AA) between Georgia, of the one part and the European Union and the European Atomic Energy Community and their Member States, of the other part, on 27 June 2014. The AA was ratified by Georgia on 14 July 2014.


Legal alignment with the EU directives is the first step towards their implementation. Progress has been already made towards that: with technical assistance of the GIZ – SMB Project, 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; determine bases for identification of such territories, their inclusion in the European network, their conservation and monitoring; 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; provide legal framework for accessibility of genetic resources and related traditional knowledge and equitable sharing of benefits arising from their utilization in accordance with the principles of Nagoya Protocol - based on the relevant prior informed consent and mutually agreed terms.

Deep and Comprehensive Free Trade Area (DCFTA), part of AA includes multilateral environmental governance and agreements; biological diversity, including trade in natural

\(^{293}\) Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity
resource-based products obtained through a sustainable use of biological resources and contributing to the conservation of biodiversity; sustainable management of forests and trade in forest products; trade in fish products.\textsuperscript{294}

Legal alignment with the EU directives is the first step towards their implementation. Where deadlines for achieving full compliance were identified, they stretch until 2030, in some cases. A roadmap for the implementation was finalized in 2015. A government-wide monitoring framework was established. In order to translate the AA into more specific actions, the Government adopted the 2014 National Action Plan for the Implementation of the Association Agreement, and National Action Plan for the Implementation of the DCFTA for 2014–2017. The two action plans are important tools for providing a predictable policy and legal framework that would enable smooth adaptation by the private sector.\textsuperscript{295}

4.3 Biodiversity-related Strategic Documents

Biodiversity conservation and sustainable use measures in Georgia are being implemented on the bases of main strategic documents: \textit{National Biodiversity Strategy and Action Plan (NBSAP), National Environmental Action Plan (NEAP)}.

There are also some strategies taking into account environmental issues; some of them are discussed below and others in relevant chapter of the report herein.

\textbf{NEAP 1} – was adopted in 2000 (approved by the Decree of the President of Georgia, #191, May 20, 2000), with a 5-year time span.

Table 17: Six priorities of NEAP 1, Georgia

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- Rehabilitation and improvement of water supply and sewage systems;
- Increase in the share of municipal transport and monitoring of fuel quality;
- Prevention of pollution by encouraging the introduction of best available techniques (BAT) and cleaner production methods;
- Improvement of waste management through the application of economic instruments;
- Introduction of integrated coastal zone management to address the environmental problems of the Black Sea; and
- Preservation of biodiversity, including that of forest ecosystems.

\textsuperscript{294} International Bank for Reconstruction and Development / The World Bank (2015): Georgia: Country Environmental Analysis—Institutional, Economic and Poverty Aspects of Georgia’s Road to Environmental Sustainability

\textsuperscript{295} Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
However, only a few of the first NEAP recommendations were implemented, mainly due to shortage of resources.  

**NBSAP 1 – (2005-2010)** was adopted in 2005 (*approved by the Decree of the Government of Georgia #27, February 19, 2005*). The document determines the national biodiversity protection strategy until 2015 with an action plan until 2010. NBSAP 1 identified the major issues faced by biodiversity in the country and categorized these into ten themes upon which to base the development of actions.

<table>
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<th>Table 18: Ten issues of NBSAP 1, Georgia</th>
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<td>• Protected areas</td>
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<td>• Species and habitats</td>
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<td>• Agro-biodiversity</td>
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<td>• Hunting and fishing</td>
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<td>• Biodiversity monitoring</td>
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<td>• Biotechnology and bio-safety</td>
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<td>• Environmental Education, Public Awareness and Public Participation</td>
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<td>• Financial and economic programmes</td>
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<td>• Sustainable forestry</td>
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NBSAP 1 comprises measures to mitigate existing threats, such as habitat destruction (due to ecosystem modification and intensive grazing), over-extraction of biological resources and poaching, low levels of public awareness. It does not set out actions to reduce pollution of the environment or to mitigate negative impacts of development projects on biodiversity. NBSAP also omits measures for the development of sustainable forestry and the protection of the Black Sea ecosystem.

Despite of considerable progress achieved in this respect, many of the activities were not accomplished, while those that were fully or partially implemented were done so largely by NGOs with the support of external donors. The role of the state institutions, in respect of the implementation was minimal or not clearly formulated in the document. These aspects were fully considered in the strategy and action plan revision process.

The main directions of the *Medium-Term Strategy of the Government of Georgia, for 2007-2010*, were the restoration of territorial integrity through a step-by-step peaceful policy, overcoming poverty and associated social problems, energy safety and infrastructure development. However, the following priorities for environmental protection and the management of natural resources have been identified over the past four years:

I. Elaboration of the resource-use system; II. Elaboration of the environmental protection systems; III. Elaboration of the system for monitoring and forecast.

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Elaboration of resource-use systems focuses on the facilitation of forest protection as well as the sustainable use of forest resources. The major direction of the recent measures implemented and planned in this area are: the reform of forestry system; the elimination of legal and regulative gaps in forest resource-use; the issue of long-term licenses for forest resource use through auction and the protection of forests from parasitic-borne disease, fires and negative anthropogenic impacts.

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

Conservation of biodiversity is one of the main directions of the NEAP 2 (2012). NEAP-2 for period 2012-2016 (approved by the Resolution of the Government #127 of January 24, 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 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 long-term goals and short-term targets set under the NEAP on 5 years period.

Table 19: Biodiversity-related targets under NEAP 2, Georgia

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

NBSAP 2 for the period of 2014-2020, (endorsed by the Decree of the Government of Georgia # 343, May 8, 2014), formulates a comprehensive policy and defines national priorities in order to transform Georgia into the country, where people by the year 2030 “will be living in a harmonious relationship with nature, whereby biodiversity is valued,
conserved, restored and wisely used, ecosystem processes and services are maintained, a healthy environment is sustained and benefits essential for the society are delivered”.297

In the 1st NBSAP the biodiversity strategy was designed with a ten-year time line, following the adoption of this document i.e. as of 2005, and the action plan was for the first five years of this period. The rational was that the action plan would be reviewed after five years to enable that the progress achieved to date as well as any changes in conditions would be taken into account. This was a wise approach because some significant and rather fast changes were already occurring in the country - indeed since 2005, Georgia has seen a dramatic transformation in many sectors including institutional development and economic growth. 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 (BPS), with the support of GIZ’s project – “Sustainable Management of Biodiversity – South Caucasus”(SMB Project), 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.298

Table 20: Strategic directions of NBSAP 2, Georgia

| • 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 |

Strategies 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 2011-2020). Each national target for Georgia has relevance to one or more Aichi Targets, 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. 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.

The updated NBSAP 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. The updated NBSAP 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.299

Table 21: Georgia, NBSAP 2 – I international recognition

| The Meeting of the Parties to the Convention on Biological Diversity (CBD) in Montreal noted that Georgia has been an exemplary country in terms of its Strategy and Action Plan (NBSAP) update.300 | Presentation on NBSAP revision process and setting National targets versus Global Aichi targets has been presented on side-event COP12 of CBD, in Korea, on October 8, 2014 |

The Second National Action Programme to Combat Desertification, was (approved by the Resolution of the Government #742 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.

Table 22: Actions to conserve biodiversity in the Second National Action Programme to Combat Desertification

- 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 bio-farming development and restoration of polluted soil.

The Government of Georgian has identified regional development as a political priority and in 2008 established a “Task Force on Regional Development”, working on a national strategy and

299 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity
300 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
action plan for regional development. **Socio-Economic Development Strategy “Georgia 2020“** (approved by the Resolution of the Government #400, of June 17, 2014) and **Regional Development Program of Georgia 2015-2017** (approved by the Resolution of the Government #1215, of July 9, 2014) 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 the population and reduce costs induced by forest degradation.

**Table 23: Actions to protect forest resources in Regional Development Program 2015-2017**

- Forest inventory and establishment of effective system for planning forestry-economic activities;
- Implementation of forest maintenance and reforestation measures;
- Clarification of the forest fund territories by means of state forest fund registration to prevent fragmentation and reduction of the forest covered areas.\(^{301}\)

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There is still no strategy for sustainable development.

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\(^{301}\) Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity
4.4 Trends in the state of ecosystems and species

4.4.1 Ecosystems

Georgia has a large variety of landscapes and ecosystems that contribute to its outstanding biodiversity. Eastern and western areas of Georgia differ in climate and topography, and are characterized by different landscape zones. Western Georgia has five major altitudinal zones ranging from forests (from the coastal plain to 1,900m), the subalpine zone (1,900 to 2,500 m), the alpine zone (2,500 to 3000 m), and up to the nival zone (greater than 3,600 m). Eastern Georgia includes similar subalpine, alpine, subnival and nival zones, but the forests begin at 600 m, below which is a zone not found in western Georgia, the semi-deserts, steppes and arid woodlands. Within all of these altitudinal zones are mixed a variety of different habitats, many with unique and endemic species of plants and animals.

Until the recent period no modern systems of habitat classification were being applied in Georgia, that 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.

Under the „Emerald Network“ development program, 15 habitats were identified in Georgia from the habitats included in the Annex 4 of the Bern Convention. Moreover, 27 priority habitats (Appendix 10 - List of Priority Habitats of Georgia) 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.

**Semi-Arid Ecosystems:** Arid and semi-arid ecosystems are mainly found in the south-eastern part of Georgia, at the border with Azerbaijan and Armenia. These ecosystems are characterised by semi-desert vegetation, steppes, arid light woodlands, Shibliq, phryganoid vegetation, rock xero- phytes, halophyte communities, and tugai forests along the River Iori.

Steppes are mainly used for winter grazing purposes. The steppes have suffered significant damage and, in some areas, overgrazing, has led to a reduction in herb species diversity. The arid thin forests widely present in the past, are now only observed in their original form in the Vashlovani PA. The artificial regulation of flow in the River Iori and deforestation has resulted in a decrease of the unique floodplain tugai type forests along the river.

With the aim to conserve rare and unique arid and semi-arid ecosystems, in 2003 Vashlovani National Park was established (24,610 ha) and Vashlovani Strict Nature Reserve was expanded (10,143 ha). Documentation for establishment of the Davit Gareji protected landscape have been elaborated as well to preserve the unique biological and cultural values of the Iori Plateau and for designation of this are in the UNESCO list of the world’s natural and cultural heritage. However, establishment of the Davit-Gareji protected landscape is not started yet.

**Forests:** In terms of biodiversity conservation, forests are most important habitats of Georgia and Caucasus Region. In the frame of the NBMS the total forest area of Georgia and its
biogeographical regions has been estimated (so far only once in 2010), on the basis of satellite images from 2001-2008, that revealed, area currently covers about 41% of the total area of Georgia (28,382km2). Over the last decade, this figure has been relatively stable.

On the bases of a sample of inventory data provided by the Forestry Department and published by the FAO (FAO, Global Forest Resources Assessment, 2010), shows, a slight but continuing decrease of the forest cover from 1990 to 2010. This development was mainly caused by the illegal forest logging activities and led not only to a decline of the total forest area, but also to a more or less severe change in the age and species compositions of the concerned forests.\(^{302}\)

In the Appendix # 11 discussions on forest cover form different sources are provided.

Figure 23: Forest area in Georgia between 1990-2010

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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. Up to 400 trees and shrub species grow in Georgian forests. Existence of about 65% of Caucasus species depends on forests\(^{303}\).

In Georgia, the vast majority of forested land is represented by mountainous forests providing such key ecosystem services as water regulation and soil protection. The forest area designated to protection of soil and water extends over 2.2 million ha, equivalent to 80 % of forested land. In many rural areas, natural springs are the primary source of drinking water supply. Cities also depend on forests for water. While, globally, forest carbon-storing volume is decreasing, Georgian forests show an increasing trend. In 2015, they held 168.4 million tons of carbon in above-ground biomass, and 43.85 million tons of carbon in below-ground biomass\(^{304}\). Rural population of Georgia (46.3% of the total population) is considerably

\(^{302}\) [http://biomonitoring.moe.gov.ge/](http://biomonitoring.moe.gov.ge/)

\(^{303}\) Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity

\(^{304}\) Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
dependent on biological resources and ecosystem services. Annually the rural population of Georgia uses 300,000-500,000 m$^3$ of timber and fuel wood 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. Forests are used by rural people for grazing purposes as well.

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.

Mixed Broad-leaved forests in western Georgia are damaged by the aggressive weed-species, often non-native, especially chestnut and box trees. Increase of the forest areas affected by pests and introduction of new pests is related to the growth trend of average annual temperature, as it was revealed by the studies within preparation of the third national communication to the UNFCCC. Another impact of climate change reveals in Zemo Svaneti, Mestia Mountainous zone where birch is being replaced by by pine and fir trees.

According to the data of 2014, protected areas cover 256,800 ha of forest ecosystems (approximately 10 % of Georgian forests) are protected in the system of PAs. In 2003-2014, 700 ha were reforested in Georgia within the state forest fund (about 0.03 % of the whole forest area).

**Subalpine and Alpine zones (High Mountain Areas):** Low (“elfin”) forests of spruce, pine, fir, and beech in relatively dry and sunny areas, and crook-stem forests in moister areas are occurred in the subalpine zone of Georgia. All these forests are very diverse and floristically rich, including the regionally endemic birch species. Under certain conditions, high grassland vegetation occurs in the subalpine zone. More typically, the vegetation of the subalpine zone consists of grass and grass/forb meadows.

Alpine zone is characterized by the dominance of short-grass meadows, the so-called “carpet-like” alpine meadows, alternating with thickets of Rhododendron caucasicum and rock scree vegetation.

Above the alpine zone, in the sub-nival zone, environmental conditions are extreme. Nevertheless, more than 300 plant species occur here.

The key threats to highland ecosystems are grazing, tree-felling, poaching. Excessive grazing has caused significant change of the flora, decrease of productivity and degradation of the upper layer of soil, which causes erosion and landslides.

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305 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity

306 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity

High mountain ecosystems in Georgia are protected in the Tusheti, Lagodekhi, Kazbegi and Borjomi-Kharagauli PAs. Grasslands of the PAs are indispensable condition for sustainability of livestock/sheep breeding and dairy production.

**Inland water ecosystems:** Fresh water ecosystems include lakes, rivers, wetlands, and artificial water reservoirs and represent typical components of the Georgian landscapes. There are 18 critical freshwater habitats (*Appendix 12 - Map - Critical freshwater habitats*) revealed in Georgia, with total area of 2,422,241 ha, and only 625,081 ha (25.8%) of this area is covered by various category protected areas. Wetlands of Kolkheti lowland are included in the list of wetlands of international importance of Ramsar Convention.

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 infrastructure.

**Black Sea:** The Black Sea, bordering western Georgia is also an important area of biodiversity for the country. Three dolphin species and 110 fish species are present within Georgian coastal waters of the Black Sea. Marine habitats and river Rioni estuary are significant habitats for sturgeon. Six species of sturgeon are observed in the area and all of them are included in the Red List of Georgia, whilst A.sturio is listed by the IUCN as globally endangered.

Today, the Black Sea is considered one of the most polluted seas on earth. Its ecosystems have become particularly deteriorated in the last decades. Its huge catchment area and its semi-enclosed nature have made the Black Sea highly sensitive to a variety of anthropogenic impacts such as eutrophication, pollution by chemicals, unsustainable fishery, invasive alien species and modification of natural habitats.

The most valuable natural habitats of the Black Sea and Georgian coastline are included in Kolkheti National Park and are under special protection regimes (15,742 ha of marine habitat).

**4.4.2 Species**

**Plants**

Georgian flora is one of the richest among countries with moderate climates. 4,130 vascular plants, 812 mosses, over 800 lichens and up to 7,000 fungi species are found in Georgia. Over 2,600 taxa of algae are described in Georgian inland waters. However, these data do not fully reflect the actual diversity of algae, lichen, and fungi species of Georgia.

About 2,000 species of Georgian flora have a direct economic value, utilized as timber, firewood, food (fruit, hazel nut), forage and animal food or used in medicine, painting and volatile oil extraction.

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308 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity

309 All information connected to species is taken from Georgia’s Fifth National Report to the Convention on Biological Diversity (2015); Ministry of Environment and Natural Resources Protection of Georgia
Around 21% of Georgian flora (up to 900 species) is endemic. Among these, around 600 (14% of all species) are Caucasus endemics and 300 (9% of all species) are endemic of Georgia. This rate of endemism is higher than that of many other much larger temperate countries.

**Animals**

758 species of chordates have been described in Georgia. Amongst the Caucasian endemics there are 19 mammals, three birds, 15 reptiles and three amphibians species whilst the Georgian endemics are represented by only one species; the Adjarian lizard (Darevskia mixta).

Due to habitat destruction and extensive, unregulated exploitation many animal species have become endangered with 29 mammal, 35 bird, 11 reptile, two amphibian and 14 fish species currently included on the national Red List. In addition, 44 vertebrates found in Georgia are globally endangered and included on the IUCN Red List as Vulnerable (VU) or higher. In the past century the goitered gazelle and the southern population (Trialeti ridge) of wild goat became extinct in Georgia. The leopard and striped hyena have are still present but most likely exist as isolated individuals, red deer only in two small populations have been preserved in Georgia.

Invertebrate species are less well known in Georgia, but those that have been catalogued include more than 26,000 species (instead of previously mentioned 15,296). Nine invertebrate species are listed as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) in the 2008 IUCN Red Data Book.

**Positive changes**

Measures are being taken to restore populations of the goitered gazelle (*Gazella subgutturosa*) in Vashlovani PAs and adjacent territories, located in the species distribution historical area.

Reintroduction of wild goat (*Capra aegagrus*) is being undertaken in Borjomi-Kharagauli National Park.

Lately, increase in number of red deer was recorded in Borjomi-Kharagauli and Lagodekhi PAs. In the beginning of the 20th century red deer was distributed throughout the whole territory of Georgia, but in 80-ies it was only preserved in singular, isolated populations. In 1990-ies, due to poaching, number of red deer was drastically reduced. From 2007, increase of deer population is recorded. In 2014, number of red deer within the protected areas amounted to more than 800 individuals.

In winter approximately 18,000 Harbourporpoises and 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.

Two species *Galanthus woronowii* and *Cyclamen coum*, included in the appendices of the Convention on the International Trade in Endangered Species of Flora and Fauna (CITES) and currently subject to commercial trade, have been studied to facilitate sustainable use of
these plants, existing resources have been evaluated, extraction quotas determined, tools for control and monitoring are being developed and measures to support their artificial cultivation are being planned.

Collections and seed banks have been created and more than 600 endangered and endemic species stored in the Tbilisi and Kew (UK) Botanical Gardens within the Millennium seed bank project. This represents 17% of Georgian flora species. The project greatly favored capacity building of the Tbilisi Botanical Garden and Institute, particularly in ex-situ plant conservation, through the training of specialists and the provision of appropriate equipment\textsuperscript{310}.

**Negative changes**

Ten species of vascular plants have become extinct in Georgia in recent times, 50 are critically endangered, 300 are rare and 140 have declined significantly, according to the USAID “Biodiversity Analysis Update for Georgia", 2009. Moreover, according to the studies done by IUCN in 2006-2010, 190 species of endemic plants are Critically Endangered (CR) and 312 plant species are Endangered (EN). However Red list of Georgia have been not updated according to this date. Currently, only 56 species of vascular plants are included in the Red list of Georgia, among the status of 1 species is CR and 16 species are Endangered (EN).

Despite the absence of precise data, it is clear that fish resources in inland waters have been severely depleted due to water pollution and illegal fishing.

Poaching (by prohibited means) has had especially adverse impact on the trout (\textit{Salmo spp.}), included in the Red List and categorized as Vulnerable (VU). Within the period of 1995-2005, population size of trout has decreased at least by 30%\textsuperscript{311}.

Due to the loss of habitats and spawning migration routes, and excess fishery, all of the six sturgeon species found in Georgian coastal waters are threatened. Within the period of 1907-2007, number of the sturgeons has decreased by 37 times.

Within the last decade, owing to fragmentation and degradation of habitats, endemic amphibian – Caucasian Salamander (\textit{Mertensiellacaucasica}) and endemic reptile – Caucasus Viper (\textit{Viperakznakovi}) have considerably decreased in number.

Among birds of prey, the most endangered one is the Eastern Imperial Eagle (\textit{Aquila heliaca}). There are only 15 nesting places of this bird remaining in Georgia. The Cinereous Vulture (\textit{Aegipius monachus}) and black stork (\textit{Ciconia nigra}) are Endangered (EN) as well.

Decrease in the number of bats is caused by degradation of their habitats and more frequent disturbance of their shelters.


\textsuperscript{311} Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity
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.

Decreased number of habitats and illegal hunting is the main reason of reduced number of ungulates. According to the latest data, total number of Capra aegagrus amounts to 300 individuals. Number of Capra caucasica individuals remains at the critical level as well and counts only 100-150 individuals.

**Figure 24: Changes of the population size of certain species**

![Population Changes Graph](image)

Source: Biodiversity Protection Service of the MoENRP

Although hunting regulations exist, they are often not enforced. Local people continue to hunt without purchasing permits, even though these are now easily available and hunting regulations are largely ignored. Number of law enforcement personnel is limited in the field.

**Alien invasive species**

There are 16 invasive plant species recorded in Georgia (5.5% of alien flora). Semi-natural areas, under severe anthropogenic pressure, and wetlands are particularly vulnerable to plant invasions, while natural forests and herbaceous communities are fairly resistant to the expansion of alien plants.

*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 Lagodekhi PAs.

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312 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity

Invasive fungus disease poses significant threat to endangered woody plants included in the Red List, such as chestnut (*Castanea sativa*), Imeretian oak (*Quercus imeretina*), Colchis box tree (*Buxus colchica*), elm (*Ulmus glabra*). 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, in Mtirala National Park - on 60% of the box tree population.

Recently, intrusion dynamics of 12 invasive plant species (out of the 50 most dangerous species for biodiversity) was analyzed in 5 PAs in Georgia and their impact on biodiversity was assessed. Based on the collected data, the level of invasion of these species was determined.

Crucian Carp (*Carassius carassius*) 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 and had a very negative effect on the native fish populations in many rivers and lakes.

Presently, there are 26 invasive alien species in the Black Sea that pose serious threat to Black Sea ecosystems.

To prevent the invasion and dispersal of alien and invasive species, phytosanitary and zoo-veterinary control is implemented. Legislative changes for raising effectiveness in controls have been adopted. Introduction of animal not native animal species is prohibited by the legislation. The legislation does not prohibit the introduction of alien species of plants, but the use of local species is recommended for rehabilitation of the forests.

### 4.4.3 Red List

The status of animals and plants species was evaluated according to the IUCN criteria and *Red List of Georgia* was approved by the Decree of President #303, of May 2, 2006. Red List includes 123 fauna species and 56 timber plant species. Nine vertebrate species and two woody-plant species are critically endangered (CR); 24 vertebrate and 18 woody-plant species are endangered (EN) and 54 vertebrate and 36 plant species are vulnerable (VU) in Georgia. However, those statuses were assigned only on the basis of outdated information and/or expert assessment - no national censuses or monitoring had been done since the breakup of the Soviet Union. Also, the Red List did not include herbaceous species. In 2013-2015 with support of GIZ – SMB Project Iliia State University (ISU) assessed herbaceous species according to IUCN criteria and 117 species are nominated for including in the "Red List" of Georgia. Five out of 117 species were selected for long-term monitoring in NBMS and base-line data are collected.\(^{314}\)

Management plans have been, or are being, prepared for the following species and species groups: tur (*Capra caucasica, C. cylindricornis*), leopard (*Panthera pardus*), bats (Chiroptera spp.), brown bear (*Ursus arctos*), Caucasian grouse (*Tetrao mlokosiewiczii*), dalmatian pelican (*Pelecanus crispus*), white fronted goose (*Anser erythropus*), red breasted goose (*Branta ruficollis*), white headed duck (*Oxyura leucocephala*), imperial eagle (*Aquila heliaca*), lesser kestrel (*Falco naumanni*), Greek tortoise (*Testudo graeca*), Caucasian salamander (*Mertensiella caucasica*), sturgeon (*Acipenseridae* spp.), red deer (*Cervus elaphus*). However, due to a lack of financial resources only few measures determined by management plans are currently being implemented.

Since 2006, new data have become available on certain species. Thus, the Georgian Red List currently requires revision.
4.5 Trends in the sectors effecting biodiversity

4.5.1 Forestry

The Forest Fund (according to the Forest Code, 1999) includes forested territories of the country as well as territories not covered with forests but designated for forestry needs.

According to different sources, that provide different data, Forest Fund is stable at an estimated 3.0 million ha of which forest cover varies from 2.7 million to 2.8 million ha, from 39 to 41% of country’s total territory. (Appendix 11 - Discussions/details on the forest cover from different sources is in). Estimated 0.5 million ha is of primary forests, 2.2 million ha of natural modified forests and 60,000 ha of protective artificial plantations. Highland forests occupy 97.7% of the total area. Total standing volume amounts to 430 million m3, and average annual forest growth measures approximately 4.0 million m3.

After 1990 the forests of Georgia became intensively exploited for economic purposes whilst, for the part of rural communities firewood has remained one of the sources of energy. Significant demand exists on timber. Household use of wood cut or collected from nearby forests for heating, cooking or building purposes is a major threat to the forests. It is estimated that 87.1 % of rural households and 17.4 % urban households depend heavily on wood for cooking and heating. The annual household use of wood is about 2.5 million m3 in the winter season. Illegal logging is equivalent to only about 1.2 % of the annual amount of wood consumed by households.

Although in recent years the volumes of illegal logging have dropped significantly, they still remain at unacceptable levels. The actual scale of logging substantially exceeds the rate of natural growth of forests located near human settlements; overgrazing of livestock in forest areas, resulting in degradation of the forests’ natural regeneration capability; forest pests and diseases; alien invasive species; frequent forest fires, unsustainable hunting and legislative gaps and shortcomings in management are also threats to forest ecosystems in Georgia.

4.5.1.1 Management Practices

Georgia’s existing forestry system is not based on sustainable development principles. Absence of a sustainable forestry setup eventually plays a role of system-based problem that causes environmental problems associated with forests. Existing methods and rules for forest inventory and planning do not correspond with sustainable development principles; In fact, no standards, indicators or adequate statutory instruments for sustainable forestry are applied.

315 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
Forestry legislation and management standards cannot adequately provide for multipurpose forest management and functional zoning. The Forest Code (1999) defines green zone, resort, soil and water protection forests as well as forests with special significance (floodplain and subalpine forests, buffer forests protecting roads and water bodies etc). The Code generally restricts logging operations in most of these ecologically sensitive forest categories.

The 3rd NR to CBD, 2009, finds the key challenges for the development of sustainable forestry the following: a lack of political will and support, institutional weaknesses, lack of cooperation between departments, lack of interest of the involved parties, lack of knowledge and practice in the field of management based on ecosystem approach and the absence of corresponding legislative, institutional and financial bases for the sustainable management of forests. Current practices in forest resource management do not correspond to the principles of sustainable management and are chiefly oriented towards exploitation, and lead to the degradation of forest biodiversity. “…the use of forest resources has increased; the impact of forest degradation factors (illegal cuts, fires, parasites and diseases) has increased; mitigation measures (forest planting, prevention of parasites and fires) have decreased; public involvement in the decision-making process has weakened. As a result, the forest biodiversity status is alarming”.

According to 5th NR, 2015, natural environment is to great extent affected by forestry sector, which provides firewood for major part of rural population, which remains as the main means of heating in the country. 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.

Figure 25: Harvested timber according to different types of felling, thds m³

Source: National Forest Agency
These data differ in different sources, but there is common picture – social felling for fuelwood isn’t reducing.

Data and assessments on the status of forests are incomplete and based on a sample of inventory or satellite images over limited periods of time. A complete forest inventory dates back to 1997, and partial updates have only recently been initiated through temporary ground plots.

According to acting Forest Code (1999), based on the materials of forest fund inventory, carried out in 1997, the annual optimal volume of timber- production was defined. The use of forest resources (timber) is subject to licensing, and licenses are issued on the basis of auction. Since 2000 the Decree of the President on the “Rules of Forest Use, Cutting, Forest Protection and Rehabilitation” was in force. These activities were aimed at the preservation of the forests soil-protecting and water-regulating function and protection of wildlife (envisaging the breeding period while planning the timber-harvesting activities). Places were defined where commercial cuts should not be implemented (e.g. flood plain forests, sub-alpine forests, sites with the dominance of relict and endemic species, slopes steeper than 35 degrees, the forest zones that protect the banks of rivers, canals and water reservoirs). The rules also define the tree species authorized for cutting. Also was defined maintenance felling. Despite these, due to large-scale illegal cuts in the recent years, forest stands were severely damaged.318

As a requirement of the legislation, forest management should have been updated every 10 years, but on the major part of the country’s territory the forest management was outdated. However, forest activities were still implemented (timber harvesting). Within the framework of the World Bank - Forests Development Project (2002), it was planned to carry out inventory in various districts of the country and to compile maps using modern technology (GIS, landscape ecological carcass); Project was terminated due to Government’s changed priorities and policy – issuing long-term leases without inventory. Government went ahead with the transfer of forest user rights to the private sector without first establishing an up-to-date forest inventory and forest management plans.

As of 2007-2009, forest use was conducted in accordance with the Georgian law “On licenses and permits” (2005) and the Resolution of the Government “On rules and terms for licensing for forest use” (2005). In total during 2007-2009, 160,108 ha of Forest Fund were licensed for long-term commercial use.

A Decree of the Government #242 of August 20, 2010 (since 2010 a number of changes have been introduced depending on needs of NFA operations) sets out forest-use conditions, which partially encompass biodiversity protection commitments. The licensee is obliged to act within the forest-use plan, as agreed upon with MoENRP, in a way that reflects specific actions to fulfil these commitments.319


147
The basis for felling operations of licensees in Georgia is the so called forest use (exploitation) plan. The template of this document applies inter alia to forest protection measures and reforestation as well as to biodiversity and environment protection measures, which forest users have to follow. Often the decision on the trees to be felled and method of felling is made by woodcutters without adequate training. Control of felling operations is carried out with focus on correct felling of marked trees. Biodiversity factors (e.g. deadwood, damages on regeneration, etc.) are given less consideration.

Forest roads are vital for sustainable use of forest, but they could be also source of negative impacts on biodiversity by disturbing habitats of wild animals. Unfortunately often forest roads in Georgia are constructed without considering possible impacts on the protection function of forests and biodiversity. Management directives for forest roads considering biodiversity as well as health and safety norms for the workers should be developed. Inside the cutting areas the use of heavy log haulers often damages or compacts the forest soil and negatively impacts on fauna and flora. Recently 68 km forest roads were constructed and 206 km were rehabilitated.

Nevertheless, in general the condition of forest biodiversity is relatively better within forest cutting compartments inside licensed forest areas, in comparison to those areas where no license was issued and where cuttings took place in a chaotic way in the past. The reason is that as a rule, workers with more practical experience are operating within licensed areas. Despite the fact that biodiversity conservation is not the priority for the license holders, they try to abide the norms defined by the relevant legislation, including those related to biodiversity (unlike illegal loggers).320

As a result of inspection of licenses for timber production by Department of Environmental Supervision (DES), there is ample evidence for lack of sustainable forest management. There have been, for example, frequent cases of illegal logging, breaching of rules for identifying timber-felling areas, and failure of licensees to engage in the required rehabilitation measures at the end of the license term. In 2013, the DES identified severe breaches of environmental law when examining holders of 11 licenses for timber harvesting. The total environmental damage was estimated at 3.4 million lari (some €1.5 million). In the period January–August 2014, other inspections revealed environmental damage estimated at some 2 million lari (€0.85 million). Problems encountered with forest use licenses reflect to a large extent inadequate forest governance and regulation by the competent state authorities. The last national forest inventory was established in 1997 and is outdated. Government has been offering licenses for timber extraction although it had incomplete information on the volume and quality of resources it was selling. Instead, the establishment of an inventory of the relevant forest areas has been assigned to the holder of the license, but only after the license was issued. In the event, the principle of sustainable use of natural resources has not been adequately applied as regards license terms, extraction quotas and other issues. It is only since 2013 that the issuance of forest use licenses has been made dependent on the

320 WWF Caucasus program Office (2012): Thematic Field: Forest Biodiversity of Georgia – Situation Analysis Report for NBSAP updating – supported by GIZ SMB Project
existence of a forest management plan, to be prepared by entity which is responsible for forest fund management (NFA) – but not yet on an up-to-date forest inventory. 321

Forest management plans based on forest inventory data, according to new legal amendments have been developed recently (in 2013 and 2014) for 2 forest districts (Kharagauli in Guria forestry and Borjomi-Bakuriani in Samtskhe Javakheti forestry, 48,100 ha and 45,800 ha, respectively); inventory of Aspindza-Akhalhalkalaki (Samtskhe Javakheti forestry, 21,000 ha) is underway.

In 2011, the Government introduced new type of cuts - supply of wood for the rural population, to be used for their own consumption as firewood for heating and cooking. This is a social policy measure in the face of low incomes in the rural areas and the limited availability of alternative energy sources (gas) in rural areas. The new system involves stricter monitoring of logging by the rural population. State forestry authorities mark trees in the forests located near population centres; the local villagers then obtain permission to cut this wood by buying tickets for timber production, make payments - have to buy a wood ticket from the “Liberty Bank”, for a small fee of 3 lari (€1.30) per m3 depending on the type of tree and 3 more lari service fee and conduct wood harvesting operations themselves with hired workers. The ticket also indicates the forest area in which the wood has to be collected. The maximum volume was initially set at 7 m3 for the rural population from the mountain region and at 3m3 for other villages. But the maximum volume for mountain villages was raised to 15 m3 and for others 7m3 in August 2014 given the greater need for wood resources for domestic use. (This is based on an amendment of the Regulation #242 of 20 August 2014). Harvested timber (logs) for fuelwood should be cut in 1 meter pieces. Forester provides villager with document indicating harvested species, amount, and place of felling area; this document is obligatory for transportation of the firewood and is time-limited (24 hours), forester submits another copy to the office and uploads in the database shared between NFA, APA, DES and “Liberty Bank”. But illegal logging remains a problem for adverse environmental impacts.

A number of factors create the ground for illegal operations and undermine the reliability of official data: the long-term forest licensing regime, resulting in the transfer of land by state forest authorities without first carrying out an up-to-date forest inventory; the lack of legal instruments (legislative, procedural) to monitor the process of use of forest resources by private investors; the limited number of rangers; and the high demand by local populations for fuelwood, due to rural poverty and the lack of affordable alternatives to firewood. The data on illegal loggings varies according to different sources. (Statistical publication – Geostat, EPR - 2015, data from DES). Despite of having shared electronic system – database, still there is problem to get the similar information on illegal logging from different agencies (Georgian statistical office, DES, NFA). Furthermore, even it is possible illegally harvested timber to be calculated twice – by NFA and DES.

321 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
Figure 26: Illegal loggings, thsd m3

Source: DES

(Data are compiled in 2006 – 2010 from EI + FD, in 2011-2012 from ANR in 2013-2015 from DES+NFA)

Based on official data on illegal logging (from Geostat and DES also), in 2011 and 2012, there was about 6-7 fold less registered illegally harvested timber. The reason is abolishment of environmental control mechanisms due to institutional and policy changes in 2011 (described below in “Institutional set-up” sub-chapter), and registration of illegal loggings was being conducted only by Agency of Nature Resources (ANR).

According to expert estimates, unsustainable grazing by livestock (cattle, sheep, goats and pigs) causes much greater damage to forest ecosystems than illegal logging. Main causes of excessive grazing are limited control from the state authorities, poverty, limited alternative livelihood opportunities, improper range management, lack of sufficient control by shepherds and a lack of awareness of the population. At present, there are no data on forest areas affected by overgrazing.

According to NBSAP - Situation Analysis, 2012, in the past, forest fires occurred relatively seldom and at the smaller scales in Georgia, affecting a few hectares of forests (mainly coniferous). However, with the increased incidences of draughts and higher summer temperatures (supposedly - associated with the climate change, however, this issue needs further investigation), forest fires have become a much more serious problem. The majority of uncontrolled fires are started by human activities during spring and autumn, notably in the context of agricultural and pastoral land use (burning of straw after harvest, with fire spreading to the forest).

According to NBMS, forest fires occur every year due to the different reasons, the cases and the area affected fluctuates rather strongly, but overall, the share of the affected area
compared to the total forest of the country is so small (less than 0.05%), that the forest fires cannot be considered as a significant threat to the forest in Georgia currently.  

Figure 27: Forest fires

![Graph showing number of forest fire cases and forest area affected by fires.]

Source: NBMS

No complete phyto-pathological examination of the state forests has been conducted during the last decade, and as such no measures have been implemented to deal with forest pests and disease. A programme of “sanitary felling” (also commercial was allowed) and removal of trees affected with the chestnut blight was undertaken in the Imereti region in order to rehabilitate valuable forest, but felling wasn’t followed by planting.

Spruce bark beetle (*Ips typographus*) and chestnut blight (*Cryphonectria parasitica*), particularly in the Samtskhe-Javakheti and Imereti regions, 26,000 ha and 17,000 ha, respectively, were affected in 2011–2012. Mass dying of Colchic box trees and pine trees was happening in Tusheti and around Tbilisi. Activities aimed at managing spruce bark beetle were started in June 2013. Since then, pheromone catchers were placed in the hit regions by NFA and APA. Program for protection of Colchic box trees has launched; national plan for conservation and rehabilitation of Colchic box tree has been elaborated; in 2013-14 on PAs studies were carried out and in 2015 rehabilitation measures were implemented. Forest fires prevention and combating pests and diseases measures is one the program financed by state budget in NFA and APA during some years. Effective combating against forest pests and diseases requires comprehensive scientific and field assessments,

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325 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
monitoring and active intervention measures. These measures are very difficult to implement due to the lack of funding and technical capacities. In August 2010, the Georgian Government adopted Resolution #v241 on “Maintenance and Restoration of Forests”, in which it is stated that forest restoration and afforestation should be conducted in line with the requirements of biodiversity conservation. In addition, according to this Resolution, the advantage should be given to native, site-adapted species, which, undoubtedly, is a step forward: planting 250 ha of forests by using local species of flood-plain forests and medium height mountains – by WWF Caucasus Program Office; I order to transform monoculture forest into close to natural forests (by planting local species and support natural regeneration) restoration 150 ha monoculture forest area is already ongoing in Tsavkisi and Khashuri on initiative of the WWF – Caucasus Program Office, supported by EU.

In 2003-2014, 700 ha were reforested in Georgia within the state forest fund under the competence of the State entities responsible for forest management. Main reforestation activities took place in 2004, under responsibility SDF and in 2010, 2011 and 2014 under NFA. Reforested area within the given 10 years period is 0.03% of whole forest area of Georgia.

Figure 28: Reforestation/afforestation measures

Reforestation activities, such as rehabilitation of windbreaks, have been implemented outside the forest fund as well: 92 ha of windbreaks were rehabilitated in Dedoplistskaro Municipality, Kakheti in 2009-2013 (GIZ- SMB project). 87 ha of the former pasture land have been afforested with local species in DM in 2009-2011 (BMU project).

Source: NBMS

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326 WWF Caucasus program Office (2012): Thematic Field: Forest Biodiversity of Georgia – Situation Analysis Report for NBSAP updating – supported by GIZ SMB Project
327 Institutional changes will be discussed below
328 http://biomonitoring.moe.gov.ge/
Forest monitoring is currently performed by the NFA, the APA and the DES. However, a comprehensive and effective monitoring system for assessing the state of forests and forest resources, using modern methodologies and based on international standards and best practices, is lacking. Effective monitoring of the state of forests is crucial, to support the implementation of sustainable and multipurpose forest management principles and practices. It requires reliable and up-dated information in line with international systems for forest resource assessment and an urgent update of the forest inventory, as well as the introduction of a categorization system providing the mapping of both sensitive forest stands for protection and forests with exploitable timber resources. The new forest cover map, developed based on RapidEye imagery, with 20 possible GIS layers, was presented during the plenary session under the NFP; it will serve as the basis for the National Forest Monitoring System. Availability of professionals skilled to perform monitoring activities and to conduct inventories remains a challenge and training of forest personnel for this purpose is a high priority.

Table 24: Main reasons for unsustainable forest management in Georgia; Source: Situation Analysis for NBSAP 2, 2012

- No formally approved National Forest Policy and Strategy document;
- Frequent institutional and legislative changes within the forestry sector;
- Limited funding and capacities, lack of adequately trained staff;
- Lack of clarity with respect to the optimal levels of involvement of private sector;
- Inadequate license conditions for private companies;
- Outdated forest inventory data and inadequate management standards

4.5.1.2 Legislation, Policy, Strategies

Forest sector in Georgia underwent through several reforms – legislative, policy and institutional changes. Forestry reforms have been high on the agenda in Georgia since the late 90s of the last century. Forest policy development process was initiated several times and never finalized. Several draft projects and concepts on “Forest Sector Reform/National Forest Policy” were developed and none of them adopted as an official document (approved by legal act). Government made first steps to reform the former Soviet forestry services to make them compliant with market requirements. Namely, the World Bank-funded “Georgia - Forests Development Project” began in the country in 2002. It aimed to improve the forest sector governance, through national regulatory, financial and institutional reforms, to introduce new planning and management methods to improve protection and support reforestation. First model of forest sector reform - “Forest sector restructuring project” was drafted in 2003. State Forestry Department (subordinated to the President of Georgia) was responsible for forest management. The reform implied establishment of a commercial body to carry out economic activities. In the same period the Project was working on development

329 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
330 WWF Caucasus program Office (2012): Thematic Field: Forest Biodiversity of Georgia – Situation Analysis Report for NBSAP updating – supported by GIZ SMB Project
of forest policies. The project was preceded by the adoption of a new national Forest Code in 1999.

The Acting Forest Code of Georgia (1999) regulates legal relations related to forest tending, protection, restoration and use. It defines the concept of the state forest fund as integrity of the State Forests of Georgia, as well as lands and resources attributed to these forests. The Code also regulates the right to the ownership of the forest fund. At the moment of adopting the code, the forest fund was declared as state property. The Code contains special provisions, according to which all major types of forest ownership are allowed (including private ownership). It also states that a “Law on Forest Privatization” should be adopted before the forest privatization starts. However, the adoption of this law has been postponed several times. The law removed economic functions from forest farms while the right of logging was completely delegated to the private sector. Transfer of forests to self-governments was also permitted. According to amendments to the Law “On State Property” (December 10, 2010), it is allowed to privatize former collective and state farm forests located within the boundaries of population centers. Boundaries of Local Forest Fund have not been drawn and, respectively, the transfer of forests to local self-governing authorities has not taken place, only exemption is Tusheti Protected Landscape (IUCN Category V Protected Area) Administration, who has rights of managing communal forest on the bases of the Laws "on PA System" (1996) and on "Establishment of Tusheti….PAs" (2003).

No practical measures have been implemented in the direction of privatization.

The Forest Code (1999) introduced short-term (up to one year) and long-term (up to 20 years) forest use, and defined the following types of forest use: timber extraction, plantation farms, hunting farms, use of non-timber resources, special use (for example while using the mineral resources, power lines, gas pipes, etc.). Preference was given to long-term use, over short-term use, as well as to those types of forest use which are less related to forest felling.

Law of Georgia “On Licenses and Permits” adopted by Georgian parliament in 2005 had important impact on natural resources management, including protection and use of forest. It was provided in the Law “On Licenses and Permits” that 4 months after its adoption would be a transitional period for bringing other laws in conformity with it. Issues, emerging during transitional period should have been managed through of Government resolutions. For the management of forest sector “Regulation on the rules and terms of forest use licensing” was approved by Resolution of the Government #132 of August 11, 2005. According to which, all licenses were to be sold through auctions. The long-term forest use licenses were issued on the basis of this regulation. 7 years after passing this 4 months transitional regulation, it, had not be cancelled, but on the contrary, is more and more referred to for addressing various issues.

After 2005 change of Forest Department leadership, the direction of the reform again changed. New concept document “The Position of Georgian MoENRP Regarding the Management and Use of State Forest Resources” was published in the beginning of 2006. In accordance with this document long-term leasing of most of the forest resources to private sector was intended. Later, this long-term lease would be transformed into private ownership. The reform concept was heavily criticized as weak and finally rejected.
In the spring of 2006, a national Working Group supported by the Food and Agriculture Organization of the United Nations (FAO), drafted the “Forest Policy Principles” (in cooperation with stakeholders) and submitted the document to the MoENRP. However, that document was not approved and, instead, a new draft of “Forestry Policy and Strategy” document was elaborated. The latter was not approved either. In 2007, the MoENRP prepared a document titled “Forestry Policy of Georgia” and uploaded on its website. Formal approval of this document did not occur.331

In 2009, the Ministry prepared “The Vision on the Development of Georgian Forestry Sector” which was discussed by the stakeholders. Final version of the document provides that Georgian forest sector development aims to set proper balance between protection and use of forests for which it is necessary: to improve legislation, make an inventory of forests, voluntary certification, create updated information system, improve forest management, train human resources in forest sector and protect forest biodiversity. The latter implies preserving forests with high conservation potential, expending the network of protected forested areas, enhancement of forest protection and reforestation activities. This document had never been approved and no policy and strategy development, or forest reform started on its basis.

On 6 July 2010 Forest Code was amended (#.3346-rs). These were major and wide-scale changes to the Forest Code. In particular, as a result of these changes were removed from Forest Code important issues that created the foundation of forestry, as well as the foundation of conservation and sustainable use of ecosystems: forest fund cadaster, forest inventory (the requirement, which provided for every 10 years forest inventory was canceled); system and rules of registration of forest fund; assignment of protection mode to categories of forest fund (which provided for special protection mode resort and green zone forests, floodplain forests and sub-alpine forests); forest protection; requirements for forest planning; establishing optimal age of maturity and logging; forestry plantation; use of non-timber resources of the state forest fund; etc. Besides, changes were introduced into the articles providing for public participation in decision making process.332

Bylaws in force by that time were cancelled. Instead, the following bylaws were adopted: by GoG: “Rule of establishing boundaries of state forest fund”; “Rule of forest registry, planning and monitoring”; “Rule of use of forest”; “Rule of care and restoration of forest”; “Rule of awarding the title of honored forester of Georgia”; Order of the Minister “On approval of regulations of issuing documents confirming lawfulness and origin of wood”.

In 2011, the MoENR announced that it planned to transfer much of the state forests to private companies on the basis of long term lease (about 50 years).

Significant amendments were introduced to the Forest Code (May, 17, 2011 #.4677). The definition of “social cutting” was introduced (implementation of appropriate arrangements of

331 WWF Caucasus program Office (2012): Thematic Field: Forest Biodiversity of Georgia – Situation Analysis Report for NBSAP updating – supported by GIZ SMB Project
providing wood for noncommercial purposes to population, budget organizations, LEPL and Georgian Orthodox Church; General requirements for transportation and primary processing of roundwood (logs) were established, timber labeling – registration of log by means of special electronic marker and entering the data to united database – was legitimized. One of the most important changes was the extension of long-term use of forest from 20 to 49 years.

By May 2012, private companies have had obtained 69 licenses of this type over the area of 161,671 ha, which is around 5.7% of the total forest cover. This new system of licensing has experienced a number of problems. No reliable forest inventory was conducted before the auctions. Several important obligations were imposed upon the license holders, such as conducting detailed forest inventory, reforestation and provision of certain volumes of wood to local population for fuelwood harvesting. In addition, these companies had to prepare a management plan based on FSC principles and get it approved by an independent and internationally recognized auditor company. (Soon this obligation was cancelled). The approval of the forest use plan by the Ministry was a precondition for starting logging operations.

In the second half of 2011, the Ministry of Energy and Natural Resources started to actively work on the elaboration of a new “Forest Law” (which should had to replace the Forest Code adopted in 1999). The new “Forest Law” almost exclusively addressed forestry issues, while nature conservation and biodiversity aspects was envisaged to be covered by other relevant legislation, such as Law on Protection of Environment (1996). The definition of forest was more reflected in the new “Forest Law”. The general biodiversity-related requirements were also incorporated. The notion of 49-year forest lease was introduced. It was also envisaged to divide the forest cover into three major categories: protective, special purpose and management. Logging has to be restricted in the first two categories.333 According to the Minister, the Government’s main objective was long-term (49 years) lease of forest, with exclusive right of further extension; all the forests, except of PAs or already leased for long-term logging – about 1,800,000 ha – would be divided into auction items by river basins. Specific river basin would be leased to an investor who offers the highest annual rent. In the beginning of 2012 MoENR put on its web-page somewhat updated version of the draft law; government was not in a hurry to adopt new law, or even had changed its mind in this regard.334

After election, Government’s attitude to the forest sector has changed. Forests management function was given back to Ministry of Environment Protection. Strengthening of forestry functions has been prioritized among the functions of the Ministry, and is already reflected in the increased number of staff and in staff salaries (mainly for forest rangers), as well as in the allocation of state budget funds to start the forest inventory.

In 2013, with active involvement of stakeholders the “National Forest Concept for Georgia” was prepared and approved by the Resolution of the Parliament of Georgia of December 11,

333 WWF Caucasus program Office (2012): Thematic Field: Forest Biodiversity of Georgia – Situation Analysis Report for NBSAP updating – supported by GIZ SMB Project
2013, which significantly changed the strategic framework of forest management. The 2013 “National Forest Concept” is the first policy document for the country that recognizes the strategic role of this natural resource; aims 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. The implementation of the identified principles, directions and actions requires extensive reform of forest legislation, including subsidiary legislation, and the development of an action plan for sustainable forest management with specific timeframes and responsibilities. It also requires strong institutional coordination, and effective enforcement and monitoring mechanisms.

Table 25: The principles of the Forest Concept, Georgia

- Sustainable management of forests;
- Precautionary principle – to maintain protective functions of forests and their ecological balance;
- All forests are local;
- Separation of policy, management and supervision functions;
- Forests are an integral part of the sustainable development of the country.

Following the Concept, the “National Forest Programme” process was launched in September 2013, within the framework of Forest Europe to assist reforms in the forestry sector in Georgia. It is led by the Forest Policy Service. The main purposes of the National Forest Programme are to: involve stakeholders in the development of policies, strategies and legal frameworks; improve coordination among the donors, supporters and various NGOs; propose solutions to specific forest issues; communicate on initiatives and achievements for the forestry sector; and help mobilize additional funding. GIZ-SMBP and ADA/ÖBF support to the formulation of NFP.335

Within the NFP, 8 thematic working groups were established. At the same time, technical groups were formed in relation to specific threats, such as forest fires, pests and diseases, and illegal logging; action plans have been elaborated for each group.336

Table 26: Thematic Working Groups within the NFP, Georgia

1. Restoration and Protection of Forests;
2. Economic Valuation of Forests;
3. a) Human Capacity Development in the Forestry Sector; b) Environmental Education and Awareness-Raising;
4. a) Legislation; b) Institutional Reform;
5. Forest Monitoring and Information System;

335 Economic Commission for Europe, Committee on Environmental Policy (2015, draft): Third Environmental Performance Review
According to 2015 report of FPS, 9th group also is planned to be established to support raising public awareness in the regions and their involvement in the forest management planning process.

Based on the new policy, new Forest Code is under elaboration; national principles, criteria and indicators for sustainable forest management in Georgia with support of GIZ –SMB Project has been developed and is incorporated into draft Forest Code (article 4). Provisions for categorization of Georgian forests based on their functional significance with relevant management regime are set out; the Code will define property and right issues; general and special uses; determine mechanisms for multifunctional use of forests; support forest education and career development. Draft Code is available for comments by the end of December 2015.

Several subsidiary regulations have been amended recently; it should be mentioned, that main purpose was to facilitate the management process in order to adjust it to day-to-day needs. On the other hand, some of them are directed to improve forest management itself: e.g. Resolution of the Government # 242 was amended to task NFA with responsibility to prove opening and closing felling area on the bases of check-up of the area.

Compensation measure for special felling has been developed, but calculation doesn’t consider the value of ecosystem –services, however is based on the timber amount and tree species.

New initiatives are underway – to regulate the use non-wood forest products; sustainable rehabilitation concepts for windbreaks, taking into consideration multi-functional use, which are developed and implemented through rehabilitation of 100 km of windbreaks in Dedoplistskaro and draft law on windbreaks, prohibition of burning agricultural lands, guidelines for tending of trees in urban areas, testing of energy efficiency approaches, etc.

In reforming forestry sector and introduction of sustainable forest management principles Georgia is being supported by international organizations. In particular, the GIZ project – “Sustainable Management of Biodiversity – South Caucasus” contributes to the institutional reforms in the forestry sector, development of the Forest Sector Reform Strategy, development of the forest monitoring system by application of remote sensing technology, setting a forest inventory, as well as forest management and information system, development of sustainable forest management plans; 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; The Economics of Ecosystems and Biodiversity TEEB survey will be conducted for Ajara forests, together with the regional valuation.

Fundamental problems with forestry-related legislation and institutional structures, lack of up-to-date information about Georgia’s forests, and other aspects of forest governance are barriers to achieving the goal of the National Forest Concept. The Forest Sector Reform Strategy (under development) of the Government of Georgia is aimed at overcoming the mentioned problems. International conference has held in Georgia, where more than 50 participants from nine countries attended and discussed possible options of forest reform. The Strategy has been negotiated under the framework of the National Forest Programme process.

Table 27: Objectives of the Forest Sector Reform Strategy

- Develop and enforce laws and regulations related to forest, required to achieve the goals of National Forestry Concept;
- Build capacity of the government institutions established by the legislation to fully accomplish their functions while implementing the Forest Code and this strategy;
- Provide information about Georgia’s forests and forest lands that government institutions need in order to make decisions and fulfil their functions;
- Promote the forest sector by increasing its role in a green economy;
- Facilitate the forest sector in achieving the National Sustainable Goals (SDGs);
- Encourage synergies in building such conditions that will enable the forestry sector to increase its contribution to the National economy and promote employment opportunities especially among rural population;
- Provide sufficient information about the market for wood and wood products to be able to decide on development goals and strategies for the state forest management organisation and the wood processing sector, and
- Increase the role of civil society in the implementation of the National Forestry Concept.

The Steering Committee on Forest Sector Reform was created in September 26, 2014, by the order of the Minister of ENRP # i-577,under the framework of the Memorandum of Understanding - “Support of the Forest Sector in Georgia” signed by MoENRP, NFA, ADA and GIZ. It encompasses all relevant forest-related bodies of the Ministry and held its first meeting on October 23, 2014 and next one in 2015.

4.5.1.3 Institutional set-up

During Soviet period most of the State forests – economic forests - were managed by state agency functioning under different titles in different periods. Forest management entities were forestry, which, alongside with administrative functions (protection, permitting documents) had economical functions (logging, restoration, turnover etc.). Basic function of these forests was logging. Reserves and forest-hunting farms were run by separate independent State body (General Directorate of Reserves and Hunting Farms).

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337 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity
After independence, on 7 March 1995 Georgian Parliament adopted the Law of Georgian Republic “On Changes and Amendments to Forest Code of Georgian SSR” that declared that forest in the Republic of Georgia is State property. Care, protection and reproduction of forests were carried out by Forestry Department of the Republic of Georgia. Since 1997 it was called State Department of Forestry of Georgia (SDF). Until 1999 an administrative body performed economic functions too (logging, forestation etc.) and received financing from the budget. In second half of 90-ties licenses for harvesting were being issued by MoENRP, the SDF was issuing tickets for all other types of logging.

After adoption the Forest Code in 1999, economic functions were separated from forestry administrations i.e. stocking up rights were delegated to private sector.

In 1999-2004 state forestry sector was managed by SDF, independent and subordinated to the President. All appropriate documentation (logging license, agreement, ticket, export permission) was issued by this body. Protected forest (protected areas) was run by State Department of nature reserves, protected areas and game farms (SDPA). Ministry of Protection of Environment and Natural Resources participated in general policy making (though it meant nothing in practice), and issued hunting management licenses. Logging remained the main form of forest use, on the basis of 1 year license (or ticket).

From 2004, the forestry sector has gone through several institutional changes: In 2004 after Rose Revolution, in line with legislative and institutional changes, SDF and SDPA were abolished, Ministry of Protection of Environment and Natural Resources was liquidated and Ministry of Environment Protection and Natural resources (MoEPNR) was established and Forestry Department (FD) and Department of Protected Areas (DPA), subordinated to MoEPNR were created. Within Ministry on the bases of a new law “On the State Control of Environmental Protection” (adopted on June 23, 2005) was created Environmental Inspection – for monitoring and controlling environmental situation; Investigation department for preliminary investigation of criminal offence in the field of environment protection; Department of licenses and environmental permits was also responsible for issuing licenses of forest use. In such institutional framework all state functions with regard to biodiversity management and protection was fully concentrated at MoEPNR.

This period was followed by frequent changes in legislation and institutional structure, accompanied with personnel changes. In 2007 MoEPNR started so called “forest reform”, aiming maximum release of the State from forest management functions. Appropriate institutional reform was initiated. Structure of the FD changed and central office was reduced, its territorial bodies were reorganized: forestry units were abolished and 10 regional forest management administrations were created. As a result, the Department personnel reduced from 1694 to 682, the employees’ average wages increased 2.4 fold. Ordinary employees – a ranger’s (former “forester” was named as “a ranger”). Each ranger became in charge of about 5,000 ha. (Rangers were responsible for cutting short illegal logging, issue-check
permitting documents, prevention of forest fires and forest diseases etc.). Demand for forestry skills fell massively; many qualified people left the sector.

In 2008 function of issuance of licenses was transferred to Ministry of Economic Development (further on called Ministry of Economy and Sustainable Development). Amount of natural resources (quota), allowed for licensed extraction was determined by MoEPNR and approved by the Ministry of Economy.

In 2010 legal entity of public law - LEPL Forest Agency (FA) replaced the FD. The Agency gained rights to carry out certain commercial activities and receive own revenues from provided services.

In 2011, new structural changes took place in the Government. The natural resources management function under the then MoEPNR was moved to the Ministry of Energy, which became the Ministry of Energy and Natural Resources. The Environmental Inspectorate, the Investigation Department and the Forest Agency all converged into the Agency of Natural Resources (ANR), an LEPL created under the new Ministry of Energy and Natural Resources. All key functions related to natural resources (hunting, fishing, timber and non-timber resources, and minerals) were concentrated in the ANR: policy, legislation development, protection, monitoring, and control of licenses and permits. Besides, the function of issuing the licenses for use of natural resources from Ministry of Economy and Sustainable Development was passed over to the ANR.

In 2013 a new structural changes happened in the Government. Management of forest sector again has passed over the Ministry of Environment Protection that has become Ministry of Environment and Natural Resources Protection (MoENRP). Three entities were established in the field of forest management within the MoENRP:

- The LEPL - National Forest Agency (NFA), responsible for the management of state-owned forests;
- The Department of Environmental Supervision (DES), responsible for inspection and control;
- The Forest Policy Service (FPS), to support the Ministry in defining the strategy and elaboration of policy documents.

As a result of the reform, the ANR was abolished.

Currently, all forests in Georgia – all the resources contained in forests, the land on which forests grow and all resources on or under the land – are owned by the State. Currently, the NFA and the APA, under the oversight of the MoENRP, undertake management of all forests. Restored forest ecosystems within the administrative boundaries of Tbilisi are under management of Tbilisi Municipality. A small portion of the forest fund has been assigned to the Patriarchate of Georgia. The Forest Code recognizes private ownership of forests. However, the question of transfer of ownership of forests is still very much debated in the country and the legislation on privatization of forests has not been yet enacted.

The reform of 2013 is expected to enhance capacity to mobilize resources, implement the principles and actions of the National Forest Concept and more effectively address pressing challenges for the forestry sector. There is clear separation of the policy, management and supervision functions, and division of tasks among these units. Initiatives have been implemented since the reform and more is planned to contribute to the enhancement of human resources and institutional capacity for the forestry sector, including proper staffing, professional training and higher education programmes.

Through GIZ-SMB Project human capacity development component, on-job training and study tours, are provided to personnel in SFM: 270 forest guards were trained in the first training module on SFM; also trainings provided to NFA, APA, Tbilisi City Hall forest, Ilia State University staff in inventory methods, soil property and site classification; in safe chain saw operations, forest tractor operation, tree cutting and tending.

*Education topic is discussed in the Chapter 4.8 “Education”*

### 4.5.1.4 Public participation and public awareness

Georgia has joined a number of environmental conventions and agreements, covering inter alia informing the public and public participation issues. According to Constitution “The legislation of Georgia shall correspond to universally recognized principles and rules of international law”. The Forest Code regulates the issues related to participation of the public in decision making process. Citizens and public organizations have the right to receive full, reliable and timely information on the condition of the state forest fund and to participate fully in the planning and management of the state forest fund. The following information is required to be published before a decision is made on forest use in a particular area: the forest management plan, categories established in the state forest fund, the protection regime established for the state forest fund, and the allocation of areas of the state forest fund for forest use. Although the provisions regulating public participation are in line with practice in European countries and with relevant international conventions, this right of Georgian citizens was violated often during long frequently changeable policies in forest sector development.

In 2013 with establishment of National Forest Programme process lunched. Representatives from different sector ministries, national and international NGOs, donor community, academic institutions, and private business organized in 8 working groups; process is steered by FPS: technical sub-groups contribute to consensus building based on draft documents; working groups serve as sounding board. To ensure public participation in decision-making process and transparency of the forest sector reform FPS involved 160 representatives of 55 organizations and conducted 77 workshops in 2013-2014 and 50 in 2015.

For raising public awareness of forest issues, with support of GIZ/ ADA Communication Strategy and Action plan have been elaborated for Sustainable Management of Forests341.

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339 Constitution of Georgia (August 24,1995), Article 6
Articles on forest issues have been published in "National Geographic" magazine in partnership with National Geography Georgia.

To insure effective public participation in decision-making process still more is needed to be done.
4.5.2 Agriculture

Georgia is rich in agricultural tradition, which is an integral part of its history, mentality and cultural heritage. Agriculture played an important role in formation of the Georgian statehood and contributed much to its economic development. From climatic zones perspective, Georgia is very diverse that is determined by the existence of 12 different zones and 49 types of soils. Many endemic species create a perfect source for the development of plant growing and cattle breeding. The country is rich in amelioration and potable water resources.\(^{342}\)

Agriculture has strategic importance for Georgian economy, 46% of the total population lives in rural areas, however they produce disproportionally low share of the GDP. In 2013, the share of agricultural production in the total GDP was 9.3%, 0.7 % points up compared with the same indicator of 2012. As of 2013, about 54% of the active workforce was employed in agriculture in Georgia, 80% of which are self-employed, meaning that most of Georgian farmers are engaged in subsistence farming, producing products mainly for own consumption and using outdated tools and methods. Georgian agricultural sector is characterized by very low productivity levels that lag behind most of the post-Soviet countries, not even considering more developed Central and Eastern European countries.

43.4% (more than 3 million hectares) of the whole territory of Georgia is designated as agricultural land, which also includes pastures and meadows.\(^{343}\) 15% of the territory of the country is arable land and perennial crops, 28% - pastures and hay fields.

At present the cultivated land of the country is almost completely privatized. About one million hectares of land has been transferred to private ownership, 80% of which is agricultural land. Of the 6,600,000 ha in state ownership, only one third is agricultural land (mainly pastures and hay fields).\(^{344}\)


Collapse of the Soviet Union put an end to the collective ownership of agricultural land in Georgia. In the 90s, most of the agricultural land was given free of charge to farmers in private ownership, the average size of the land plots transferred to the private ownership was 1.25 ha. (According to the Agricultural Census of 2004, 66.9% land users owned about 0.1-1 hectares of land, 23.3% - 1 to 5 hectares, and only 0.15% owned more than 50-500 ha.

**Table 28: Number of farms and their size, Georgia**

<table>
<thead>
<tr>
<th>Farm Size (Ha)</th>
<th>Number of Farms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0,1</td>
<td>57,019</td>
<td>8.24</td>
</tr>
<tr>
<td>0.1–1</td>
<td>462,340</td>
<td>66.85</td>
</tr>
<tr>
<td>1–5</td>
<td>160,993</td>
<td>23.28</td>
</tr>
<tr>
<td>5–50</td>
<td>10,112</td>
<td>1.46</td>
</tr>
<tr>
<td>50–500</td>
<td>1,041</td>
<td>0.15</td>
</tr>
<tr>
<td>&gt;500</td>
<td>72</td>
<td>0.01</td>
</tr>
<tr>
<td>Total:</td>
<td>691,577</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The problem is also aggravated by the fact that one ha of land owned by households is divided into 2-3 parcels. About 72% of the total agricultural land (including arable land as well as pastures and meadows) was operated by small plots with the land size less than 10 ha. Out of the total 763,500 agricultural holdings, only 5% of holdings were without any agricultural land. Large majority of holdings, having a land-plot in ownership, represents small scale farmers with 2 ha of maximum size of land. These small scale farms are involved in subsistence and semi-commercial farming, their land resources are mostly enough for
production of goods for own consumption, and income derived from selling agro-production make up small share of their incomes. The essence of the privatization in the early 90s was to provide farmers with enough land for subsistence farming, although no thought was given to the effects of the consequent land fragmentation over the long-term development of agricultural production. Fragmented land is often cited as one of the major problems for the development of Georgian agriculture. Second wave of land privatization started after 2005, following the liberalization of the land regulations, when part of the land remaining in state ownership was sold to private investors, however, as the recent production patterns suggest, this process has not resulted in any significant land consolidation; although significant problems remained related to the land registration. In some cases exact borders of the land plots were not defined which created ambiguities and conflicts over the ownership of land.

Drastic decline in output and productivity in agriculture, on the one hand, shows the hardships that agricultural production went through the last 20 years, on the other hand, high levels of production in the past indicates the huge potential for the future growth. Despite the demolition of most of the agricultural infrastructure, natural conditions and agricultural traditions are still present, which creates fertile soil for investment and for future growth.\footnote{Bluashvili, A., Sukhanskaya, N. (2015): Country Report – Georgia, The Fund Georgian Center for Agribusiness Development (GCAD)}

\subsection*{4.5.2.1 Institutional set-up}

The Ministry of Agriculture of Georgia (MoA) is the main institution responsible for the agricultural policy making in Georgia. It forms the agricultural development policy as well as plans and conducts actions for the effective implementation of these policies.

The MoA has overall state responsibilities for agricultural production, soil fertility, plant protection, livestock breeding and agricultural engineering, and is responsible for carrying out state control over irrigation systems. Irrigation systems are state owned and state managed through the Ministry's Melioration Policy Department.

Under the Ministry of Agriculture, there are several agencies: National Food Agency is responsible for the food safety in the country; Wine Agency supports export of wines, discover and preserve the traditional Georgian grape varieties etc.; Agricultural Projects’ Management Agency administers agricultural support projects: There are 5 main projects aimed at developing domestic agricultural production via offering interest subsidies, insurance premium subsidies, the state-owned assets in discounted prices (mainly state-owned abandoned factory buildings and agricultural land) as well as subsidized leasing schemes and support to small scale farmers.

“Laboratory of the Ministry of Agriculture” conducts analysis of veterinary diseases as well as diagnostics of food and water. Currently there are 3 laboratories in Tbilisi, Kutaisi and Akhaltsikhe as well as 8 field stations. LLC “Mechanization”, founded in 2009 by the Ministry of Economy of Georgia; provides farmers with agricultural machinery as well as conducting trainings and consultations for farmers. “Mechanization” is instrumental in ensuring that farmers in all regions of Georgia have access to needed agricultural machinery. “Agricultural Cooperation Development Agency” is one of the newest of the agricultural sector for
promoting agricultural cooperation, provides consultations for farmers to the creation of cooperatives.

In 2013, the MoA established a Soil Management Division in the Melioration Policy Department; includes a laboratory for scientific research on soil degradation and soil monitoring to support the extension service.

The MoENRP created a new Land Resources Protection and Mineral Resources Service in 2013, which is charged with implementation of the Law on Soil Protection. Its main responsibilities are participation in the process of developing and implementation governmental policy of sustainable management and targeted using of land resources and mineral resources; Coordination planning and implementation measurements for land degradation and desertification prevention. The laboratory of the NEA, monitoring air, water and soil, is equipped for analysing heavy metals in the soils.

The MoENRP (Land Resources Protection and Mineral Resources Service) collaborates with the Ministry of Justice on land registration and with the Ministry of Economy and Sustainable Development on privatization issues, in order to establish that the plots to be registered as a property do not belong to the forest fund, the fund of protected areas or the fund of mineral resources.

The National Agency of Public Registry of the Ministry of Justice is in charge of registering the land plots and of all operations related to real estate. The National Agency for State Property Management of the Ministry of Economy and Sustainable Development is the manager of state land.

4.5.2.2 Policy

Before 2012 agriculture has not been viewed as priority and governmental spending on the agricultural sector has been erratic. At its low-point in 2010 spending on agriculture was 0.44% of total government spending. From 2007-2010 the majority of the large expenditure items in the Ministry of Agriculture budget were social support of one kind or another, providing hand-outs of flour, food and fuel.346

Since 2003, most of the reforms implemented in Georgia were oriented to create liberal environment in the economy of Georgia. Standpoint of the economic team of the government was to intervene as little as possible and let the free markets work in almost every sector of the economy. Georgia abolished most import tariffs, however, most agricultural imports are subject to 12% and 5% import tariffs. Since 2012, despite the fact that the tax code was not changed and import tariffs remained the same, imported agricultural goods became subject to more thorough sanitary and phytosanitary regulations.347

The new Government (from 2012) drastically changed the attitude toward the development of agriculture sector. The sector was declared as a top priority and the financing of the MoA

increased substantially. The main consideration was given to improving amelioration infrastructure, purchasing and use of the agricultural technologies, implementation of the small farmers’ assistance project, implementation of preventive measures for cattle diseases, the allocation of funds to purchase laboratories equipped to the level allowing their international accreditation. The main attention is given to international market diversification.348

Recent efforts of the government of Georgia along with number of international donor organizations are aimed at promoting agricultural cooperatives. Formation of cooperatives is seen as the most viable solution to consolidate agricultural production process.


Land taxes are determined by the municipalities according to a grid established upon the soil bonity. Farms of under 5 ha are exempt from the land tax.

One of the main priorities of the 2012 state programme “For Strong, Democratic, United Georgia” is agriculture, with focuses on the economic strengthening of rural areas, and raising productivity and the living standards of farmers by means of modernizing agricultural techniques.

The 2014 state programme “Produce in Georgia” provided assistance to small farmers for the spring seasonal work, co-financing for agro-processing enterprises and concessional agro-credit.

Within the framework of the state programme “Modernization of Melioration Systems”, and with the support of the World Bank, the Ministry of Agriculture has started rehabilitation of irrigation-drainage systems.

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The Rural and Agricultural Development Fund was established in January 2013 to attract investments promoting the development of Georgian agriculture. The Fund currently runs two projects: the Project Promoting the Spring Works of Land-Poor Farmers, which has handed out vouchers of differing values to those owning agricultural land; and the Preferential Agro-Credit Project, which is aimed at issuing low-interest agro-credit loans. Generally, it can be stated that these projects have no environmental objectives and very little environmental component.349

From 2014, a full-scale implementation of a cadaster program for vine-yards has been launched. The traditional Georgian method of “Qvevri” wine-making has been given the status of an Intangible Cultural Heritage in December 2013 by the UNESCO.350

349 Economic Commission for Europe, Committee on Environmental Policy (2015, draft): Third Environmental Performance Review
350 http://www.unesco.org/archives/multimedia/?s=films_details&pg=33&id=3515
In September of 2014 a Law “on Genetically Modified Living Organisms” was adopted, according the Law introduction of genetically modified organisms into natural environment is barred in Georgia. 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.

Second National Action Programme to Combat Desertification for period 2015-2022 has been adopted. A new action program was aligned with 10 year strategy of the UNCCD. The programme also envisages the measures for the agriculture sector, including, categorisation of existing pastures and determining appropriate carrying capacities; support in applying traditional knowledge and experience; development of management principles and plans for arable lands; and developing sustainable use programs for agriculture.

In order to reduce the direct pressures on biodiversity and promote sustainable use of biological resources, NBSAP-2 (Global strategic goal B, national targets B1.– B6.) identifies package of actions aimed at creation of the legislative and institutional framework for sustainable use of agrarian ecosystems, grasslands, 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 organic farm development.

A new Strategy for Agricultural Development in Georgia for the period 2015 – 2020, approved by the Resolution of the Government of Georgia #167, of February 11, 2015, includes seven directions:

Table 29: Seven directions of the Strategy for Agricultural Development in Georgia

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1.</td>
<td>Increasing competitiveness of the agriculture sector employees</td>
</tr>
<tr>
<td>2.</td>
<td>Institutional Development</td>
</tr>
<tr>
<td>3.</td>
<td>The land reclamation and soil fertility</td>
</tr>
<tr>
<td>4.</td>
<td>Regional and sectorial development</td>
</tr>
<tr>
<td>5.</td>
<td>The ensuring of food security</td>
</tr>
<tr>
<td>6.</td>
<td>Food Safety, Veterinary and Plant Protection</td>
</tr>
<tr>
<td>7.</td>
<td>Changes in climate, environment and biodiversity conservation</td>
</tr>
</tbody>
</table>

The document places special emphasis on preservation of agricultural 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.\textsuperscript{351}

Recently signed DCFTA, removes tariff and non-tariff barriers to trade with the certain conditions, the latter having been identified as the largest obstacle for Georgian products to enter the EU market.

4.5.2.3 Arable lands management

Georgia is characterized by altitudinal zonality. Only 39\% of arable land is located on elevation of 500 masl, 29\% - 500-1000 masl, 21\% - 1000-1500 masl and 11\% is located over 1500 masl. Due to certain developments after the declaration of independence, the sown and planted areas of annual and perennial crops have reduced, as well as livestock numbers.\textsuperscript{352}

Since 2005, use of the country’s arable land has been continuously decreasing and the area in use was as low as 259,700 ha (32 \%) in 2012: the owners in title of these lands have moved away, neither using the land nor arranging for its use by others, leaving it as uncontrolled pasture. \textit{In 2013, the area of cultivated arable land rose again to 320,700 ha}.\textsuperscript{353}

During the last 20 years, the use of fertilizers and pesticides fell sharply and as a result the general impact on the environment and biodiversity has reduced considerably. In the 1980s’ about 600,000 tons of mineral fertilizers were used, while in the mid 1990’s this had reduced to only about 12,000 tons, \textit{Nowadays there is trend of increase}, however the level of the use is still insignificant in comparison with that of the 1980s. The use of pesticides has also been drastically reduced. In 2008, the area of annual and perennial plants treated with pesticides totaled 182,200 ha.\textsuperscript{354} Though lately, its growth trend is obvious again. \textit{By 2013, as compared to 2010, the areas of pesticide treated crops have increased 1.55-fold and have covered a 360,200 thousand ha area.}\textsuperscript{355}

\textsuperscript{351} Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National report to the Convention on Biological Diversity
\textsuperscript{352} Ministry of Agriculture of Georgia (2015): Strategy of Agricultural Development in Georgia 2015 - 2020
\textsuperscript{353} Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
\textsuperscript{355} Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National report to the Convention on Biological Diversity
The Law “on Pesticides and Agro-chemicals” (2005) exerts control over the use of pesticide and agro-chemicals. The order of the MoA on the approval of the rule of import, storage, realization and wise use of agro-chemicals was also adopted in 2005. This order outlines all of the necessary rules and norms that need to be followed while using fertilizers and pesticides.

Georgia has limited land resources. The total agricultural land is 32,000 km², accounting for of which about 30 % (10,700 km²) was cultivated in 2005. Some 65–70 % of the country has poor soils with insufficient nutrients to support agricultural crops. Poor land management practice, soil erosion, salination, and loss of vegetation cover exacerbate the process of land desertification and have resulted in degradation of almost 35 % of the farmland. Land erosion is a major problem on more than 1 million ha of land. There is no systemic monitoring of soil pollution. Because of land degradation, ecosystems fail to deliver such services as flood control and prevention of frequent disasters caused by landslides and flash floods.357

Poor irrigation practices and deteriorated collector-drainage and irrigation networks contributed to water logging and secondary salinization. Waterlogging and salinization affect 20 % of all irrigated land.358

A significant amount of the arable land is unsown/unused (130,000 ha, mainly in the eastern part of the country). As the EU Partnership Program (2012)359 reports, many of the title

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358 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
owners of these lands have moved away from the area, just abandoning their land because land has no cost and no land taxes are payable on holdings less than 5 ha. Thus, there are a lot of fragmented land holdings (which cannot be used for collateral), where 80% of the plots are hand-cultivated with a minimal use of inputs. This is one of the main reasons for agricultural decline.

In line with the decreasing sown area and reduced yields, cereals production levels also declined over the last 20 years. The decline is especially evident in the case of wheat, its production almost halved compared with the early 90s, and Georgia became even more dependent on imported wheat. Production of permanent crops in Georgia is dominated by grapes. Production of grapes occupy special place in Georgian agriculture due to the favourable natural conditions and deeply rooted tradition of wine-making. Production of hazelnuts emerged after the Soviet times and nowadays this crop represents one of the most important export goods for Georgia.

Outdated skills of farmers represent another major challenge for the development of the economy. Not only they lack knowledge of modern production methods but also entrepreneurial skills necessary to turn the subsistence farms into successful businesses are absent.

Lack of market information systems and export promotion activities create obstacle for sustained development of agricultural production.360

4.5.2.4 Organic farming

Organic production is often described by experts as the future of the Georgian agricultural production. The development of organic agriculture started in Georgia in the 1990s, although its portion of the agricultural sector is still insignificant. According to 3rd National Report to CBD361, about 1000 small farmers were introducing practices based on bio-farming principles; The development of organic farming is largely supported by the Organic Farmers Association “Elkana”. Elkana has been an active advocate of the organic farming and has supported creation of a legislative and institutional environment necessary for the development of organic production in Georgia. In 2006 a “Law on Biological Agri-production” was adopted which regulated issues of organic farming in Georgia. In the frame of reform, legislation related to food and agriculture was abolished in 2010.

The Decree of Government No. 198, of 2013 on Organic Production, defines inter alia organic farming management and rules for labelling and voluntary certification of products. The responsible agency is the MoA. Decree relates to the labelling of food and agricultural products meeting certain production standards so as to be labelled “bio/eco/organic-products”.

359 FAO (2012): Assesment of the Agriculture and Rural development Sectors in the Eastern Partnership countries – Georgia; - EU
361 Ministry of Environment Protection and Natural Resources of Georgia (submitted in 2010): Third National report of Georgia to the Convention on Biological Diversity
There is currently only one internationally accredited organization ("Caucascert’ Ltd) for the certification of organic agricultural food products, established in 2005. In 2011 “Caucascert” Ltd received accreditation of the German Accreditation System, organic certificate of which is valid in the whole EU.

According to 5th National report to CBD, in 2011, 71 producers in Georgia were certified as organic according to international standards; among them is the company Hipp Ltd which is supplied with organic apples by 1,103 small holder 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. Area of certified bio-farms in Georgia has increased from 130 ha- year 2005, to 1,999 ha - year 2011. In 2011, area of bio-farms constituted 0,08% of agricultural lands of the country. According to Country Report (2015), developed by GCAD, “up to now, 29 agricultural entities hold the organic production certificate. Certified agricultural producers operate in various sectors of agriculture, including wine production, production of vegetables, olives, nuts, honey etc. Overall, 0,06% of the total agricultural land (1,042 ha) was certified as “organic” in Georgia by 2011.” Here again, there is the matter of accuracy of data collection and registration.

4.5.2.5 Agrobiodiversity

Georgian agriculture can be traced back to the 5th or 6th millennium BC, when Kartvelian (east Georgian) tribes began to domesticate animals and basic crops such as wheat, barley, oat, rye and legumes such as pea, chickpea, lentil and faba beans. They cultivated plum, cherry, quince and the common grape as well as other varieties. According to archaeological findings, livestock, horse and sheep breeding were well-developed and important branches of farming in Georgia throughout the centuries. Today genetic resources important for food and agriculture, such as crops cultivated in Georgia since ancient times (endemic species and landraces) and their wild relatives (as possible sources of the domestication of landraces), fruit crops, mainly grape and its wild relative species, field crops, wheat (including five endemic cultural species, a wide range of landraces and seven species of wild relatives), barley and other grain and legume crops having the highest conservation value, as well as medical plants are under pressure due to habitat loss, degradation and fragmentation, overharvesting, genetic erosion and pollution.

The majority of local landraces and breeds of domestic animals are at risk of extinction caused by their uncontrolled crossing with introduced breeds. The Georgian bee is threatened with genetic erosion.

Instead of using native stocks, more "modern" seeds, some genetically engineered, are being imported into the country for planting. Along with this, more and more fields are becoming fallow as people move to the cities, and remaining native agricultural varieties are being lost. Research collections and seed banks in Georgia and the region do not have the capacity or

362 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National report to the Convention on Biological Diversity
resources to save these stocks. The Plant Genetics Resources of the Caucasus Program has studied and catalogued many cultivars of agricultural crops in Georgia, but recognizes that many of these are not adequately preserved in seed banks, nurseries and rural farmland in the country.\(^{364}\)

Conservation of Georgian agricultural biodiversity through the elaborate a framework of sustainable use and support of ex-situ and in-situ activities was one of the strategic targets of the NBSAP -1. Among activities were the development of a legislative framework, institutional, administrative and scientific capacity building, inventory and creation of a database, creation of a genetic bank, and educational and public awareness activities.

As stated in the 3\(^{rd}\) National Report to CBD, 2009, “The majority of genetic resources of plants are kept in collections and their seeds are inaccessible to farmers in the amount necessary for reproduction. There are no economic incentives for farmers to implement farm-based conservation.”

This diversity is being continuously lost, with modern agriculture prioritizing production with introduced varieties producing acceptable yields. Local varieties were kept in ex-situ collections and extension centres, which could not continue their work because of the lack of technical and financial means after the country’s independence. Furthermore, natural populations of many species of crop wild relatives are increasingly at risk, as a result of the degradation, fragmentation and loss of their habitats. Cereal wild relatives (wheat and millet) in semi-arid habitats are affected by overgrazing and desertification.\(^{365}\)

In Georgia there is no mechanism that regulates the accessibility to genetic resources and their distribution. The legislation does not require the registration of export and import of genetic resources. Despite of that, with support of international organizations several measures have been implemented to study, assess and conserve agrobiodiversity:

In 2001-2003, with the support of GEF/UNDP, three regions were studied (Racha-Lechkhumi, Svaneti, Samtskhe- Javakheti). Evaluations included the state of fruit species, field cultures and medicinal plants, and target species were identified: forgotten species the conservation and restoration of which are very important for the protection of agricultural biodiversity and development of the economy. The project supported not only the conservation of target cultures, but also their introduction in farms. \(11\) varieties of local endangered cereal were conserved on farms, and local species of fruit were recovered; through promotion of new products at market and degustation events prepared with traditional species have supported their on-farm conservation;

With the financing of Global Crop Diversity Trust, in cooperation with ICARDA, a genetic bank was created on the base of the Institute of Agriculture, that maintains about 2500 samples of field culture plants and vegetables.

\(^{364}\) Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID

\(^{365}\) Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
A gene bank was established at the institute of crop-farming. The bank is equipped with modern equipment and computer facilities and a working database. **3,057 samples of field and vegetable crops are currently being stored in the gene bank; 1,519 samples of fruit and vine varieties are available at the institute of horticulture, viticulture and wine making.** On-farm conservation of old Georgian endangered, traditional agricultural crops is also being conducted. The traditional cultivation of 10 wheat and legume varieties (tsiteli doli, dika, barley, rye and millet), (cicer, bean, lentil, cowpea and chick pea) and 1 technical (flax) variety have already been restored on local farms of Samtskhe-Javakheti. 22 local apple species have also been collected; saplings have been cultivated and handed over to the farmers in Samtskhe-Javakheti.366

The gene bank collections of Agricultural University, Lomouri Agricultural University and Botanical Garden have been supplemented with new specimen.

Elkana in cooperation with MoA and Agricultural University prepared an electronic catalog of agrarian biodiversity of Georgia with support of GIZ – SMB Project.367 The catalogue combines 824 indigenous cultural plants and domestic animals, as well as local selective species. These varieties are divided into four main categories. These include: the vine (251 varieties), fruits and berries (317 varieties), field crops and vegetables (217 species) and the agricultural and domestic animals (39 species). The catalogue will set up a base for the inventory of genetic resources important for food and agriculture, the legislation of varieties use and availability of genetic resources, and the ratification and implementation of the Nagoya Protocol to the Convention Biodiversity Convention; Currently, MoENRP , with support of GIZ, is developing a new “Law on Biodiversity” is underway, that includes special chapter on ABS – (Access to genetic resources and their fair and equitable sharing of benefits arising from their utilization).

Georgia’s agroecosystems are the economic basis of Georgian agriculture, while the local plant and animal landraces, as well as microorganisms and fungi that take part in food production, have not only cultural but also great economic and scientific value. Thus, and against the background of global climate change, the conservation and sustainable use of local agricultural biodiversity is of great importance for ensuring the country's long-term food security.

GIZ – SMB project supported farmers association in Dedoplistskaro to establish farming system, which shows higher ecological tolerance given the effects of climate change. Concept for sustainable agriculture with increased tolerance towards effects of climate change is introduced in semi-arid areas of Georgia.368 Modern techniques have been introduced in climate adapted wheat cultivation369 that protects soil and ensures better

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366 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity
368 Goenner, Ch.; Weigel, O.; Kolbin G.(2014): Concept on “Climate-adapted Agriculture in East Georgia” – GIZ-SMB project
369 [https://www.youtube.com/watch?v=GM0OsMPS25U&index=1&list=PLexduQs86HGDIvt6YyjUZquaS7I_LaA5](https://www.youtube.com/watch?v=GM0OsMPS25U&index=1&list=PLexduQs86HGDIvt6YyjUZquaS7I_LaA5)
Several educational/promotional materials have been developed and provided to Dedoplistskaro farmers. Experience has been shared and in adjacent agricultural plots farmers use the same approach (disc-cultivation for soil-preparation without burning after harvesting).

In order to restore the scientific-research activities in agricultural sector, the government of Georgia established the LEPL Scientific-Research Center of Agriculture (SRCA) in 2014. The entire infrastructure of the LLC “Agro” and N(N)LE „Agro-Cartu“ bases have been assigned to SRCA. The SCRA has the following obligations with regards to agricultural biodiversity conservation:

- Explore-study, rehabilitate and develop local gene pool of the annual and perennial crops;
- Set up the genetic bank;
- Observe, evaluate and adapt the introduced species and varieties of crops in Georgia;
- Arrange the standardization and certification systems for planting and seedling materials;
- Study the land pool and restore the soil fertility of Georgia;
- Endorse the organic production, promote the ecological food and harmonize it with international standards;
- Explore, restore and improve the population of local breeds of agricultural and domestic animals, poultry, fish and useful insects of Georgia; Research and adaptation of imported breeds.

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.

The seventh strategic direction of the new Agricultural development Strategy for 2015-2020 includes measures for maintaining good agricultural practices, biodiversity and environmental sustainability programs, support to gene bank development and management for conservation of agrobiodiversity and endemic species as well as promoting climate smart agricultural practices.

In order to improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity (Global strategic goal C) NBSAP -2, sets out national targets C1.- C5. For the purpose of conservation of endemic agricultural species and landraces enhancement of their on-farm and ex-situ conservation an raising of the level of their recognition of their value by the public.

https://www.youtube.com/watch?v=uD8LSi738io&index=2&list=PLexduQs86HGDiVt6YylUJZquaS7L_LaA5
371 http://srca.gov.ge/
372 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National report to the Convention on Biological Diversity
4.5.2.6 Pasture management

Georgia has ancient traditions and harmonious attitudes towards nature by local populations, and diverse traditions of their sustainable consumption of natural resources. These traditions have been thoroughly studied and documented. Though many of these traditions are lost or altered in the Soviet and recent periods due to a “consumer attitude” to nature.

Georgian laws “On Soil Protection” (1994) and “On the Conservation of Soils and Improvement of Their Fertility” (2003) define prohibitions as well as activities aimed at prevention excessive grazing in the highlands of Georgia. These laws prohibit grazing above specific altitudes; in order to prevent erosive processes and maintain natural cover in the highland regions vertical grazing and pasture rotation practices should be obeyed.

However, in reality these legal requirements are not fulfilled because of the subsidiary regulations have not been elaborated. There are no official documents on migration routes of the livestock. No document defining the norms of pressure on pasturelands is told in the 3rd National Report to CBD.373

Overgrazing is one of the most significant factors deleteriously affecting biodiversity. Overgrazing is most acute on sub-alpine and alpine pastures of the highlands and in arid ecosystems of southeast Georgia, where numerous domestic livestock (especially sheep) and unregulated grazing have resulted in soil erosion, and reduction of plant cover composition and productivity, which creates ideal conditions for spreading invasive plants. The MoA has a significant role in the protection of agro-biodiversity and in defining rules for pasture use. Pasture use is regulated at the level of local authorities.374

State-owned pasture lands were handed over to local districts for administration. The local administrations issued to individuals or companies grazing permits for 10–15 years for pastures on most of these lands. The permit indicates a theoretical number of permitted animals but specific regulations on those contracts and monitoring and controls are virtually absent.375

The practice of moving livestock between summer and winter pasture is not widely used, and sheep flocks tend to graze all year long in communal winter pastures close to villages. Furthermore, in order to improve the quality of the grass and the productivity of the pastures, shepherds burn off the vegetation in spring. By contrast, distant summer pastures tend to be underutilized or abandoned and this alters their soil properties and botanical composition, and affects the fauna, depending on these types of habitats. Furthermore, when state-owned lands were privatized, many sheep migration routes became private and were cut off, so that every year shepherds who wish to transfer sheep from winter to summer pasture and back face problems.

373 Ministry of Environment Protection and Natural Resources of Georgia (submitted in 2010): Third National report of Georgia to the Convention on Biological Diversity
375 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
Pastures in Georgia have been under an increasing overgrazing pressure. The total amount of livestock in Georgia has not been reduced since 1994 (FAO 2014). At the same time, milk and especially meat production reduced dramatically, suggesting that unproductive cattle breeds sustained by traditional free-ranging feeding practices and by poorly managed state and communal grasslands has resulted in overgrazed pastures.

Pastures are totally excluded from privatization. Thus, monitoring of pastures at the expense of the pasture leaseholder will be imposed in the leasing contract. For land that has already been privatized, these measures cannot be applied.

The Georgian semi-arid zone (Kakheti) has been historically used as winter pastures (from September to April) for livestock (mainly sheep), moving from the north-east and central parts of the country, with seasonal migration from summer pasture to winter pasture. However, there are insufficient winter pastures to cope with the concentration and recent increase of the flocks, 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 Kakheti - Dedoplistskaro municipality, due to double and triple utilization of pastures. In Dedoplistskaro, degraded lands, which are on the verge of desertification cover 5,000 has area.

Introduction of the degraded pasture restoration and sustainable pasture management practices is supported by the UNDP/GEF project for “Sustainable management of pastures in Georgia to demonstrate climate change mitigation and adaptation benefits and dividends for local communities” under the framework of ‘Clima East’. 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.

Pasture monitoring guideline provided by GIZ –SMB Project is used for development of pasture management plans in PAs traditional use zone.

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376 FAO (Food and Agriculture Organization). 2014. FAOSTAT Statistical Database. Rome
378 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National report to the Convention on Biological Diversity
4.6 Protected areas system

The main instrument for protection and conservation of biodiversity in Georgia is the development of a protected areas system. By contrast to the earlier approach, which envisaged the establishment of some separate and strictly protected reserves, the Law of Georgia on Protected Areas System (1996) provides the legal basis for development of a system of protected areas of different regimes and creation of network of PAs. Although the primary function of protected areas is to ensure biodiversity conservation, they also have a great scientific research and socio-economic value for the country, especially for development of national and international tourism. Development of a unified PA network is one of the main challenges of the PAs system. Some sensitive areas in the country have still not been designated as PAs.380

4.6.1 Coverage and Representativeness

Expansion of PA system

First officially declared protected area in Georgia was established in 1912 – Lagodekhi State Nature Reserve. Under Soviet legislation, 15 nature reserves and 5 state forest hunting farms were established in Georgia. Strictly protected areas covered 2.4 % of the country’s territory.381 System included about 2% of forests.

Figure 31: Coverage of Protected Areas, Georgia (January 2015)

Borjomi-Kharagauli National Park (area 57,980 ha), formally established in 1995 by a decision of the Cabinet of Ministers was the first national park in Caucasus that was

381 Kakabadze, E.; - WWF Caucasus Program Office (2012): Protected Areas of Georgia, Situation Analysis, for NBSAP updating – GIZ, SMB Project
established according to new standards. Together were designated 3 managed nature reserve (Tetrobi, Ktsia-Tabatskuri and Nedzvi).

In 1996 existed five hunting farms were legally designated as managed nature reserves. That was followed by designation of Kolkheti PAs in 1998, comprised with areas of different management categories of PAs (IUCN I, II, IV) and represents coastal and lowland wetlands – marshes, peat bogs, marshy forests, dunes, Paliastomi Lake and marine area of the Black Sea - 45,083 ha in total. In 1997 these territories were included in the list of internationally important wetlands of the Ramsar Convention.

Next significant expansion was in 2003, when Parliament of Georgia passed the Law “on Establishment and Management of Tusheti, Batsara-Babaneuri, Lagodekhi and Vashlovani PAs”. By this one legal act 5 new PAs of different categories (IUCN II, III, IV, V) has been designated and 3 existing (IUCN I) expended. As a result, the total area of PAs (IUCN categories I-V) was enlarged by 149,339 ha.

By 2005 the system of Protected Areas included the following: 18 strict nature reserves (IUCN category I, in all 171,673 ha), 4 national parks (IUCN category II, in all, 211 003 ha), 3 natural monuments (IUCN category III), 8 managed nature reserves (IUCN category IV, in all, 20,093 ha) and 1 protected landscape (IUCN category V, in all, 27 903 ha), 430,762 ha in all, which is 6.2% of the entire Georgian territory.

In 2005 -2009 area of PAs system has increased by 64,889 ha as a result of the establishment of new protected territories and the extending of existing ones. By the end of 2009, there are 14 strict nature reserves, 8 national parks, 14 natural monuments, 12 managed reserves and 2 protected landscapes in Georgia. Their total area is 495,954 ha (among these, marine area occupy 15,743 ha), or around 7.14 % of the entire territory of the country.

Within 2010-2014, 3 new national parks, 7 nature reserves and 27 natural monuments founded in Georgia. Therefore, as compared to the year 2010 space of protected areas has increased by 104 643 ha and as of 2015 there are 87 Protected Areas including 14 Strict Nature Reserves, 11 National Parks, 19 Managed Reserves, 41 Natural Monuments and 2 Protected Landscapes, with total area 600,598 ha, that constitutes 8.6% of the total area of the country.

382 Ministry of Environment Protection and Natural Resources of Georgia (2009): Third National Report of Georgia to the Convention on Biological Diversity
384 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity
Table 30: Protected Areas of Georgia (As of January 2015)

<table>
<thead>
<tr>
<th>Protected Area</th>
<th>IUCN Category</th>
<th>Quantity</th>
<th>Area (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strict Nature Reserve</td>
<td>I</td>
<td>14</td>
<td>140,672.3</td>
</tr>
<tr>
<td>National Park</td>
<td>II</td>
<td>11</td>
<td>352,566.4</td>
</tr>
<tr>
<td>Natural Monument</td>
<td>III</td>
<td>41</td>
<td>2,257.7</td>
</tr>
<tr>
<td>Managed Nature Reserve</td>
<td>IV</td>
<td>19</td>
<td>70,392.8</td>
</tr>
<tr>
<td>Protected Landscape</td>
<td>V</td>
<td>2</td>
<td>34,708</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>87</strong></td>
<td><strong>600,597.2</strong></td>
</tr>
</tbody>
</table>

Appendix 13 - A Map of PAs of Georgia; Appendix 14 - Detailed information on PAs

In spite of the expansion of the coverage of protected areas, the territorial distribution and the degree of coverage of important conservation areas is not sufficient for ensuring the long-term conservation of the country’s biodiversity.385

In 2015 Vashlovani PAs was awarded by European Diploma.

Representativeness of PAs and Ecological connectivity

About 60% of PAs is covered with forests. Regarding other ecosystems there is no available data about area of each type of ecosystem.

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. In respect of geographical coverage of the country and representativeness of Georgian biomes, critical gaps still exist, in particular in the Central Caucasus Mountain Range.

The need for the conservation of ecological corridors is underlined in NBSAP-1, which defined the following activities in this regard: assessment of the Surami and Gombori ranges as biological corridors, elaborate the management plan for the sustainable use of these territories; elaborate the State program of conservation and protection of flood plain forests.

In 2002-2008, under the framework of the WB/GEF – Georgia Protected areas Development Project with the aim of integration of biodiversity conservation into the production landscapes between protected areas, ecological corridors were identified, including the Alazani floodplain forests and the Davit-Gareji Protected Landscape; respective management plans and draft laws were developed. Though the documents have no legal status.386 According to guidelines, Alazani flood-plans were envisaged to become PA under the category VI- multiple use area, connecting PAs of Eastern Caucasus, David Gareji Protected Landscape (IUCN

category V) would have connected PAs of category I-IV on Iori Plateau.\(^{387}\) Also network of different categories (II –VI) of PAs was planned in Central Caucasus (Racha-Lechkhumi-Svaneti).\(^ {388}\) Due to changed priorities of GoG in 2005, none of these PAs have been established. Alazani floodplains conservation had not been taken under the agenda of GoG, but some practical activities were implemented within this area to support regeneration of degraded plots.

No protected area network is yet developed in Georgia, and neither is there a spatial development plan in order to strengthen the existing protected areas and transform them into a network. Protected areas appear isolated.

The Caucasus Eco-regional Conservation Plan was adopted at the 11th Caucasus Biodiversity Council Meeting in March 2011. It provides for Georgia, as well as Armenia and Azerbaijan, a comprehensive ecological network map with corridor planning both within the country and with neighbouring countries.\(^ {389}\)

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 Eco-corridors in Lesser Caucasus will be supported by the regional project of “Ecological Corridors in Caucasus”, 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 establishment of protected landscapes, multiple use areas, ecological corridors and general introduction of landscape planning principles in Georgia are subject to certain difficulties, mainly caused by absence of a spatial planning system and full land cadaster data resulting in an inability to achieve consensus on the development perspectives of the same territorial unit at central and local levels as well as between sectors.\(^ {390}\)

According to NBSAP-2 in order to improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity (Global strategic goal C, national targets C1.- C6.) for the purpose of conservation of the Black Sea and inland waters’ biodiversity, creation of the new marine protected area, development of PAs network is planned.

\(^{387}\) Georgia’s Protected Areas Programme (GPAP), NGO (2006): Conservation Management Guidelines for Proposed David Gareji Protected Landscape and draft Law, GEF/WB - Georgia Protected Areas Development Project

\(^{388}\) Georgia’s Protected Areas Programme (GPAP), NGO (2006): Management Guidelines for Centralm Caucasus Planning Region, draft Law, GEF/WB - Georgia Protected Areas Development Project

\(^{389}\) United Nations Economic Commission for Europe (ECE) (2015, draft): Environmental Performance Reviews (EPR)

4.6.2 Conservation areas of global importance

**Ramsar sites**

Georgia has two Ramsar sites: the Ispani II and Central Kolkheti wetlands that are part of the existing Kolkheti PA and Kobuleti PA, Lakes and wetlands on Javakheti Plateau are in the list of potential Ramsar sites.

**Important Bird Area (IBA)**

The Georgian Centre for the Conservation of Wildlife (GCCW) in cooperation with Birdlife International list of 31 Important Bird Areas (IBA) in Georgia, some included in Protected Areas. A map of these sites is presented in the (Appendix 15 – Map and summary of Important Bird Areas in Georgia)

**Emerald Network**

In the period 2009–2011, within the framework of the joint Council of Europe and EU Programme for the Development of the Emerald Network in Central and Eastern Europe and the South Caucasus, a scientific database and maps were prepared and 20 sites of special conservation interest with a total area of 596,475.63 ha were identified. However, of these 20 sites, the eight conservation areas so far identified and nominated are located within the borders of existing protected areas. Selecting sites of special conservation interest outside protected areas would bring added value. GIZ supports to further identification and designation of Emerald Sites.

**UNESCO World Heritage Sites**

The process of identification and nomination of potential areas for inscriptions on the UNESCO World Heritage List was re-initiated in 2011.

**Biosphere Reserves**

In 2010, BMZ/KFW funded a feasibility study for the establishment of the Kazbegi Biosphere Reserve. The study recommended expanding the existing territory of the National Park.

4.6.3 Legislation and Policy

At the time of its independence (1991) Georgia’s protected area system, modeled on the “zapovednik” system of the former Soviet Union, consisted of a number of small, strictly protected reserves isolated from one another (about 170,000 hectares), had relevant legislation – the Law on Nature Protection (1958) and was managed by a subdivision of the forest management institution. The reserve system protected less than 2% of forests within

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391 Ecodit (2009): Biodiversity Analysis Update for Georgia, USAID  
392 United Nations Economic Commission for Europe (ECE) (2015, draft): Environmental Performance Reviews (EPR)
Georgia and was managed mainly by excluding uses other than scientific research and limited recreation.

The management of reserves system developed under the forest management institution emphasized strict protection and research. This approach to protected areas management was appropriate when Georgian forests were managed for protection, and timber and timber products were obtained from Russia. Under the transition, Georgia was increasingly turning to its forests and other natural resources to meet domestic demand and to generate exports. In that period, Georgia had a unique chance of legal and institutional reform on the one hand and the risk of degradation of the heritage on the other. Under Georgia’s developing market conditions, there was a need to expand both the size and mandate of protected areas management to better address issues in the sustainable use of natural resources, the role in promoting the country’s tourism potential and the same time maintain the heritage unimpaired for future generations.

In 1995, Georgia began the process of expansion and diversification of its protected area network.

The 1996 Law “on the Protected Area System” (“the PA Law”) (136-IIS; March 7, 1996) defines new protected area management categories (corresponding to IUCN categories) and their establishment procedures. Thus, the law became a pioneering legislation of this kind in the region and presumably remains the most internationally compliant among similar national laws in the countries of the region.\(^{393}\) (Appendix 16 – Georgian PA categories).

This framework law has created a legal basis for the harmonization of nature conservation and socioeconomic development through providing the means for the setup of a network of protected areas of various categories. The law builds upon universal values that are the foundation of the national PA categories in line with IUCN guidelines. The law also allows the establishment of PAs of global importance such as a Biosphere Reserve, a Ramsar site and a World Heritage site; the concrete responsibilities and competences of each player are also provided and a multitude of relationships are enabled. Based on this law a number of new PAs have been established, and many existing ones have been expended and modified.\(^{394}\) Law “on Status of PAs” (2007) defined the categories of all existing PAs.

Each PA has to be designated by the individual Law. Only the Parliament is authorized to pass the laws on designation and abolition of all categories of PAs that provides PAs with firm guarantee. Boundaries of PAs are described in the appropriate law. Boundaries almost all of PAs are demarcated and registered.

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\(^{393}\) Kakabadze, E.; - WWF Caucasus Program Office (2012): Protected Areas of Georgia, Situation Analysis, for NBSAP updating – GIZ, SMB Project

\(^{394}\) 2014 -2020, National Biodiversity Strategy and Action Plan of Georgia (2014) – supported by GIZ, SMB Project
Other laws related to protected areas include the “Law on Fauna” (540–RS, 26 December 1996), the “Forest Code” (2124–IIS; 22 June 1999), the Law “On Environmental Protection” (519–IIS; 10 December 1996), and others.

A number of bylaws regulate different issues related to protected areas and their management.

The legislation on protected areas needs further development to include more details for the improvement of PA management; a full set of sub-laws and regulations need to be elaborated and adopted.

Threats such as contamination, degradation of neighbouring ecosystems, disturbance, etc. posed to the territories adjacent to protected areas by use of natural resources, non-sustainable agriculture, development, etc. remain a serious issue. According to the framework law, the responsible institution (APA) has the right to implement some control on the territories outside a PA for avoiding or mitigating direct or indirect negative impacts on the PA. Nevertheless, this is insufficient because other relevant legislation fails to support such control.

*Georgia’s National Protected Areas System Development Strategy and Action Plan* for Georgia were developed in 2009 and included a ten-year strategy and a five-year action plan. This document was never approved and is planned to be updated.

The political situation, lack of legislation outside protected areas and lack of capacity are preventing the establishment of a comprehensive protected area network in Georgia. In Kolkheti National Park, part of a Ramsar site was allocated for construction of the Kulevi terminal, and part of Kazbegi Protected Areas was allocated for construction of a hydroelectric power plant. The country’s drive for economic development, in particular the country’s hydroelectricity generation and regional development strategies, are preventing progress towards the development of the network.395

According to EPR, draft 2015, “Efforts such as the identification and nomination of potential areas for inscription on the UNESCO World Heritage List – which were re-initiated in 2011 by WWF and the International Union for Conservation of Nature (IUCN) with support from the MAVA Foundation – as well as designation of Ramsar sites and UNESCO biosphere reserves, are positive steps in this direction. The Government is planning to develop PA network through designation of PAs of Category V and VI connecting other categories I-IV to insure achievement of conservation goals in production landscape.”

4.6.4 Institutional set-up and management

In the Soviet period, Reserves and forest-hunting reserve were administered by the Main Agency of Reserves and Hunting Forests that was part of the Ministry of Forestry. In 1992-1997, the Agency was restructured into the Principal Bureau of Reserves and Hunting Farms

395 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
of Georgia and over the years was either subordinated to different ministries or functioned as independent entity.

After October 9, 1997, protected areas in Georgia were managed by the Georgian State Department of Protected Areas, Reserves and Hunting Farms (SDPA) as a supreme executive authority, through the filed administrations, while the Ministry of Environment Protection and Natural Resources was the agency for the State policy of establishment, management and control of protected areas system through its structural unit - Protected Areas Division of the Biodiversity Conservation Department. The old-fashioned structure of the SDPA was insufficient to meet its expanded mandate.

The important attempt to strengthen the SDPA through reorganization, improving qualification of staff and better equipping the organization can through the effort of a GEF/Wold Bank supported Georgia Protected Areas Development Project (GPADP) (2002-2008) aimed to update its mandate (assist in the protection and use of the country's landscape and biological diversity, managing modern PA system) in partnership with the USDoI.

The proposed organizational chart reflected a divisional structure which would have met the three main functions of the SDPA: operations, planning, and administration. The Division of Operations would have been responsible for establishing operational policies and programs for resource and visitor management, enforcement, and outreach, as well as ensuring their consistent implementation by individual protected areas administrations. The Division of Planning would have been responsible the development of system and unit management plans and maintaining the land status, inventory and monitoring data bases using Geographic Information System (GIS) technology. The Division of Administration would have been responsible for preparing and executing the annual budget, managing and monitoring all procurement, maintenance and reporting of the financial management system, and carrying out analyses of revenue generation and tourism trends. Comprehensive job descriptions of the professional positions at the DPA headquarters were provided. The process had begun but after the Rose Revolution, in 2004 Government's structure changed, State Departments were abolished and SDPA had become the subordinate agency of the Ministry of Environment Protection and Natural Resources - Department of Protected Areas (DPA) (again the supreme executive power within the Ministry).

DPA was managing PAs with the field administrations – territorial bodies, but some of them - supported by the donor financed projects were legal entities of public law (LEPL-having opportunities and legal provision of income generation and retention). It comprised of three units: administrative, planning, and development.

As a result of support to the DPA from the management of the MoENRP as well as the general backing from the Government expressed in the increased State budget funding beginning for 2005, the Project interventions in support to this institution gained favorable results. Based on WB mission’s evaluation, the DPA made outstanding progress in terms of

gaining capacity to run the national system of protected areas, strengthening oversight of the management of individual PAs and advocating for interests of the PA network within the MoENRP.\textsuperscript{397}

Currently, from 2008 main authorized institution for management of the system of PAs in Georgia has been reorganized into the Agency of Protected Areas (APA) and acquired a new legal status of a LEPL under the State control of the MoENRP. At the same time due to reorganization of MoENRP there is no relevant unit in the Ministry having the mandate to keep hold of State policy and control. With this change administration of individual PAs ceased to exist as discrete legal bodies and came under the institutional body of the APA. APA is centralized; central apparatus is involved in micro- day to day management and decision making process of field administrations. On one hand this institutional change is an illustration of centralization of the network of PAs, which based on the best practices isn’t a desired course of action. On the other hand, this change reflects increasingly strong ownership and leadership of the sector by the APA. The favourable enabling environment has been created for making decisions at the central level. Simultaneously because of the lack of delegation of authority to the local level the operational flexibility of the units closed to the resources is limited.

APA consists of 7 divisions: \textit{Planning and development} (for conducting and participating in PAs system’s planning, coordinating management planning, supervising the boundary demarcation process, managing GIS, coordinating programs carried out on PAs, for planning, coordinating and supervising scientific research, biodiversity monitoring, resource protection, rehabilitation and use strategy, ecotourism development, conduction training activities for field staff), \textit{international relations and projects’ management} (for coordinating programs carried out on PAs and in support zones, fund-raising, cooperating with international organizations, supporting trans-boundary cooperation), \textit{economical} (for financial management, procurement and maintenance of equipment and office running of headquarter and PAs), \textit{administrative} (for human resource management and archiving documents), \textit{marketing and public relations} (for promotion and supporting ecotourism development on PAs and PRs), \textit{legal} (for legal support of APA), and \textit{inspection/control} (provides preventions of law violations by staff members as well as delivers the information to law enforcement authorities regarding violations on PAs).

APA manages PAs through \textit{Territorial Bodies} (Field Administrations). Field Administration is composed of 2 divisions – \textit{protection and administrative}. Resource management position is included in the protection division (with 1 or exceptional case 2 staff positions per PA) other staff are rangers, and visitor service position – in the administrative division (with 1 or exceptional case 2 staff positions per PA).

Today there are 24 Territorial Administrations;\textsuperscript{398} some of them manage more than one PAs.

\textsuperscript{397} The World Bank - Supervision Mission (January 24 – February 2, 2007); Aide Memoire – “Georgia Protected Areas Development Project” (P048791 GEF TF No. 023968 GE)

\textsuperscript{398} Four PAs Administrations are located on the de-jure Georgian territory that is not under de-facto control of the state.
According to the PA law, APA directly manages protected areas of categories I-IV; Protected landscapes as well as, in exceptional cases, managed reserves, biosphere reserves, world heritage sites and Ramsar sites may be managed together with other organizations. According to the PA law, APA has the function of control over multiple use territories. Tusheti Protected Landscape has been managed by the Tusheti Protected Landscape Administration created at the Akhmeta municipality council.

Forms of PA ownership vary depending on the PA category. PAs categories of I-IV and core zone of biosphere reserve are owned by state; In PAs of category V and VI other forms of ownership are permitted alongside the state ownership. Ownership of Ramsar sites, World Heritage sites and associated resources depends on the category of protected areas where these are established.

According to the framework Law individual PAs should have scientific – consultative councils with local participation, which could fulfill the need of public participation in the PA management and decision-making process and composed of a wide range of relevant stakeholders. Consultative councils were established for some protected areas, though there has been very little, if any activity of these councils. Councils were not operational, because they hadn’t compromised the relevant local stakeholders but the representatives of top management from the MoEPNR. Councils were abolished, but new councils aren’t created.399

According to charter of the APA (approved by the Order of the Minister of ENRP #3 of May 10, 2013), Consultation Council has been re-established at APA (that was abolished as a result of reorganization in 2005) in order to increase public participation in the management of protected areas through comprehensive discussions of problems and provide methodological support and recommendations.

According to the legislation, the MoENRP, is an executive Governmental institution, which ensures state governance in the field of environmental protection and rational use of natural resources as well as in the field of ecological safety of population. In the field of protected areas MoENRP is responsible for developing the national policy on designation, functioning and management of protected areas system, as well as coordination and control of activities carried out. There is no special unit in the Ministry, and as such the Minister and Deputy Minister are responsible for supervising the APA and all staff on demand of supreme management.

According to “Law on PAs” (framework law) (1996) PAs are managed on the bases of six-year management plans (MP) that are approved by the Resolution of the Government.

In 1990s first comprehensive management plan was elaborated for Borjomi-Kharagauli National Park by interdisciplinary team of experts; similar comprehensive management plans were elaborated for the Eastern Caucasus and Iori Plateau regions and management guidelines for Kolkheti Wetlands, considered wetlands of international importance.400 MPs

400 Chemonics International Inc. (2000): Biodiversity Assessment for Georgia, USAID
developed until 2006 were comprehensive MPs with all needed resources (including human and financial) and time-frame.

APA’s recently developed standards of the preparation of MPs (that are general, without action plan and indicated resources) and approved by an order of the Minister of Environment in 2011, that has changed in 2014 and has approved by the order of the Minister of ENRP #110, March 12, 2014).

Most of the management planning efforts has been so far funded by donors under various projects. Currently many PAs have approved MPs, MPs are being developed for a number of PAs, and management of PAs without MPs is conducted by special interim/temporary regulations approved by resolution of the Government.

There is a lack of PA management planning capacity both at the central apparatus and at territorial units (field administrations). There is also a limited capacity for the planning and implementation of specific conservation measures such as species and habitats conservation management plans, species recovery and reintroduction plans, etc.

To summarize, despite of many deficiencies, PA system succeeded in Georgia: The main factor is existence of “Law on PAs” and concept that is exceptional among all courtiers of East Europe region – based on universal values and the same time taking into account country’s characteristics. That’s why so strong international support was provided from 1996 to establishment of PA system in Georgia. There are still conflicts with “development” projects, especially due to HPP constructions, not only hampering the designation of PAs (e.g.in Racha-Lechkhumi-Svaneti region), but also taking lands from existing ones (e.g. Khazbegi NP, Kolkheti PAs). Besides, there are also some “hidden” mechanisms, impeding integrity within PA – “special cut” for maintenance of power lines and gas pipes, this regulation comes from forest-related legislation.

- coverage of PAs increased from 2 to 9 % of country’s territory, but no ecological connectivity yet;
- new PAs and administrations are established, boundaries are demarcated;
- the most supported spheres of management are visitor service and development of infrastructure;
- resource management (including inventory and species rehabilitation) and monitoring measures are being implemented, but are very limited;
- public awareness on PAs is increased, but public relations and eco-education activities isn’t focused on the main important function of PAs – sustaining of life-support system;
- law enforcement is strengthened, but still, measures are not effective due to lack of facilities, rights and qualification;
- institutional strengthening is underway, personal are being trained, but to maintain qualified staff isn’t easy due to low salary, especially in the territorial administrations; data and financial management systems are outdated; own revenues of protected areas are increased and APA can retain all of these revenues for financing its activities;
- management effectiveness assessment is applied only for PAs supported by CNF.
Strong international support and commitments taken by GoG, are promising for further development of PA system.
4.7 Education

Georgia joined Bologna Process in 2005 at Bergen Summit and in 2010 Torino process.

On April 8, 2005, Law on General Education was adopted. In December 21, 2004, Law on Higher Education was endorsed and in March 28, 2007 Law on Vocational Education has adopted.

National Qualifications Framework (NQF) was approved by a decree N120/N of the Minister of Education and Science of Georgia on December 10, 2010. The document includes all the qualifications and different levels of general, vocational and higher education competences that exist in Georgia.

One of the priority area of ENPI – National Indicative Program for 2011- 2013 was - Sub-priority 3.3: Education, skills development and mobility, with Specific objectives: Support human resource development; strengthen links between education, training, skills development and the needs of the labour market, facilitating access to jobs and mobility. Support further modernisation of education and training systems, including vocation education and training, in order to enhance socio-economic development, to facilitate integration into the European Higher Education Area and the European Research Area.

Currently, educational system in Georgia consists of pre-school education; general/school education (elementary stage - 1-6 grades, basic stage - 7-9 grades, secondary stage - 10-12 grades); vocational education (5-level) and academic higher/university education (bachelor’s, master’s and doctoral).

4.7.1 VET and Higher education

Georgia basically commenced vocational education system reform in 2007, for the purpose of harmonization with the European systems. According to Georgian Law “on Vocational Education” (adopted in 2007, amended in 2010) the general goal of vocational education is: a) Creation of the integrated vocational-education space providing life-long, many-staged and wide-range education opportunities; b) Support to professional development of the individuals; c) Ensuring training of labor market-oriented, competitive and highly qualified professionals; d) Support to employment of the individuals, including support to launching of their own business or self-employment; e) Creation of the education-entrepreneurial partnership system in the sphere of vocational education, promotion of participation of the employers of various sectors in the education programs planning and implementation.

Students may receive vocational education after completion of 9th grade. No age limitations exist in vocational education.

In the sphere of vocational education, the National Qualification Framework includes 391 vocational specialties in 10 sectors. There is only one environmental/ecology sector/specialty, 9 subsectors/specializations and 4 vocational specializations.

Currently 14 sector councils operate in the sphere of vocational education, their main goal is support to creation of the qualifications system and its further development (catalogue of qualifications, professional standards) in accordance with the requirements of labor market.
There are 2 professional standards of environmental/ecology sphere: Environment protection technician and Specialist of ecological control of the food products.

As for Higher education, among 28 studied universities, 10 of them offer bachelor’s programs for environmental specialties, 10 universities offer master’s programs for 19 specialties, and 7 universities offer doctor’s programs for 10 specialties.

The herein report focuses on **Vocational and Higher Education connected to forestry education**.

One of the thematic directions within National Forest Program is **Human Capacity Development in the Forestry Sector and Environmental Education and Awareness-Raising**.

**Table 31: National Forest Concept on forest education:**

- Demand for forestry skills fell massively in the period after regaining independence; many qualified people left the sector. Measures for a reversal of that trend have been taken, with new programmes being developed and teaching staff being brought into higher education institutions from Georgian and foreign academic, research, advocacy and project implementation organisations.
- Public schools, especially in rural areas, should include basic knowledge on the Georgian forests, tree species, and principles of sustainable use of natural resources in their courses. University courses in biology/life sciences should have sufficient amount of hours that students spend in the field.
- Special education in forestry should comprise: professional education and short-term training of the existent employees provided by universities, state forestry agency, or in cooperation between both; higher-level education of forest scientists/ engineers/ economists (MSc and MBA levels); education of academicians in forest science, for successful implementation of cutting edge research in the field and educating new generation of professionals. It is envisaged that special forest training centres and courses should be established soon, especially in areas where practical forest training in the field is possible.

Academic education in forestry is implemented in Agricultural University of Georgia and Ilia State University. Cooperation with Ilia state University started in 2012 based on MoU between ISU, DAAD and GIZ. Aim of the cooperation was to strengthen the existing master courses with development of curricula and teaching materials in 5 topics: Ecology (MSc), Forestry (MSc), Natural Resources (MSc), Sustainable Forestry (MBA), Natural Resources Management (MBA); Besides, conduction of master courses by international experts’ is financed by GIZ. 27 students were enrolled all five master programmes for academic year 2012-2013; 31 students in academic year 2013-2014; For the academic year 2015-2016, ISU received 70 applications, only 23 students were selected for the different MSc programs.

High demand of qualified foresters on operational level in the field exists. This requests the introduction of a vocational educational program “Forest Worker”, similar to the programs existing in several countries of Europe. Following the procedures of the MoES, three operational (professional) standards (Forest Guard, Wood-cutter and Forestation Specialist) were submitted from NFA to the MoES and the NCEQE (National Center for Educational Quality Enhancement) for approval. After approval – expected for spring 2016 – a two year VE program can be initiated. Two Vocational Education Centres (under MoES), one in West, one in East Georgia expressed their willingness to carry out such a program. GIZ will support
this endeavor with training of teachers and the necessary equipment to realize in an appropriate manner the strong practical oriented education.

NBSAP-2 identifies activities addressing improvement of professional knowledge and scientific base of forestry, rangeland management, pastures, hunting, fishing, and protected areas.

4.7.2 Environmental Education (EE)

The first Intergovernmental Conference on Environmental Education was held in Tbilisi in 1977 under the auspices of the UN. About 500 participants from 68 countries were present at the conference. The “Tbilisi Declaration” and recommendations adopted at the conference have created the basis for documents and actions implemented in the field of Environmental Education (EE) throughout the world since.

“The State Program of Ecological Education of the Population” was approved by the Decree of the President #538 as of December 18, 2002. One of the priorities of the program was the increase of the level of the ecological (environmental) education in secondary schools and institutions of the higher education with a pedagogical profile, as well as capacity building of NGOs and informing local authorities, businesses, target groups and the public at large regarding ecological issues. According to the Decree, the Ministry of Education and Science of Georgia (MoES) is responsible for EE-related activities in formal education.

Following to State Program, "National Goals of General Education" was approved by Resolution #84 of Government as of October 18, 2004, stated, that “On the basis of experience gained within the general education system of Georgia, the adolescent shall:… b) be able to maintain and protect natural environment: An adolescent shall be aware of the natural environment s/he lives in, what kind of harm may be caused to the environment by activities of a person, how to maintain and protect natural environment”.

On the basis of the document the National Education Plan (NEP) was developed. It offered student-oriented approach. Out of nine priority competences by NEP is Environmental literacy: “Environmental literacy implies formation of healthy attitude towards the natural environment and this means that the student should understand his/her personal responsibility towards the processes in the natural environment, be able to participate in their protection and restoration.” Thus, the state has recognized the place and role of general education in formation of the environmental awareness.

Several awareness-rising projects had been implemented by different organizations. According to USAID “Biodiversity Analysis Update, 2009”, “Numerous programs and projects address the environmental awareness raising issues, but the end result is not satisfactory. Furthermore, many experts assess the trend as negative – biodiversity conservation is significantly lower priority now in Georgia than 10 years ago (before these projects were implemented) and awareness at the public level remains very low. More focused and long-term visionary programs are required in this field. Programs addressing elementary, basic

401 LEPL Environmental Information and Education Center, Ministry of Environment Protection and Natural Resources (2014): Assessment of Environmental Education in Georgia – GIZ, SMB Project
and high school education may be much more effective, considering the replicable character of such projects (e.g. trained teachers continue teaching, developed materials are used for a long time), mass effect (half million students annually in Georgian schools, plus their parents) and long-term results (school students will later influence all sectors of society).\(^{402}\)

According to 3\(^{rd}\) National Report to CBD, 2009, within the reform of primary and secondary education, attention was focused on the integration of environmental issues (including biodiversity conservation) in the curricula and manuals of certain subjects (biology, geography). This process was supported by the World Bank program of the reform and enhancement of the educational system, which had been implemented since 2001. Program supported the development of planning and improvement of the quality of manuals of primary and secondary schools. Environmental issues were integrated in the corresponding disciplines. Still, biodiversity issues need to be better reflected in the educational programs. The number of qualified teachers in this field is too small and there is a lack of methodological manuals for teachers. The majority of BA and MA programs do not envisage obligatory teaching of environmental issues, especially in private institutions. EE in schools of higher education is inconsequent and it is not integrated in general higher education system. In the Technical Institute of Georgia, the Ecological Education Coordination Council and the National Center of Ecological Training were established. At the Agricultural University a Department of Biosphere Reserves has been founded and lectures were delivered on protected areas. With the support of TEMPUS TACIS, a project was implemented for the purpose of improving the environmental education. Several courses include modules dealing with environmental aspects, offered by Tbilisi State University (TSU) and Ilia State University (ISU).\(^{403}\)

In 2009, the National Education Programs and Assessments Centre, with the support of UNICEF, established educational standards for preschool institutions, aimed at developing environmental awareness and a positive attitude to the environment in children.\(^{404}\)

Considering the importance of EE outlined above as well as the need for formal and non-formal education identified in various chapters of the NEAP-2, it is evident that substantial resources should be devoted to EE. Enhanced formal and informal EE will not only contribute to sustainable development of the country, but also reduce anthropogenic impacts on the environment as well as costs for rehabilitating and restoring injured environment.\(^{405}\)

The Ministry of Education and Science of Georgia has made significant efforts to include biodiversity topics in National Curricula.

\(^{402}\) Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID

\(^{403}\) Ministry of Environment Protection and Natural Resources of Georgia (2009): Third National Report of Georgia to the Convention on Biological Diversity


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

EE (and, in particular, biodiversity education), is not identified as a separate subject block in the National Curriculum for general education. The Curriculum specifies learning outcomes related to environmental/biodiversity education in transparent priority competencies that are integrated in an inter-disciplinary manner and embedded in specific subject’s at all three levels. Apart from transparent competencies, environmental teaching and learning is mainly consolidated in two blocks of subjects: natural and social. In 2012 amendments in the curricula were introduced to add new optional subjects: “Environment and sustainable development”, “Geo-ecology and environment management”, “Monitoring of the natural monuments”, “Principles of conservative biology”.

In Georgia about 11 higher educational institutions offer different levels of vocational and higher education programs in the related professions of Biodiversity and Environment protection.

Communication on biodiversity issues became more intense and focused on various social groups. Starting from the year 2009, the BPS of the MoENRP with support of GIZ is conducting awareness raising campaigns – “The Hour of Garden Bird” (HGB) countrywide, which involves schoolchildren and teachers. About 26,000 schoolchildren of 598 schools participated in the HGB campaign during 2009 – 2015.

A weekly environmental education TV show, “Ecovision”, has been broadcast since 2012. This is the first TV show for children in Georgia that places a particular emphasis on environmental and sustainable development issues. Teachers are trained under SPARE module teach on energy saving in the schools.

In 2013, the “Teacher’s Guidebook to Environmental Education for Grades I–IX” was published as a joint undertaking of the Ministry of Environment and Natural Resources Protection, the Ministry of Education and Science, and UNDP Georgia. The National Centre for Teacher Professional Development under the MoES has a training course for geography and biology teachers on “Environment and Sustainable Development”.

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406 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity
407 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
408 Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity
410 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
Despite of the mentioned progress, according to the experts, public awareness regarding biodiversity issues is still underdeveloped. 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 assessment conducted during NBSAP revision process, 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.

NBSAP-2 identifies activities for the National Curriculum - development of national concept and recommendations on teaching biodiversity aspects, capacity building for the pre-school and secondary school teachers, improved incorporation of biodiversity aspects in the curricula of the 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.

4.7.3 Education for Sustainable Development (ESD)

While the field of environmental education was evolving, the broader concept of “sustainable development” was gaining prominence as well.

Over the last decade, EE has merged with the concept of sustainable development to form the field of “Education for Sustainable Development” (ESD). According to the UNECE, ESD “broadens” EE by integrating it with other subject areas to create a “comprehensive concept ... encompassing interrelated environmental, economic and social issues”. ESD is now internationally recognized as a strategy fundamental for developing a sustainable society. Georgia became a party to the UNECE ESD strategy and action framework in 2005. The Ministry of Environment Protection of Georgia seeks to lay the foundations for ESD in Georgia with the Environmental Education for Sustainable Development: Georgian National Strategy and Action Plan 2012 – 2014. While giving due attention to the Georgian context, this strategy and action plan is also aligned with the vision and goals of the Decade of ESD and the UNECE ESD strategy and action plan.

The GoG has strengthened its efforts to promote better environmental education and bring together activities that have been scattered to date. To this end, a working group has been created, aimed at coordinating formal and informal environmental education initiatives. This group also supported the implementation of the National Strategy and Action Plan on Environmental Education for Sustainable Development 2012–2014.

Several important initiatives have been implemented. Thus, 2012 was proclaimed the Year of EE in Georgia. During this year, high-profile events occurred, most importantly a national performance review.

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411 LEPL Environmental Information and Education Centre (2014): Assessment of Environmental Education in Georgia, GIZ – SMB Project
413 Economic Commission for Europe, Committee on Environmental Policy (2015, draft): Third Environmental Performance Review
Environmental Education Week and the international Tbilisi+35 Intergovernmental Conference on Environmental Education for Sustainable Development, organized in partnership with UNESCO and UNEP.

In 2014 Research „Assessment of Environmental Education in Georgia“ was conducted by the order of LEPL Environmental Information and Education Center (EIEC) under the MoENRP, with the support of GIZ. EE in the spheres of formal (all levels of formal education: preschool, general education, vocational and higher education) and informal education has been assessed as well existing achievements and challenges; evaluation of contribution of the existing approaches to formation of proper attitude towards environment in children/pupils/students, acquiring of the relevant knowledge and skills has been analyzed.

Research showed that various regulatory documents, standards and education programs contain the environmental issues to certain extent but they require revising and development in this respect. (In particular: Appendix 17 - Assessment of Environmental Education in Georgia)

Assessment also states, that for recent four years the situation with respect of environmental awareness changed positively. Environment protection was put on agenda for both, political elite and population. Though, the efforts for improvement of environmental awareness and sensitivity are insufficient.

EIEC with support of GIZ –SMB Project in close cooperation with MoES prepared cross-cutting standard for “Environmental Education for Sustainable Development” (EESD).414 Standard is relevant for different target groups.

The Goal of the Standard is to promote implementation of sustainable development principles on the bases of an environmental context. The standard defines the knowledge, skills, attitudes and values, that pupil should possess at the end of a particular stage of general education (4th, 6th, 9th and 12th grade). The Standard includes six strands: Systems Perspective, Ecological limits, Thinking for now and tomorrow, Turning ideas into action, Empathy for others and natural systems, Equity.

Each strand is based on a single, environmental/sustainable development principle. Each strand has specified learning outcome and indicators, showing what kind of knowledge, skill and attitude should demonstrate student.

Requirements of the Standard are cross-cutting, which means that they, as far as possible, should be reflected in all three levels of general education in all subject programs and the activities within the framework of non-formal education.

4.8 Biodiversity Monitoring

A precondition for taking decisions on suitable measures to minimize or stop the loss of biodiversity or even to improve the situation of threatened species is the monitoring of biodiversity. As a party to the CBD, Georgia has committed itself to establish and implement a national biodiversity monitoring system (NBMS). The biodiversity monitoring data, together with other environmental data, form an important basis for the future nature conservation policy and for other policy areas with a significant impact on biodiversity such as agriculture and forestry, road construction and land-use planning. The results of biodiversity monitoring are therefore relevant information to the Government and policy makers in various sectors. The establishment of a system of biodiversity monitoring and dynamic database was one of the strategic objectives of the NBSAP-1.

Certain State, scientific and non-governmental organizations were implementing separate monitoring and inventory activities under the framework of different donor-supported projects, but the data have not being systematized and collected on the national level.

PAs have been carrying out recording data on separate flora and flora species and presented to the Department of Statistics. However, the rules of monitoring and inventory haven’t been defined; there were no unified methods and reporting rules.415

In 2004 a program of biodiversity monitoring system was elaborated for the Kolkheti PAs 416. In 2007 Biodiversity Monitoring Manual was prepared for the key species of Vashlovani, Lagodekhi, Tusheti and Batsara-Babaneuri PAs.417 Relevant PA personnel was trained.

Environmental NGOs and individual specialists have been conducting the monitoring of some endangered species: brown bear and leopard in Vashlovani PAs, Eurasian otter in Alazani flood plain forests, bats and birds of prey. Several identifications and inventories of water birds were carried out in Kolkheti PAs. With the support of CEPF, Birdlife International cooperated with local NGOs for the creation of a network of management and monitoring of Important Bird Ares (IBA). Since 2004 the monitoring of certain species is implemented regularly in the corridor under the impact of Baku-Tbilisi-Ceyhan pipeline. However, the data collected by separate NGOs and scientific institutes are not gathered in a unified system. There is no modern operational system of maintenance and analysis of the data which could be later used for the further analysis in the decision-making process.

In 2005 Javakhishvili Tbilisi State University initiated the creation of a unified database of Georgian biodiversity (www.biodiversity-georgia.net). The results of species inventory of flora and fauna were published by the Institute of Botany and the Institute of Zoology, e.g. in scientific proceedings of these institutes.

The indicators for biodiversity and forest resources were defined in order to study the status of the country related to of the Millennium Development Goals, objective 7 (ensuring the

415 Ministry of Environment Protection and Natural Resources of Georgia (2009): Third National report of Georgia to the Convention on Biological Diversity
416 WB/GEF - Georgia - Integrated Coastal Management Project
417 (WB/GEF – Georgia’- Protected Areas Development Project
sustainability of the environment), supported by the World Bank. The following indicators were defined:

- the area of protected areas as compared to the entire territory of the country,
- the area of protected areas of IUCN categories I-IV as compared to the entire territory of the country,
- the portion of endangered/extinct species,
- the coefficient of the intensity of forest use,
- forest areas compared to the entire area of the country,
- the area of degraded forests as compared to the entire forest area

WWF Caucasus coordinated the creation of a system of independent monitoring of biodiversity in the Caucasus ecoregion; indicators were defined for species, important conservation sites and corridors.418

The monitoring of the Black Sea mammals has started. Surveys of alien and invasive flora have been conducted.

Two species *Galanthus woronowii* and *Cyclamen coum*, included in the appendices of the Convention on the International Trade in Endangered Species of Flora and Fauna (CITES) have been studied due to their importance in commercial trade. To facilitate sustainable use of these plants existing resources have been evaluated, tools for control and monitoring are being developed.

Monitoring and documentation of legal and illegal resource use within the protected areas are regularly conducted. Protected areas administration provides APA and the Statistics Department with annual records for major bird and mammal species as well as plants and animals included in the Red List of Georgia. Registration data is gathered in the APA database which has functioned since 2007. However, due to an absence of tools for monitoring (in terms of both human and financial resources as well as basic equipment) the quality of the data is low.419 Outside of protected areas, the knowledge about plant and animal species is further limited with little information on the distribution, health, or even the occurrence of many species throughout the country.420

Table 32: USAID, “Biodiversity Analysis Update for Georgia” (2009) report on NBMS

> “The German government also made a commitment to assist Georgia (through a Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) project) in the establishment of National Biodiversity Monitoring System. This system will include the selection of key indicators, and capacity building to gather, store and analyze relevant information for use in policy formulation and priority setting activities. This is the only project addressing this important issue, It is in the initiation stage and hard to assess its effectiveness now”

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418 Ministry of Environment Protection and Natural Resources of Georgia (2009): Third National report of Georgia to the Convention on Biological Diversity
420 Ecodit (2009): Biodiversity Analysis Update for Georgia, USAID
Due to a lack of modern and effective tools for data collection, storage and analysis, the identification of actual changes in species and habitat conditions is quite difficult; this, in turn, makes assessment of the current state and trends of biodiversity more difficult. Lack of proper data is one of the factors hampering development of appropriate measures necessary for the conservation of biodiversity and effective management of biological resources.\footnote{Ministry of Environment Protection of Georgia (2012): National Environmental Action Programme of Georgia, 2012 -2016 (NEAP-2); Approved by the Resolution of the Government #127 of 24 January 2012}

The establishment of the NBMS was initiated by the MoENRP, particular, by Biodiversity Protection Service of the MoENRP in 2008. MoENRP has invited all the relevant governmental, non-governmental and scientific institutions to collaborate within NBMS and create a pool of all knowledge, experience and resources available in Georgia in the field of biodiversity protection. Within the NBMS MoENRP is represented by the BPS, which has the co-ordinating role and is recipient of recommendations related to the improvement of policies and the legal framework for biodiversity protection. The BPS is in charge of reporting on the results of the NBMS to the public.

The conceptual basis of the NBMS is built by 26 indicators, which have been selected according to the internationally accepted and widely used OECD Pressure-State-Response Model. Through the regular assessment of these indicators the overall status and trends of biodiversity in Georgia, as well as threats for biodiversity are supposed to be identified and monitored. The effectiveness of nature protection and conservation measures will also be examined.

The legal basis for the functioning of the NBMS is the Decree of the Minister of ENRP # 262, as of December 18, 2012 on Approval of the List of the Indicators and Methodologies for their Calculation. (1\textsuperscript{st} order was issued in 2008.)

After testing methodologies and publishing results for series of indicators in 2013-2014, the need for the revision of the list and the methodologies has been identified. Currently the NBMS is undergoing refinement process, including the aspects of better institutional embodiment.

The following 12 indicators have been calculated/recalculated and published so far:

In 2013: R1: Total Area of Protected Areas; S1: Forest Area; P4: Intensity of Fishery; P1: Fragmentation of Landscape

In 2014: R1: Total Area of Protected Areas; P4: Intensity of Marine Fishery; P11: Forest Diseases and Forest Fires; R7: Financial Resources for Nature Conservation; R6: Area under Organic Farming; R5: Reforestation/Afforestation;

In 2015: P9: Distribution area of invasive species; P11: Forest Diseases and Forest Fires; P4: Intensity of Marine Fishery; R5: Reforestation/Afforestation; R6: Area under Organic Farming; R7: Financial Resources for Nature Conservation; S7: Public Awareness on
Biodiversity; S3c: Populations of Selected Plant Species; R2: Protected Areas with Management Plans.

A website of the national system for Biodiversity Monitoring of Georgia has been created⁴²², which discloses, in the form of Biotrends, findings of surveys conducted according to indicators.

Staff members of the MoENRP, MoA, ISU (in total 72 people) have been trained. Currently, there is a process of seeking of ways how to institutionalize the NBMS.

In order to improve the monitoring and reporting of environmental information, LEPL Center for Environmental Information and Education (CEIE) under the MoE started to develop an environmental information management system. However, this long-term process would take several years before it will be fully operational.⁴²³

Among the published indicators, only one indicator - P4 on intensity of marine fisheries - provides an explicit recommendation on the need of scientific assessment of the stocks of the commercial fish species and this recommendation is clearly reflected in NBSAP OP 2015/2016 on Black Sea.

Sporadic measures are not enough for proper functioning of the system and providing policy recommendations regularly; therefore within the GIZ follow-up programme “Integrated Biodiversity Management in South Caucasus” (IBiS) a stronger emphasis is envisaged to put on a more systemic approach to strengthen NBMS via institutionalization and capacity development at wider scale, such as, e.g. developing university courses on biodiversity monitoring.

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⁴²² http://biomonitoring.moe.gov.ge/
⁴²³ United Nations Economic Commission for Europe (ECE) (2015, draft): Environmental Performance Reviews (EPR)
4.9 Financial mechanisms

According to USAID “Biodiversity Analysis Update”, in 2009, “GoG’s programs and activities that promote biodiversity conservation and sustainable natural resources management are very limited in scope and budgetary allocations. Since the government assumes that international donors will provide the funds for biodiversity conservation and natural resource management, the government does not budget for biodiversity conservation. Even the preparation of policy and strategic documents, like the NEAP or NBSAP, are fully dependent on donor funding”.

The Medium-Term Expenditure Framework (MTEF)/Basic Data Directions (BDD) also declare environmental protection a priority. Compared with other countries, particularly those in Europe, Georgia spends considerably less on environment as a percentage of GDP.

Parts of the NEAP-2 were picked up by the BDD documents, whereas for a number of other actions, grant funding was provided by donor organizations.

BDD is a composite document representing the state’s annual budget plans as well as Medium-Term Expenditure Framework, which reflects the government’s medium-term strategic priorities and targeted outcomes. BDDs for 2013–16 and 2014–17 both show increased government acknowledgment of environmental and sustainability issues. The 2014–17 BDD names protection of the environment and rational use of natural resources among established priorities and commits to serve the goal of gradually attaining environmental standards adhered to in the EU space or established by international treaties.

Financial resources for environmental protection

The three main sources of domestic environmental protection expenditures are the state (central government) budget, local self-government budgets, and foreign funds provided by international financial institutions (IFIs) and other international donors, as well as bilateral donors. Most of the domestic environmental expenditures have been made at local self-government level, but these are largely financed by transfers from the central government budget and foreign resources. There is no information on business sector expenditure on environmental protection.424

State budget allocation

State financing of the MoENRP and the target programs increased substantially from 2005, though more funds are necessary to properly address environmental problems.425 From 2011 it was decreasing, but from 2014 it again increased.

424 Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review
Despite of the fact that since 2012 the government has defined environmental protection as one of its priorities, and the Medium-Term Expenditure Framework (MTEF)/Basic Data Directions (BDD) also declares environmental protection a priority, the budget/expenditure for 2011–13 was lower than it was for 2006 –10. But trend of increasing from 2012 is obvious.

During 2006-2013, financial resources allocated for nature conservation purposes barely exceeded 0.2% of the state budget.\(^{426}\) In 2014 it was slightly more than 0.3% due to the increase of the total MoENRP budget by 24% decrease of the country's total budget by 15% from 2013 to 2014.\(^{427}\)

**International financial institutions (IFIs) and other international donors**

Currently, the majority of international funds go to improvement of PAs status, including system level capacity building, strengthening and increasing the size of individual protected areas, and establishment of new protected areas. Although ecotourism and infrastructure has been provided.\(^ {428}\)

However, financing from external sources for protected area development is fairly comprehensive with the main donors being GEF, BMZ and KfW, USAID/the United States Department of the Interior, the Norwegian government, the European Union and the MAVA Foundation.\(^ {429}\)

\(^{426}\) Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity

\(^{427}\) www.biomonitoring.moe.gov.ge – NBMS of Georgia

\(^{428}\) Ecodit (2009): Biodiversity Analysis Update for Georgia, USAID

\(^{429}\) Ministry of Environment Protection and Natural Resources of Georgia (2009): Third National Report of Georgia to the Convention on Biological Diversity
In 2006, the German Ministry of Economic Development and Cooperation (BMZ), German Bank of International Development (KfW), Conservation International and WWF initiative resulted in the financing of a trust fund for the protected areas for Armenia, Georgia and Azerbaijan; the Caucasus Protected Areas Fund (CPAF), later Caucasus Nature Fund (CNF). The fund covers up to 50% of expenses incurred in priority protected areas from the three countries on the fulfillment of the following conditions: (1) the relevant state finances the remaining 50% of management costs; (2) management and business plans for each protected area have been completed or are being developed; (3) the government provides the fund with grant agreement. The trust fund is an important tool for the long-term financing of periodical expenses of Georgia’s protected areas, even if other sources of income are identified and a system and institutional basis favouring financial sustainability is in place.

**Own revenues from fees for various services provided**

According to Georgian legislation, LEPLs have rights to gain their own revenue from provided services. There are five LEPL under the MoENRP. Own revenues of LEPLs’ were increased from 2012 due to regain right of issuance licences (NEA) and NFA started to receive revenues.

**Table 33: Budget of the Ministry of Environment and Natural Resources Protection, 2010-2014, (GEL mln)**

<table>
<thead>
<tr>
<th>Budget sources</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocations from state budget</td>
<td>28.2</td>
<td>13.7</td>
<td>16.0</td>
<td>21.2</td>
<td>26.8</td>
</tr>
<tr>
<td>Own revenues of legal entities of public law (LEPLs)</td>
<td>1.5</td>
<td>3.8</td>
<td>15.7</td>
<td>16.0</td>
<td>15.0</td>
</tr>
<tr>
<td>Agency for Protected Areas</td>
<td>0.1</td>
<td>0.4</td>
<td>0.7</td>
<td>1.1</td>
<td>1.5</td>
</tr>
<tr>
<td>National Forestry Agency</td>
<td>0.0</td>
<td>1.9</td>
<td>13.7</td>
<td>12.4</td>
<td>4.9</td>
</tr>
<tr>
<td>Forestry Sapling</td>
<td>0.4</td>
<td>0.2</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Env. Information and Education Centre</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>National Environmental Agency</td>
<td>0.9</td>
<td>1.3</td>
<td>1.2</td>
<td>2.2</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Total funds of Ministry</strong></td>
<td><strong>31.2</strong></td>
<td><strong>21.3</strong></td>
<td><strong>47.4</strong></td>
<td><strong>53.2</strong></td>
<td><strong>56.8</strong></td>
</tr>
</tbody>
</table>

*Source: UNECE EPR III 2015*\(^{430}\)

**Payments for use of natural resources**

According to Georgian legislation, the use of natural resources is payable and it is subject to licensing. License fee taxes and the amounts paid for the auctions on issuing licenses (royalty) become part of the central budget, whereas the fees for the use of natural resources becomes part of the local budget i.e. the budget of the municipality, where the resource has been harvested. The exception is revenue from charges for use of underground resources, which is allocated to the state budget. None of these revenues is earmarked for a specific

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\(^{430}\) United Nations Economic Commission for Europe (ECE) (2015, draft): Environmental Performance Reviews (EPR)
purpose, but is disposed based on the needs and decisions of the local self-governance bodies.\textsuperscript{431}

**Figure 33: Environmental revenues – fees/permits/licenses**

- Natural resources user fees—for the use of soil; for the use of state forest timber resources; for non-timber forest resources extracted from the environment and the use of wood products; for the use of water resources; for hunting; for extraction of migratory birds; for use of other non-classified natural resources.
- Licensing fees—for fishing and hunting permits; for environmental impact; for State Ecological Expertise of MENRP; for forestry or timber harvesting and hunting economy/licenses for mineral exploration and use of underground resources; for the use of wild fauna and flora; for restoration of green plantation; for endangered flora and fauna species; and for export, import, re-export, and extraction from the sea.\textsuperscript{433}

There is no general assessment available concerning experience of the system of auctioning licenses for use of the various natural resources in Georgia.\textsuperscript{434}

There is no a valuation of Ecosystem Services system, which could help mainstream natural capital accounting in national accounting systems and policy analysis.

\textsuperscript{431} Ministry of Environment Protection and Natural Resources of Georgia (2009): Third National Report of Georgia to the Convention on Biological Diversity
\textsuperscript{432} International Bank for Reconstruction and Development / The World Bank (2015): Georgia: Country Environmental Analysis—Institutional, Economic and Poverty Aspects of Georgia’s Road to Environmental Sustainability
\textsuperscript{433} International Bank for Reconstruction and Development / The World Bank (2015): Georgia: Country Environmental Analysis—Institutional, Economic and Poverty Aspects of Georgia’s Road to Environmental Sustainability
\textsuperscript{434} United Nations Economic Commission for Europe (ECE) (2015, draft): Environmental Performance Reviews (EPR)
Penalties and fines

The administrative and criminal codes define penalties and fines for the breach of law in the environmental field (e.g. illegal hunting, fishing, timber harvesting, violation of the regime of protected areas, violation of the rules of harvesting natural resources, destruction of species under the Red List etc.). Besides, the violator is obliged to repair the damage. So, Georgia collects environment-based revenues for administrative violations in the field of environmental protection and natural resources and as compensation for the environmental damage - state compensation for damages.

Figure 34: Environmental revenues – fees/permits/licenses (GEL thsd)

Georgia’s system for natural resource fees and fines has to be improved in order to maintain adequate incentives for users and polluters to reduce environmental pressures. This means monitoring and assessing the effectiveness of economic instruments involving payments most commonly in the form of taxes, permits, and rent as well as government payments in the form of subsidies and other transfers. For natural resources used commercially, there are untapped opportunities for more effective controls and payments for their use, which could also call for reform of the system of environmental taxes.

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Environmental subsidies

The 1996 Law on Environmental Protection provides the possibility of promoting environmentally friendly behavior by means of financial incentives (such as tax relief, soft government loans, product marketing schemes) for environmental projects and the use of second-hand materials and environmentally friendly (“green”) technologies. The corresponding details have to be settled in separate legislation. But there has been relatively limited use made of these instruments. Among the known examples is that imports of electric motor cars are exempt from VAT and car excise duty.

The 2004 Law “on Fees for Use of Natural Resources” stipulates that the fee for use of specific natural resources is reduced by 70 % for scientific and educational activities that promote the sustainable use of resources. The same holds for users of resources that are directly engaged in the recovery and reproduction of these resources. The Tax Code stipulates, moreover, that hunting farms are exempt from property tax for the land they occupy. This is to create incentives for the creation of hunting farms. There is no information about the use that has been made of these instruments.

The 2013 Decree “on Bio-Production”, # 198, defines inter alia bio-farming management and rules for labelling and voluntary certification of products. The Decree was developed on the basis of Codex Alimentarius standards. The responsible agency is the MoA. In particular, article 15 of the Decree relates to the labelling of food and agricultural products meeting certain production standards so as to be labelled “bio-products”.

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5. Conclusions

This chapter summarizes in general the trends/changes related to the biodiversity conservation and use in the South Caucasus region. In addition, more detailed information is offered according to the each country.

On the regional level a lot of changes have taken place in "biodiversity-related sectors" in the span of the last decade: Number of multilateral and regional/European environmental agreements have increased; the basic legal and planning framework for biodiversity conservation is in place and is moving towards the harmonization with the European legislation; the public has more rights to participate in the decision-making process; biodiversity policy (NBSAP) is in place or is under approval; environmental/biodiversity issues are included in sectoral strategies; in-situ and ex-situ conservation measures have improved; system of PAs is expanding and diversifying through different categories; little progress has been made in improving biodiversity information; state budget for nature protection and PAs have increased; absolute amount of environmental expenditures have increased, but still remains quite low; efforts to become forestry sector oriented on sustainable forest management is underway; forest policy has become transparent; spending for the agriculture sector have increased in the state budgets of the countries, at the same time use of agrochemicals, as well as overgrazing and land degradation due to poor management practices have an increasing trend; number of gene banks and live collections as well as their technical capacity is improving, however on-farm and in situ management remains weakly developed; academic and vocational education and training in the forestry and agriculture have gained high demand from the governments; human capacity building measures through the introduction of new standards in curricula for forestry professional and high education is underway; environmental education is being incorporated into all levels of education; a transition to education for sustainable development is taking place.

While assessing reference materials, following observations have been made:

- In many cases data obtained through different sources is varied from each other, data collection lacks accuracy, in many cases no data are available;
- Due to the poor quality of translation in many cases, terms and definitions used in many documents are inconsistent and make the meaning vague

Trends in identified fields/themes on a country level are shown below:
5.1 Armenia

**International obligations/Multilateral Environmental Agreements**

Positive trend:

*From 2008 Armenia joined 8 more international conventions, agreements and protocols, is a party of 22 Multilateral Environmental Agreements and follows to fulfill requirements.*

- RA Government adopted five-year action plan for 2012-2016 on fulfillment of requirements of environmental conventions, including of those five directly related to biodiversity.

**Biodiversity policy and mainstreaming environment and biodiversity in National planning documents**

Positive trend:

*Development of biodiversity policy documents is underway*

- After NBSAP 1 (2000-2004), 11 years later, new State Strategy and Action Plan on the Conservation, Use and Reproduction of Biological Diversity of the Republic of Armenia for 2016-2020 (NBSAP 2) is developed and submitted for approval to National Assembly;
- NEAP 2 (2008-2012) served as a policy for biodiversity

**Mainstreaming environment and biodiversity in National planning documents has been improved**


**Ecosystems and species**

Ecosystems
The data on habitat conditions are qualitative, showing some general trend, but isn’t evaluated quantitative:

Negative trend:

- **Semi-deserts:** increased pressure from agriculture (arable lands and winter pastures), salinization, artificial drying; over the last five years intensified process of erosion, desertification, expansion of semi-desert zone up by about 50 m;
- **Steppes:** flat slopes and the valleys have been cultivated/ploughed and are being used for irrigated and unirrigated agriculture; steep slopes are used as pastures; over the last five years the lower part of steppe belt has reduced - due to the expansion of semi-desert vegetation;
- **Forests:** the valuable forest areas are being decreased; natural seed regeneration is not satisfactory; rare tree species have reduced - occur in the form of patches and sporadic trees. The steppe-meadow vegetation types are often replacing valuable forests;
- **Subalpine and alpine meadows:** gradual increase in grazing pressure has caused significant changes in vegetation cover.

Positive trend:

- **Semi-deserts:** 623.14 ha of semi-desert ecosystems has become protected under SPNAs (0.2%)
- **Steppes:** 61,391.7 ha of steppe ecosystems has become protected under SPNAs (15.8% of SPNA)
- **Forests:** Area of protected forests has become 110,269.2 ha (28%) in SPNAs
- **Subalpine and alpine meadows:** 87,516.24 ha of these ecosystems has become protected in SPNAs (22.6% of SPNAs)
- **Wetlands and waterways: Lake Sevan:** As of January 1, 2014 the water level of the lake increased by 3.84 m in comparison with the mark of January 1, 2002 (after decrease by 19.3m since 1999); the surface of water and wetland areas in the SPNAs has become 127,254.08 ha (32.9 % of SPNAs), the majority - 124,759.0 ha is on the territory of Sevan National Park.

Species

Positive trend:

- Number of leopard, mouflon, bezoar goat, black vulture, has increased;
- The avifauna of Lake Sevan has started to rehabilitate;
- Study of invasive plant species of Armenia has been implemented;
- 2nd edition of the Red Book has been published;
- 159 plant species were removed from the Red Book.

Negative trend:
• Due to the drop of the Lake Sevan water level two subspecies of endemic ishkhan (winter ishkhan and bojak) have disappeared; the number of the other fish species have critically reduced and are under the threat of extinction;
• The alien species goldfish (Carassius auratus) and common carp (Cyprinus carpio) have penetrated into the Lake Sevan;
• The areal of Caspian snowcock is shrinking over years;
• Reduction of number of hare, wild boar and roe-deer has been observed;
• Out of 77 aggressive plant species 38 have penetrated into natural ecosystems and currently threaten local plant diversity;
• In the new Red Book, the number of high vascular plants has increased by 227 species.

**Biodiversity Monitoring**

**Biodiversity monitoring is being improved:**

• In 2006-2010 contemporary environmental monitoring system was introduced in Armenia, but no biological monitoring was being conducted by Environmental Impact Monitoring Centre, SNCO;
• Active studies of the status of biodiversity, trends and consequences of its loss have been conducted in the last years and are currently ongoing;
• **NBMS with set of 18 indicators** is developed according to the “Pressure-State-Response” Model; 8 indicators and in addition, 1 partly, were calculated/recalculated, report is not officially published but presented on stakeholders workshop. **NBMS is not fully institutionalized.**

**Biodiversity conservation**

Protected Areas – tool for in-situ conservation

**Positive trend:**

**Expansion and development of SPNAs system is underway:**

• System of SPNAs of Armenia has expanded from 141,600 ha 5% of the country’s territory up to 387,054 -13.1% of the country;
• Currently, system consists of I – IV PAs categories (instead of only soviet “zapovedniks”), but is not compatible with internationally recognized categories;
• **Two habitat** types represented in SPNAs has increased up to six types of ecosystems;
• Three (one new) Ramsar sites are designated;
• Preparation of management plans is underway;
• Monitoring program in Sevan and Dilijan NP has been introduced;
• Khosrov Forest State Reserve is awarded with the European Diploma on Protected Areas.

**Activities towards creation of ecological network is underway:**
Improvement of legislation towards internationally recognized categorization system is underway;

Need of improvement of institutional set up is recognized.

*ex-situ conservation*

Positive trend:

**Number of samples in the gene bank is being increased:**

- Number of accessions in the Laboratory of Plant Gene Bank and Breeding of the ANAU has increased to 24%,
- Collection of the “Scientific Center of Vegetables and Technical Crops”, SNCO under the RA MoA has increased 3.5 times,
- Collection of the Institute of Botany of the RA NAS – 2.8 times;
- In the National gene bank of plant genetic resources for food and agriculture the number of accessions have increased 8 times.

**Forestry**

Legislation and Policy

Positive trend:

- In 2005 National Forest Programme (NFP) 2006-2015 was developed;
- A National Coordinating Council was created for successful implementation of the NFP;
- In 2005 new Forest Code and Forest Policy has been adopted;
- Opportunity of establishment of new forests on community and private lands is introduced;
- In 2015 amendment to Forest Code introducing multi-functional zoning and multi-purpose use of forests is approved by MoA and submitted to National Assembly.

Management practices

Positive trend:

- At present Forest Management Plans (FMP) have about 90% of forest enterprises;
- FMP determines Annual Allowable Cut (AAC) only through “sanitary” and “forest regeneration” felling;
- In 2013-2014 on the territory of the Institute of Botany of NAS RA a nursery of threatened forest species was established, containing about 22 forest species including eight valuable and threatened species;
- In 2011 National forest monitoring system based on remote sensing technology has been established at State Forest Monitoring Center, SNCO under MoA;
- Forest monitoring data (intensity of logging) is used for annual planning, pre-harvesting planning and post-harvesting assessment, and improvement of forest
management: e.g. annual harvesting plan has reduced from 90,000m³ in 2011 to 42,000m³ in 2012; to 36,000m³ in 2013; and to 24,000m³ for 2014 (by 33%);

- Forest monitoring reports are transparent and are being published;
- **National Forest Management Information System (NFMIS)** has been established; all 19 forest enterprise are equipped and trained.

**Remains unchanged:**

- FMPs do not define respective regimes of SPNA management and protection (in 13 forest sanctuaries); consequently at present no respective regimes are applied.
- FMPs are mainly not aimed at multi-functional forest use, no special conservation measures are planned for the forest areas, which have the richest and most unique biodiversity or provide essential ecosystem services;

**Institutional set-up**

**Positive trend:**

- In the structure of “Hayantar”, SNCO new departments are established: **Forest Inventory and Cadastre; Management of Specially Protected Areas.**

**Agriculture**

**Positive trend:**

*Prevention of arable and pastureland degradation, protection on natural agro-ecosystems and wild relatives of the cultivated plants, development of organic farming has been recognized by GoRA as important agricultural development targets:*

- **Organic agriculture:** has an increasing trend, including organic/sustainable wild collection which is also becoming a prominent agriculture sector;
- **Agricultural biodiversity:** there are quite comprehensive strategies and many interesting projects working on local landrace and crop wild relative protection, many of them operating successfully;
- **Pastureland management:** besides some Governmental and international programmes, around 122 communities developed the plans on pasture management and live-stock breeding development in a participatory way and activities on sustainable pasture management are being implemented.

**Negative trend:**

**Arable land management:**

- Steep slopes, broken relieves, areas prone to landslides, floods, bogging are increasingly used for agriculture, thereby causing land degradation and intensification of landslides;
- **Import of pesticides** rises year by year, which results in additional soil and water contamination;
- **Abandoned cultivated areas** (33% of total arable land) are being covered by aggressive weeds.
Agricultural biodiversity: uncontrolled breeding with introduced breeds has increased threatening agrobiodiversity

Pasture management: insufficiency of the legal framework with regards to pastureland management; disproportional pasture utilization leads to extreme degradation of the ecosystems, steep reduction of the type composition and even extinction of some species;

Remains unchanged: Practice of the burning of agricultural land

Education

Vocational and higher education (in forestry / agriculture education)

Positive trend:

Forestry vocational education is being improved

- Reforms implemented in the area of middle vocational education: the new list of vocational specializations and new educational standards have been established; new curricula and educational plans are being developed; vocational education facilities has been re-operationalized;
- Vocational training package including the curricula package in sustainable forest management is developed; staff of all 19 forest enterprises are trained in new forest management planning, SFMIS tools, technologies, annual harvesting planning.
- Model curricula for trainings in different subjects of forestry (Sustainable forest management (level 1, level 2), Pre-commercial thinning, Road construction and maintenance, Afforestation and reforestation, Biodiversity issues on landscape and stand level in Armenian forestry, Biodiversity issues on detail level in Armenian forestry, Commercial thinning for chainsaw operators, Chainsaw operators training course - level 1, level 2) at ANAU has been elaborated;

Agrobiodiversity and sustainable pasture management issues is included in academic agricultural education curricula

- At ANAU is taught pasture monitoring and management methods;
- Since 2013 agrobiodiversity topic is integrated into university curricula of Yerevan State University (YSU) and ANAU.

EE and ESD

Positive trend:

EE and ESD is being incorporated at all level of education system

- In 2009, the “Concept on Establishment of Comprehensive and Unified National System of Education, Training and Awareness on Environmental Protection” has been ratified, the purpose of which is to create necessary preconditions for improving the quality of EE and training;
To implement the Concept, the Action Plan for 2011-2015 has been approved, with aim to contribute to the establishment of the comprehensive and unified national system of environmental education, training and awareness rising;

- The main topics of the ESD are included in the curricula of natural and social subjects at all levels of education through integrated courses;
- At different universities Chairs for Sustainable Development were established;
- In 2012, a 4-year action plan for the integration of EE in the educational system of Armenia was elaborated;
- 6 modules for EE as a product of EE Campaigns have been developed.

Financial mechanisms

Positive trend:

Efforts are underway to diversify economic instruments for financing environmental expenditure

- Substantial increase is being recorded of cash flows to the state budget through nature protection and nature use payments;
- To ensure their return in the environmental expenditures in 2011 the ‘Law on Budget System” was amended introducing statement, that the expenses envisaged by the annual state budget for environmental programs for each year cannot be less than the sum of actual incomes from environmental and nature use fees of the budget two years ago”;
- Environmental funds has been established;
- Economic incentives for SPNAs users has been introduced;
- In the “Concept on Establishment of Innovative Financial-Economic Mechanisms in the Field of Environment” (approved by the Government of RA) adoption of the RA ‘Law on Ecosystem Services” is considered as a preferable option. It is suggested to introduce a system on payments for ecosystem services, will not replace the system of environmental and nature use fees, but will be applied in parallel with it.
5.2 Azerbaijan

International obligations/Multilateral Environmental Agreements

Positive trend:

Participation in international and pan-European processes is improving:

- 4th (2010) and 5th (2014) NR to CBD are submitted, while submission 2nd and 3rd NRs has failed;
- Preparation of State of Environment (SOE) Report is under preparation, while before it has never been submitted;
- GoA has approved the Plan of Actions on Approximation of Legislation with that of the EU for the span of 2007–2010; many EU directives in environmental areas have already been translated into Azeri;
- Since 2008, in 2011 country joined one - European Landscape Convention.

Biodiversity policy and mainstreaming environment and biodiversity in National planning documents

Positive trend:

Mainstreaming environment and biodiversity in National planning documents is improving:

- No NEAP 2 was approved since 2003;
- Since 2009 no biodiversity policy in place. After 6 years NBSAP 1 (2006-2009) has concluded, National Strategy and Action Plan on Conservation and Sustainable Use of Biodiversity for period 2015-2020 - NBSAP 2 (2015-2020) has been developed and submitted to the Cabinet for approval;

Remains unchanged:

- No National Strategy on Sustainable Development, though the new Vision - Azerbaijan 2020 (approved in 2012), is in line with the Millennium Development Goals.

Ecosystems and species

Ecosystems
It is not yet possible to objectively report on ecosystem and habitat trends in Azerbaijan due to the limited institutional capacities in the mapping and classifying of ecosystems and habitats, except forest cover.

- Over the last 15 years, forest cover has expanded up to 110,030,700 ha from 871,800 ha (i.e. the forested area has increased from 10.1% to 11.9% of the country’s territory) (since 2008 - by 0.4%)
- General trends are as follows, but are not assessed in the figures:
  - increasing salination and desertification of lowland grasslands and semi-desert ecosystems
  - conversion of the lowland grasslands into agricultural land
  - fragmentation of steppe ecosystems by the extensive network of irrigation channels, particularly in the Kura-Araz plain
  - pollution and fragmentation of inland water ecosystems
  - pollution of the Caspian Sea

Species

Positive trend:

- Population size of goitered gazelle has increased by about 28% from 2004; More than 130 goitered gazelles have been reintroduced to their historical ranges – as part of the phased reintroduction programme - in Aqqol National Park, the Gobustan-Jangichay valley and the Acinohur –Sarija plain; also were released in Georgia for reintroduction to their historical range on Iori Plateau ;
- Population size Mouflon since the start of census in 2006 has increased by 9%;
- Population size of the East Caucasian Tur is stable within PAs;
- 2nd edition of the Red Book has been published.

Negative trend:

- The Hyrkanian tiger (Panthera tigris ssp. virgata), has not been observed for more than 25 years and is considered extinct;
- Number of species included in the 2nd edition of the Red book of Azerbaijan (2013) has significantly increased compared to the first edition (1989): 337 plant species (instead of 140) and 223 animal species (instead of 108) are now included in the Red list.

Biodiversity Monitoring

Improvement of biodiversity monitoring is ongoing:

- Monitoring of PAs coverage, conservation priority areas and forest areas has started at eco-regional level by WWF;
- Improvement of the environmental date collection, storage and availability, have been supported by the ENPI-SEIS - the shared ecological information system – project; the published data can be viewed on the web-site of the State Statistical Committee (http://www.stat.gov.az/source/environment/indexen.php);
• **NBMS with set of 20 indicators** has been developed according to the "Pressure-State-Response-Model"; Working group has been established; **14 indicators** were calculated and two NBM Reports for years 2012 and 2013 has been developed by the Working group; reports are not approved by MENR and has not been published; **NBMS is not institutionalized yet.**

• Data collection, analysis and interpretation methodologies are not harmonized through several monitoring systems managed by different institutions such as NBMS working group, the National Department of Environmental Monitoring (NDEM), the State Statistical Committee of Azerbaijan, NGOs and private sector.

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**Biodiversity conservation**

**Protected Areas (SPNAs) – tool for in-situ conservation**

**Positive trend:**

**Expansion of PAs system (SPNAs) is underway**

• System of PAs has expanded since 1995 from 429,860 ha, 5% of the country’s territory up to 892,546 ha - **10.3%** of the country; it is planned for the area of PA system to become 14% (12% terrestrial and to 2% marine);
• New category compatible to the internationally recognized categories (IUCN II) – National Park is introduced and **9 national parks** are established;
• Administrative and visitor **infrastructure** in national parks has improved;
• National parks have management plans;
• Two Ramsar sites have been designated.

**Remains unchanged:**

• No connectivity between SPNAs yet;
• No compliance with internationally recognized categories.

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**ex-situ conservation**

**Positive trend:**

**Number of samples in the gene bank is being increased**

The gene fund of Genetic Resources Institute became rich through exchange of materials and genetic materials collected through collecting missions. Main collections of cereals and leguminous crops are maintained at Research Institute of Agriculture (2,490 accessions), at the Genetic Resources Institute (2,272 accessions) and at Nakhchivan Bioresources Institute (843 accessions).

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**Forestry**

**Positive trend:**
Successful State programs: Investments in gas supply, import of low price timber from Russia and afforestation

- The main driver of forest loss – clearing for wood fuels – is declining with the increasing coverage of gas supplies to communities, forests only need to meet two % of the population’s fuel needs;
- Industrial felling is banned; only maintenance and sanitary felling of forests are being carried out; the average volume of those logging is gradually getting reduced;
- Almost 200,000 ha of forest was planted, sowed, or have regenerated naturally between 2000 and 2013;
- In 2013 National Forest Program (NFP) – National Forest Policy and Action Plan of Azerbaijan has been prepared for a 15 year period - from 2015 up to 2030, but has not been approved yet.
- Study to improve methodology of inventory is underway;
- Development of the national forest monitoring system (NFMS) based on remote sensing technology is underway; process of setting up a National Forest Monitoring Unit (NFMU) has started.

Agriculture

Positive trend:

Harmonizing its legislation related to phyto-sanitary measures to Codex Alimentarius and EU rules is underway

- Organic agriculture increased by 13% in last 7 years; MoA signed a grant agreement with FAO to support organic agriculture; Azerbaijan State Agrarian University established a separate department of Organic Agriculture;
- Agricultural biodiversity: new gene banks and agricultural live collections were set up (see ex-situ conservation above);
- Pasture management: pasture monitoring manuals have prepared and tested in pilot areas.

Negative trend:

- Arable land management: As a result of subsidizing cereals and dried pulses the agriculture of Azerbaijan is becoming more and more monoculture oriented with 64% of sown are covered with above mentioned crops; crop rotation is applied less frequently; use of chemical fertilizers and pesticides is increasing year by year;
- Agricultural biodiversity: use of native and aboriginal breeds and varieties is decreasing, for e.g. only 1% of local wheat varieties is cultivated by the farmers; little risk monitoring; on-farm conservation programmes absent; draft law on Biosafety was rejected by Parliament
- Pasture management: specific laws on permits indicating number of animals to be grazed and their monitoring tools absent; overgrazing causes changes in vegetation cover and supports spread of weeds; the grassland covers of the land of forest fund increased from 2003 till 2012 from 874,200 ha to 1,024,000 ha in 2012.

Remains unchanged: Practice of the burning of agricultural land
Education

Positive trend:

Declared policy to make education system comparable with European standards by reforming its programs (modules);

State Program on the education of Azerbaijani youth in foreign countries has expanded;

Vocational and higher education (in forestry / agriculture education)

Academic and vocational education is being improved:

- Forestry academic and vocational education is recognized as priority by NFP
- At Azerbaijan State Agrarian University (ASAU) in Ganja for existing M.Sc. in forestry “Forest Ecology” – as specification has prepared;
- Cooperation has begun between Baku State University (BSU) and Greifswald University as well as Klagenfurth University;
- The MENR Institute of Training and Retraining runs two-four week training courses and one-two day retraining seminars for staff of the Ministry and its subordinating units;
- Training and retraining of professionals in forestry and pasture monitoring is being carried out.

EE and ESD

Positive trend:

EE and ESD is being incorporated at all level of education system

- In higher educational institutions, a number of environmental subjects have been included in curricula;
- Curriculum for M.Sc. "Biodiversity and nature conservation" for the department of Bioecology of the faculty of Ecology and Soil Science at BSU is approved;
- Concept for reorganization of the State Ecological Training and Education Centre (SETEC) and Environmental Education Centers (EEC) to deliver effective extracurricular EE for schools in all administrative districts is prepared;
- Starting from the year 2011, country-wide awareness raising campaign – “International Biodiversity Day” (IDB) is being conducted; about 4500 schoolchildren of 450 schools participated in the campaign during 2011–2015.

Remains unchanged:

- There is no national strategy on ESD recommended by the UNECE

Financial mechanisms
**Positive trend:**

**Investment expenditures** allocated through the State Investment Programme to MENR increased sharply around 20% of total environmental capital spending in the country from 2007-2008, the highest was in 2012.

**Expenditures for nature conservation has increased strongly** (state budget of MENR). At the same time, however, the share in the overall annual budget dropped to 38% of the value in 2005.(0.60% in 2005 and 0.22% in 2013).

**Penalties and pollution charges,** which are main sources of revenue for the State Fund for the Protection of the Environment, has increased from 2007.

**Total environmental spending has drastically increased** from 175,600 in 2008 to 419,300 in 2012, but in 2013 and 2014 decreased to the level of 2010-11.

These economic instruments are not connected to the achievement of specific environmental targets, as part of the policy packages that also combine elements of a regulatory nature, but have only a revenue-raising dimension.
5.3 Georgia

International obligations/Multilateral Environmental Agreements

Positive trend:

From 2008 Georgia joined 9 more international conventions, agreements and protocols, is a party of 31 Multilateral Environmental Agreements and follows to fulfill requirements.

- In 2009 Cartagena Protocol on Bio-safety entered into force. Legislation (including law and subsidiary acts) on “Living Genetically Modified Organisms” has been endorsed in 2014;
- 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; preparation of the legal framework for ratification is underway;
- In 2011 Bern Convention on the Conservation of European Wildlife and Natural Habitats entered into force; identification of ‘Emerald sites’ is underway.

The European Union – Georgia Association Agreement (AA), was executed in June 2014, was ratified by Georgia on 14 July 2014; implementation is underway:

- A road map for harmonization of environmental legislation is developed;
- Draft “Law on Biodiversity” with consideration of EU directives - (“Habitat Directive”) and (“Bird Directive”), as well as the principles of Nagoya Protocol (ABS) is prepared;

Biodiversity policy and mainstreaming environment and biodiversity in National planning documents

Positive trend:

NBSAP 2 (2014-2020) in line with Global Strategic Plan for Biodiversity 2011-2020 together with Aichi Biodiversity Targets was elaborated by highly participatory approach, with full involvement of different sectors, Governmental organizations, NGOs, International organizations and Universities; adopted by GoG in 2014; NBSAP revision process was presented on CBD COP 12, in South Korea.

Mainstreaming environment and biodiversity in National planning documents has improved

- Environmental/biodiversity aspects are being incorporated in National development planning and strategic documents of other sectors (e.g. Socio-Economic Development Strategy “Georgia 2020“ (2014); Regional Development Program of Georgia 2015-2017(2014); Strategy for Agricultural Development in Georgia for the period 2015 – 2020 (2015)
Remains unchanged:

- No National Strategy on Sustainable Development
- Biodiversity is still undervalued and not fully considered in decision making processes.

Ecosystems and species

**Ecosystems**

*Due to the lack of modern and effective tools for data collection, storage and analysis, the identification of actual changes in species and habitat conditions are quite difficult, but still there are some data available*

- National system of habitat classification has been elaborated in compliance with modern systems;
- According to different sources, that provide different data, Forest Fund is stable at an estimated 3.0 million ha of which forest cover varies from 2.7 million to 2.8 million ha, from **39 to 41%** of country’s total territory.

**Species**

**Positive trend:**

- Reintroduction of *goitered gazelle* in Georgia to their historical range on Iori Plateau is underway; individuals were released from Azerbaijan;
- Population size of *red deer* after drastic decline in 1990-ies, has increased within the PAs (Lagodekhi and Borjomi-Kharagauli); in 2014, number of red deer counted more than 800 individuals;
- *Monitoring of invasive plant* species of Georgia has started;
- In 2013-2015 *herbaceous species were assessed* according to IUCN criteria and **117** species are nominated for the inclusion in the “Red List”.

**Negative trend:**

- Within the last decade population size of *Caucasian Salamander, Caucasus Viper*, several species of *bats* have been decreased.

Remains unchanged:

- Red list adopted in 2006 has not been revised during the last 10 years.

**Biodiversity Monitoring**

*Biodiversity monitoring is being improved:*

- Different sporadic monitoring activities are under way on PAs, by NGOs, and also private sector, but no unified system existed where all information could have been collected and analyzed;
• NBMS with set of 26 indicators has developed according to the “Pressure-State-Response” Model and established; 12 indicators were calculated/recalculated, and published on the web-page of the MoENRP; refining and institutionalization of NBMS is underway.

Biodiversity conservation

Protected Areas – tool for in-situ conservation

Positive trend:

Expansion and development of PAs system is underway

• System of PAs of Georgia has expanded since 1995 according to the “Law on PA System” (1996) from 170,000 ha, 2.4% of the country’s territory up to 600,598 -8.7% of the country and is planned until 2020 to become 14.5% (12% terrestrial and to 2.5% marine)
• System consists of I – VI PAs of National categories, compatible to internationally recognized categories;
• Two Ramsar sites are designated;
• Preparation and update of management plans are underway;
• Capacity building is underway;
• Administrative and visitor infrastructure is being constructed;
• Visitor number is increasing; (from 12,000 in 2007 to 500,000 in 2015).

Activities towards creation of ecological network is underway

Negative trend:

When conflict arises with “development” projects, this latter wins

• PA of category VI (in Kolkheti PAs) was abolished due to development project;
• Taking lands from PAs due to HPP construction.

Remains unchanged:

• No connectivity between PAs yet, except of Tusheti PA system;
• No spatial plan with PAs system’s plan.

ex-situ conservation

Positive trend:

The gene bank collections of Agricultural University, Lomouri Agricultural University and Botanical Garden have been supplemented with new samples. 17% of Georgian flora species (more than 600 endangered and endemic species) is stored at the seed banks in Tbilisi and Kew (UK) Botanical Gardens. The gene bank of the Agrarian University contains 3,075 samples of field and vegetable crops, as well as, 1,519 specimens of vine, fruit, nuts and berries.
Forestry

Policy: negative trend in 2007-2013; Current trend since 2013 - positive, (as declared policy is oriented on sustainable forest management):

- During 2004-2013 forestry sector went through several policies, legislative and institutional reforms; trend in the policy was unstable, changeable, and not transparent; policy document has never been approved;
- From 2007 government policy was oriented towards the short-term revenue maximization from extraction of resources while neglecting the importance of nature conservation and sustainability;
- In 2013, with active involvement of stakeholders the “National Forest Concept for Georgia” was prepared and adopted by Parliament. This is the first officially approved policy document declaring strategic role of forest resources and recognizing sustainable management of forests as guiding principle;
- In 2013 “National Forest Programme” process was launched involving 160 representatives of 55 organizations and conducted 77 workshops in 2013-2014 and 50 in 2015;
- The Forest Sector Reform Strategy to achieve the goal of National Forest Concept is under development.

Management practices: negative trend in 2007 – 2013; positive trend since 2013

- From 2007 licenses for long-term commercial forest use were issued on the bases of auction without inventory (uninformed decision-making); forest use plans were prepared by license holders;
- In 2013 an issuing of long-term forest use license was stopped; existence of management plans developed by NFA based on inventory before starting forest use activities has become obligatory. Public participation in forest-related processes became active; management plans for low forest districts have been developed;
- Electronic shared database for registration of harvested timber and monitor illegal logging has been established;
- Development of the national forest monitoring system (NFMS) based on remote sensing technology is underway.

Institutional set-up: negative trend in 2007 – 2013; positive trend since 2013

- Institutional reform in 2007, aiming at the maximum release of the State from forest management functions, has reduced central apparatus, abolished forestry units and decreased staff number 3-fold. This reform resulted in loss of qualified staff, wash-out of institutional memory, and increased responsibility of forest rangers. Function of issuance of licenses was transferred to Ministry of Economic Development;
- In 2010 LEPL Forest Agency was established, gained rights to carry out certain commercial activities and receive own revenues from provided services;
- In 2011, the natural resources management function under the then MoENRP has moved to the Ministry of Energy; The Environmental Inspectorate, the Investigation
Department and the Forest Agency all converged into the Agency of Natural Resources (ANR), an LEPL created under the new Ministry of Energy and Natural Resources. **All key functions** related to the natural resources (hunting, fishing, timber and non-timber resources, and minerals) **were concentrated in the ANR:** policy, legislation development, protection, monitoring, and control of licenses and permits. Besides, the function of issuing the licenses for use of natural resources from Ministry of Economy and Sustainable Development was passed over to the ANR.

- In 2013, new structural changes have taken place in the Government. Management of **forest sector** again has been passed over to the **Ministry of Environment Protection** that has become MoENRP. Three entities were established in the field of forest management within the MoENRP:
  - The LEPL National Forest Agency (NFA), responsible for the management of state-owned forests;
  - The Department of Environmental Supervision (DES), responsible for inspection and control;
  - The Forest Policy Service (FPS), to support the Ministry in defining the strategy and elaboration of policy documents.

  **Policy, management and control functions have separated.**

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**Agriculture**

**Positive trend:**

- **The DCFTA with European Union adopted in July 2014** – to meet the requirements of the agreement Georgia is approximating its laws and regulations with the EU, including environmental related agricultural measures; production, import, marketing and use of agrochemicals is more strictly controlled;
- **Since 2014 with introduction of genetically modified organisms** into natural environment is barred in Georgia;
- **Arable land management:** new state programmes developed and special divisions in the MoA and MoENRP set up responsible of improved soil and land management policies, including lab service; development of legal bases for prohibition of burning agricultural lands in underway; Government is actively working towards rehabilitation of both drainage and irrigation systems;
- **Agricultural biodiversity:** inventories conducted. data base created, new gene bank and several live collections established *(see ex-situ conservation above)*; new *Strategy for Agricultural Development 2015-2020* also has focus on preservation of agricultural biodiversity and endemic species;
- **Pasture management:** Pastures in PAs are being assessed and preparation of pasture management plans in PAs is underway.

**Negative trend:**

- **Arable land management:** Land areas treated with fertilizers and pesticides increased by 1.5 times since 2010 (however still very low in comparison to 1980 data);

**Remains unchanged:**
• **Organic agriculture:** no proper support programs for development of organic agriculture;

• **Agricultural biodiversity:** uncontrolled crossing of local landrace animals with introduced breeds; no economic incentives for farmers to implement farm-based conservation; no or poor access to local seeds/propagation material kept in collections.

• **Pasture management:** grazing regulations in Georgia remains poor and not effective.

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**Education**

**Vocational and higher education (in forestry education)**

**Positive trend:**

**Forestry academic and vocational education is being improved**

• In 2007 vocational education system reform has commenced for harmonization with the European system;

• There is high demand of introduction of qualified foresters on operational level in the field;

• Introduction of a *vocational educational program “Forest Worker”*, is underway

• Three operational (professional) standards (Forest Guard, Wood-cutter and Forestation Specialist) were developed and submitted to the MoES and the NCEQE for approval;

• Academic education in forestry is implemented in Agricultural University of Georgia and Ilia State University. From 2012 existing master courses are being strengthened with the development of curricula and teaching materials in 5 topics: *Ecology (MSc), Forestry (MSc), Natural Resources (MSc), Sustainable Forestry (MBA), Natural Resources Management (MBA)*; number of applicants are being increased.

**EE and ESD**

**Positive trend:**

**EE and ESD is being incorporated at all level of education system**

• In 2009, the National Education Programs and Assessments Centre established educational standards for preschool institutions, aimed at developing environmental awareness and a positive attitude to the environment in children.

• MoES included *biodiversity topics in National Curricula* at all three levels;

• In 2013, the “Teacher’s Guidebook to Environmental Education for Grades I–IX” has been published;

• Georgian National *Strategy and Action Plan 2012 – 2014* for Environmental Education for Sustainable Development (EESD) has been developed;

• EIEC under MoENRP in cooperation with MoES has prepared *cross-cutting standard for “Environmental Education for Sustainable Development”* in general education;
Starting from the year 2009, awareness raising campaign – “The Hour of Garden Bird” (HGB) countrywide is being conducted; about 26,000 schoolchildren of 598 schools participated in the HGB campaign during 2009 – 2015.

**Financial mechanisms**

*Trend is unclear:*

- The State budget/expenditure for environmental protection for 2011–13 was lower than that of 2006–10. But the trend of it increasing is obvious from 2012;
- During 2006-2013, financial resources allocated for nature conservation purposes barely exceeded 0.2% of the state budget. In 2014 it was slightly more than 0.3% due to the increase of the total MoENRP budget by 24% and decrease of the country's total budget by 15% from 2013 to 2014;

*Positive trend:*

- Own revenues of LEPL under MoENRP has increased significantly from 2012.

*Remains unchanged:*

- No innovative financial mechanisms, incentives and subsidies.

Sharing experience on biodiversity planning, nature resource management and strengthening biodiversity conservation through implementation of Eco-regional Conservation Plan in South Caucasus countries with support of international organizations is underway.
6. References

ARMENIA

Barth, Ruecker, 2014 - National Forest management Information System (NFMIS) – Progress of 1st Development Phase and Preparation of Second Phase – GIZ, SMBP

Ecodit (2009): Biodiversity Analysis Update for Armenia, USAID


Chemonics International Inc. (2000): Biodiversity Assessment for Armenia, USAID


Ministry of Agriculture (2011): Agricultural Land Consolidation Concept Paper


Schwarz S., Gharajyan L., Eberherr Th.(2015): “Environmental Education in South Caucasus Schools”, GIZ- Sustainable Management of Biodiversity Program, South Caucasus


http://www.shen.am/PDF/Milestones%20of%20Organic%20Agriculture%20in%20Armenia.pdf


AZERBAIJAN


AETS consortium (2013): Country Environmental Profile of Azerbaijan - EU


Chemonics International Inc. (2000): Biodiversity Assessment for Azerbaijan, USAID


Deutsche Forstservice GmbH (DFS) (2013): Final report Zaqatala and Balakan

Ecodit (2010): The Biodiversity Analysis Update for Azerbaijan, USAID


Gallo-Orsi, U. (2014): A contribution toward the definition of regional and cross border challenges for biodiversity protection, GIZ - SMBP


Heidorn, F. (2014): General options and international examples for the institutional and functional set-up of Environmental Education Centres, GIZ-SMBP


Kokh, B., FELIS, University of Freiburg, Germany (2012): Evaluation of remote sensing methods for forest monitoring and inventory, GIZ - SMBP


The Caspian Information Centre (2012): Awakening from Azerbaijan’s Environmental Nightmare


Welton,G. et.al (2012):Comparative Analysis of the Agricultural Sector in the South Caucasus


http://www.ruralpovertyportal.org/country/home/tags/azerbaijan
GEORGIA


Cheamonics International Inc. (2000): Biodiversity Assessment for Georgia, USAID

Ecodit (2009): Biodiversity Analysis Update for Georgia, USAID

Economic Commission for Europe, Committee on Environmental Policy (2015, draft ): Third Environmental Performance Review

Efficient Education Management Network for LLL in the Black Sea Basin (2014): The VET Systems of Ukraine, Moldova, Georgia, Turkey, Bulgaria and Romania in the context of the Torino Process – EU


EU Partnership Program. 2012. Assessment of the Agriculture and Rural Development Sectors in the Eastern Partnership Countries. Tbilisi, Georgia

FAO (2012): Assessment of the Agriculture and Rural development Sectors in the Eastern Partnership countries – Georgia; - EU

FAO (Food and Agriculture Organization). 2014. FAOSTAT Statistical Database. Rome


Goenner, Ch.; Weigel, O.; Kolbin G.(2014): Concept on “Climate-adapted Agriculture in East Georgia” – GIZ-SMB project

Georgia’s Protected Areas Programme (GPAP), NGO (2006): Conservation Management Guidelines for Proposed David Gareji Protected Landscape and draft Law, GEF/WB - Georgia Protected Areas Development Project

Georgia’s Protected Areas Programme (GPAP), NGO (2006): Management Guidelines for Central Caucasus Planning Region, draft Law, GEF/WB - Georgia Protected Areas Development Project

GPAP (2005): Conservation Planning in Alazani Floodplain Forest, Final Draft management Plan, WB/GEF – Georgia Protected Areas Development Project

Kakabadze, E.; - WWF Caucasus Program Office (2012): Protected Areas of Georgia, Situation Analysis, for NBSAP updating – GIZ, SMB Project


LEPL Environmental Information and Education Center, Ministry of Environment Protection and Natural Resources (2014): Assessment of Environmental Education in Georgia – GIZ, SMB Project


Ministry of Environment and Natural Resources Protection of Georgia (2015): Georgia’s Fifth National Report to the Convention on Biological Diversity


United Nations Economic Commission for Europe (ECE) (2015, draft): Environmental Performance Reviews (EPR)


World Bank - Supervision Mission (January 24 – February 2, 2007); Aide Memoire – “Georgia Protected Areas Development Project” (P048791 GEF TF No. 023968 GE)

WWF Caucasus program Office (2012): Thematic Field: Forest Biodiversity of Georgia – Situation Analysis Report for NBSAP updating – supported by GIZ SMB Project

http://biomonitoring.moe.gov.ge/
http://srca.gov.ge/
http://catalog.elkana.org.ge/
http://www.unesco.org/archives/multimedia/?s=films_details&pg=33&id=3515

https://www.youtube.com/watch?v=GM0OsMPS25U&index=1&list=PLexduQs86HGDlvlt6YvjUZquaS7i_LaA5;

https://www.youtube.com/watch?v=uD8LSi738io&index=2&list=PLexduQs86HGDlvlt6YvjUZquaS7i_LaA5
7. Appendices

Appendices - ARMENIA

Appendix 1 - Multilateral Environmental Agreements (MEAs) ratified by the Republic of Armenia

<table>
<thead>
<tr>
<th>Title of the Agreement</th>
<th>Entry into force for the Republic of Armenia</th>
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<tbody>
<tr>
<td><strong>GLOBAL TREATIES</strong></td>
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<tr>
<td>Convention on Wetlands of International Importance Especially as Waterfowl Habitant (Ramsar, 1971)</td>
<td>1993</td>
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<tr>
<td>Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)</td>
<td>1993</td>
</tr>
<tr>
<td>UN Convention on Biological Diversity (Rio de Janeiro, 1992)</td>
<td>1993</td>
</tr>
<tr>
<td>- Cartagena Protocol on Biodiversity (Cartagena, 2000)</td>
<td>2004</td>
</tr>
<tr>
<td>UN Framework Convention on Climate Change (UNFCCC), (New York, 1992)</td>
<td>1994</td>
</tr>
<tr>
<td>- Kyoto Protocol (Kyoto, 1997)</td>
<td>2005</td>
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<tr>
<td>- Protocol on Substances that Deplete the Ozone Layer (Montreal, 1987)</td>
<td>1999</td>
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<tr>
<td>- Copenhagen Amendment to the Montreal protocol (Copenhagen, 1992)</td>
<td>2003</td>
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<tr>
<td>- Beijing Amendment to the Montreal protocol (Beijing, 1999)</td>
<td>2009</td>
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<tr>
<td>- Montreal Amendment to the Montreal protocol (Montreal, 1997)</td>
<td>2009</td>
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<tr>
<td>UN Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel, 1989)</td>
<td>1999</td>
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<tr>
<td>Convention on Persistent Organic Pollutants (Stockholm, 2001)</td>
<td>2004</td>
</tr>
<tr>
<td>Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979)</td>
<td>2011</td>
</tr>
<tr>
<td><strong>REGIONAL TREATIES</strong></td>
<td></td>
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<tr>
<td>UNECE Convention on Long-Range Trans-boundary Air Pollution (CLRTAP), (Geneva, 1979)</td>
<td>1997</td>
</tr>
<tr>
<td>- Protocol on Strategic Environmental Assessment (Kiev, 2003)</td>
<td>2011</td>
</tr>
<tr>
<td>Title of the Agreement</td>
<td>Entry into force for the Republic of Armenia</td>
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<td>---------------------------------------------</td>
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<tr>
<td>UNECE Convention on Transboundary Effects of Industrial Accidents (Helsinki, 1992)</td>
<td>1997</td>
</tr>
<tr>
<td>UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992)</td>
<td></td>
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<tr>
<td>- Protocol on Water and Health (London, 1999)</td>
<td>Under ratification</td>
</tr>
<tr>
<td>European Landscape Convention (Florence, 2000)</td>
<td>2004</td>
</tr>
<tr>
<td>Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979)</td>
<td>2008</td>
</tr>
</tbody>
</table>
### Appendix 2 - Main institutional structures of the RA forest management sector

<table>
<thead>
<tr>
<th>Structure</th>
<th>Functions</th>
</tr>
</thead>
</table>
| RA Ministry of Agriculture  
“Hayantar” SNCO with 19 branches (Forest Enterprises) | Implementation of the state policy on forest protection, reproduction and use, safeguarding of protection, guarding, reproduction and effective use of the RA state forest lands |
| RA Ministry of Agriculture  
“State Forest Monitoring Center”, SNCO | Implementation of monitoring of illegal loggings and state forest monitoring |
| RA Ministry of Agriculture  
Department of Forestry | Development of state policy on protection, reproduction and use of forests |
| RA Ministry of Nature Protection  
Department of Environmental Protection | Development of state policy and strategy in the environmental field, definition of program principles and approaches of the tactics, development of the principles on selection of SPNAs, definition of their boundaries and protection regimes |
| RA Ministry of Nature Protection  
State Environmental Inspection | Control over implementation of the instructions and requirements set forth by environmental legislation |
| RA Ministry of Nature Protection  
Bio-resources Management Agency | Coordination of activities on SPNA protection and sustainable use, support to development and implementation of the state policy  
Provision of services for implementation of the forest management policy, in particular safeguarding implementation of works on state forest stock-taking, inventory and forest management planning |

*Source: Gevorgyan A. (2014): Scoping study of economic significance of ecosystems and biodiversity (TEEB) of the forestry sector of Armenia. Framework level assessment of the forestry sector capacity. FLEG II (ENPI-East)*
Appendix 3 – Map of SPNAs of Armenia

Map of Specially Protected Nature Areas of Armenia

Appendix 4 – IBAs in Armenia

1. Lake Arpi IBA
2. Amasia IBA
3. Tashir IBA
4. Dsegh IBA
5. Haghartsin IBA
6. Pambak Mountain Chain IBA
7. Lake Sevan IBA
8. Mount Ara IBA
9. Sardarapat Steppe IBA
10. Metsamor River System IBA
11. Armash IBA
12. Khosrov IBA
13. Gndasar IBA
14. Noravank IBA
15. Jermuk IBA
16. Gorayk IBA
17. Zangezur IBA
18. Meghri IBA

## Appendix 5 - Protected Areas in Armenia

### State Reserves and National Parks of the Republic of Armenia

<table>
<thead>
<tr>
<th>Name</th>
<th>Year of Establishment</th>
<th>Area and Location</th>
<th>Protected Objects</th>
<th>Subordination</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State Reserves</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>“Khosrov Forest” State Reserve</td>
<td>Council of Ministers ArmSSR N341, 13.09.1958</td>
<td>23 003 ha, Ararat Marz, Slopes of Urts and Yeranos Ranges. 700 - 2800 m above sea level</td>
<td>Dry, open woodland landscapes, unique flora and fauna associations</td>
<td>MoNP RA, “Khosrov Forest State Reserve” SNCO</td>
</tr>
<tr>
<td>“Shikahogh” State Reserve</td>
<td>Council of Ministers ArmSSR N 341, 13.09.1958</td>
<td>12137,075 ha, Syunik Marz, Tsav and Shikahogh River Basins., 700-2400 m above sea level</td>
<td>Oak-hornbeam forests, plane and yew grove, Bezoar goat, Indian porcupine, Caucasian leopard</td>
<td>MoNP RA, “Shikahogh State Reserve” SNCO</td>
</tr>
<tr>
<td>“Erebuni” State Reserve</td>
<td>Council of Ministers ArmSSR N324, 27.05.1981.</td>
<td>South-Eastern vicinities of Yerevan City, 1300-1400 m above sea level</td>
<td>Preservation of wild cereals ad their habitats</td>
<td>MoNP RA, “Reserve-Park Complex” SNCO</td>
</tr>
<tr>
<td><strong>National Parks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>“Sevan National” Park</td>
<td>1978 Decree of the RA Government N 205-N, 19.01.07 approved the management plan and the size of the National park</td>
<td>147456 ha, Gegharkunik Marz, Lake Sevan basin, 1896-2000 m above sea level</td>
<td>High mountainous lake ecosystem, endemic species of fish, plants and animals. Resting sites for migratory waterfowl</td>
<td>MoNP RA, “Sevan National Park” SNCO</td>
</tr>
<tr>
<td>“Dilijan” National Park</td>
<td>2002, RA Governmental Decree N 204-H, 19.01.07, approved the management plan and the size of the National park</td>
<td>33765 ha, Basins of Aghstev and Getik Rivers. 1070-2400 m above sea level</td>
<td>Mesophilous oak and beech forests, unique yew grove, species of vertebrate animals, 902 species of vascular plants,</td>
<td>MoNP RA, “Dilijan National Park” SNCO</td>
</tr>
<tr>
<td>N</td>
<td>Name and area</td>
<td>Year of Establishment and Decree</td>
<td>Protected objects</td>
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<tr>
<td>----</td>
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<td>-----------------------------------------------------------------------------------</td>
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<tr>
<td>1</td>
<td>“Boghakar” State Sanctuary (“Arevik National Park” SNCO), 2728 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N400, 10.08.1989</td>
<td>Typical species of Southern Armenian flora and fauna</td>
<td></td>
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<tr>
<td>2</td>
<td>“Akhnabat Yew Grove” State Sanctuary (“Dilijan National Park” SNCO), 25 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N20, 29.01.1959</td>
<td>Unique relict yew grove</td>
<td></td>
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<tr>
<td>3</td>
<td>“Goravan Sands” State Sanctuary (“Khostrov Forest State Reserve” SNCO), 200 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N20, 29.01.1959</td>
<td>Remnant sands with unique species of plants and animals</td>
<td></td>
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<tr>
<td>4</td>
<td>“Juniper Open Woodlands” State Sanctuary (“Sevan National Park” SNCO), 3312 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N 341, 13.09.1958</td>
<td>Unique relict juniper and oak open woodlands with typical fauna and flora</td>
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<tr>
<td>5</td>
<td>“Plane Grove” State Sanctuary (“Shikahogh State Reserve” SNCO), 60 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N 341, 13.09.1958</td>
<td>The only natural plane grove in the Caucasus</td>
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<tr>
<td>6</td>
<td>“Vordan Karmir” State Sanctuary (“Reserve-Park Complex” SNCO), 200 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N61, 03.02.1987</td>
<td>Ararat cochineal and typical semi-desert vegetation,</td>
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<tr>
<td>7</td>
<td>“Sev Lich” State Sanctuary (“Reserve-Park Complex” SNCO), 240 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N717, 17.10.1987</td>
<td>High mountainous volcanic reservoir and adjacent areas with plant and animal associations</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>“Khor Virap” State Sanctuary (“Khostrov Forest State Reserve” SNCO), 50,28 ha</td>
<td>RA Governmental Decree N 975-N 25.01.07</td>
<td>Wetland ecosystems and typical species of plants and animals</td>
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<tr>
<td>9</td>
<td>“Gilan” State Sanctuary (“Khostrov Forest State Reserve” SNCO), 118ha</td>
<td>RA Governmental Decree N 673-N, 24.05.07</td>
<td>Mountainous-forest ecosystems</td>
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<tr>
<td>10</td>
<td>“Zangezur” State Sanctuary (“Shikahogh State Reserve” SNCO), 17368.77 ha</td>
<td>RA Governmental Decree N 1187-N, 15. 10.2009</td>
<td>Typical species of Southern Armenian flora and fauna</td>
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<tr>
<td>11</td>
<td>“Jermuk” hydrological State Sanctuary, (“Reserve-Park Complex” SNCO), 18000 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N148, 23.03.1981</td>
<td>Mineral water Jermuk</td>
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<td>12</td>
<td>“Hankavan” hydrological State Sanctuary (“Reserve-Park Complex” SNCO), 9350ha</td>
<td>Decree of the Council of Ministers of ArmSSR N148, 23.03.1981</td>
<td>Mineral water Hankavan</td>
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<tr>
<td>13</td>
<td>“Zikatar” State Sanctuary (“Forest Research Experimental Centre” SNCO)</td>
<td>RA Governmental Decree, 08.04.2010</td>
<td>Preservation of forest biodiversity, rare and endangered species</td>
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## State Sanctuaries under the Ministry of Agriculture ("Hayantar" SNCO) of the Republic of Armenia

<table>
<thead>
<tr>
<th>No.</th>
<th>Name and area</th>
<th>Year of Establishment and Decree</th>
<th>Protected objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>“Arjatkleni Hazelnut” State Sanctuary, Ijevan Forest Enterprise, 40 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N 341, 13.09.1958</td>
<td>Relict groves of hazel-nut (Corylus Colurna)</td>
</tr>
<tr>
<td>2</td>
<td>“Pine of Banx” Sanctuary (Hrazdan Forest Enterprise), 4 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N20</td>
<td>Unique planted stands of pine of Banx</td>
</tr>
<tr>
<td>3</td>
<td>“Her-Her Open Woodland” State Sanctuary (Yeghegis Forest Enterprise), 6139 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N 341, 13.09.1958</td>
<td>Relict yew open woodland and remnant orchards of pear</td>
</tr>
<tr>
<td>4</td>
<td>“Jermuk” State Sanctuary (Eghegnadzor Forest Enterprise), 3865 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N 341, 13.09.1958</td>
<td>Rare animals - Armenian mouflon, Bezoar goat, brown bear, Caucasian leopard</td>
</tr>
<tr>
<td>5</td>
<td>“Gyulagarak Pine” State Sanctuary (Stepanavan Forest Enterprise, 2576 ha)</td>
<td>Decree of the Council of Ministers of ArmSSR N 341, 13.09.1958</td>
<td>Relict pine forests</td>
</tr>
<tr>
<td>6</td>
<td>Caucasian Rose-bay State Sanctuary (Gugark Forest Enterprise), 1000 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N20, 29.01.1959</td>
<td>Caucasian rose-bay (Rhododendron caucasicum)</td>
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<tr>
<td>7</td>
<td>“Margahovit” State Sanctuary (Gugark Forest Enterprise), 3368 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N 212, 19.04.1971</td>
<td>Forest animals - roe-deer, brown bear, red deer, Caucasian black grouse</td>
</tr>
<tr>
<td>8</td>
<td>“Arzakan and Meghadzor” State Sanctuary (Hrazdan Forest Enterprise), 13532 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N 212, 19.04.1971</td>
<td>Rare and valuable animal species - brown bear, roe-deer, black grouse and other forest species</td>
</tr>
<tr>
<td>9</td>
<td>“Ijevan” State Sanctuary (Ijevan Forest Enterprise), 5908 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N 212, 19.04.1971</td>
<td>Rare and valuable animal species - brown bear, roe-deer, black grouse and other forest species</td>
</tr>
<tr>
<td>10</td>
<td>“Gandzakar” State Sanctuary (Ijevan Forest Enterprise), 6813 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N 212, 19.04.1971</td>
<td>Rare and valuable animal species - brown bear, roe-deer, black grouse and other forest species, mountainous forests</td>
</tr>
<tr>
<td>11</td>
<td>“Getik” (Jambarak Forest Enterprise), 5728 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N 212, 19.04.1971</td>
<td>Rare and valuable animal species - roe-deer, brown bear, wild boar, black grouse</td>
</tr>
<tr>
<td>12</td>
<td>“Yeghegnadzor” State Sanctuary (Yeghegis Forest Enterprise), 4200 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N375, 16.11.1971</td>
<td>Rare and valuable animal species - Bezoar goat, Armenian mouflon, Caucasian leopard, rich diversity of wild wheat</td>
</tr>
<tr>
<td>13</td>
<td>“Goris” State Sanctuary (Goris Forest Enterprise), 1850 ha</td>
<td>Decree of the Council of Ministers of ArmSSR N775, 16.11.1972</td>
<td>Forest ecosystems typical for the region, threatened species of flora and fauna</td>
</tr>
</tbody>
</table>
Appendices - AZERBAIJAN

Appendix 6 - Multilateral Environmental Agreements (MEAs) ratified by Azerbaijan

<table>
<thead>
<tr>
<th>Title of the Agreement</th>
<th>Entry into force for the Republic of Azerbaijan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GLOBAL TREATIES</strong></td>
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</tr>
<tr>
<td>International Plant Protection Convention (Rome, 1951)</td>
<td>2000</td>
</tr>
<tr>
<td>Convention on Wetlands of International Importance Especially as Waterfowl Habitat</td>
<td>2001</td>
</tr>
<tr>
<td>(Ramsar, 1971)</td>
<td></td>
</tr>
<tr>
<td>Convention on the Protection of the World Cultural and Natural Heritage (Paris, 1972)</td>
<td>1993</td>
</tr>
<tr>
<td>Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter</td>
<td>1997</td>
</tr>
<tr>
<td>(London, 1972)</td>
<td></td>
</tr>
<tr>
<td>International Convention on the International Regulations for Preventing Collision at</td>
<td>1997</td>
</tr>
<tr>
<td>Sea (London, 1972)</td>
<td></td>
</tr>
<tr>
<td>(Washington D.C., 1973)</td>
<td></td>
</tr>
<tr>
<td>- Annex I on Prevention of Pollution by Oil (London, 1978)</td>
<td></td>
</tr>
<tr>
<td>- Annex II on Control of Pollution by Noxious Liquid Substances (London, 1978)</td>
<td></td>
</tr>
<tr>
<td>- Annex IV on Sewage (London, 1978)</td>
<td></td>
</tr>
<tr>
<td>Convention for the Protection of the Ozone Layer (Vienna, 1985)</td>
<td>1996</td>
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<tr>
<td>Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal, 1987)</td>
<td></td>
</tr>
<tr>
<td>- Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal, 1987)</td>
<td>1996</td>
</tr>
<tr>
<td>- Copenhagen Amendment to the Protocol (Copenhagen, 1992)</td>
<td>1996</td>
</tr>
<tr>
<td>- Montreal Amendment to the Protocol (Montreal, 1997)</td>
<td>2000</td>
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<tr>
<td>Convention on the Control of Transboundary Movements of Hazardous Wastes and their</td>
<td>2001</td>
</tr>
<tr>
<td>Disposal (Basel, 1989)</td>
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<tr>
<td>- Cartagena Protocol on Biosafety (Cartagena, 2000)</td>
<td>2005</td>
</tr>
<tr>
<td>- Kyoto Protocol (Kyoto 1997)</td>
<td>2000</td>
</tr>
<tr>
<td>Title of the Agreement</td>
<td>Entry into force for the Republic of Azerbaijan</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Convention on Persistent Organic Pollutants (POPs) (Stockholm, 2001)</td>
<td>2004</td>
</tr>
<tr>
<td>REGIONAL TREATIES</td>
<td></td>
</tr>
<tr>
<td>European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) (Geneva, 1957)</td>
<td>2000</td>
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<tr>
<td>Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979)</td>
<td>2002</td>
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<tr>
<td>UNECE Convention on Long-Range Trans-boundary Air Pollution (CLRTAP), (Geneva, 1979)</td>
<td>1999</td>
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<tr>
<td>UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992)</td>
<td>2000</td>
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<tr>
<td>UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention),</td>
<td>1999</td>
</tr>
<tr>
<td>European Landscape Convention (Florence, 2000)</td>
<td>2011</td>
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</table>

Source: Compiled from EPR-II

# Appendix 7 - List of the Specially Protected Nature Areas of the Republic of Azerbaijan

## State Nature Reserves

<table>
<thead>
<tr>
<th>№</th>
<th>Name of the SPNA</th>
<th>Administrative territory</th>
<th>Area (ha)</th>
<th>Date of establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gizilaghaj SNR</td>
<td>Lankaran region</td>
<td>88,360</td>
<td>1929</td>
</tr>
<tr>
<td>2</td>
<td>Zagatala SNR</td>
<td>Zagatala and Balakan regions</td>
<td>47,349</td>
<td>1929</td>
</tr>
<tr>
<td>3</td>
<td>Turyanchay SNR</td>
<td>Aghdash, Oghuz, Yevlakh and Gabala regions</td>
<td>22,488</td>
<td>1958</td>
</tr>
<tr>
<td>4</td>
<td>Shirvan SNR</td>
<td>Salyan and Neftchala regions</td>
<td>6,232</td>
<td>1969</td>
</tr>
<tr>
<td>5</td>
<td>Basitchay SNR</td>
<td>Zangilan region</td>
<td>107</td>
<td>1974</td>
</tr>
<tr>
<td>6</td>
<td>Garayazi SNR</td>
<td>Gazakh region</td>
<td>9,658</td>
<td>1978</td>
</tr>
<tr>
<td>7</td>
<td>Illis SNR</td>
<td>Gakh region</td>
<td>17,381.6</td>
<td>1987</td>
</tr>
<tr>
<td>8</td>
<td>Garagol SNR</td>
<td>Lachin region</td>
<td>240</td>
<td>1987</td>
</tr>
<tr>
<td>9</td>
<td>Eldar shami SNR</td>
<td>Samukh region</td>
<td>1,686</td>
<td>2004</td>
</tr>
<tr>
<td>10</td>
<td>Mud volcanoes SNR</td>
<td>Baku and Absheron peninsula</td>
<td>20,000</td>
<td>2007</td>
</tr>
<tr>
<td>11</td>
<td>Korchay SNR</td>
<td>Goranboy region</td>
<td>4,833.6</td>
<td>2008</td>
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</tbody>
</table>

## National Parks

<table>
<thead>
<tr>
<th>№</th>
<th>Name of the SPNA</th>
<th>Administrative territory</th>
<th>Area (ha)</th>
<th>Date of establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Zangazur NP named after Academician H. Aliyev</td>
<td>Nakhichevan AR</td>
<td>4,279.74</td>
<td>2003</td>
</tr>
<tr>
<td>2</td>
<td>Shirvan NP</td>
<td>Garadagh district of Baku city, Salyan and Neftchala regions</td>
<td>54,373.5</td>
<td>2003</td>
</tr>
<tr>
<td>3</td>
<td>Aghgol NP</td>
<td>Aghjabadi and Belaygan regions</td>
<td>17,924</td>
<td>2003</td>
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<tr>
<td>4</td>
<td>Hirkan NP</td>
<td>Lankaran and Astara regions</td>
<td>40,358</td>
<td>2004</td>
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<tr>
<td>5</td>
<td>Aliaghaj NP</td>
<td>Khizi and Silyazan regions</td>
<td>11,035</td>
<td>2004</td>
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<tr>
<td>6</td>
<td>Absheron NP</td>
<td>Azizbayov district of Baku city</td>
<td>783</td>
<td>2005</td>
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<tr>
<td>7</td>
<td>Shahdagh NP</td>
<td>Guba, Gusar, Ismayilli, Gabala, Oghuz and Shamakhy regions</td>
<td>130,508.1</td>
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<td>8</td>
<td>Goygol NP</td>
<td>Goygol, Dashkasan and Goranboy regions</td>
<td>12,755</td>
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<td>9</td>
<td>Samur-Yalama</td>
<td>Khachmaz region</td>
<td>11,772.45</td>
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## State Nature Sanctuaries

<table>
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<tr>
<th>№</th>
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<th>Area (ha)</th>
<th>Date of establishment</th>
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<tbody>
<tr>
<td>1</td>
<td>Lachin SNS</td>
<td>Lachin region</td>
<td>20,000</td>
<td>1961</td>
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<td>2</td>
<td>Korchay SNS</td>
<td>Goygol and Goranboy regions</td>
<td>15,000</td>
<td>1961</td>
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<td>3</td>
<td>Bandovan SNS</td>
<td>Salyan region and Garadagh district</td>
<td>4,930</td>
<td>1961</td>
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<td>4</td>
<td>Shaki SNS</td>
<td>Shaki region</td>
<td>10,350</td>
<td>1964</td>
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<tr>
<td>5</td>
<td>Gusar SNS</td>
<td>Gusar region</td>
<td>15,000</td>
<td>1964</td>
</tr>
<tr>
<td>6</td>
<td>Shamkir SNS</td>
<td>Shamkir region</td>
<td>10,000</td>
<td>1964</td>
</tr>
<tr>
<td>7</td>
<td>Gil island SNS</td>
<td>Gil island</td>
<td>400</td>
<td>1964</td>
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<td>8</td>
<td>Garayaz-Aghstafa SNS</td>
<td>Aghstafa region</td>
<td>10,000</td>
<td>1964</td>
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<td>9</td>
<td>Bada SNS</td>
<td>Bada and Aghdam regions</td>
<td>7,500</td>
<td>1966</td>
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<td>10</td>
<td>Zuvand SNS</td>
<td>Lerik, Yardimly regions</td>
<td>15,000</td>
<td>1969</td>
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<td>11</td>
<td>Ordubad SNS</td>
<td>Ordubad region</td>
<td>27,869</td>
<td>1969</td>
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<td>Ismayilli SNS</td>
<td>Ismayilli and Gabala region</td>
<td>23,438</td>
<td>1969</td>
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<td>№</td>
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<td>Area (ha)</td>
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<td>13</td>
<td>Qubadli SNS</td>
<td>Qubadli, Lachin region</td>
<td>20,000</td>
<td>1969</td>
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<td>14</td>
<td>Lesser Gizilaghaj SNS</td>
<td>Lankaran region</td>
<td>10,700</td>
<td>1978</td>
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<td>15</td>
<td>Dashalti SNS</td>
<td>Shusha region</td>
<td>450</td>
<td>1981</td>
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<td>16</td>
<td>Gizilja SNS</td>
<td>Gedebe region</td>
<td>5,135</td>
<td>1984</td>
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<td>17</td>
<td>Arazboyu SNS</td>
<td>Zangilan region</td>
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<td>1993</td>
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<td>18</td>
<td>Gabala SNS</td>
<td>Gabala region</td>
<td>39,700</td>
<td>1993</td>
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<td>19</td>
<td>Gakh SNS</td>
<td>Gakh region</td>
<td>36,836</td>
<td>2003</td>
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<tr>
<td>20</td>
<td>Hirkan SNS</td>
<td>Lankaran and Astara regions</td>
<td>1,553</td>
<td>2005</td>
</tr>
<tr>
<td>21</td>
<td>Arazboyu SNS</td>
<td>Nakhichevan AR</td>
<td>9,118</td>
<td>2005</td>
</tr>
<tr>
<td>22</td>
<td>Zagatala SNS</td>
<td>Zagatala and Balakan regions</td>
<td>6,557</td>
<td>2008</td>
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<tr>
<td>23</td>
<td>Arpachay SNS</td>
<td>Nakhichevan AR, Sharur region</td>
<td>68,911</td>
<td>2009</td>
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<td>24</td>
<td>Rvarud SNS</td>
<td>Lenik region</td>
<td>510</td>
<td>2009</td>
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Appendix 8 - Important Bird Areas (IBA) in Azerbaijan
<table>
<thead>
<tr>
<th>Category</th>
<th>Criterion</th>
</tr>
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<tbody>
<tr>
<td><strong>A. Species of global conservation concern</strong></td>
<td>The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.</td>
</tr>
<tr>
<td><strong>A2. Restricted-range species</strong></td>
<td>The site is known or thought to hold a significant component of the restricted-range species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA).</td>
</tr>
<tr>
<td><strong>A3. Biome-restricted species</strong></td>
<td>The site is known or thought to hold a significant assemblage of the species whose breeding distributions are largely or wholly confined to one biome.</td>
</tr>
</tbody>
</table>
| **A4. Congregations** | (i) The site is known or thought to hold, on a regular basis, >1% of a biogeographic population of a congregatory waterbird species.  
(ii) The site is known or thought to hold, on a regular basis, >1% of the global population of a congregatory seabird or terrestrial species.  
(iii) The site is known or thought to hold, on a regular basis, >20,000 waterbirds or >10,000 pairs of seabird of one or more species.  
(iv) The site is known or thought to be a "bottleneck" site where at least 20,000 storks (Ciconiidae), raptors (Accipitridae and Falconiformes) or cranes (Gruidae) regularly pass during spring or autumn migration. |
| **B1. Congregations** | (i) The site is known or thought to hold at least 1% of a flyway or other distinct population of a waterbird species.  
(ii) The site is known or thought to hold at least 1% of a distinct population of a seabird species.  
(iii) The site is known or thought to hold at least 1% of a flyway or other distinct population of other congregatory species.  
(iv) The site is a "bottleneck" site where over 5,000 storks, or over 3,000 raptors or cranes regularly pass on spring or autumn migration. |
<p>| <strong>B2. Species with an unfavorable conservation status in Europe</strong> | The site is one of the &quot;n&quot; most important in the country for a species with an unfavourable conservation status in Europe (SPEC 2, 3) and for which the site-protection approach is thought to be appropriate. |
| <strong>B3. Species with a favorable conservation status in Europe</strong> | The site is one of the &quot;n&quot; most important in the country for a species with a favourable conservation status in Europe but concentrated in Europe (SPEC 4) and for which the site-protection approach is thought to be appropriate. |</p>
<table>
<thead>
<tr>
<th>Modern code</th>
<th>SU time number</th>
<th>Name</th>
<th>Administrative district</th>
<th>Area in ha</th>
<th>Criteria of IBA</th>
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<td>001</td>
<td>SU075</td>
<td>Zagatala</td>
<td>Zagatala, Balakan</td>
<td>23,844</td>
<td>A1, A3</td>
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<td>002</td>
<td></td>
<td>Ilisu</td>
<td>Gakh</td>
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<td>001</td>
<td></td>
<td>Alazan (Ganikh) river valley</td>
<td>Zagatala, Balakan, Gakh</td>
<td>5,000</td>
<td>A1, B2</td>
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<tr>
<td>004</td>
<td></td>
<td>Sheki upland</td>
<td>Sheki</td>
<td>10,400</td>
<td>A1</td>
</tr>
<tr>
<td>005</td>
<td>SU073</td>
<td>Garayazi</td>
<td>Gazakh, Aghstafa</td>
<td>10,000</td>
<td>A1</td>
</tr>
<tr>
<td>005</td>
<td></td>
<td>Agstafa-chai valley</td>
<td>Gazakh</td>
<td>200</td>
<td>B2</td>
</tr>
<tr>
<td>007</td>
<td></td>
<td>Shamkir area</td>
<td>Shamkir</td>
<td>10,000</td>
<td>A1, B2</td>
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<tr>
<td>008</td>
<td></td>
<td>Korchai</td>
<td>Samukh, Goranboy</td>
<td>15,000</td>
<td>A1, B2</td>
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<tr>
<td>009</td>
<td></td>
<td>Varvara reservoir</td>
<td>Yevlakh</td>
<td>4,000</td>
<td>A1</td>
</tr>
<tr>
<td>010</td>
<td>SU 081</td>
<td>Turianchay, Gekchai Bozdag</td>
<td>Agdash, Yevlakh, Oguz, Gabala Goychay, Gabala</td>
<td>12,600</td>
<td>B2</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>5,000</td>
<td>A1, B2</td>
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<td>012</td>
<td>SU074</td>
<td>Goygol</td>
<td>Khanlar</td>
<td>7,131</td>
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<td>Kelbadjar, Lachin</td>
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<tr>
<td>016</td>
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<td>Shahbuz</td>
<td>Nakchivan Aut.Rep., Shahbuz</td>
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<tr>
<td>020</td>
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<td>Guba, Gabala, Gusari</td>
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<td>A1, A3</td>
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<td>021</td>
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<td>Gusar</td>
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<td>Khachmas</td>
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<tr>
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<td>Aghibir</td>
<td>Devechi</td>
<td>7,000</td>
<td>A4iii, A1, A4i, B1i, B2</td>
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<td>025</td>
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<td>Shamakhi</td>
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<td>Agjabedy</td>
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<td>SU time number</td>
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<td>Area in ha</td>
<td>Criteria of IBA</td>
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<tr>
<td>032</td>
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<tr>
<td>034</td>
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<td>Absheron archipelago (north) and Pyrallahy Bay</td>
<td>Baku</td>
<td>1,000</td>
<td>B1i</td>
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<tr>
<td>035</td>
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<td>Shah Cape (Shahdili)</td>
<td>Baku</td>
<td>500</td>
<td>A4i, A4iii, B1i</td>
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<tr>
<td>036</td>
<td></td>
<td>Red lake and other lakes of Absheron peninsula</td>
<td>Great Baku, Absheron</td>
<td>—</td>
<td>A1, A4i, B1i</td>
</tr>
<tr>
<td>037</td>
<td></td>
<td>Gargabazardag and Gushgaya</td>
<td>Gobustan</td>
<td>3,000</td>
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<tr>
<td>038</td>
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<td>Gobustan</td>
<td>Garadag, Gobustan</td>
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<td>039</td>
<td></td>
<td>Sangachal Bay</td>
<td>Garadag</td>
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<td>040</td>
<td></td>
<td>Gil island</td>
<td>Garadag</td>
<td>200</td>
<td>A4i,Bii,B2</td>
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<tr>
<td>041 -</td>
<td></td>
<td>Lake Hajikabul</td>
<td>Shirvan city, Ajigabul district</td>
<td>1,500</td>
<td>A1, A4i, B1i</td>
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<tr>
<td>042</td>
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<td>Piragat islands and Los island</td>
<td>Garadag</td>
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<td>SU078/080</td>
<td>Shirvan (Lake in Shirvan NP)</td>
<td>Salyan, Neftechala</td>
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<td>Salyan, Imishli, Pushkin, Saatly, Sabirabad</td>
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<td>Mahmudchala</td>
<td>Pushkin, Jalilabad, Masally</td>
<td>10,000</td>
<td>A1, A4i, A4iii, B1i</td>
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<td>Kur river delta</td>
<td>Neftechala</td>
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<td>AghChala (Novogolovka-chala)</td>
<td>Salyan, Masally</td>
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<td>SU077</td>
<td>Great Gyzylagach Gulf</td>
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<td>Viliashchay valley</td>
<td>Lenkeran, Yardymly</td>
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<td></td>
<td>Zuvand upland</td>
<td>Yardymly, Lerik</td>
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<tr>
<td>051</td>
<td></td>
<td>Hirkan forest</td>
<td>Astara, Lenkeran</td>
<td>4,500</td>
<td>B2</td>
</tr>
<tr>
<td>052</td>
<td></td>
<td>Astarachai valley</td>
<td>Astara</td>
<td>2,000</td>
<td>B2, B3</td>
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<td>053</td>
<td></td>
<td>Heydar Aliyev Factory &quot;Sheif&quot;</td>
<td>Garadag</td>
<td>5,000</td>
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</tr>
</tbody>
</table>
### Appendix 9 - Multilateral Environmental Agreements (MEAs) ratified by Georgia

**Source:** MoENRP

<table>
<thead>
<tr>
<th>Title of the Agreement</th>
<th>Entry into force for Georgia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GLOBAL TREATIES</strong></td>
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<tr>
<td>Convention On Protection of the Black Sea Against Pollution (Bucharest, 1992)</td>
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<tr>
<td>- The Black Sea Biodiversity and Landscape Conservation Protocol (Bucharest, 1992)</td>
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<tr>
<td>- Protocol on Protection of the Black Sea Marine Environment Against Pollution from Land Based Sources (Bucharest, 1992)</td>
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<tr>
<td>- Protocol on The Protection of The Black Sea Marine Environment Against Pollution by Dumping (Bucharest, 1992)</td>
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<tr>
<td>- Protocol on Cooperation in combating pollution of the Black Sea Marine Environment by Oil and Other Harmful Substances in Emergency Situations (Bucharest, 1992)</td>
<td>not in force</td>
</tr>
<tr>
<td>- Cartagena Protocol on Biosafety (Cartagena 2000)</td>
<td>2009</td>
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<tr>
<td>United Nations Framework Convention on Climate Change (UNFCCC) (New York, 1992)</td>
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<tr>
<td>- Kyoto Protocol (Kyoto 1997)</td>
<td>2005</td>
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<tr>
<td>Convention for the Protection of the Ozone Layer (Vienna, 1985)</td>
<td>1996</td>
</tr>
<tr>
<td>- Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal 1987)</td>
<td>1997</td>
</tr>
<tr>
<td>- Copenhagen Amendment to the Montreal protocol (Copenhagen, 1992)</td>
<td>2000</td>
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<tr>
<td>- Montreal Amendment to the Montreal protocol (Montreal, 1997)</td>
<td>2000</td>
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<tr>
<td>- Beijing Amendment to the Montreal protocol (Beijing, 1999)</td>
<td>2011</td>
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<tr>
<td>- Bonn Amendment (1979, Bonn)</td>
<td>1996</td>
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<tr>
<td>- Gaborone Amendment (Gaborone (Botswana), 1983)</td>
<td>1996</td>
</tr>
<tr>
<td>Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 1971)</td>
<td>1997</td>
</tr>
<tr>
<td>- Paris Amendment (Paris, 1982)</td>
<td>1997</td>
</tr>
<tr>
<td>- Regina Amendment (Regina, Canada, 1987)</td>
<td>1997</td>
</tr>
<tr>
<td>Title of the Agreement</td>
<td>Entry into force for Georgia</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979)</td>
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</tr>
<tr>
<td>- Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) (Monaco, 1996)</td>
<td>2001</td>
</tr>
<tr>
<td>Convention on Persistent Organic Pollutants (POPs) (Stockholm, 2001)</td>
<td>2007</td>
</tr>
<tr>
<td>Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979)</td>
<td>2010</td>
</tr>
<tr>
<td>European Landscape Convention (Florence, 2000)</td>
<td>2011</td>
</tr>
<tr>
<td>Agreement between the Republic of Georgia and the International Atomic Energy Agency for the Application of Safeguards in Connection with Treaty on the Non-Proliferation of Nuclear Weapons (Vienna, 1997)</td>
<td>2003</td>
</tr>
<tr>
<td>- Protocol Additional to the Agreement between the Republic of Georgia and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons (Vienna, 1997)</td>
<td>2003</td>
</tr>
<tr>
<td>Convention on Early Notification of a Nuclear Accident (Vienna, 1986)</td>
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<td>REGIONAL TREATIES</td>
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<td>UNECE Convention on Long-Range Trans-boundary Air Pollution (CLRTAP), (Geneva, 1979)</td>
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</tr>
<tr>
<td>- GMO Amendment (Almaty, 2005)</td>
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</table>
Appendix 10- List of 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.
12. Limestone beech forests (Cephalanthero-Fagion)
13. Beech forests with Colchic understory (Fagetafruticosacolchica)
14. Tilio-Acerion forests of slopes, scree 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. Kolkheti relic broad-leaved mixed forest
24. Arid open woodlands
25. Sub-alpine birch krummholz
26. Sub-alpine tall herbvegetation
27. Prostrate scrub vegetation (Rododendretum)
Appendix 11 - Discussions/details form different sources on forest cover in Georgia

The total area of the Forest Fund is stable at an estimated 3.0 million ha, of which 2.7 million ha are covered with forests, or 40 % of all Georgian territory. Georgian forests are divided into highland and plain forests. Highland forests occupy 97.7% of the total area under forestry. Average timber stock is 160 m\(^3\) per hectare. It is estimated that the total annual increase in timber stocks is 1.8 m\(^3\) per hectare, representing 4.6-4.8 million m\(^3\) nationally.\(^{441}\)

According to 4th NR to CBD, 2010, approximately 2.8 million ha, or 40% of the country’s territories, are covered by forest and about 97% of these are of natural origin. The majority of Georgia’s biodiversity is directly or indirectly connected with forest ecosystems.

According to NEAP-2, data are as following: 2.77 million ha are covered with forests, i.e. 39.9% of the country’s territory – including an estimated 0.5 million ha of primary forests, 2.2 million ha of natural modified forests and 60,000 ha of protective artificial plantations. Total standing volume amounts to 430 million m\(^3\), and average annual forest growth measures approximately 4.0 million m\(^3\).

According to Country Environmental Analysis, 2015, carried out by the WB\(^{442}\), land area covered by forest is 0.5% lower than the 40% in 1990.

Satellite images of the project from the University of Maryland, Google Tree Cover Loss, measure forest change data, tree cover loss, tree cover gain, and forest disturbance.\(^{443}\) They show increasing forest degradation in certain areas in Georgia through the period of 2001–13. However, providing that there is no large-scale, clear-cut logging, but instead mostly selective logging in Georgia, not all present degradation could be detected at the given resolution (30 m).\(^{444}\) Forested land reduction in Georgia in 2001–12, as forestland is defined in the Global Forest Resources Assessment (FAO 2010). Accordingly, forest area gain is also estimated based on this method (www.globalforestwatch.org). Deforestation is not confirmed by Georgian official statistics. However, it is believed that it is a serious problem. An annual loss of tree cover is reported by Global Forest Watch. Over the past 12 years, forest cover has been reduced by 7,800 hectares (ha), and Georgia has gained 4,900 hectares of forest of a different quality.\(^{445}\)


\(^{442}\) International Bank for Reconstruction and Development / The World Bank (2015): Georgia: Country Environmental Analysis—Institutional, Economic and Poverty Aspects of Georgia’s Road to Environmental Sustainability

\(^{443}\) http://www.globalforestwatch.org/sources/forest_cover.

\(^{444}\) University of Maryland, Global Forest Cover Change: http://forstcover.org.

In the frame of the NBMS the total forest area of Georgia and its biogeographical regions has been estimated (so far only once in 2010), on the basis of satellite images from 2001-2008, that revealed, area currently covers about 41% of the total area of Georgia (28,382km²). Over the last decade, this figure has been relatively stable.

On the bases of a sample of inventory data provided by the Forestry Department and published by the FAO (FAO, Global Forest Resources Assessment, 2010), shows, a slight but continuing decrease of the forest cover from 1990 to 2010. This development was mainly caused by the illegal forest logging activities and led not only to a decline of the total forest area, but also to a more or less severe change in the age and species compositions of the concerned forests.446

446 http://biomonitoring.moe.gov.ge/
Appendix 12 - Map - Critical freshwater habitats

Source: “Freshwater Ecosystems and Biodiversity, Critical Sites for Threatened Freshwater Biodiversity in the Southern Caucasus” WWF, 2015
### Appendix 14 - PAs of Georgia

<table>
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<tr>
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Natural Monument Area (ha) 2,376.10

Total Number of Natural Monuments 41

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<td>Ito Managed Nature Reserve</td>
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<td>3 1965 2007</td>
<td>Korugi Managed Nature Reserve</td>
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<td>Gardabani Managed Nature Reserve</td>
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<td>5 1965 2007</td>
<td>Ior Managed Nature Reserve</td>
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Managed Nature Reserves Area (ha) 70,392.78

Total Number of Managed Nature Reserves 19

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Total Area of Protected Landscapes (ha) 34,708.00

Total Number of Protected Landscapes 2

Total Area of PAs 600,668.41

Total Number of PAs 87

Ratio of Country’s territory % 8.62

Source: Agency of Protected Areas of Georgia
Appendix 15 - Important Bird Areas of Georgia

Summary of IBAs in Georgia

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<td>Racha</td>
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*Source: Ecodit (2009): Biodiversity Analysis Update for Georgia, USAID (Provided by GCCW/BirdLife Georgia)*
### Appendix 16 - Georgian Protected Areas Categories

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<th>Key Management Objective</th>
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<td>Strict Nature Reserve/ State Reserve</td>
<td>Strict protection of biodiversity, non-manipulated scientific research</td>
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<td>National Park</td>
<td>Protection of ecosystems and recreation on a comparatively large area</td>
<td>II</td>
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<tr>
<td>Natural Monument</td>
<td>Conservation of small-sized prominent natural site and features</td>
<td>III</td>
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<tr>
<td>Managed Nature Reserve / Sanctuary</td>
<td>Conservation of biodiversity through active management and focusing on particular species</td>
<td>IV</td>
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<tr>
<td>Protected Landscape</td>
<td>Conservation of traditional natural and cultural landscapes</td>
<td>V</td>
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<tr>
<td>Multiple-Use Territories</td>
<td>Sustainable development of natural ecosystems</td>
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Appendix 17 - Assessment of Environmental Education in Georgia, LEPL Environmental Information and Education Centre (2014): supported by GIZ – SMB Project

- Environmental qualifications included into the National Qualification Framework to quite limited extent, requires expansion; Standard education and development for early age is well balanced but lacks such components as the effective model for introduction of standards, opportunities for improvement of the teachers’ qualification; National Education Plan provides proper basis for expansion of the environmental issues and their including into the education programs, though they have no exact mechanism for their introduction; Environmental issues are unevenly distributed by the subjects; In many cases the professional standards do not properly reflect the environmental issues impacting the contents of the vocational education programs; sizes of the environmental and vocational education programs in many cases is insufficient for achievement of the learning outcomes;

- Training modules of teachers’ professional development contain the environmental and sustainable development issues for the subjects the standards of which contain the relevant preconditions while the subject standards of the other teachers these issues are presented in a very limited manner.

- Education resources lack diversity and in many cases availability of supplementary materials, audio and video materials, infrastructure and their availability is limited. Existing textbooks often contain very limited information about environmental issues.

- Teachers lack information related to environment protection; in general, the teachers have positive attitude to professional development and they believe that they need trainings and seminars, re-training with respect of teaching of the environmental issues etc.

- Extracurricular and informal education activities are even less systematic and versatile at kindergartens and schools, as well as at the vocational and higher education institutions. Extracurricular activities are rarely integrated with the education process.

- Education institutions rarely have contacts/cooperation with the state, nongovernmental and international organizations working in the environmental sphere.

- In general, the education process lacks cooperation between the education institutions (teachers, administration, students) and hence, the opportunities of sharing gained experience, approaches and/or education materials in the environmental sphere are very limited.