National Biodiversity Strategy and Action Plan of Georgia 2014 – 2020

Tbilisi, 2014

Foreword

The process of the preparation of the National Biodiversity Strategy and Action Plan (NBSAP) involved a number of nongovernmental and governmental organisations, research and academic institutions, international organizations and foreign and Georgian experts.

The Georgian Ministry of Environment and Natural Resources Protection is grateful to the German International Cooperation (GIZ) for its support in the preparation of this document and to all who participated in the process.

The process of the development of the National Biodiversity Strategy and Action Plan (NBSAP) was initiated and coordinated by the Biodiversity Protection Service of the Ministry of Environment and Natural Resources Protection.

The following persons participated in the development process and the determination of main aspects, thematic areas and document structure:

Ioseb kartsivadze, Ana Rukhadze, Tamar Kvantaliani, Christine Straub, Natia Iordanashvili, Khatuna Tsiklauri, Frank Flasche, Natia Kobakhidze, Paata Shanshiashvili, Darejan Kapanadze, Khatuna Gogaladze, Nugzar Zazanashvili, Malkhaz Dzneladze, Davit Tarkhnishvili, Irakli Shavgulidze, Ramaz Goklhelashvili, Ekaterine Kakabadze, Irakli Macharashvili, Mariam Jorjadze, Tornike Pulariani, Levan Butkhuzi.

The following persons worked on the compilation and editing of the entire text:

Christian Prip, Mike Garforth, Christian Goenner, Hans Bilger, Irakli Shavgulidze, Ioseb Kartsivadze, Nona Khelaia, Mariam Urdia, Teona Karchava, Nugzar Gvaladze, Akaki Veltauri, Natia Urushadze, Natia Kobakhidze.

The following organisations worked on the development of thematic areas:

- **Centre for Biodiversity Conservation and Research – NACRES**; Coordinator: Kakha Artsivadze

  Thematic areas:

  I. **Species and Habitats** – Coordinator: Irakli Shavgulidze; Experts: Irakli Shavgulidze, Bejan Lortkipanidze, Giorgi Gorgadze, Irakli Macharashvili, Maia Akhalkatsi, Ketevan Batsatsashvili, Kakha Artsivadze
  II. **Biodiversity and Climate Change** – Coordinator: Kakha Artsivadze; Experts: Irakli Macharashvili, Irakli Shavgulidze
  III. **Assessment and Use of Biological Resources** – Coordinator: Irakli Macharashvili; Experts: Irakli Macharashvili, Irakli Shavgulidze

- **WWF Caucasus Programme Office** – Coordinator: Nugzar Zazanashvili

  Thematic areas**:**

  I. **Protected Areas** – Coordinator: Ekaterine Kakabadze; Experts: Ekaterine Kakabadze, Nugzar Zazanashvili
  II. **Forest Ecosystems** – Coordinator: Ilia Osepashvili, Johan Neuner; Experts: Ilia Osepashvili, Leri Chochua, Zaliko Daushvili

- **RECC Caucasus** – Coordinator: Sopiko Akhobadze

  Thematic areas:

  I. Biosafety – Coordinator: Ana Rukhadze; Experts: Ana Rukhadze, Zurab Kuchukashvili, Gia Zhorzholiani

  II. Cross cutting issues – Coordinator: Malkhaz Dzneladze; Experts: Malkhaz Dzneladze, Gia Zhorzholiani

- Biological Farming Association ELKANA

  Thematic area: Agrarian Biodiversity and Natural Grasslands

  Coordinator: Elene Shatberashvili; Experts: Mariam Jorjadze, Elene Shatberashvili, Maia Akhalkatsi, Giuli Gogoli, Nino Chanishvili, George Eliava, Tengiz Urushadze, Zaza Kilasonia

- **Union for Sustainable Development ECOVISION**

  Thematic area: Communication, Education, Public Awareness And Public Participation

  Coordinator: Nino Sulkhanishvili; Experts: Tea Siprashvili, Gia Sopadze, Ana Rukhadze, Rusudan Chochua

- **Ilia State University; Coordinator: Zurab Gurielidze**

  Thematic areas:

  I. Inland Water Ecosystems – Coordinator: Bella Japoshvili; Experts: Marina Bozhadze, Zhanetta Shubitidze, Tamar Loladze, Levan Mumladze

  II. The Biodiversity of the Black Sea – Coordinator: Zurab Gurielidze; Experts: Zurab Gurielidze, Natia Kopaliani, Maia Shakarashvili, Nana Devidze, Zurab Javakhishvili

The following persons made valuable contributions to the NBSAP by providing comments, advice and important information:

Abesalom Tsuladze, Avtandil Mikaberiodze, Alexandre Bukhnikashvili, Ana Gulbani, Ana Shubitidze, Anja Witich, Archil Adamia, Archil Partsvania, Bejan Rekhviashvili, Gela Bakhturidze, Giorgi Darchiashvili, Giorgi Kolbini, Giorgi Lebanidze, Giorgi Maghradze, Giorgi Sulamanidze, Giorgi Khabeishvili, Giorgi Chitidze, Guram Aleqksidze, Davit Bedoshvili, Davit Dekanoidze, Davit Tarkhnishvili, Darejan Kapanadze, Diana Dzidziguri, Dieter Mueller, Vano Kupradze, Vakhtang Gogoberidze, Zviad Matiashvili, Tamaz Gamkrelidze, Tamar Pataridze, Tamar Kartvelishvili, Tengiz Martiashvili, Teo Urushadze, Toma Dekanoidze, Tornike Pulariani, Irakli Dvali, Irakli Nadiradze, Irakli Chavchanidze, Kakha Bakhtadze, Kakha Sokhadze, Lali Tevzadze, Lali Tabatadze, Lasha Moistsrapishvili, Levan Tabunidze, Levan Inashvili, Levan Ninua, Lia Shubladze, Maia Chkhobadze, Manana Ratiani, Marina Baidauri, Mariam Gelashvili, Mariam Shotadze, Marina Shvangiradze, Marine Sujashvili, Maka Shubladze, Natia Iordanashvili, Nana Pantskhava, Nato Sultanishvili, Neli Datukishvili, Neli Korkotadze, Nino Batmanidu, Nona Khelaia, Otar Antia, Otar Abdaladze, Paata Turava,

Paata Shanshiashvili, Rezo Getiashvili, Rusudan Tevzadze, Ketevan Laperashvili, Khatuna Tsiklauri, Mitropolit Ioane (Gamrekeli).

The following persons and organisations participated in the discussions and consultations surrounding the creation of the NBSAP:

List of participants: Avtandil Kokhrashvili, Avtandil Tskhvediani, Aivengo Shatirishvili, Amiran Svanadze, Gela Macharashvili, Gigi Damenia, Giorgi Beruchashvii, Giorgi Menabde, Giorgi Kavtaradze, Giorgi Khatiashvili, Goderdzi Goderdzishvili, Gocha Aronishidze, Davit Chipashvili, Davit Lobzhanidze, Dimitri Glonti, Ekaterine Balarjishvili, Ekaterine Bendeliani, Eka Abashidze, Eka Slovinski, Eka Shalutashvili, Elene Tsirekidze, Eliso Barnovi, Eristo Kvavadze, Vano Tsiklauri, Vazha Gotsiridze, Vladimer Elisashvili, Zaza Zedginidze, Zaza Kvantaliani, Zezva Asanidze, Tamaz Dundua, Tamar Aladashvili, Tamar Nasuashvili, Tamar Pruidze, Tamar Sharashenidze, Tamar Tsitsishvili, Tamar Chunashvili, Teimuraz Lezhava, Teimuraz Gogoberidze, Temur Kokosadze, Tengiz Kurashvili, Tinatin Epitashvili, Tinatin Sadunishvili, Ia Jashiashvili, Izo Machutadze, Ilia Datunashvili, Inga Nikagosiani, Inga Kveladze, Irakli Gvaladze, Irina Lomashvili, Irina Japaridze, Irine Svanidze, Irma Bochorishvili, Kaxa Nadiradze, Kaxa Potschishvili, Koba Natsvaladze, Konstantine Kobakhidze, Kukuri Dzeria, Lali Ediberidze, Lali Meskhi, Lamara Amirezashvili, Levan Gulua, Levan Tortladze, Levan Kurdiani, Lela Bakradze, Lela Tsirekidze, Lela Kacheishvili, Lia Margania, Madona Pirvelashvili, Madona Jorbenadze, Maia Sebiskveradze, Malkhaz Rogava, Manana Kakhadze, Mamuka Modebadze, Mariam Gaidamashvili, Mariam Darchiashvili, Mariam Kimeridze, Mariam Khomasuridze, Mariam Khutsurauli, Mariam Jorbenadze, Marine Mosulishvili, Marine Zhordania, Marine Chkareuli, Mirian Gvritishvili, Murman Kuridze, Nana Kilasonia, Nestan Numchenko, Nia Giuashvili, Nino Gvazava, Nino Lagidze, Nino Tsirekidze, Nino Tskhadadze, Nodar Ebralidze, Nodar Elizbarashvili, Nugzar Chitaia, Otar Kvesitadze, Otar Tsamalaidze, Petre Naskidashvili, Rusudan Barkalaia, Rusudan Tevzadze, Rusudan Keshelava, Sofio Altunashvili, Taiul Berishvili, Tata Matnadze, Ketevan Mchedlishvili, Shalva Zarnadze, Shalva Melkadze, Shota Gongladze, Tsiasia Chkubinishvili, Dekanozi Bidzina (Gunia), The Community of village Kbaniskhevi (Borjomi Municipality).

Governmental organisations: Departments, Services and LBPL's (legal body of public law) of the Ministry of Environment and Natural Resources Protection of Georgia, Ministry of Energy of Georgia, Ministry of Agriculture of Georgia, Ministry of Education and Science of Georgia, Ministry of Economy and Sustainable Development of Georgia, Ministry of Justice of Georgia, Parliament of Georgia, The National Centre for Intellectual Property Rights – "Sakpatenti"

Nongovernmental organisations: The Aarhus Centre; The Caucasus Environmental NGO Network (CENN); Field Researchers Association CAMPESTER; Green Alternative; Association "Caucasus Genetics"; The Greens Movement Of Georgia; Association For The Protection of Farmers' Rights; Association Of Nature Explorers "Orchis"; Association of Georgian Chemists; Association "Chveni Pshavi"; Association of Professional Bee Keepers of Georgia; Union of Young Agrarian Scientists; The Youth Conservation Group.

Research and academic organisations: Academy of Sciences of Georgia; Agrarian University of Georgia; Ivane Javakhishvili Tbilisi State University; Tbilisi State Medical University; Public College of Decorative Gardening of Georgian Patriarchy; State University

of Akhaltsikhe; Batumi Shota Rustaveli State University; Telavi State University of Telavi; Akaki Tsereteli University of Kutaisi; Tbilisi Zoo; National Museum of Georgia; Academy of Agrarian Sciences; Georgian Technical University.

Private sector: State Company “Agrarian Corporation”; Agro Kartu, Ltd.; MULTITESTI Ltd. – Chemical Laboratory for Testing of Food Products, Soils and Minerals; Georgia Eco, Ltd.; Georgian Wood & Industrial Development, Ltd.

International organisations: IUCN Caucasus Cooperation Centre; USDOI-ITAP; USAID; UNDP; the World Bank; CARE International; Mercy Corps.

The Patriarchy of Georgia and the St. King David Education Centre of the Patriarchy

Decree of the Government of Georgia

No. 343

Tbilisi, 8 May 2014

On the adoption of the National Biodiversity Strategy and Action Plan, 2014–2020

On the basis of Article 5 paragraph “s” of the “Law of Georgia on the Structure, Authority and Activity of the Government of Georgia” and Article 25 of the “Law of Georgia on Normative Acts”, the government of Georgia resolves to carry out the following actions:

Article 1. To adopt the enclosed National Biodiversity Strategy and Action Plan 2014-2020 in order to implement the requirements of the Convention on Biological Diversity, ratified by the Resolution of the Parliament of Georgia No. 471 of 21 April 1994, titled “On the Convention on Biological Diversity”

Article 2. To charge the Ministry of Environment and Natural Resources Protection with the coordination of the implementation of the National Biodiversity Strategy and Action Plan 2014-2020

Article 3. To cancel Decree No. 27 (19 February, 2005) of the Government of Georgia “on the Adoption of National Biodiversity Strategy and Action Plan”

Article 4. To enter this Decree into force immediately after publication

Prime Minister

Irakli Garibashvili

Endorsed by Decree № 343
of the Government of Georgia on the 8th of May, 2014

National Biodiversity Strategy and Action Plan of Georgia 2014 – 2020

List of Abbreviations

APA	Agency of Protected Areas of Georgia
CBD	Convention on Biological Biodiversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species
COP	Conference of the Parties
CWR	Crop Wild Relatives
EIA	Environmental Impact Assessment
EU	European Union
EUNIS	European Nature Information System
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
LMO	Living Modified Organism
IBA	Important Bird Area
IPA	Important Plant Area
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	International Union for the Conservation of Nature
KBA	Key Biodiversity Area
MoA	Ministry of Agriculture of Georgia
MoCMP	Ministry of Culture and Monument Protection of Georgia
MoE	Ministry of Energy
MoENRP	Ministry of Environment and Natural Resources Protection of Georgia
MoESc	Ministry of Education and Science
MoESD	Ministry of Economy and Sustainable Development
MoF	Ministry of Finance of Georgia
MoIA	Ministry of Internal Affairs of Georgia
MoIRD	Ministry of Infrastructure and Regional Development of Georgia
MoLHSA	Ministry of Labour, Health and Social Affairs of Georgia
MoU	Memorandum of Understanding
NBSAP	National Biodiversity Strategy and Action Plan
NEAP	National Environmental Action Plan
NFA	National Forestry Agency of Georgia
NGO	Non-Governmental Organisation
PA	Protected Area
PR	Public Relations
SEA	Strategic Environmental Assessment
TEEB	The Economics of Ecosystems and Biodiversity
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
WWF	World Wide Fund for Nature

CONTENTS

1 INTRODUCTION

1.1 Georgia and the Convention on Biological Diversity

In 1994, Georgia joined the Convention on Biological Diversity (CBD) and thus committed itself to the Convention's three objectives: the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of benefits arising from the utilization of genetic resources. Georgia is also party to other global biodiversity-related conventions such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), The Ramsar Convention on Wetlands of International Importance, the Convention on Migratory Species (CMS) and the UNESCO World Heritage Convention.

In the CBD's first Strategic Plan, adopted in 2002, the parties committed themselves "to a more effective and coherent implementation of the three objectives of the Convention; to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation; and to the benefit of all life on Earth."

The Convention's 2010 biodiversity target has not been achieved. The diversity of genes, species and ecosystems continues to decline while the pressures on biodiversity remain constant or increase in intensity, mainly as a result of human actions. Experts argue that this century may see unprecedented rates of habitat loss and extinction if current trends persist, with the risk of drastic consequences to human societies as several thresholds or "tipping points" are crossed; a wide range of services derived from ecosystems, which are underpinned by biodiversity, could also rapidly be lost. While the harshest consequences will affect the poor, and thereby undermine efforts to achieve the Millennium Development Goals, no one will be immune from the impacts of the loss of biodiversity.

Halting and reversing these trends requires actions at multiple entry points, which are reflected in the Convention's Strategic Plan for Biodiversity 2011-2020 adopted at the 10th Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10) in 2010. The vision of the Strategic Plan is a world of "living in harmony with nature" where "by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people".

The mission of the Convention's Strategic Plan is to take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services. It aims thereby to secure the planet's variety of life and to contribute to human well-being and poverty eradication.

Organized under five goals, the Strategic Plan includes 20 targets (the "Aichi Biodiversity Targets"). The goals and targets constitute aspirations for achievement at the global level and a flexible framework for the establishment of national or regional targets. The Aichi Targets are outlined in Annex I.

In order to include the gender dimension in biodiversity conservation, sustainable use of resources and equitable sharing of the benefits obtained from biodiversity use, CBD has

created the Gender Plan of Action. The Millennium Development Goals also emphasizes the direct links between gender equality, poverty eradication, biodiversity conservation and sustainable development. This should be the vision for the outlook and approaches in reversing the loss of biodiversity, poverty reduction and human wellbeing.

1.2 Updating Georgia's first National Biodiversity Strategy and Action Plan

Aichi Target 17 states: "By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan".

Georgia's first National Biodiversity Strategy and Action Plan (NBSAP-1) was approved on February 19, 2005, by Governmental Resolution №27. The document features a 10-year strategy of conservation and sustainable use of biological diversity of Georgia and a 5-year plan of concrete actions. The document allowed for the development of another action plan for the following five years that would take into account the current situation and results achieved by that time.

In light of the country's biodiversity status, problems and threats, the first NBSAP identified the following priority areas for work:

- protected areas
- species and habitats
- agricultural biodiversity
- hunting and fishing
- biodiversity monitoring
- biosafety
- Environmental education, public awareness and involvement
- Financial-economical programme
- Sustainable forestry
- Legal aspects

Strategic goals and objectives were set out for each of the above thematic areas except "Sustainable forestry" and a total of 140 actions were outlined in the action plan to achieve those goals and objectives.

The Ministry of Environment and Natural Resources Protection (MoENRP) was responsible for the overall coordination of the implementation of NBSAP. In addition to governmental agencies, a wide spectrum of nongovernmental and scientific organisations were involved in the completion of the 1st NBSAP's activities.

The main achievements of the 1st NBSAP (2005) include:

- The development of the system of protected areas
- The preparation of the National Red List of Georgia based on international criteria and categories
- The development of conservation management plans for endangered species and groups of species and the launching of their implementation
- The initiation of the national biodiversity monitoring system

- *Ex-situ* and/or on-farm conservation of several endemic and endangered plant species and crops
- The improvement of the legal and institutional environment for the sustainable management of biological resources
- The launching of the Georgian biodiversity clearing house mechanism

However, many of the activities envisaged in NBSAP-1 have not been accomplished. Thus, an important purpose of NBSAP-2 is to fill this implementation gap.

In 2011, the Ministry of the Environment and Natural Resources Protection (MoENRP) launched the process of updating the National Biodiversity Strategy and Action Plan to reflect the Strategic Plan for Biodiversity and the Aichi Targets. The Biodiversity Protection Service of MoENRP, with the support of GIZ's Georgian-German technical assistance project, *Sustainable Management of Biodiversity – South Caucasus*, began the assessment of various aspects of the state of Georgia's biodiversity and the progress that the country had made with implementing its first National Biodiversity Strategy and Action Plan. A wide range of nongovernmental and scientific organisations were involved in the assessment process, which prepared reports for 11 main thematic areas.

The eleven reports were compiled into a single volume that included all of the information and conclusions provided by the assessments. It was then synthesized into a shorter document, "Situation Analysis", that formed the basis of the updated National Biodiversity Strategy and Action Plan (NBSAP-2).

NBSAP-2 includes an overview of Georgia's biodiversity followed by the vision and the overall national targets for safeguarding Georgia's biodiversity. These are followed by thematic chapters that describe the situation for Georgia's biodiversity in more detail under the following headings:

- Species and habitats
- Protected areas
- Forest ecosystems
- Agricultural biodiversity and natural grasslands
- Inland water ecosystems
- The Black Sea
- Cross-cutting issues and governance
- Communication, Education and Public Awareness

Following the thematic chapters, the strategy and actions are outlined in the form of a table of national targets, indicators and specific objectives for Georgia along with critical assumptions organized under the 5 CBD strategy goals. Each national target for Georgia has relevance to one or more Aichi Targets, which is indicated. Under the targets and objectives, a number of activities are included that should help achieve the objectives, targets and eventually, the Strategic Goals. The time frame and implementing organizations are also indicated for each activity.

The final chapter of the document considers practical aspects of the implementation of and resource mobilization for the NBSAP -2.

CBD's Gender Plan of Action was fully considered during the preparation of this document. Men and women play different roles in human societies, and this reality affects the use and management of natural resources. In order to ensure its effective implementation, NBSAP-2 emphasises the inequality between men and women in respect of access to resources and opportunities. In addition, gender equality is itself an important aspect of development. Therefore, this document aims at empowering women and encouraging their participation. Both men and women are considered as allies working together on the development as well as subsequent implementation of this strategy and action plan.

2 AN OVERVIEW OF GEORGIA'S BIODIVERSITY

2.1 The importance of Georgia's biodiversity

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.

Georgia is rich in various types of ecosystems, habitats and associated species, including those that are used or are potentially important as food or other essential products. The country's biodiversity thus provides life-sustaining services:

(1) Forest ecosystems:
   - provide timber and non-timber products
   - provide clean water
   - prevent erosion and landslides and mitigate their impacts
   - regulate the global carbon cycle
   - support recreation and tourism
   - provide critical habitats to numerous species
   - etc.

(2) Meadows (pastures and hay meadows):
   - provide food for livestock
   - provide medicinal and culinary herbs
   - support a traditional way of life
   - support recreation and tourism
   - etc.

(3) Wetlands and lakes:
   - provide stopovers for birds on their annual migrations
   - regulate the global carbon cycle
   - are important fresh water reservoirs and provide water quality control
   - support recreation (such as sport fishing) and tourism
   - support commercial fisheries
   - etc.

(4) The Black Sea:
   - supports recreation and tourism

- supports commercial fishery
- is an important reservoir of carbon dioxide and methane
- etc.

(5) Glaciers:
- regulate the flow of water into the country's river system
- (and hence) provide water for homes and agriculture
- Etc.

2.2 The status of Georgia's biodiversity

At present, the Red List of Georgia contains 139 animal species and 56 wooded plant species; 43 of the animal species and 20 of the plant species are categorised as endangered or critically endangered; many of the animal species in the list are also considered globally threatened.

It is not possible to provide a precise account of the status of Georgia's biodiversity: information on the condition of ecosystems, habitats and species has not been collected in a systematic way, while the national biodiversity monitoring system has been established only recently and is not yet fully operational. Information from studies conducted within the framework of various projects present the following picture:

2.2.1 Threatened species

Approximately 60% of the total number of endemic plant species are classified as endangered due to disturbance to their habitats, excessive use, pathogens and other pressures. Among threatened woody plants, chestnut (*Castanea sativa)*, Imeretian oak (*Quercus imeretina)*, Colchic box tree (*Buxus colchica)*, elm (*Ulmus glabra, U. Minor)* are especially noteworthy.

Many groups of invertebrates are affected by encroachment of natural and semi-natural habitats and intensified agriculture.

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

Due to habitat fragmentation over the last ten years, the numbers of the Caucasian salamander (*Mertensiella caucasica*) and the Caucasian viper (*Vipera kaznakovi*), two endemic species, have declined. The latter reptile is included in the Georgian Red List as *Endangered*.

At present, 35 avian species are included in the Georgian Red List. Among birds of prey, the most threatened species is the Eastern Imperial eagle (*Aquila heliaca).* Among vultures, the black vulture *(Aegipius monachus)* is the rarest. The black stork *(Ciconia nigra)* is noteworthy as a widespread but uncommon species.

Among endemic rodents, Brandt's hamster *(Mesocricetus brandti)* and the long-clawed mole (*Prometheomys schaposchnikowi*) are rare species with very limited ranges that have become fragmented due to agricultural activities such as grazing and excessive use of chemicals. There is a negative trend in populations of Georgian bats caused primarily by habitat degradation and the disturbance of roosting sites.

The majority of the large mammals found in Georgia are included in the Red List. Their populations have been affected by uncontrolled and/or illegal hunting and habitat destruction. In the last century, the goitered gazelle (*Gazella subgutturosa*) became extinct in Georgia. For years, there has been no credible report of the presence of the striped hyena (*Heyena heyena*). The Caucasus leopard (*Panthera pardus saxicolor*) was considered virtually extinct in Georgia until one male individual was recorded in Vashlovani national park (SW of Georgia) in 2004. Currently, leopards are believed to still remain in the high mountainous areas of the country.

Among the ungulates, the wild goat (*Capra aegragus*) is perhaps the most at risk. The only more or less viable population is found in Tusheti Protected Areas. Wild goat numbers are currently estimated at 300 individuals. Red deer numbers are also extremely low in Georgia, with small, isolated populations occurring only in three protected areas; Lagodekhi PA, Gardabani Managed Reserve and Borjomi-Kharagauli National Park. There is a slight positive trend in the Lagodekhi and Borjomi populations at present, and the total population size is estimated to be 800.

Between the two species of tur (*Capra caucasica* and *C. cylindricornis*) found in Georgia, the West Caucasus tur has the smallest population size (150 by expert assessment), occurring only in very limited areas of Georgia. The eastern tur is significantly more numerous – according to a recent assessment, *C. cylindricornis* numbers are about 3,000.

The brown bear (*Ursus arctos*) is included in the Georgian Red List as critically endangered. According to a recent assessment there are about 1,600 individuals.

The number of otters (*Lutra lutra*) has decreased, presumably as a result of a decline in wild fish stocks and habitat destruction. At present, the minimum population size is estimated at around 400 individuals.

The Eurasian lynx (*Lynx lynx*) is classified as “Critically Endangered” in the Georgian Red List. However, research conducted in recent years suggests that this species has a larger population size than previously thought.

Among the marine mammals found in the Georgian Black Sea waters, the common bottlenose dolphin (*Tursiops truncatus*) is most at risk and numbers about 100 individuals.

2.2.2 Genetic resources important for food and agriculture under pressure

The crops cultivated in Georgia since ancient times (endemic species and landraces) and their wild relatives (from which the landraces may have been domesticated) are of the highest conservation importance. These include: (1) fruit crops (such as *Malus, Pyrus,*

Prunus and *Corylus),* grape and its wild relative species (*Vitis vinifera subsp. sylvestris*), (2) 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 as well as flax, and (3) herbs.

Natural populations of many species of crop wild relatives (CWRs) are increasingly at risk due to habitat loss and fragmentation, overgrazing and desertification. Among the threats to the diversity of CWRs are potential genetic erosion and contamination by genetically modified organisms.

Overharvesting, mainly for the pharmaceutical industry, threatens many medicinal plants with local extinction. At present, medicinal plants such as *Origanum vulgare, Helichrysum plicatum* and *Hypericum spp*. are at risk.

The majority of local landraces and breeds of domestic animals are at risk due to hybridization with introduced breeds. Some strains of the Georgian mountain cattle landrace have been completely lost (Abkhazuri and Osuri), while others (e.g. Acharuli) have dramatically declined in number. Some Georgian sheep breeds (Tushuri, Imeruli) are also at risk. Endemic pig breeds such as Kakhuri, Svanuri and Rachuli and the Tushuri horse are in decline. The Megruli horse is at risk of complete extinction. The Georgian bee is threatened with genetic erosion.

2.2.3 Critical ecosystems and habitats

Forests are under pressure from unsustainable logging and overgrazing as well as poor management practices. A large part of the “forest fund” (all forests under the state forest authority) is severely degraded. In some places, degradation has led to a complete loss of forest cover and consequently to the decline of the plant and animal communities that depend on it. The ability of the forests to provide life-supporting ecosystem services is being reduced.

Intensive grazing in the alpine zones of the Eastern Caucasus has resulted in a decrease in the feeding base and habitat quality of the wild ungulates, particularly for the chamois, east Caucasian tur and red deer. The subsequent decrease in wild ungulate numbers is probably one of the main causes of intensified conflicts between large carnivore species, such as wolves, and local communities.

Georgia’s semi-arid ecosystems that are used as winter pastures for livestock are under threat due to excessive or disorganized grazing. The processes of land degradation and erosion which began in the Soviet period have now reached critical levels in some areas; without urgent restoration activities, they may soon become irreversible.

Water ecosystems in Georgia have been intensively modified over many decades as bogs have been drained and water levels in many lakes have been artificially regulated. Excessive use of chemicals in agriculture and in industrial and household wastewater discharge pollute internal waters as well as the Black Sea. Over the past 20 years, pollution from non-industrial sources has increased due to the malfunctioning of water treatment facilities.

Monitoring of water quality has been conducted for only 22 of the country's rivers and one lake, the Paliastomi. Pollution now threatens many of the species associated with Georgia's wetlands. Pollution by organic substances is causing eutrophication of the Black Sea, resulting in "dead zones". Harmful fishing methods such as bottom trawling are also causing serious damage to the Black Sea ecosystem.

Invasive alien species pose a threat to both terrestrial and aquatic ecosystems. Habitats important for biodiversity are being lost to construction projects, including hydropower generation infrastructure, electricity transmission lines, new roads and railways and industrial and urban development.

There is an obvious lack of information on the ecological condition of the soils. Most of the available data is outdated or incomplete.

2.3 Biodiversity and climate change

Today, it is widely recognized that climate change can be viewed as the fifth key factor contributing to biodiversity loss together with habitat degradation, unsustainable use, environmental pollution and invasive species. The vast majority of experts agree that the planet is becoming warmer as a result of increased concentrations of carbon dioxide and methane in the atmosphere from the burning of fossil fuels, deforestation and livestock farming. The higher temperatures, and the decreased levels of precipitation that are predicted for some parts of Georgia, will severely affect ecosystems – especially those which are at the edge of their natural global range. Major changes will occur in such ecosystems and in the distributions of plant and animal populations that depend on them. Shifts in the vertical ecological zones will have a great impact on Georgia's biodiversity due to its mountainous terrain. Some species may disappear from Georgia because of their inability to adapt to new conditions.

Some experts believe that with the changing climate, some plant species such as pine may become more susceptible to certain pathogens. The maintenance of robust ecosystems like forests benefits biodiversity and serves as an important tool for both climate change mitigation through carbon sequestration and climate change adaptation.

2.4 Underlying causes and enabling factors

The loss of Georgia's biodiversity has a number of underlying causes, the effects of which are exacerbated by enabling factors.

The main underlying causes of the pressures on biodiversity are the following:

- the poverty of many, who are driven to use natural resources unsustainably for energy, food and financial gain
- the greed and irresponsibility of a few who take and spoil without regard for their impact on the environment
- ignorance about the importance of biodiversity and the impacts of people's own actions on biodiversity

- the country's drive for economic development, which is essential for raising people out of poverty.

These underlying causes lead to the direct drivers of biodiversity loss: habitat loss, overexploitation of natural resources, pollution, invasive alien species and more lately, climate change.
The main enabling factors are the following:

- insufficient regard paid to the value of biodiversity in policies, strategies and programmes;
- inadequate and in some cases perverse laws regulating the use of biological resources;
- lack of resources to enforce regulations and implement procedures that are designed to safeguard biodiversity

2.5 The economics of ecosystems and biodiversity

For most people, biodiversity has spiritual, cultural, aesthetic and other nonmonetary values; but biodiversity is also our natural capital. Forty percent of the world's economy is directly or indirectly associated with the use of biological resources. Economic prosperity and alleviation of poverty cannot be achieved in the long run if our natural capital is lost. In Georgia, as in many other countries, several economic sectors such as forestry, agriculture, energy and tourism depend on healthy ecosystems.

Acknowledging the value of biodiversity and its potential for creating incentives for conservation and sustainable use, Georgia offered to be a pilot country for a scoping valuation study of ecosystems and biodiversity which is now being implemented under the international TEEB (The Economics of Ecosystems and Biodiversity) initiative. It is expected that the study will help policymakers, businesses and society to understand and recognize the value of biodiversity and the services provided by ecosystems. It will also reveal new opportunities to work with nature in a sustainable way and thereby help to bridge the divides between economic development interests and biodiversity conservation needs. After the TEEB Georgia Scoping Study, a comprehensive study of the economics of the country's biodiversity and ecosystems has been planned which will focus on forestry, agriculture, tourism, the energy sector and mining.

3 VISION AND TARGETS

Vision

The Vision of Georgia's National Biodiversity Strategy and Action Plan is:

By 2030, the people of Georgia 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.

Targets

National targets have been set in order to achieve the Vision. Below, 20 national targets for safeguarding Georgia's biodiversity are grouped under global biodiversity targets. Objectives and activities under each national target are further elaborated in chapter 12:

CBD Strategic Goal A. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
National Target A.1. By 2020, at least 50% of the population of Georgia is informed about biodiversity; this segment of the populace is aware of the value biodiversity provides to society and the economy, knows about the ways it is threatened, and is acquainted with the steps necessary to mitigate those threats.
National Target A.2. By 2020, significantly more people, especially local populations, are interested and effectively taking part in decision making processes that contribute both to conservation and sustainable use of biodiversity and to biosafety
National Target A.3. By 2020, sustainable use and the economic values of biodiversity and ecosystems are integrated into legislation, national accounting, rural development, agriculture, poverty reduction and other relevant strategies; positive economic incentives have been put in place and incentives harmful to biodiversity have been eliminated or reformed
National Target A.4. By 2020, an effective and fully functional national biosafety system has been putin place ensuring adequate protection of the country's biodiversity from any potential negative impact from living modified organisms
CBD Strategic Goal B. Reduce the direct pressures on biodiversity and promote sustainable use.
National Target B.1. By 2020, negative factors directly affecting threatened natural habitats have been significantly reduced through the sustainable management of at least 60% of these habitats, including at least 60% of forests, 80% of wetlands and 70% of grasslands
National Target B.2. By 2020, alien invasive species have been assessed with regard to their status and impact; their pathways have been evaluated and identified, and measures are in place to prevent their introduction and establishment through the management of these pathways; no new alien species have been recorded
National Target B.3. By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem functioning and biodiversity
National Target B.4. By 2020, the management of agricultural ecosystems and natural grasslands is improved
National Target B.5. By 2020, the impact of fisheries on stock, species and ecosystems is within safe ecological limits
National Target B.6. By 2010, a national system of sustainable hunting is in place which ensures the viability of game species
CBD Strategic Goal C. Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
National Target C.1. By 2020, the status of biodiversity has been assessed through the improvement of scientific and baseline knowledge and the establishment of an effective monitoring system
National Target C.2. By 2020, the status of species - including 75% of "Red List" species - has been considerably improved through effective conservation measures and sustainable use
National Target C.3.

By 2020, forest biodiversity is safeguarded through sustainable management policies and practices
National Target C.4. By 2020, at least 12% of the country's terrestrial and inland water areas and 2.5 % of marine areas are covered by protected areas; areas of particular importance for ecosystem services are effectively and equitably managed via an ecologically representative system and other effective conservation measures; development of the protected areas network and its integration into the wider landscape and seascapes is ongoing
National Target C.5. By 2020, the genetic diversity of farmed and domesticated animals, cultivated plants and of their wild relatives, including other socioeconomically as well as culturally valuable species, is maintained; strategies have been developed and implemented for safeguarding their genetic diversity
National Target C.6. By 2020, the pressure of human activities on the Black Sea and inland waters has decreased; the integrity and functioning of the aquatic ecosystem are preserved
CBD Strategic Goal D. Enhance the benefits to all from biodiversity and ecosystem services
National Target D.1. By 2015, the Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (the Nagoya Protocol) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) have been ratified and implemented
National Target D.2. By 2020, the impact of climate change on biodiversity is evaluated; ecosystems resilience has been enhanced through relevant environmental policies and activities
CBD Strategic Goal E. Enhance implementation through participatory planning, knowledge management and capacity-building
National Target E.1. By 2020, knowledge has been enhanced on the values, functioning, status and trends of biodiversity and the consequences of its loss; the corresponding science base has been improved
National Target E.2. By 2020, teaching on biodiversity issues is improved in all stages of formal and non-formal education; continuous teaching of biodiversity is ensured and all necessary resources are available.
National Target E.3. By 2020, the interest and traditional knowledge of local people in biodiversity conservation and use are integrated into the legislation and strategies

4 SPECIES AND HABITATS

Significant progress was made during the implementation of the first NBSAP with regard to species and habitats conservation, such as: The National Commission for Endangered Species, which developed a new Red List for Georgia, was established; conservation plans were elaborated for certain endangered species and the implementation of some of those plans was launched; important biodiversity areas were identified. Nevertheless, biodiversity conservation is still largely ineffective outside the PA system, i.e. PAs still remain the only effective tool for species *in situ* conservation. Hence, specific measures are needed to stop and/or reverse the negative trends observed in species populations over the last years.

Out of 30 actions of the first NBSAP (Governmental Decree #27, 19th February 2005) that were prescribed for the conservation of species and habitats, nine were fully and eight partially implemented, while 13 were not accomplished. The majority of those actions that

were fully or partially implemented were done so by NGOs with the support of external donors, while the financial contribution from the state was insignificant.

4.1 Description of problems

4.1.1 Invasive alien species

In the past, there was no control of the introduction (both intentional and random)of alien species into Georgia and many invasive alien species are now found throughout the country. In some cases, the impact has been devastating (e.g. crucian carp, *Carassiusm carassius*, in freshwater lakes). Georgia's forests are suffering from pest species and diseases that have been unintentionally introduced into the country. These include great spruce bark beetle, Chestnut blight, etc. No detailed studies have been conducted on the impacts of most alien species on local ecosystems and biodiversity. Therefore, it is unclear what should or can be done to mitigate those impacts.

Presently, the introduction of non-native animal species is prohibited by law. However, there is no clear strategy for dealing with alien species, which are already widespread in Georgia.

4.1.2 Human-wildlife conflict

In light of increasing pressure on land and resources and the deteriorated ecological balance in the natural ecosystems, wild animals more often come into conflict with local people: they raid crops that are near the forests of protected areas and attack livestock and bee hives. This creates strong negative attitudes toward the species involved, which eventually translate into legitimate or illegitimate behaviours. Any such conflict has a negative impact on both the local people and biodiversity. In many parts of the country, the conflicts between the local farmers and large carnivores are extremely acute. The root causes of such conflicts often lie in the destruction of habitats and wild prey bases and the lack of household waste management, i.e. random landfills near settlements. Despite some surveys, human-wildlife conflict in Georgia is not thoroughly understood.

4.1.3 Hunting

Since the soviet times, ineffective management of hunting has resulted in a decline of many game species while some have completely disappeared. Wild ungulates have suffered from illegal hunting particularly severely. By the end of the last century, Georgia had already lost Goitered gazelles, while all other wild ungulates were significantly reduced. At present, anti-poaching mechanisms are largely ineffective and administrative resources allocated to law enforcement are not sufficient. National strategies of community and/or trophy hunting and sustainable hunting need to be developed. The lack of awareness and education among sport hunters may be facilitating violations of hunting regulations.

4.1.4 National Red List

The Georgian national Red List was created in 2006. Species conservation statuses were assessed using the IUCN categories of threat. 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 herbal species[1].

Since 2006, new data have become available on certain species. Thus, the Georgian Red List currently requires updating.

4.1.5 Species-specific conservation activities

In recent years, a number of national species conservation action plans have been elaborated. Some of those plans are currently being implemented, which should continue. However, the implementation processes are hampered by the fact that species conservation plans lack any legal status. In addition, conservation plans have yet to be elaborated for many rare or economically important species.

Many large mammals require urgent and specific actions that should be outlined in their conservation plans. This primarily applies to species with alarmingly low populations or only a few surviving individuals, such as red deer, Bezoar goat, etc.

4.1.6 Species checklists

Available data on invertebrates are rather poor and sporadic. Complete checklists of species are nonexistent for almost every group of invertebrates. It is important that invertebrate inventories continue at a greater scale to help create a more complete picture of the country's biodiversity.

4.1.7 Biodiversity monitoring

The creation of a national biodiversity monitoring system began in 2007, and since then certain important steps have been accomplished. However, methodologies still need to be established for some of the national indicators. The legal and institutional basis also requires further elaboration (including clear distribution of responsibilities among the responsible agencies) and relevant guidelines need to be developed. Several Memoranda of Understanding (MoUs) have been signed between MoENRP and relevant organisations for cooperation in the field of biodiversity monitoring. Similar partnerships may be established with more institutions.

The effective implementation of biodiversity monitoring is hampered by the lack of capacity and financial resources.

[1]Presently, the work for the evaluation of plant species—including non-woody species—is underway for the purpose of their potential inclusion into the national Red List.

In addition, electronic databases of plant and animal species found in Georgia need to be developed to systematise all information including descriptions, distribution, population status and trends, etc. These databases must be regularly updated with the results of species monitoring or other surveys.

4.1.8 Species recovery and reintroduction

In recent years, captive breeding programs for wild goat and goitered gazelle recovery and reintroduction have been implemented in protected areas, but the planned growth of the captive populations could not be achieved. Conversely, a Cholchic pheasant (*Phasianus colchicus*) breeding programme implemented in Dedoplistskaro district by a local NGO, is showing good signs of success. In general, it is clear that better planning and species-specific recovery/reintroduction plans are needed to achieve success.

4.1.9 Habitat classification

Georgian habitats need to be classified according to modern and internationally recognised classification systems. Using outdated classification systems creates constraints on(i) the harmonisation with international and namely European conservation policies and strategies, (ii) the priority setting and appreciation of Georgia as a county of remarkable habitat diversity in the global and European context, (iii) the assessment of the status of specific habitat types, and (iv) effective conservation planning.

Several years ago, first steps were made to classify Georgia's habitats using a modern classification system—the country's habitats were classified according to NATURA 2000 requirements. At the same time, a total of 15 habitats were identified from the 4th Appendix to the Bern Convention within the framework of the Emerald Network Development Programme in Georgia. Presently, all European countries use the EUNIS[2] habitat classification and Georgia has also been advised to apply that classification.

4.1.10 Priority habitats

Twenty-seven priority habitats have been selected using such criteria as current threats to and the vulnerability of habitats. However, information on the current status of these and other potentially important habitats is extremely scarce. More detailed studies are required to fill this knowledge gap.

4.1.11 Key biodiversity areas

There are numerous key biodiversity areas (KBA) outside the current protected areas system of Georgia. These include biological corridors, animal migration corridors, important plant areas (IPA), important bird areas (IBA), etc. KBAs need to be identified and mapped and their potential must be assessed to plan suitable protection/restoration measures where needed and put them under sustainable management.

[2]European Natural Information System; http://eunis.eea.europa.eu/habitats.jsp

4.2 Strategic approach

- ✓ The national Red List needs updating.
- ✓ Georgian laws need to be gradually harmonized with the EU directives such as Birds Directive (2009/147/EC) and Habitats Directive (92/43/EC). The obligation of the implementation of some of the requirements set in these directives is included in the EU-Georgia association agreement. It is also important to further develop the unified monitoring system.
- ✓ Georgian habitats need to be classified according to modern and internationally recognised classification systems.
- ✓ A national sustainable hunting strategy needs to be developed with the participation of all stakeholders. This strategy should determine such issues as the assessment of resources, wise use of game species and control of illegal hunting. Management plans need to be elaborated for game species as an important prerequisite of sustainable hunting.
- ✓ Valuation of rare and economically important species (game species, species of commercial and personal use) is required to ensure effective control of poaching and sustainable use of biological resources. This would help simplify the procedures for calculation of damage to the state due to acts of illegal killing of animals as well as facilitate the assessment of ecosystems services.
- ✓ More effective response schemes need to be developed and implemented to solve or mitigate human-wildlife conflicts in Georgia.
- ✓ A strategy needs to be elaborated with regard to the alien species, already established in Georgia. Despite the legislation, risk of new invasions of alien species still remains. Reliable preventive measures (regulations, control of trade and better customs control, etc.) are needed to avoid the spread of new invasive alien species and subspecies into the country.
- ✓ It is important to increase the national capacity to facilitate timely and adequate response to biodiversity problems at all levels.
- ✓ There is a need of creating an effective and fully operational biodiversity clearing house mechanism.

4.3 Actions in chapter 12 relevant to “Species and habitats”

A2-o1. 2
A2-o1. 4
B1-o1. 3 – 4
B1-o1. 6 – 7
B2-o1. 1 – 3
B6-o1. 1 – 3
C1-o1. 1 – 5
C1.o2. 1 – 2
C2-o1. 1 – 24
C2-o2. 1 – 3
C4-o4. 1 – 2

E1-o1. 1 – 2
E1-o2. 1

5 PROTECTED AREAS

The first official protected area in Georgia, the Lagodekhi Reserve, was established in 1912. By the time the Soviet Union broke up, Georgia had 15 strict nature reserves with a total area of 168.8 thousand hectares covering about 2.4% of the country's territory. In addition, about 0.8% of the country's territory was allocated for 5 so-called forestry-hunting reserves.

In 1995, Georgia began the process of expansion and diversification of its protected area network. The 1996 law on the Protected Area System defined new protected area management categories (based on IUCN categories) and their establishment procedures.

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. As a result, there was a three-fold increase in total coverage of PAs.

Today there are 14 State Reserves, 10 National Parks, 18 Managed Reserves, 40 Natural Monuments, 2 Protected Landscapes, and two Multiple-use Territories (the latter two as yet only exist in legal terms). The protected areas occupy a total of 520,811.14 hectares, which is about 7.47% of the country's overall territory.

5.1 Description of problems

5.1.1 Representativeness and connectivity of the protected area network

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. During the implementation period of the first NBSAP, biodiversity conservation was always behind the interests of economic development. Presently, there is some cooperation between the main relevant sectors, but in general protected areas are not among the highest priorities. There have been instances of severe interference such as: the exclusion of sections of the Kolkheti Ramsar site and Kolkheti NP and their allocation to the Kulevi oil terminal; the downgrading of a section of that same national park from Category II to Category VI with subsequent complete abolishment of the protected area on that section; allocation of a portion of the Kazbegi NP to a hydropower plant; the exclusion of part of the Tbilisi NP from the PA and that section's subsequent allocation to the construction of new railway sections going round Tbilisi.

Internationally recognised instruments such as a UNESCO World Heritage site, Ramsar site, biosphere reserve, are insufficiently applied or non-existent in Georgia.

Georgia's protected areas do not constitute a network - there is no connected system of protected areas integrated into the broader landscape/seascape. There is no protected areas spatial development plan that would contribute to the expansion of protected areas coverage and improve the degree of connectivity. However, some work has been done to support the development of such a plan, including: (i) a document on planned protected areas has been prepared, (ii) priority conservation areas and priority corridors for the Caucasus have been identified, (iii) critical conservation areas and forest conservation areas have been identified and the Caucasus Ecoregion Conservation Plan has been elaborated. All this creates a good basis for the development of an effective protected areas network. However, so far there has been limited overall political support for the creation of a comprehensive and representative protected areas network.

5.1.2 The effectiveness of protected areas management

The legislation on protected areas needs further improvement to include more details for the improvement of PA management; a full set of sub-laws and regulations need to be elaborated and adopted in accordance with IUCN's PA categories and new guidelines that have been developed based on new information and experience.

Currently, the management of PAs of national categories V and VI is not fully regulated by the legislation. There is only one form of PA management in Georgia: all PAs are managed by the government. International best practice, however, also recognises other forms such as private management and co-management as well as management by local people or local communities. The legislation fails to regulate compensation and incentivising mechanisms for local communities.

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.

The regulations for PA management planning are presently being further refined and management plans are being developed for a number of PAs. Nevertheless, the majority of the country's PAs do not have management plans; their management is conducted by special interim regulations. There is a lack of PA management planning capacity both at the central apparatus and at territorial units(PA 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.

There are problems with ensuring sustainable pasture management and sustainable forest management in traditional use zones. None of the protected areas in which agricultural activities are permitted has a management plan that regulates agricultural activities and/or

agricultural biodiversity conservation and rational use. Certain forms of functional uses such as the production of traditional farming products and crafts-making need to be promoted to maintain unique local historical and cultural environments and stimulate income-generating activities that will ensure sustainable agriculture and resource use.

There are currently no programmes or implemented measures for mitigating the impact of alien invasive species that pose an important threat to many protected areas.

Research and monitoring systems are not adequate; there is no unified database; the evaluation of management effectiveness is not conducted on a regular basis. Climate change is not adequately reflected in the PA management plans. Most protected areas lack adequate infrastructure and equipment and there is a general lack of qualified personnel.

5.1.3 Public awareness and participation

Low public awareness is considered one of the root causes of many problems pertinent to the development of the protected areas system. In addition, there is a lack of interest in and understanding of protected areas issues among decision-makers.

Certain steps have been takento increase the level of involvement of various stakeholder groups— including local communities—in PA management. A consultative council has been established at APA. There is also a plan to reform the existing local consultative scientific committees at individual PAs to include only representatives of local stakeholders. As a result of certain legal changes, public participation in various aspects of PA management has been increased. However, while the PA legislation gives APA the right to cooperate with the local population in protected areas management planning, it does not oblige it. The legislation fails to provide cooperation mechanisms and procedures. There are several ongoing livelihood projects at some PAs and they should be more widely used for the promotion of positive attitudes among and increased involvement of the local communities.

5.1.4 Lack of Financing

Funding for the PA system has increased in recent years. However, almost all components of the PA management structure and operation are still underfinanced, including salaries and operational costs. Practically no funding is allocated to monitoring and additional research or educational activities. The lack of financing is one of the major causes of the above-listed problems and obstacles for effective PA management.

5.2 Strategic approach

- ✓ A protected areas spatial development plan and a strong protected areas network needs to be established with a well-connected system of protected areas integrated into the wider landscape/seascape in order to conserve the country's biodiversity.
- ✓ It is important to establish transboundary connectivity with the PA systems of neighbouring countries.

- ✓ The existing law on protected areas should be improved and refined to include more details and to create new opportunities, such as: possibilities of the establishment of new PAs; details on institutions responsible for the management of PAs of various categories and on activities that would be permitted and/or prohibited in those categories; development of law enforcement and public-private partnerships; different forms of partnership and innovative funding instruments; further elaboration of international cooperation and PA network planning models.
- ✓ Issues related to the establishment and management of protected areas of Category V and VI should be defined more clearly in the legislation.
- ✓ The legislation should clearly define the establishment and management of buffer/support zones.
- ✓ A legal basis needs to be created (including amendments to all related laws and adoption of relevant sub-laws) that would give APA the authority to act in the areas adjacent to PAs in order to avoid or mitigate any direct or indirect adverse impacts of land use and development processes outside the PAs.
- ✓ Management plans for sustainable resource use in the traditional use zones of PAs need to be developed. Management programs for invasive species should be developed. Adequate monitoring and research systems together with a unified database should be established.
- ✓ Management effectiveness assessments should be carried out regularly.
- ✓ Public awareness at various levels, including all stakeholders groups, needs to be increased.
- ✓ Full participation of stakeholders, especially local communities, in protected areas management planning needs to be ensured through adoption of effective mechanisms and regulations.
- ✓ There is a need to develop adequate compensation mechanisms and promote positive incentives among the local people in support zones of PAs.
- ✓ Necessary infrastructure and equipment should be made available and adequately maintained in all PAs.
- ✓ The attraction of qualified personnel and the professional growth of staff members should be ensured in all PAs.
- ✓ Funding for protected areas should be increased, including through the introduction of innovative funding mechanisms and improved fundraising.

5.2.1 Actions in chapter 12 relevant to the thematic area ”Protected Areas”

A1-o2.1 - 2, 4
A2-o1.1 - 2
A3-o2.1
A3-o5.3
B1-o2.4 - 10
B2-o1.1 - 3
B4-o1.5
B4-o2.1
B4-o3.1
B6-o1.1 - 2
C2-o1.4 - 17, 19

C2-o2.1
C4-o1.1
C4-o2. 1 – 2
C4-o3. 1 – 3
C4-o4. 1 – 2
C4-o5. 1 – 7
C4-o6. 1 – 2
C4-o7. 1 – 2
C5-o1.3 – 2
C6-o1.1
E1-o2. 1
E2-o2. 3 – 4
E2-o1.3, 8

6 FOREST ECOSYSTEMS

The forestry component of the first NBSAP (Governmental Decree #27, 19th February 2005) has only been accomplished to a limited extent. Major factors impeding its progress have been lack of funds and capacity as well as frequent reorganization and changes of priorities within the sector.

Currently, the main problems in the forestry sector include unsustainable (and often illegal) forest use, excessive grazing, forest fires, pests and diseases, improper hunting (see also Chapter 4—Species and habitats) and climate change. Poorly planned infrastructure development also poses a serious threat to Georgia's forest ecosystems. (see Chapter 10 — Cross-cutting issues and governance). All of these factors have a negative effect on forest biodiversity.

The overall socioeconomic situation in the country exacerbates the above problems—particularly their root causes. NBSAP-2 therefore addresses the underlying causes of these forestry problems and aims towards achieving sustainable forest management.

6.1 Description of problems

6.1.1 Unsustainable (including illegal) forest use

Over the last two decades, unsustainable and often illegal logging has remained one of the most serious problems in the country. Article 5, Paragraph (*m*) of the Forest Code adopted in 1999 defines illegal felling as "cutting trees without permission". This definition is too general and insufficient to determine whether each particular case of logging was legal or illegal.

Although the volume of illegal logging has significantly dropped in recent years, it still remains at an unacceptable level. The actual scale of logging substantially exceeds the rate of natural growth of forests located near human settlements. As a result, these forests are devastated—the canopy cover has reached critically low thresholds.

The main causes of unsustainable and illegal logging are rural poverty and lack of access to alternative energy sources. Lack of awareness among the loggers and consumers further aggravates the problem. The limited capacities of the state forestry authorities and gaps in the legislation prevent effective monitoring and law enforcement. In respect of the use of non-timber forest products, the collection of bulbs of snowdrops (*Galanthus spp.)* and cyclamens (*Cyclamen vernum*) as well as spruce seeds is the most common activity. Official data on the quantity of these resources licensed for harvesting is available. However, the real levels of harvest are unknown. Therefore, it is difficult to assess their sustainability. Nevertheless, according to expert estimates, there are no obvious signs of depletion of these resources in the wild.

There are problems in respect of the collection of other non-timber forest products such as chestnuts, wild fruits, berries and mushrooms. The law allows the collection of these products free of charge for personal consumption. However, while local people often collect them for sale, no harvesting limits are specified beyond which the collection of a given product would be regarded as commercial. Because no annual harvest quotas are defined, there might be significant risks of unsustainable extraction.

The degradation or even complete loss of forest cover is often caused by infrastructure projects such as the construction of roads, pipelines, reservoirs etc. and by open-pit mining (e.g. manganese mining in Chiatura) and the removal of the fertile layer of soil. At present, the rate of forest degradation due to these factors is not too high. But with economic development and in the absence of effective control, the acuteness of the problem is likely to increase. The impact of infrastructure projects on natural ecosystems, including forests, and measures to address them are discussed in detail in Chapter 11.

6.1.2 Unsustainable livestock grazing

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

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

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

6.1.3 Pests and diseases

Pests and diseases, such as chestnut cancer (*Cryphonectria parasitica*, formerly *Endothia parasitica*), pose a significant threat to Georgia's forests. Currently, there is mass dying of Colchic box trees, and of pine trees in Tusheti and around Tbilisi. Article 10, Part 1,

Paragraph (d) of the Forest Code (1999) obliges forest owners (regardless of their status) to conduct forest protection measures against pests and diseases. However, timely detection and effective action against forest pests and diseases require comprehensive field and laboratory studies and monitoring and active intervention measures, which are very difficult to implement due to the current lack of funding and technical capacity.

6.1.4 Non-native and invasive tree species

Forest plantations cover about 110,000 ha in Georgia. The primary purpose of those plantations was to increase the total forest cover and provide additional socioecological benefits. Presently, these plantations are 50-60 years old monocultures of non-native and poorly adapted species such as Black pine (*Pinus nigra*). The monoculture plantations are much poorer in biodiversity than "close to nature" forests composed of several native tree species. So far, the non-native species used in the forest plantations do not show any signs of invasiveness. The soil chemistry gradually changes in the plantations, however, which may create additional constraints on the restoration of the native forest types in those areas.

Uncontrolled distribution of certain alien tree species such as *Paulownia tomentosa* and *Ailanthus altissima*, on the other hand, poses a threat to the country's natural (including flood plain) forests. Detailed studies are needed to assess the potential threats from certain invasive tree species in Georgia.

6.1.5 Forest fires

In the past, forest fires were relatively uncommon and mainly affected conifer forests. With more frequent and prolonged draughts in recent years, though, forest fires have become a serious problem. Fires cause damage to or completely destroy trees and bushes and hamper the natural regeneration of the affected forest.

In recent years, forest fires have become an annual occurrence, affecting tens and sometimes hundreds of hectares of forest. The largest fire in recent years took place in 2008: a total of 1,000 ha of forest in the Shida Kartli and Samtskhe-Javakheti regions was seriously damaged and in places completely destroyed. In total, an estimated 2,500 hectares of forest were destroyed or seriously damaged due to forest fires in the last 3-4 years.

Forest fires are often caused by irresponsible or careless human behaviour and/or inappropriate management. It is common to set fire to agricultural plots and graze lands; this is often done in an incorrect or highly uncontrolled manner, which results in fire spreading to the nearby forests. While relatively small-scale natural fires may boost species diversity, artificially-induced fires are usually very detrimental to forest biodiversity.

Article 97 of the Forest Code (1999) is dedicated to the prevention of and means of combating forest fires (Part 2, Paragraph "D" and Parts 5 and 6). It describes measures aimed at fire prevention. The law designates the Ministry of Interior as the authority responsible for combating forest fires in coordination with relevant forest management units and tenure holders. The main regulation dealing with forest fires is the Decision of the

Georgian Government # 241 (13.08.2010) “On the Rules of Forest Maintenance and Restoration”. This document contains: (a) general requirements for protection from fires, (b) detailed precautionary measures and (c) measures to combat forest fires and their consequences.

In recent years, the state authorities have gained some experience in forest fire fighting. However, existing fire detection and fire combating systems are not effective. In addition, mountainous terrain, steep slopes and a lack of access roads complicate firefighting efforts. The responsibilities and functions for responding to forest fires need to be more clearly defined and distributed among the relevant authorities (Ministry of Environment and Natural Resources Protection, Ministry of Interior, Emergency Service and local governments).

6.1.6 Climate change

Some signs of climate change can already be observed in Georgia. These include more frequent and intense rainfalls, increased temperatures, melting of the glaciers, heavier floods and longer draughts. At the global level, major causes of climate change are the greenhouse gases emitted into the atmosphere mainly by the industry, agriculture and transport sectors. Forest degradation and unsustainable management contribute about 10-15% of the total emissions of greenhouse gases.

The exact magnitude of the impact of climate change on forest biodiversity is very difficult to predict. It is, however, likely to be very significant. Georgia joined the Convention on Climate Change in 1994. But there is as yet no special document with an official status addressing the impact of climate change on the country’s forests.

6.1.7 Unsustainable forest management

The Forest Code (1999) states that the principles of protection and sustainable management of Georgian forests are based on the Constitution of Georgia, Statement on Forestry Principles adopted at the “Earth Summit” in Rio de Janeiro in 1992 and the principles reflected in Article 5 of the Georgian Law on Protection of Environment (1996). The latter includes biodiversity conservation, risk mitigation and prevention, sustainability and several other important principles.

Georgia participates in different international processes such as Forests Europe, Convention on Biological Diversity (1992), Bern Convention (1979) and the European Landscape Convention (2000). Nevertheless, there is no formally approved forest policy or strategic document for the country. The effective forestry legislation and management standards are currently unable to ensure sustainable forest management.

As a result of the reform of the Forestry Department that took place in 2007, the number of staff was sharply reduced and salaries were increased substantially. As a result, the average forest area under the responsibility of one forest ranger increased to about 5,000 ha. At present, the rangers still lack equipment and transportation means to effectively control such

a large section of forest. In general, the forestry sector experiences a severe lack of qualified personnel.

In 2008-2009, a group of experts prepared national sustainable forest management standards along with principles, criteria, indicators and verifiers. These standards, among other aspects, address the needs of biodiversity conservation. However, no further steps have been made toward forest certification.

In August 2010, the Georgian Government adopted Decree #241 on “The Rules of Forest Maintenance and Restoration”, according to which forest restoration and reforestation should be conducted in line with the requirements of biodiversity conservation. According to this Decree, preference should be given to native species typical of the site in question.

The “Regulation on the Procedures and Terms of Forest Use Licensing" adopted by Governmental Decree #132 on 11 August 2005, includes provisions for general and special licenses (for logging or hunting). According to the Georgian Forest Code (Article 52), the logging licenses may be issued for a period of 1 to 49 years. Sections of forest were transferred to license holders without any prior detailed inventory. At the same time, some of the obligations imposed upon the license holders placed substantial financial burdens on them. As a result, only 8% of the forest fund has been transferred to the private sector for use under long-term logging licenses.

The basis for logging operations in Georgia is the forest exploitation plan, according to which the license holder is obliged to implement forest protection and reforestation measures. However, the selection of trees and felling methodsareoften made by persons without adequate qualification. Biodiversity factors (e.g. the maintenance of deadwood, minimization of damages to young trees, etc.) are seldom given sufficient consideration.

Problems also exist in respect of the establishment of community or municipal forest management systems. According to the Forest Code, the Local Forest Fund shall be managed by local self-governing authorities. However, those forests have not been transferred to the local governments that do not seem to be ready to accept the responsibility of forest management due to lack of funding and capacities.

In 2013, the National Forestry Concept of Georgia was prepared as a result of a highly participatory process. It was adopted by the parliament on the 11th of December, 2013. The national Concept defines the attitude of the state toward its forests and considers the functions and values of theses ecosystems. The document aims to establish a sustainable forest management system that would ensure the improvement of quantitative and qualitative forest indicators, biodiversity conservation, and effective utilization of economic values of forests; it would take into account their ecological values, public participation in forest management, and equitable benefit sharing. The concept is based on the following main principles:

- Principle of Sustainable Management of Forests
- Precautionary principle - to maintain protective functions of forests and the ecological balance of forests
- “All forests are local”

- Separation of regulation, management and supervision functions
- Forestry is an integral part of the sustainable development of the country.

The Concept sets national priorities and actions in the field of forest management:

- Forest management planning
  - Restoration of degraded forests and reforestation
  - Use of forests
- Rational use of forest resources
- Forest ownership, management and use rights
- Adaption to the impacts of climate change

Activities are also identified for such areas as legislation and institutional development, sector administration, education and science, and public awareness and involvement.

In spring 2013, with the support of the German International Cooperation (GIZ), the Ministry of Environment and Natural Resources Protection began the implementation of the National Forestry Programme, which is based upon the National Forest Concept and biodiversity strategy document. All key stakeholder groups are involved in the process. The programme envisages the implementation of specific activities in several thematic areas. In 2014, the work for the preparation of a new forest code will also begin.

A major reorganization of the forestry system took place in 2013. The National Forestry Agency was established, with a total of 800 payroll positions. The number of forest rangers was also increased—as of February 2014, there were 569 forest rangers in the National Forestry Agency. This permitted a reduction of the area under one ranger to 3,000 ha. In parallel, the Forest Policy Service was established within the MoENRP. The Department of Environmental Supervision, a legal body of public law, was also set up under the same ministry. The purpose of these reforms was to ensure clear distribution of functions related to forest management, forest protection, policy and legislative development.

Notably, in 2013 forest inventory was conducted on a sizable portion of the national forest fund by the relevant authority in accordance with the normative act (Article 2^1, Paragraphs 1 and 2) adopted by Governmental Decree #132 of 11th August 2005. This work is presently carried out by the National Forest Agency and will continue in the coming years.

6.2 Strategic approach

- ✓ The current unfavourable status of forest biodiversity in Georgia is primarily related to non-sustainable forest management practices. The situation can be improved though the introduction of sustainable and ecologically sound management practices. Preconditions for establishing an integrated sustainable forest management system in Georgia are: (a) optimal institutional set-up of the forestry sector including forest management and ownership forms, and (b) adequate forestry legislation that takes full account of biodiversity values.
- ✓ It is essential to address the problem of poverty (especially in rural areas) and supply affordable alternative energy sources to the population. However, these problems

cannot be addressed by the forestry sector alone. They should be considered within the context of the overall strategic development of the country.

- ✓ An effective wood tracking system should be developed and implemented in order to facilitate the identification of the origin of wood logged anthem territory of Georgia. This would help prevent or mitigate illegal logging activities.
- ✓ Sustainable forestry standards need to be established in order to promote voluntary certification of forests.
- ✓ The establishment of fast-growing forest plantations in open areas (as opposed to naturally forested areas) would contribute to meeting the demand in timber. It is very important to give priority to native species in these plantations (potential areas for forest plantations include the lower forest zones of western Georgia where forests were cleared for tea and citrus plantations during the soviet times—most of the tea plantations have now been abandoned).
- ✓ In the next few years, net forest clearance should be brought to zero, while the levels of degradation of forest habitats should be substantially reduced. These are realistic targets, because the annual rate of forest clearance is still relatively low. If effective silvicultural interventions are implemented, substantial reductions in the rates of forest habitat degradation can be achieved in the observable future. As a first step, a comprehensive assessment of the rates of loss and degradation of natural forest habitats should be conducted to help identify adequate measures.
- ✓ The issue of excessive livestock grazing in forests requires consistent and coordinated efforts at the national level. The forestry sector alone will be unable to resolve this problem. However, pilot projects could be conducted that would demonstrate practical examples of low-impact, sustainable livestock grazing systems. Close cooperation between the Ministry of Agriculture and livestock farmers is also essential.
- ✓ A national-level action plan for combating forest fires should be elaborated and implemented. The roles and responsibilities of the relevant authorities (MoENRP, Ministry of Interior, Emergency Service, local authorities etc.) should be determined more clearly. The capacities of these agencies should be increased so that forest fires can be more effectively prevented and combated.
- ✓ Detailed studies are needed in the forested areas most affected by pests and diseases in order to assess the degree and scale of the problem. Following these, a relevant action plan should be elaborated and implemented.
- ✓ Surveys need to be conducted in high-risk areas to assess any potential threats from or actual occurrence of invasive species and their pathways. If necessary, relevant measures to control invasive species and mitigate their negative impacts should be conducted.
- ✓ Sustainable forestry would also contribute to mitigation of climate change and adaptation to its negative impacts. Specifically, forest ecosystem resilience to climate change should be enhanced. Healthy forest ecosystems are able to absorb and store more atmospheric carbon.
- ✓ Inventories and assessments should be conducted in the forested areas where the forest cover has been modified, degraded or completely depleted due to infrastructural or mining projects. Based on those findings, adequate measures should be implemented to restore the landscape.
- ✓ Sustainable and multipurpose management, including the conservation of biodiversity, requires the implementation of a flexible and optimal forest categorization system. Such a system should be introduced and implemented. It should include the identification and

mapping of forests under Category V and VI of IUCN (protected landscape and multiple use territory), ecological corridors and forests with High Conservation Values. This would allow for(i) the effective protection of most sensitive forest stands (e.g. virgin forests) and (ii) efficient utilization of forests that have significant exploitable timber resources.

- ✓ Capacity building of all key players is essential for the conservation of forest biodiversity. Training sessions and extension activities should be conducted for foresters, biodiversity monitoring experts, forest fire-fighters and other specialists from related fields.
- ✓ It is of vital importance to increase the educational capacity in the forestry discipline and to ensure the training of future specialists with gender aspects taken into account. Modern curricula incorporating best practices of forest management and biodiversity conservation should be introduced in the Agricultural University of Georgia (a major education institution preparing professional foresters) and other relevant education institutions. (Notably, one of the objectives of the Environmental Information and Education Centre of MoENRP is to facilitate the professional growth of the employees of the sector. In addition, the National Forest Agency plans to establish a training centre).
- ✓ Community forest schemes should be developed that would fully consider the role and rights of local communities—including those of women—in respect of access to non-timber forest products.

6.3 Actions in chapter 12 relevant to the thematic area ”Forest biodiversity”

B1-o1. 1 – 2
B1 o2. 1 – 5
B1-o2.6
B1-o2. 7 – 10
C2-o1. 19
C3-o1. 1 – 3
C3-o2. 1 – 4
E1-o2. 1 – 2

7 AGRICULTURAL BIODIVERSITY AND NATURAL GRASSLANDS

Agricultural biodiversity (incl. agricultural ecosystems) and natural grasslands, which cover about 43% of the country’s territory, are a significant and integral part of Georgia’s biodiversity.

Highly specialised policies of the Soviet planned economy and industrialisation of agriculture resulted in the degradation of agricultural ecosystems and the reduction of local plant and animal genetic resources important for food and agriculture. This process became even more intense in 1990s when state collections and breeding stations collapsed and negative impacts on agricultural ecosystems and natural grasslands increased because of spontaneous and chaotic developments in the sector.

Since the 2000s, some important initiatives have been implemented aiming to improve the conservation status of the agricultural biodiversity of Georgia. These include (i) the

establishment of the field crop gene bank at the Lomauri Institute of Farming, (ii) the improvement and enrichment of the collections of plants and microorganisms maintained at different research institutes, (iii)the establishment of “Agro” – the National Centre of Production of Grapevine and Fruit Planting Material, (iv)the conservation of certain crop landraces, (v) the rehabilitation of degraded agricultural lands, windbreaks and forest edges in the Dedoplistskaro municipality.

Unfortunately, the above efforts were not sufficient to combat the increased degradation and genetic erosion of the agricultural biodiversity and the degradation of the natural grasslands of Georgia.

At present, it is necessary to create an effective national system ensuring the restoration and sustainable use of agricultural ecosystems, as well as *in situ* and *ex situ* conservation of local landraces of plants and domesticated animals, crop wild relatives (CWR) including wild plants harvested for food and medicinal plants, and microbiological and fungal genetic resources. This system should address the root causes of the main problems contributing to the loss of agricultural biodiversity and degradation of natural grasslands.

7.1 Description of problems

7.1.1 Lack of information

No inventory has been made (including in protected areas) of landraces and CWRs due to lack of appropriate institutional and legal framework, targeted funding and methodology.

There is no detailed information on the summer and winter pastures under state ownership in respect of the number and size of plots in each municipality. There is also a lack of information regarding the status of the pastures, including levels of use, pressures, vegetation cover, productivity, etc.

7.1.2 Insufficient legal and institutional framework

The lack of appropriate legal and institutional framework is a major obstacle for the conservation and sustainable use of the agricultural biodiversity of Georgia. Georgian legislation fails to define the values and conservation mechanisms of agricultural biodiversity. There is no mention of agricultural biodiversity in the environmental legislation. The legislation does not recognise landraces and traditional agricultural landscapes, traditional products and associated traditional knowledge as part of the country’s cultural heritage. The roles and competences of specific governmental agencies and research institutions in respect of *ex situ* and *in situ* conservation of agricultural biodiversity are not defined.

Georgia has not ratified the Nagoya Protocol of CBD on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising from their Utilization and it is not a party to the International Treaty on Plant Genetic Resources Important for Food and Agriculture (ITPGRFA);relevant issues are not reflected in the national legislation. Georgian legislation does not include specific provisions to ensure (i) access to genetic resources important for

agriculture, (ii) equitable sharing of the benefits from their use or (iii) effective action against "bio-piracy" and the protection from unauthorised use of the names of Georgia's genetic resources. This hampers international cooperation in the field of genetic resources important for food and agriculture.

Despite the existence of relevant regulations, there is no effective veterinary or phytosanitary control. The elements of the national biodiversity monitoring system that are related to agricultural biodiversity need to be improved.

7.1.3 Lack of public awareness

Lack of public awareness about agro-biodiversity issues is directly linked to the lack of qualified specialists (especially young professionals) — hence the poor quality of the information provided to decision makers and the general public. There is limited coverage of agricultural biodiversity (especially *ex situ* conservation issues) in the press, and these issues are not adequately reflected in school curricula and textbooks.

7.1.4 In situ conservation of genetic resources important for food and agriculture

On-farm conservation activities in Georgia have been supported only by international projects. In addition, every initiative is faced by such obstacles as (i) limited access to seed and planting materials, (ii) lack of specific knowledge on the cultivation of concrete landraces and local varieties and (iii) low recognition of landraces and their products on the market. This is connected with poor breeding and production of seed and planting material of local varieties, as well as of the starter cultures of traditional foods. There is no relevant national vision or strategy, and no national programs exist to promote cooperation between research institutes and entrepreneurs. More importantly, there is no legal framework for the production of seed and planting material for landraces.

The genetic erosion of domestic animal landraces is obvious and is a result of uncontrolled crossing with introduced breeds. The recent reversal of the law prohibiting the import of invasive bee species into Georgia poses a threat to the native bee species *Apis mellifera caucasica*.

7.1.5 Genetic erosion of CWRs, medicinal plants and wild plants harvested for food

Genetic erosion of CWRs, medicinal plants and wild plants harvested for food is connected with the following: loss of habitats through landscape fragmentation; improper farming practices; overgrazing; the spread of new pests and diseases; and the unregulated collection of those plants in the wild for commercial purposes.

There is no conservation strategy for CWRs, medicinal plants and wild plants harvested for food. Little is known about their presence and distribution in the protected areas.

7.1.6 Ex situ collections of research institutes

There is no national *ex situ* conservation strategy or national vision and no specific governmental or semi-governmental agency is directly responsible for *ex situ* conservation of agrobiodiversity. Issues such as the maintenance of the existing collections of plant genetic resources and access to the genetic material maintained in the collections need to be regulated. Most of the *ex situ* collections of plant genetic resources and microorganisms kept at universities and research institutes lack any formal status and are therefore deprived of stable funding from the state.

The management of existing *ex situ* collections needs improvement. Currently, some of the collections completely lack databases; others have incomplete databases wherein many of the available records are either incomplete or wrong. The current management approaches and financing of these collections can ensure neither regular replacement of seed/planting materials nor their protection from pests, diseases and natural disasters.

There is a lack of cooperation between the *ex situ* collections, the industry and ongoing breeding activities. It is also unclear if Georgian farmers and breeders can enjoy free access to the genetic material kept at the existing collections.

Because of the lack of targeted collecting expeditions, many types of *ex situ* collections (e.g. sperm banks of domestic animals) are nonexistent. The samples kept in different existing *ex situ* collections are not sufficient. Georgia is not a party to the ITPGRFA; as a result, Georgia's free access to samples of landraces extinct in Georgia but maintained in other countries' collections and gene banks is complicated.

7.1.7 Degradation of agricultural ecosystems

Soil degradation and erosion is evident throughout the agricultural ecosystems of the country. The current agricultural policy fails to promote best practices (e.g. sustainable use of chemicals, modern irrigation and land cultivation technologies), use of agroecological techniques such as landscape planning, windbreaks, crop rotation, soil filtering, etc. It also fails to facilitate the development of organic farming. There are no programs for restoring heavily eroded plots or soils contaminated by heavy metals and radionuclides.

The root causes of the obvious reduction of populations of useful insects are the loss of natural habitats (reduction of buffer zones, monoculture production, soil degradation) and incorrect application of insecticides.

7.1.8 Overgrazing and degradation of natural grasslands

The lack of institutional and legal framework for the sustainable use of common pastures has resulted in unsystematic and unorganized grazing on those lands. The degradation of natural grasslands has been caused by (i) the lack of knowledge among livestock farmers, (ii) the fact that many pastures were privatised or leased out without adequate planning and a targeted approach, and (iii) the fact that there are no control mechanisms of pasture

management. At present, there is a lack of regulations and mechanisms for the promotion of sustainable grazing and the implementation of pasture improvement measures.

7.1.9 Natural grasslands and climate change

Alpine, arid and semi-arid natural grasslands are very sensitive to climate change. Increasing global temperatures will inevitably have a major impact on high mountain species that are adapted to low temperatures. These species may become replaced by thermophilous species whose spread is presently limited by the low temperatures thigh altitudes. This will lead to major shifts in the plant communities of the alpine and then of the subnival zones.

Currently, the understanding of the impact of climate change on Georgia's biodiversity is extremely limited and no credible assessments have been done to determine the influence of stress factors caused by climate change on high mountain, wetland and semi-arid ecosystems.

7.2 Strategic approach

- ✓ Inventories of landraces, CWRs and medicinal and food plants need to be conducted; their status should be assessed and a Red List of Genetic Resources Important for Food and Agriculture should be created.
- ✓ Representative sites of high CWR richness should be identified and mapped.
- ✓ Georgia should ratify ITPGRFA and the Nagoya Protocol and develop an appropriate legal basis for (i) ensuring access to genetic resources important for agriculture, (ii) equitable sharing of the benefits from their use and (iii) effective action against "bio-piracy" and the protection from unauthorised use of the names of those genetic resources.
- ✓ The conservation of endemic agricultural species and landraces, CWRs and micro flora of traditional fermented products needs to be ensured through *on farm* conservation measures.
- ✓ An *ex situ* conservation framework needs to be established to ensure the conservation of endemic agricultural species and landraces, CWRs and microflora of traditional fermented products in live collections.
- ✓ The status and economic values of Georgia's agricultural ecosystems and natural grasslands need to be assessed.
- ✓ Strategic documents related to the sustainable management of agricultural ecosystems and natural grasslands should be developed and relevant activities should be incorporated in local action plans.
- ✓ A full inventory of summer and winter pastures that are currently under state ownership should be conducted and their current status should be assessed; terms and conditions for their privatisation and lease contracts need to be defined in advance.
- ✓ It is important to mitigate all factors that have a negative impact on agricultural ecosystems, biodiversity and natural grasslands and to minimise the unfavourable effects of plant protection and veterinary chemicals.

- ✓ The legal and institutional framework needs to be improved to facilitate the conservation of agricultural ecosystems and natural grasslands as well as to minimize environmental pollution from agriculture.
- ✓ Organic farming and sustainable management practices and labelling schemes should be promoted in agriculture and pasture management.
- ✓ The National Biodiversity Monitoring System should be improved with regard to the indicators related to agricultural biodiversity and natural grasslands.
- ✓ The impact of climate change on agrarian biodiversity and natural grasslands needs to be assessed.
- ✓ Public awareness activities should be conducted focusing on (i) the values of the country's agricultural biodiversity and (ii) informing the public on the steps they can take to conserve and sustainably use agricultural biodiversity and natural grasslands.

7.3 Actions in chapter 12 relevant to the thematic area "Agricultural biodiversity and natural grasslands"

A2-o1. 4
A.2-o1.6
A.3-o2.1
A3-o3.1
A3-o3. 5
A3-o4. 5 – 8
B1-o1. 5
B1-o2. 6
B3-o2. 1 – 3
B4-o1. 1 – 5
B4-o2. 1 – 3
B4-o3. 1 – 3
C1-o1. 6
C5-o1. 1 – 7
C5-o2. 1 – 8
D1-o1. 1 – 2
D2-o1.2
E2-o1. 1
E2-o1. 5

8 INLAND WATER ECOSYSTEMS

Georgia is rich in inland water resources. There are more than 26,000 rivers, about 860 lakes, 12 water reservoirs and numerous fish farming ponds. The inland waters of Georgia are inhabited by more than 80 species of fish, 100 known species of crustaceans and 58 species of molluscs. (Data on other groups of aquatic invertebrates are inaccurate and unreliable).There are more than 2,600 species of algae. The wetland ecosystems of the Kolkheti lowlands and the Javakheti plateau are important habitats for migratory birds. Up to

300 species of birds have been recorded in the Kolkheti protected areas and adjacent territories and 91 species are found in the lakes of Javakheti.

There is a legal framework for the conservation and sustainable use of wetlands in Georgia. The country is a party to international agreements such as the Ramsar Convention and the Convention on Migratory Species (CMS). However, the legislation still needs substantial improvement and there are many shortcomings in respect of law enforcement. Many wetlands are not protected and/or are not managed sustainably and are continuing to be modified as a result of anthropogenic factors. The problem is compounded by invasive species. These factors contribute to the fragmentation of wetland ecosystems and have a serious impact on the biodiversity of inland waters, including water birds.

8.1 Description of problems

8.1.1 Pollution

The pollution of surface waters in Georgia by organic substances and heavy metals—phenols, hydrocarbons, nitrates, copper, manganese, zinc, etc.—significantly exceeds the threshold levels. Until recent years, surface waters in the lowland areas of Georgia were heavily polluted by agrochemicals, industrial waste and sewage waters. At present, the first two factors have considerably decreased as a result of a decline in agricultural and industrial activities. However, the layers of deposited sediment in water reservoirs are still likely to contain high levels of heavy metals. At present, the main sources of surface water pollution include municipal sewage systems, healthcare institutions and industry.

8.1.2 Illegal fishing

Illegal fishing remains a serious problem. Poachers often use prohibited methods such as electric devices, poison and explosive substances that cause irreparable damage to the biodiversity of Georgia's inland waters.

8.1.3 Harvest in inland waters

The utilization of natural resources in the inland waters of Georgia is subject to licensing. These licenses are issued by auctions. Recreational and sport fishing, fishing for scientific purposes as well as fishing in lake Paliastomi are exempt from licensing.

At present, there are valid fishing licenses for 6 lakes: Tabatskuri, Nadarbazevi, Jandari, Santa, Suldi and the Tsalka reservoir.

In addition, four licenses for the use of wild fauna have been issued for the purpose of setting up fish breeding facilities at the Zhinvali, Dali and Shaori reservoirs as well as on the lower sections of the river Kvirila. There is also one license for the captive breeding of sturgeon species on the Rioni, Supsa and Chorokhi rivers.

The terms of fish harvest licenses in inland waters are defined in the governmental "*Decree #138 on the terms and issuance procedures of fish harvest licenses*" (11 August, 2005). Additional terms may be imposed by the issuing entity for each individual water body based on preliminary studies. These additional terms may include harvest quantities, qualitative requirements and a timeline such as a harvest quota for the first year, requirements of fish breeding, etc.

Assessment methodologies and techniques for water bodies and fish stocks need improvement. There is a lack of specialists, equipment and financial resources.

8.1.4 The Impact of infrastructure development

Inland water ecosystems and their inhabitants are heavily affected by the construction and operation of major infrastructure such as dams, roads, railways, bridges and pipelines. Therefore, all infrastructure projects need to be conducted in full compliance with environmental requirements and any possible negative impacts must be avoided. Potential serious impacts from infrastructure development typically include: blocking of fish passages; limiting of fish breeding and/or movement of the breeding season; depletion of fish food bases; water pollution and the reduction of its quality; a decrease of water flow; overall degradation of water ecosystems, etc. Any activity at or near water bodies needs to consider the ecological characteristics and values of the given water body as well as those of its whole basin. Relevant means, technologies and project design features must be applied to reduce the impact to a minimum.

8.1.5 Aquaculture in the inland waters of Georgia

The inland waters of Georgia are rich in resources that are essential for the development of aquaculture. Presently, there are up to 300 registered aquaculture facilities. Nevertheless, only an insignificant part of the overall national potential is currently being used. Abundant water resources including rivers, springs, lakes, underground waters (including geothermal), irrigation channels and ponds are capable of both supporting growth in aquaculture production and creating jobs in rural areas.

The reduced natural populations of fish observed in inland waters and the degradation of water ecosystems have a significant impact on food security, economic development and local livelihoods in the country. Aquaculture could reduce the harvesting pressure on natural populations and also provide stock for projects aimed at the recovery of endangered fish species. However, without adequate management, aquaculture can also have a negative impact on water ecosystems and have both environmental and socioeconomic consequences.

Threats created by other forms of human activity such as water pollution may hamper the development of aquaculture in the country.

8.1.6 Invasive species

Invasive species pose a serious threat to the biodiversity of the country's inland waters. The non-native Crucian carp (*Carasius carasius*) rapidly spread throughout the country soon after its first introduction. The species is now the most common fish in the inland waters of Georgia. There has been no study of its impact, but it is likely that this invasive species has had a very negative effect on the native fish populations in many rivers and lakes.

It is important to develop effective mechanisms to control the import and release of invasive alien animals. Monitoring and an inventory of invasive species need to be conducted.

8.1.7 Lack of information

Data on inland water biodiversity is rather scarce. The current status of the fish populations in inland waters, including of species endemic to the Caucasus, is unknown. There has been no comprehensive inventory made of the wetlands of Georgia. In recent years, the MoENRP established national biodiversity monitoring and began certain activities. Nevertheless, the monitoring of the biodiversity of country's inland waters remains insufficient. Setting harvest quotas and stock release requirements is also a problematic task. There is a lack of specialists and reliable up-to-date information on aquatic biodiversity (including ichthyofauna), which hampers the planning and management of inland fisheries.

8.2 Strategic approach

- ✓ The existing legislation needs to be improved and regulatory mechanisms for effective control need to be developed in order to ensure the conservation and sustainable use of the biological resources of the country's inland waters.
- ✓ New conservation approaches should be applied to endangered fish species and relevant conservation management plans should be elaborated for such species.
- ✓ Effective monitoring needs to be implemented for Georgia's inland water ecosystems and its biodiversity, including monitoring of water quality.
- ✓ Full inventories of the biodiversity of inland water ecosystems should be conducted.
- ✓ Especially important and vulnerable inland water ecosystems should be designated as protected areas.
- ✓ It is necessary to identify invasive species and their pathways and effects on inland water ecosystems and to elaborate measures for the mitigation of those threats.
- ✓ Comprehensive Environmental Impact Assessments (EIAs) must be carried out for all projects that have a potential impact on inland water ecosystems. In addition, legally binding assessment techniques should be developed and legally binding obligations to take adequate compensation measures should be imposed.
- ✓ The capacity for the effective monitoring of inland waters and their biodiversity needs to be increased. This includes the securing of sufficient resources (both human and financial)and the training of specialists.
- ✓ An ecosystem approach must be applied to the integrated management and sustainable development of the aquaculture sector.

8.3 Actions in chapter 12 relevant to the thematic area "Inland water ecosystems"

B3-o3. 1 – 4
B5-o1. 5
B5-o2.1- 3
C6-o2. 1 – 3

9 THE BIODIVERSITY OF THE BLACK SEA

The Black Sea has a 2 million-square-kilometre basin that covers almost one third of continental Europe. Hence, the rivers that flow into the Black Sea bring huge quantities of sediment into it. This sea is relatively poor in species diversity because of both the limited availability of habitable layers and the substantial difference in water temperature and salinity compared to the Mediterranean Sea. The less hospitable environments of the Black Sea and its general isolation have resulted in the development of specific features in its inhabitants. These features are not found in any of the species' close relatives or even in their conspecific populations elsewhere.

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.

Several Georgian laws include provisions related to the protection of the Black Sea and its coastal areas, as well as the use of its fish resources. However, all of them are outdated and need improvement. Also, the biodiversity of the Black Sea was not covered in the first NBSAP.

Georgia is a party to the Convention on the Protection of the Black Sea Against Pollution (The Bucharest Convention of 1994), and to the Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea (1996, updated in 2009). The latter has been implemented with differing amounts of success in different Black Sea countries. A regional analysis conducted in 2007 showed that it was not or only partially implemented in three countries including Bulgaria, Ukraine and Georgia.

9.1 Description of problems

9.1.1 Eutrophication

Eutrophication is one of the major threats to the Georgian Black Sea waters as well as to the entire Black Sea. It is a combined effect of anthropogenic and natural processes: pollution of rivers and seas from anthropogenic sources stimulates the growth of phytoplankton—namely flagellates—which leads to a reduction in oxygen content in certain layers. This, in turn, leads to the mass death of living organisms, which results in even more organic contamination. Accelerated sulphate-reduction processes release H_2S into both the water

and sediments. About 40,000 square kilometres of the waters of the Black Sea's northwest shelf are affected by hypoxia (lack of oxygen).

9.1.2 Chemical pollution

Georgia's Black Sea waters are polluted by oil and heavy metals. Carcinogenic benzopyrenehas been found in the tissue of fish and mussels.

There is an increased risk of pollution from ships, gas and oil pipelines and terminals, and from the seaports of Georgia. During the period from 2006 to 2011, there were 42 cases of wastewater discharge and 27 cases of oil spills from ships. In December 2011, pyrolysis tar was spilt near the Poti port. There were 6 cases of hydraulic oil spills. Potential sources of pollution are the Kulevi and Supsa oil terminals. Both of these terminals are located near dolphin feeding grounds and areas that are particularly important for migratory birds. The damage a major oil spill could do to biodiversity might be irreversible.

Highly persistent chloro-organic pesticides have accumulated in the sediments on the bottom of the coastal zone. Chloro-organic pesticides can cause various diseases in marine organisms. Their influence on benthic fish—and likely also on the harbour porpoises that feed on these fish—is especially important.

9.1.3 Unsustainable fishing

Overfishing is one of the main reasons for the observed decline of the Black Seafish stocks. Catches were especially high in the 1970's and 1980's (8-9 hundred thousand metric tons per year). Excessive exploitation of fishing territories, expansion of fishing activities and the application of new technologies, combined with other pressures, caused significant damage to numerous fish species throughout the Black Sea. Among the most affected were predatory fish species such as the Atlantic bonito (*Sarda sarda)*, mackerel (*Trachurus mediterraneus ponticus),* bluefish (*Pomatomus saltatrix),* etc. Populations of plankton-eating fish suffered too, including those of the sprat (*Sprattus sprattus*) and anchovy *(Engraulis encrasicolus)*. Thus, the number of commercial fish species in the Black Sea has decreased from 20 to 5. Recently, the number of major fishing boats in the Black Sea has increased. Excessive fishing is caused in part by the insufficient amount of scientific information used insetting harvest quotas. Apart from its direct impact on fish stocks, overfishing contributes to eutrophication, too—a decrease in the numbers of phytoplankton-eating commercial species allows for the rapid growth of phytoplankton, which eventually leads to increased eutrophication.

9.1.4 Invasive alien species

Invasive alien species pose a serious threat to Black Sea ecosystems. Intentional and accidental introductions of alien species into the Black Sea began in the 19th century. Presently, there are 26 invasive alien species in the Black Sea. Among them, the following species have had the greatest impact on Black Sea ecosystems and native biodiversity:

comb jelly *(Mnemiopsis leidyi),* mud crab *(Rhithropanopeus harrisii),* veined rapa whelk (*Rapana venosa),* sand gaper *(Mya arenaria),* redlip mullet *(Liza haematocheila)* and *Cunearca cornea*.

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

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

9.1.5 Modification of natural systems

Georgia's Black Sea coastal zone is threatened by urban and industrial development. Existing or planned development projects may have a serious impact on sensitive ecosystems such as the critical habitats of dolphins and the spawning grounds of rare fish species—including sturgeons—that are listed in both the national and IUCN Red Lists. The process of intensive urbanization will imply the drainage of more wetlands. It may also enhance eutrophication by yielding increased amounts of sewage and other types of pollution.

There is a risk of insufficient implementation of environmental impact permits and environmental impact assessment procedures during new urban, infrastructural, or industrial development processes. This may result in the fragmentation of important habitats.

9.1.6 Pollution by solid waste

The Black Sea coastal waters are heavily polluted by solid waste such as plastic objects—plastic bottles, plastic bags, etc.—brought by the inflowing rivers. The decomposition of plastic objects may take as long as 500 years. Plastic objects pose serious threats to marine life, including marine birds and mammals. If swallowed by an animal, plastic objects may fill its stomach and block the passage between the stomach and the pancreas. This usually leads to the death of the animal.

9.1.7 Climate change and the Black Sea

An increase in sea acidification has already been observed in the seas and oceans of the world and has been caused by the intake of anthropogenic carbon dioxide (CO2) from the atmosphere. This may lead to a reduction of phytoplankton and hence a decline in photosynthesis.

9.2 Strategic approach

- ✓ A system for monitoring eutrophication and other types of pollution in the Black Sea is needed. Pollution sources must also be identified. The legislation needs to be improved to ensure better management and control of the pollution of marine ecosystems.
- ✓ The ecological effects of commercial fisheries should be thoroughly assessed. New, effective, flexible fisheries regulations should be established that include the identification of commercial fish species, harvest quotas and fishing methods.
- ✓ Invasive alien species monitoring needs to be established in the Black Sea so that adequate management strategies can be planned.
- ✓ Adequate assessment procedures and a legal framework need to be put in place in order to avoid adverse effects from new urban, infrastructural and industrial developments in the coastal zones. The national legislation should also address issues of integrated coastal zone management.
- ✓ An effective system must be set up for the protection of the Black Sea from pollution. This protection should occur through the improvement of control mechanisms and their inclusion in the legislation, the strengthening of the capacity of the controlling body, the increase of stakeholders' awareness, etc.

9.3 Actions in chapter 12 relevant to the thematic area "The biodiversity of the Black Sea"

B2-o1. 1 – 5
B3-o1. 1 – 2
B5-o1. 1 – 4
C6-o1. 1 – 12

10 COMMUNICATION, EDUCATION, PUBLIC AWARENESS AND PUBLIC PARTICIPATION

Some progress was made during the implementation period of the first NBSAP in respect of communication, education, public awareness and participation. There has been a significant increase in education and public awareness activities by the MoENRP and its subordinate agencies as well as by NGOs. Since 2009, the Biodiversity Protection Service of the MoENRP has been conducting awareness raising campaigns— "The Hour of Garden Birds" and "The Species of Red List"—which involve schoolchildren and teachers of public schools; the Agency of Protected Areas (APA) and its territorial administrations have been conducting lectures and seminars for different target groups along with trainings and workshops for communities living near protected areas; a number of books, leaflets and short films have also been produced.

The National Goals and Standards of General Education sufficiently covers teaching of biodiversity at both preschool and school levels, thus creating favourable grounds for formal biodiversity education. New opportunities for the improvement of teaching of biodiversity are also created by ongoing processes such as mergers of research and education institutes, currently provided new opportunities for student and teacher mobility, increased funding for research activities and steps for the modernization of professional education.

The Biodiversity Protection Service of the MoENRP and the Agency of Protected Areas carried out various activities to encourage the development of local NGOs. “Friends associations” have been established to support a number of protected areas.

10.1 Description of problems

In spite of the significant progress described above, some experts believe that public awareness of biodiversity remains low. Key stakeholder groups such as decision-makers, local governments, communities, the media, the private sector (including those whose activities are directly linked to the use of biological resources), youth and young children are still poorly informed about biodiversity issues. This also leads to a low level of public participation in the decision making process and a low priority of biodiversity issues among decision-makers.

10.1.1 Lack of mechanisms of communication on biodiversity issues

The Biodiversity Protection Service of the MoENRP does not have sufficient human resources to plan, implement and evaluate targeted information/awareness-raising campaigns. In 2013, as part of the reorganization process of the Ministry, The Environmental Information and Education Centre was created. It should address the above problem.

The development of effective communication strategies has been hampered by the lack of assessments of current levels of public awareness. There is no institutional framework for such assessments.

The protection of biodiversity is not regarded as an important issue in Georgian media. The media also lacks knowledge and experience of covering biodiversity issues. In general, biodiversity has a low profile on Georgian TV and radio channels. Georgian TV channels rarely show documentaries on biodiversity and related issues in the Georgian language. The Internet-based media, a growing means of communication, is not fully exploited for communicating with the public about biodiversity. There is a distinct lack of communication and awareness activities targeted specifically at the private sector and decision-makers.

10.1.2 Problems in teaching biodiversity

At the level of formal education, more needs to be done to have biodiversity issues delivered in the classroom. Problems exist in respect of knowledge transfer and values development due to the lack of qualification and educational resources such as textbooks, Internet access and other relevant facilities. Issues of agrobiodiversity are not adequately reflected in education programmes.

More attention should be paid to teaching sustainable development principles in higher and vocational educational programs for fields that involve indirect or direct interaction with natural resources. These fields include agriculture, law, tourism, production, journalism, etc. There is also a lack of facilities for professional training.

Informal environmental education is still unsystematic and fragmented. There are sustainability issues as well. At present, most of the providers of informal environmental education are NGOs who often have to discontinue these activities as funds for specific projects run out.

Informal biodiversity education is one of the focuses of The National Strategy for Environmental Education, which was developed jointly by the MoENRP and the Ministry of Education and Science. The current progress of its implementation, however, leaves much to be desired.

10.1.3 Lack of access to regularly updated information

There is a general lack of easily accessible up-to-date information on the status and values of biodiversity and current threats to it, especially in rural areas.

10.1.4 Legal framework for public participation

The existing regulations and schemes do not ensure effective public participation in decision-making processes. The legislation fails to create the obligation of public consultations before the adoption of policy, legislative and strategic documents. The existing procedures of public participation in the planning of the utilisation of biological resources (such as forestry activities, hunting and fishery management plans) fail to ensure public participation. Current set durations for public consultations are not sufficient and no public consultations are being obligatorily organised on the ground.

The public often show little interest in public consultations. Hence, they have no influence on decision-making processes. This is primarily due to the facts that (i) the public lack information, knowledge and experience and (ii) decision-makers fail to understand that public participation is a means of arriving at optimal decisions. The extremely poor socioeconomic situation on the ground also contributes to low public interest and participation. The limited capacities of local NGOs working in the field of biodiversity do as well.

10.2 Strategic approach

- ✓ An institutional framework needs to be put in place. Capacity must be increased at national and local levels for communication, education and awareness activities and their evaluation.
- ✓ Targeted messages should be developed with full consideration of gender equality for key stakeholders such as decision-makers, the private sector, users of natural resources, the media, teachers, and key local communities. These messages should emphasise the values of and the services provided by biodiversity; relevant campaigns should be conducted using various means of communication.
- ✓ More trainings and conferences should be organised for key target groups, including media partners, decision-makers, the private sector, users of natural resources, teachers, students and women's groups.
- ✓ It is necessary to increase the effectiveness of existing communication mechanisms and to introduce new ones to ensure access to up-to-date information in all regions of the country.
- ✓ It is necessary to strengthen existing and introduce new legal and institutional mechanisms for improved public participation in decision-making processes.
- ✓ Continuous teaching of biodiversity focussing on the values, status and trends of biodiversity, and on the consequences of its loss needs to be ensured; the teaching of biodiversity should be improved at all levels of formal education.
- ✓ Volunteering should be promoted through providing training and education to potential volunteers; their participation should be encouraged in conservation activities such as biodiversity monitoring, conservation education, etc.
- ✓ Gender equality issues should be considered in providing access to (i) formal and informal education and (ii) knowledge, technologies and trainings related to the use and management of biological resources. This would increase the national capacity for halting biodiversity loss and facilitating adaptation to climate change.

10.3 Actions in chapter 12 relevant to the thematic area "Communication, education, public awareness and public participation"

A1-o1.1
A1-o2.1 – 4
A1-o3. 1 – 2
A2-o1. 1 – 5
A2-o2. 1 – 5
E2-o1. 1 – 8
E3-o1. 1

11 CROSS-CUTTING ISSUES AND GOVERNANCE

The rapid economic reforms conducted in Georgia during the past decade were targeted at achieving short-term results in fiscal and social spheres and were mainly based on the universal and comprehensive economic concept of market self-regulation. This approach caused the degradation and institutional erosion of the fields of environmental protection and sustainable use of natural resources. These reforms were conducted without long-term

planning and in the absence of frameworks of long-term development. As a result, many shortcomings emerged in the field of biodiversity management related to law enforcement and institutional efficacy. A step-by-step, consistent approach is needed to remedy these shortcomings. This approach should take account of the country's general socioeconomic development and available resources.

11.1 Description of problems

11.1.1 Legal shortcomings

The international agreements and treaties signed by Georgia represent an important source of national legislation. International legislation has priority over national legislation unless the former contradicts the Constitution of Georgia.

Georgia is a party to many important multilateral agreements in the field of biodiversity protection and conservation. However, the requirements of those agreements are not fully and consistently reflected in Georgia's national legislation except for those of the Convention on International Trade in Endangered Species (CITES). Relevant amendments should be introduced into the existing legislation to ensure full incorporation of the requirements of the multilateral agreements into the national legislation.

Georgia is not a party to the International Treaty on Plant Genetic Resources for Food and Agriculture - ITPGRFA (2004) and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (2010). Both of these treaties are very relevant to Georgia for the following reasons: (i) the country has a remarkably rich diversity of wild and domesticated genetic resources with a great actual and potential value, (ii) more than 2,000 species of Georgia's flora have direct economic importance as food for humans or animal feed, sources of timber, medicine and colorants (there are 1,200 medicinal plants included in the country's flora). Georgia's accession to ITPGRFA will facilitate an exchange of genetic materials with gene banks and collections of other member countries. Thus, the accession to the above two treaties would be beneficial to Georgia (see also Chapter 7: Agrarian biodiversity and natural grasslands).

11.1.2 Institutional setup and law enforcement

National level

As a result of the amendments introduced into the Law of Georgia "On the Structure, Powers and Order of Activity of the Government of Georgia" on the 11th of March 2011, the Ministry of Environment Protection and Natural Resources was reorganised and renamed *the Ministry of Environment Protection*. The ministry's competences and responsibilities in the field of environmental protection, including biodiversity and the use of natural resources (including biological) were modified. Certain functions and responsibilities were transferred to the Ministry of Energy and Natural Resources. Two units of the Ministry of Environment Protection and Natural Resources—the Forestry Department and the Environmental

Inspection—were also moved to the Ministry of Energy and Natural Resources to ensure that the latter effectively performed its new functions in the field of management of biological resources.

Prior to the redistribution of competences mentioned above, the Ministry of Environment Protection and Natural Resources either took part in or was solely responsible for the issuing of licenses and permits. After the changes, most of these functions began to be performed by the Ministry of Energy and Natural Resources. The Ministry of Energy and Natural Resources also became responsible for approving most of the subordinate legislative acts in the field of flora and fauna protection.

The above reorganisation was nota successful step. Recently, another legislative change took place that reversed the situation: the Ministry of Environment Protection reclaimed its initial name—the "Ministry of Environment and Natural Resources Protection"—and the responsibility of the management of natural resources (except oil and gas).

Local level

Decisions that affect biodiversity are often made, and any consequences of these decisions are most strongly felt at the local level. The legislation on local authorities fails to clearly define the roles and responsibilities of local governments with regard to biodiversity. As stated in The National Environmental Action Plan of Georgia 2011-2015 (NEAP-2), the vertical coordination between the national and local governments is weak. There is no platform for cooperation between different levels of government, and responsibilities of national and local authorities are often overlapping and vaguely defined.

11.1.3 Integration of biodiversity aspects into decision-making across economic sectors

Integration in general

NEAP-2 includes a separate chapter on cross-cutting issues and mainstreaming the environment into other sectors. It is stated that environmental policy integration is an essential tool for balancing economic, social and environmental interests in such a way that the total benefits are maximized and conflicts and inconsistencies are minimized. It is further stated that the goals set in NEAP-2 cannot be achieved without the coordinated action of all involved ministries and local governments. Since biodiversity is an important component of the broader environmental policy, these ideas also apply to the goals set by this National Biodiversity Strategy and Action Plan.

NEAP-2 also states that the responsibilities related to environmental protection are somewhat scattered among different ministries, and that horizontal coordination between those ministries needs to be strengthened. The ownership of issues is sometimes unclear, especially when more than one department or more than one level of the government is involved. Several instruments of environmental mainstreaming exist in Georgia, but due to weak legal and institutional frameworks as well as a lack of resources, these instruments fail to ensure adequate integration of environmental issues into development sectors. There is

no strategy for sustainable development, which could be an essential tool for environmental policy integration.

Strategic Environmental Assessment (SEA)

The Strategic Environmental Assessment (SEA) is an important tool for ensuring environmental and biodiversity mainstreaming. However, this tool is not yet applied in Georgia. The SEA is a process for evaluating the environmental consequences of proposed public initiatives (such as plans, programmes, policies and legislation) in order to ensure that environmental issues are fully considered at the same level as economic and social considerations. So, the SEA shares its roots and procedures with the Environmental Impact Assessment (EIA), but is able to identify potential impacts on biodiversity in the early stages of the planning process.

Environmental Impact Assessment (EIA)

The EIA is a very effective tool for ensuring adequate consideration of environmental issues in development projects. This is especially true in light of the implementation of major infrastructural projects implied by the country's need of rapid economic development and poverty reduction. However, the current legislation fails to provide for sufficient consideration of biodiversity in the EIA process.

Spatial planning

Spatial planning is another tool for mainstreaming biodiversity into sectoral and cross-sectoral plans since spatial plans determine where exactly economic activities or infrastructure developments are to take place. The process of spatial planning provides a good opportunity for different sectors and stakeholders to coordinate and communicate between each other. This tool needs to be further developed in Georgia.

Economic valuation of biodiversity

In most countries, including Georgia, goods and services provided by ecosystems have not been economically valuated. A country could cut its forests and deplete its fish stocks, and this would show only as a gain in GDP without accounting for the corresponding decline in the nation's natural capital. Assessment of the role of ecosystems in the country's economy at the national level is a new trend that can gradually attract decision-makers' attention. The Economics of Ecosystems and Biodiversity (TEEB) is a global initiative focused on drawing attention to the economic benefits of biodiversity. Its objective is to highlight the growing cost of biodiversity loss and ecosystem degradation. TEEB presents an approach that can help decision-makers recognize, demonstrate and capture the values of ecosystems and biodiversity. This includes helping to teach decision-makers how to incorporate these values into decision-making.

Georgia has offered to be a pilot country for a TEEB Scoping Study. In this context, economic valuations of ecosystem services of three protected areas have already been undertaken. They have revealed that (i) protected areas are indispensable for generating

economic benefits from nature-based tourism, (ii)the ecosystems within the protected areas provide services for economic sectors that are vital to humans, including agriculture, hydropower, fisheries and fresh water supplies. Furthermore, it is likely that sustainable management of protected areas will contribute to poverty elimination and fair sharing of resources and will promote the transformation of economic values of biodiversity into a stable financing mechanism for protected areas.

Prevention of unsustainable infrastructure development

Infrastructure development is a relatively new threat to the biodiversity of Georgia. Rapid economic recovery and growth has triggered large-scale infrastructure development. There are plans to construct new pipelines, dams, power lines, mining facilities, railways and roads. Hydropower development is given a particular emphasis in the economic policy of the government. New hydroelectric plants and dams may require the clearance of significant forest areas. Because of the strategically important location of Georgia and its "corridor" function between Europe and Asia, the existing transportation networks (railways, motor roads, hotels, etc.) will be modernized and extended.

In this situation, careful planning and sufficient consideration of ecological aspects are essential. However, the awareness of and consideration by decision-makers of the real values and importance of biodiversity are not sufficient at present. There is a high risk that ecosystems with high biodiversity value will be lost due to infrastructure development activities. The destruction of even a relatively small portion of natural habitats could cause irreversible damage if it takes place in an ecological corridor or other environmentally sensitive areas.

The drivers of unsustainable infrastructure development can be summarised as follows:

- rapid economic growth and tourism development
- pressure for rapid decision-making
- insufficient knowledge of or negligence of ecological values
- underestimation of the economic consequences of the destruction of natural ecosystems.

11.2 Biosafety

The management and associated risk assessment of living modified organisms (LMOs) are very relevant to Georgia, which is rich in local breeds and varieties and landraces as well as in crop wild relatives (CWR). The conservation of these genetic resources is important for biodiversity conservation as well as for the sustainable development of agriculture and for the nation's food security.

At present, there is no verified information on LMO distribution in Georgia, including on LMO import, cultivation, placement on the market, processing and use for feed. Consequently, it is impossible to assess the degree of risk that LMOs pose to Georgia's biodiversity and biological resources.

There is no national law that regulates biosafety issues in Georgia. Thus, the country fails to fulfil its commitments derived from its ratification of the Cartagena Protocol on Biosafety.

The activities defined by NBSAP-1 in the field of biosafety have been implemented only partially, and the problems and gaps in regards to legal, institutional and technical capacity still remain. Since 2005, some progress has been achieved in terms of the creation of scientific and technical capacities for LMO detection and identification. But there is insufficient knowledge, experience and facilities for ensuring LMO risk assessment and management, control and monitoring of their trans-border movement, placement on the market or release into the environment.

To some extent biosafety issues are reflected in the curricula of secondary and higher education. Measures aimed at increasing public awareness have been partially implemented by the non-governmental sector. NGOs have conducted activities aimed at increasing public communication about and awareness of LMOs. However, there is a lack of awareness and understanding of the risks associated with LMOs among the general public. There is also a lack of widely accessible and/or targeted up-to-date information and educational materials on biosafety issues.

Responsibilities of the governmental agencies in the field of biosafety are unclear. The country fails to comply with the requirement of the Cartagena Protocol of the establishment of a National Coordination Centre to coordinate biosafety issues with the CBD Secretariat. Competent national entities need to be set up to perform LMO-related administrative functions and public control and monitoring of LMOs.

11.3 Strategic approach

- ✓ Integration of biodiversity concerns across sectors is the way to recognize the value of biodiversity and ecosystem services; it will maximize the positive and minimize the negative impacts of human activities.
- ✓ A system of Strategic Environmental Assessments of national plans, programs, etc. should be developed.
- ✓ It is necessary to improve the existing EIA procedures to ensure better consideration of biodiversity issues; the current list of activities subject to EIAs must be revised to encompass all forms of activities that can potentially impact biodiversity according to the requirements of the CBD resolutions and recommendations (DEC VIII/22) and the Aarhus Convention.
- ✓ Any damage to biodiversity should be avoided and, if unavoidable, the damage should be minimized as much as possible. A handbook on integrating biodiversity aspects into EIAs that considers the national context and local conditions should be developed based on the guidelines and methods developed under the auspices of the CBD and other biodiversity-related agreements.
- ✓ The recommendations of the national TEEB study should be immediately incorporated into the environmental legislation and regulations on the use of natural resources; the process of economic valuation of biodiversity and ecosystems should continue in all preliminarily selected fields—forestry, energy, agriculture, tourism and

mining—and obtained results should be fully incorporated into national policies, accounts and statistics.

- ✓ Subsidies harmful to biodiversity often are a result of the lack of values attached to the services provided by ecosystems. Thus, it is important to stimulate the market to create incentives to safeguard the nation's biodiversity. The Georgian system for licenses and permits for the exploitation of natural resources is a strong instrument, which, depending on the overall conditions, has the potential to serve as both an incentive and a disincentive for the conservation and sustainable use of biodiversity. Therefore, this system should be thoroughly reviewed considering these aspects.
- ✓ The system of spatial planning should be reviewed and amended with the intent of integrating biodiversity concerns and aligning it with conservation planning.
- ✓ A policy should be developed to clarify and strengthen the powers of local governments in the field of conservation and sustainable use of biodiversity.
- ✓ To ensure the implementation of its international obligations, Georgia must join the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization of the CBD and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).
- ✓ It is necessary to establishment a national biosafety system to ensure the conservation of Georgia's rich genetic diversity, to help prevent the introduction of LMOs into the environment, and to ensure the eradication of LMOs which have already been introduced. It will be necessary to develop legislation for the safe handling, transportation, packaging and storage of LMOs used for food or animal feed, as well as for ensuring the safe use in closed facilities of LMOs in scientific research. It is also important to establish a monitoring system ensuring the traceability of raw foods and feeds that are composed of or contain LMOs. Capacity building, including the strengthening of institutional and technical capacities, and public awareness, education and participation are required for the effective operation of such a national biosafety system.

11.4 Actions in chapter 12 relevant to the thematic area "Cross-cutting issues and governance'

A3-o1. 1 – 3
A3-o3. 1 – 4
A3-o4. 1 – 4
A3-o5. 1 – 3
A4-o1. 1 – 4
A4-o2. 1 – 3
A4-o3. 1 – 3
D2-o1. 1 – 4
E3-o1. 2

12 STRATEGIC GOALS, NATIONAL TARGETS, OBJECTIVES AND ACTIONS

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

National Targets	Corresponding Aichi Targets	Indicators	Objectives	Critical assumptions
A.1. By 2020, at least 50% of the population of Georgia is informed about biodiversity; this segment of the populace is aware of the value biodiversity provides to society and the economy, knows about the ways it is threatened, and is acquainted with the steps necessary to mitigate those threats	1	A.1- i1. Trends of awareness and attitudes of various target groups towards biodiversity(results of qualitative and quantitative studies incorporating the gender dimension) A.1- i2. Rate of media coverage of biodiversity issues (Published articles, radio and TV shows) A.1- i3. Number of supporting groups for communication, education and awareness-raising A.1- i4. Number of hits/clicks/visitors on the biodiversity web portal	A.1–o1. Establish institutional mechanisms and capacity for improved communications, awareness and education on biodiversity and biosafety at the national level A.1–o2. Develop key messages for the general public as well as for specific target groups for raising awareness of biodiversity (including agrarian biodiversity) values and ecosystem services; launch campaigns using diverse media A1-o3. Increase the awareness of the general public and decision makers of climate change as a threat to biodiversity	That strong local NGOs and education establishments exist That media companies and local municipalities are interested and have lent their support; that adequate facilities and human and financial resources are available
A.2. By 2020, significantly more people, especially local populations, are interested and effectively taking part in decision making processes that contribute both to conservation and sustainable use of biodiversity and to biosafety	1	A.2- i1. Percentage of draft policy, strategic and legal documents related to biodiversity and biosafety made accessible for public consultation and the number and composition of consultation meetings A2 –i2. Existence of new amendments to the legislation aimed at improving public participation in decision making processes	A.2-o1. Strengthen the efficiency of existing mechanisms of informing the public and create new mechanisms that ensure access to up-to-date and authentic information on biodiversity and biosafety in all regions of Georgia A.2-o2. Strengthen existing legislative, institutional and administrative mechanisms and create new mechanisms for public participation in decision making processes	That sufficient political will exists and that the NGO sector and local governments have lent their support

		A.2- i3. Number of NGOs, including women's organizations and other stakeholders (especially representatives of local communities taking into account the gender balance), participating in public consultations on development projects and natural resource management plans		
A.3. By 2020, sustainable use and the economic values of biodiversity and ecosystems are integrated into legislation, national accounting, rural development, agriculture, poverty reduction and other relevant strategies; positive economic incentives have been put in place and incentives harmful to biodiversity have been eliminated or reformed	2,3	A.3 – i1. Existence of newly enacted policies, laws, regulations and institutional changes that ensure compliance with the Convention on Biological Diversity and other biodiversity-related international commitments A.3- i2. Number of economic tools and instruments (including TEEB) ensuring biodiversity conservation and ecosystem services that are applied in decision-making A.3 – i3. Statistical information placed on www.geostat.ge and biodiversity monitoring reports/calculated biodiversity indicators placed on www.biomonitoring.gov.ge	A.3- o1. Integrate biodiversity conservation, sustainable use and ecosystems' values into development programs for such sectors as forestry, energy, agriculture, tourism, mining and infrastructure; take all possible measures to prevent irreversible degradation of ecosystems A3– o2. Evaluate economic values of biodiversity and ecosystems and integrate them into national accounting, agricultural and poverty reduction strategies and planning processes A.3– o3. Elaborate and support the implementation of positive economic incentives for biodiversity conservation and remove any negative incentives A 3- o4. Improve the relevant institutional and regulatory framework A.3- o5. Ensure that infrastructure development and other activities that could have a significant impact on biodiversity are subjected to the Environmental Impact Assessment (EIA) based on environmental standards; Implement adequate and fair compensation mechanisms where damage to biodiversity is unavoidable	That sufficient political will exists; That the NGO sector, general public and local governments have lent their support That adequate facilities and human and financial resources are available That private companies (including banks) are willing to fund economic and fiscal incentives for biodiversity conservation
A.4. By 2020, an effective and fully functional national biosafety system has been putin place ensuring adequate	1, 7	A.4 –i1. Existence of newly enacted legislation on biosafety	A4 –o1. Enforce legislation regulating biosafety issues and provide all necessary institutional support for its implementation	That sufficient political will exists

protection of the country's biodiversity from any potential negative impact from living modified organisms		A.4 –i2. Existence of clearly defined functions of the state agencies in the field of management, monitoring and control of LMOs reflected in their statutes A.4 –i3. Existence of fully functional infrastructure for the management, monitoring and control of LMOs, including accredited laboratories A.4 –i4. Number of trained specialists (considering the gender dimension), with appropriate qualification in the assessment, monitoring, management and control of LMOs	A4 –o2. Establish effective infrastructure for the monitoring and control of LMOs A4 –o3. Create relevant scientific capacity for adequate risk assessment and management of LMOs	That stakeholders (governmental agencies, research and education institutions)are involved and have lent their support

National Target A.1. By 2020, at least 50% of the population of Georgia is informed about biodiversity; this segment of the populace is aware of the value biodiversity provides to society and the economy, knows about the ways it is threatened, and is acquainted with the steps necessary to mitigate those threats

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective A.1–o1. Establish institutional mechanisms and capacity for improved communications, awareness and education on biodiversity and biosafety at the national level			
A.1-o1.1. Establish a network of partners and local conservation support groups including local NGOs, CBOs and research and education organizations for the implementation of public communication, education, and awareness raising at national and local levels	2014	MoENRP	Sate budget, donors

Objective A.1–o2. Develop key messages for the general public as well as for specific target groups for raising awareness of biodiversity (including agrarian biodiversity) values and ecosystem services; launch campaigns using diverse media			
A.1-o2.1. Prepare and distribute informational materials—newsletters, brochures, newspapers, internet articles, documentaries, advertisements, banners, TV shows, etc.—that are targeted at the media along with local, women's and other specific groups	2014 - 2020	MoENRP; APA; MoA; NGOs; research institutes; regional TV and radio companies; newspapers	State budget, donors; private sector
A.1-o2.2. Organise trainings, competitions and conferences for target groups such as media partners, decision-makers, users of biological resources, teachers, schoolchildren, students, women's and community groups, etc.	2014 - 2020	MoENRP; APA	State budget, donors; private sector
A.1-o2.3. Create a multimedia informational web portal, designed based on a single-window principle, for hosting comprehensive educational resources for targeted age groups	2014	MoENRP	State budget, donors; private sector
A.1-o2.4. Conduct regular monitoring of the level of public awareness of biodiversity	2014 - 2020	MoENRP; APA; MoESc; National Statistics Service	State budget, donors; private sector
Objective A1-o3. Increase the awareness of the general public and decision makers of climate change as a threat to biodiversity			
A.1-o3.1. Organise workshops for national and local governments on the impacts of climate change on biodiversity	2014 - 2015	MoENRP; APA; NGOs; research institutes	State budget; donors
A.1-o3.2. Conduct a national awareness campaign on the issue of climate change as a threat to biodiversity	2014 - 2020	MoENRP; MoA	State budget; donors

National Target A.2. By 2020, significantly more people, especially local populations, are interested and effectively taking part in decision making processes that contribute both to conservation and sustainable use of biodiversity and to biosafety

Action	Time frame	Responsible/Implementing agency	Source of funding (potential)
Objective A.2-o1. Strengthen the efficiency of existing mechanisms of informing the public and create new mechanisms that ensure access to up-to-date and authentic information on biodiversity and biosafety in all regions of Georgia			
A2-o1.1. Provide, using different means of communication, information to the public on their right to have access to information and participate in decision-making processes at various levels	2014 – 2020	MoENRP; APA	State budget; donors
A.2-o1.2. Restore and promote (e.g. through the distribution of electronic copies in the districts of Georgia) the existing Clearing House Mechanism (CHM; www.chm.moe.gov.ge)	2014 - 2018	MoENRP; APA	State budget; donors
A.2-o1.3. A.2-o1.3. Create a web portal and a search feature for the regularly updated biosafety resources at the Clearing House Mechanism (CHM; www.chm.moe.gov.ge)	2015	MoENRP	State budget; donors
A.2-o1.4. Define the content of official statistical data about biodiversity (including agrobiodiversity) and biosafety; define the frequency of data collection; name the agencies responsible for data collection and strengthen their capacities	2014 – 2020	MoENRP; The National Statistics Service	State budget
A.2-o1.5. Develop and adopt regulations (or relevant changes therein) for public participation in the preparation of biodiversity-related policies and legislation as well as programmes	2014 – 2015	Government of Georgia; Parliament of Georgia; MoENRP	State budget
A.2-o1.6. Prepare updated informational and educational materials on biosafety and agrobiodiversity for farmer's extension centres and provide access to regularly updated information, with an emphasis on gender equality, to all farmers	2015-2020	MoA; MoENRP	State budget; donors
Objective A.2-o2. Strengthen existing legislative, institutional and administrative mechanisms and create new mechanisms for public participation in decision making processes			

A.2-o2.1**.** Increase the capacity of the staff of relevant governmental agencies (including through trainings) with regard to public communication and involvement in matters related to biodiversity	2014 – 2018	PR departments of relevant agencies	State budget; donors
A.2-o2.2. Improve public participation in decisions related to biodiversity conservation and use, including through the introduction of changes to the existing legislation	2014 -2015	Government of Georgia; MoENRP	State budget; donors
A.2-o2. 3. Strengthen local NGOs, CBOs and local women's groups and encourage their involvement in the decision-making in and monitoring of development projects as well as in biodiversity conservation and resource-use planning	2014 -2020	MoENRP; NGOs; international organisations	State budget; donors
A.2-o2.4. Strengthen local governments with regard to ensuring pubic communication and involvement in decision making processes	2014 -2015	MoENRP; NGOs; international organisations	State budget
A.2-o2.5. Monitor public consultations and involvement and the integration of the public's views into the decision-making processes; organise biennial reviews of the situation	2015 -2019	NGOs; international organisations	State budget

National Target A.3. By 2020, sustainable use and the economic values of biodiversity and ecosystems are integrated into legislation, national accounting, rural development, agriculture, poverty reduction and other relevant strategies; positive economic incentives have been put in place and incentives harmful to biodiversity have been eliminated or reformed

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective A.3-o1. Integrate biodiversity conservation, sustainable use and ecosystems' values into development programs for such sectors as forestry, energy, agriculture, tourism, mining and infrastructure; take all possible measures to prevent irreversible degradation of ecosystems			

A.3-o1.1. Establish Strategic Environmental Assessments (SEAs) for national plans, programmes and legislation development processes that take account of biodiversity and ecosystem services	2015	MoESD; MoENRP; MoE	State budget
A.3-o1.2. Develop national guidelines for the integration of biodiversity conservation into sectoral and cross-sectoral policies and strategies	2014-2015	MoENRP; NGOs; international organisations	State budget; donors
A.3-o1.3 Conduct a review and modification of the current system of spatial planning to ensure the integration of biodiversity through both the mapping of biodiversity and ecosystem services and systemic conservation planning	2016	MoENRP; other relevant agencies	State budget; donors
Objective A3-o2. Evaluate economic values of biodiversity and ecosystems and integrate them into national accounting, agricultural and poverty reduction strategies and planning processes			
A.3-o2.1. Conduct an economic valuation of the country's biodiversity and ecosystems using TEEB (The Economics of Ecosystems and Biodiversity), including agroecosystems (agricultural soils, natural grasslands and priority landraces)	2015	MoENRP; APA; NGOs; research institutes	Donors
A.3-o2.2. Elaborate and implement a communication strategy for decision makers, local communities and women's groups on the economic values of biodiversity and ecosystems	2016	MoENRP; NGOs	Donors
A.3-o2.3. Integrate the results of the TEEB study into development, agriculture, poverty eradication and other relevant programmes as well as into the national statistics	2018	MoENRP; other relevant agencies	State budget
Objective A.3-o3. Elaborate and support the implementation of positive economic incentives for biodiversity conservation and remove any negative incentives			
A.3-o3.1. Conduct a review of the regulations for licensing and permit issuance for the use of natural resources with respect to the mitigation of their impact on biodiversity and protected areas and incentives for conservation	2015	MoENRP; NGOs	State budget; donors
A.3-o3.2. Increase the capacity of licensing and permit-issuing units through training and provision of resources (including equipment)	2015-2020	MoENRP	State budget; donors
A.3-o3.3. Elaborate and adopt guidelines for the control and monitoring of licences involving the use of natural resources such as forestry, hunting, fishing, etc.	2015	MoENRP	State budget; donors

A.3-o3.4. Establish mechanisms that ensure that all decisions on providing special conditions and/or subsidies to farmers and on preventive and quarantine measures in plant or veterinary protection take into account their potential impact on the environment and are taken through public consultations	2018-2020	MoA; National Agency for Food; local governments	State budget
Objective A 3- o4. Improve the relevant institutional and regulatory framework			
A.3-o4.1. Improve the existing regulatory framework through the integration of the country's obligations that derive from its bilateral and multi-lateral agreements into the national legislation	2014-2015	MoENRP; NGOs	State budget; donors
A.3-o4.2. Define and ensure a clear distribution of powers and competences in biodiversity conservation and use among the national, regional and local government	2014	MoENRP; MoF; NGOs; international organisations	State budget; donors
A.3-o4.3. Establish a committee for the supervision and monitoring of NBSAP implementation	2014	MoENRP; MoF; other relevant agencies	State budget; donors
A.3-o4.4. Elaborate relevant policies for local governments that entitle them to more power in the field of biodiversity conservation and use and ensure the strengthening of their capacities	2015	MoENRP	State budget; donors
A.3-o4.5. Create a legal framework that establishes the status of agrobiodiversity, its inventory, protection from biopiracy, stock/seed production, the coordination of *ex situ* conservation and a favourable environment for *in situ* conservation	2015	Parliament of Georgia; MoA; MoENRP; MoCMP; NGOs	State budget; donors
A.3-o4.6. Prohibit the import of non-native breeds of bees	2015	Parliament of Georgia; MoA; MoENRP	State budget
A.3-o4.7. Introduce amendments to the copyright law to ensure the protection of traditional products and their names on national and international markets	2015	Parliament of Georgia; MoA; The National Centre for Intellectual Property Rights – "Sakpatenti"	State budget

A.3-o4.8. Improve the legal and institutional frameworks for the commercial use of non-timber plant resources	2015	Parliament of Georgia; MoENRP; NGOs	State budget
Objective A.3- o5. Ensure that infrastructure development and other activities that could have a significant impact on biodiversity are subjected to the Environmental Impact Assessment (EIA) based on environmental standards; Implement adequate and fair compensation mechanisms where damage to biodiversity is unavoidable			
A.3-o5.1. Introduce legal amendments that ensure that an EIA is required for any infrastructure development or other project that may have a significant impact on biodiversity and ecosystems (or protected areas), and provide for adequate law enforcement (e.g. ensure that the conduction of EIAs prior to the commencement of development activities is enforced)	2014-2020	MoENRP; private companies	Private investments
A.3-o5.2. Establish emission, discharge and water consumption norms with full regard to biodiversity conservation	2014-2016	MoE; MoENRP; MoESD; MoIRD; MoLHSA	State budget; donors
A.3-o5.3. Establish fair and adequate compensation schemes for those cases in which the impact on the natural environment is unavoidable	2014	MoENRP; NFA; APA; NGOs; research institutes	Donors

National Target A.4. By 2020, an effective and fully functional national biosafety system has been put in place ensuring adequate protection of the country's biodiversity from any potential negative impact from living modified organisms

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective A4 -o1. Enforce legislation regulating biosafety issues and provide all necessary institutional support for its implementation			
A.4-o1.1. Adopt biosafety legislation, i.e. implement the requirements of the Cartagena Protocol	2015	MoENRP	State budget; donors
A.4 -o1.2. Establish a control system for transboundary movement, introduction and placement on the market of LMOs; designate a responsible unit in each relevant governmental agency and ensure exchange of information between them	2015	MoENRP; other relevant agencies	State budget; donors

A.4-o1.3. Ratify The Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress and integrate its requirements into the legislation	2016	Parliament of Georgia; Government of Georgia; MoENRP	State budget; donors
A.4-o1.4. Increase the capacities of relevant governmental agencies, taking into account the gender dimension, through organising regular trainings in LMO management, control and monitoring	2015-2016	MoENRP; MoF; MoA	State budget; donors
Objective A4 -o2. Establish effective infrastructure for the monitoring and control of LMOs			
A.4-o2.1 Establish (designate, equip and provide human resources and trainings) a central referral laboratory for LMO detection and identification based on a cost-effectiveness analysis	2016	MoENRP; MoA	State budget; donors
A.4-o2.2 Equip and provide gender-balanced personnelto two laboratories for LMO detection and identification	2016-2018	MoENRP; MoA	State budget; donors; private sector
A.4-o2.3 Adopt methods of LMO detection and identification using international best practices	2015	MoENRP; MoA; MoESD	State budget
Objective A4 -o3. Create relevant scientific capacity for adequate risk assessment and management of LMOs			
A.4-o3.1 Organise trainings and exchange programmes in LMO risk assessment and management	2014-2017	MoENRP; universities	State budget; donors
A.4-o3.2 Elaborate and adopt guidelines for LMO risk assessment and management using international best practices	2015-2016	MoENRP	State budget; donors
A.4-o3.3 Elaborate a list of national biosafety experts using special criteria and set minimum requirements	2017-2018	MoENRP; MoA; universities	State budget; donors

Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use

National Targets	Corresponding Aichi Targets	Indicators	Objectives	Critical assumptions
B.1. By 2020, negative factors directly affecting threatened natural habitats have been significantly reduced through the sustainable management of at least 60% of these habitats, including at least 60% of forests, 80% of wetlands and 70% of grasslands.	5	B.1-i1. Percentage of natural habitats that are managed according to their respective management plans B.1-i2. Existence of a relevant legal base providing for (i) the integration of biodiversity conservation requirements into the EIA process and (ii) monitoring and enforcement of environmental impact permits (EIP) and licences B.1- i3. Rate of loss of forested areas B.1 -i4. Area of degraded forest B.1 - i5. Scale of grazing in the forest B.1 - i6. Area affected by forest fire B.1- i7. Area of forest affected by pests and diseases	B.1- o1. Develop a legal and institutional base for the sustainable use of forests and other natural habitats B.1-o2. Reduce pressures on forest ecosystems	That a long-term political will, favourable public opinion, and effective intersectoral cooperation exist. That law enforcement has been improved. That the welfare of country dwellers has been improved That livestock owners are willing to cooperate with the authorities and other stakeholders That forests fires are recognized as a serious threat at all levels.
B.2. By 2020, alien invasive species have been assessed with regard to their status and impact; their pathways have been evaluated and identified, and measures are in place to prevent their introduction and establishment through the management ofthese pathways; no	9	B.2- i1. Existence of a strategic document for the management of alien invasive species and for the prevention of their introduction and establishment B.2-i2. Number and distribution of invasive species	B.2-o1. Prevent the distribution of new alien invasive species and control the existing populations of alien species	That a long-term political will and effective intersectoral cooperation exist

new alien species have been recorded				
B.3. By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem functioning and biodiversity	8	B.3 -i1. Main anthropogenic sources of the eutrophication of the Black Sea identified; measures aimed at their eradication underway B.3-i2. Enacted legislation regulating environmental pollution B.3-i3. Existence of reports on the control of environmental pollution	B.3-o1. Assess the feasibility of reducing Black Sea eutrophication and implement relevant effective measures B.3-o2. Significantly reduce pollution from agriculture by improving the institutional framework and restoring degraded agricultural lands and natural grasslands B.3-o3. Reduce the level of pollution of inland waters to ecologically acceptable levels	That coordination among governmental and other organizations exists
B.4.By 2020, the management of agricultural ecosystems and natural grasslands is improved	7, 14, 15	B.4 - i1. Relevant changes introduced in the legislation B.4- i2. Existence of a National Agricultural Strategy and Action Plan	B.4 - o1. Improve the legislative and institutional framework for conservation and sustainable management of agricultural ecosystems and natural grasslands B.4 - o2. Develop programs aimed at promoting sustainable management practices, certification and labelling schemes such as Best Agricultural Practices, organic farming and sustainable harvesting of wild plants B.4-o3. Assess the status of Georgia's agricultural ecosystems (including soils and ecosystem services provided) and natural grasslands	That currently ongoing reforms in the fields of food safety, veterinary and plant protection have been successfully completed That interest among local governments exists That the public and local municipalities are interested and have lent their support
B.5. By 2020, the impact of fisheries on stock, species and ecosystems is within safe ecological limits	**6**	B.5 - i1. Existence of approved and scientifically sound methodology for stock assessment of commercial fish species in inland waters B.5 - i2. Existence of approved and	B.5 -o1. Set quotas for commercial fishing within safe ecological limits and ensure effective protection of fish stocks through appropriate institutional and legislative framework	That coordination among governmental and other organizations exists That a long-term political

		scientifically sound methodology for establishing harvest quotas for commercial species in inland waters and the Black Sea B.5 - i3. Trends in stocks of commercial species in inland waters and the Black Sea B.5-i4. Existence of effective legal and institutional frameworks for the management of aquaculture in place	B.5 –o2. Establish a sustainable system for aquaculture management (including legal and institutional frameworks) which can overcome the problem of institutional dispersal of responsibility for resource management and create institutional mechanisms for the coordination between all involved sectors on the ground	will exists
B.6. By 2010, a national system of sustainable hunting is in place which ensures the viability of game species		B.6 - i1. Existence of improved legislative and institutional framework for sustainable hunting	B6-o1. Establish a national sustainable hunting system (including legal and institutional frameworks) with the involvement of all stakeholders	That a long-term political will and favourable public opinion exist

National Target B.1. By 2020, negative factors directly affecting threatened natural habitats have been significantly reduced through the sustainable management of at least 60% of these habitats, including at least 60% of forests, 80% of wetlands and 70% of grasslands.

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective B.1 - o1: Develop a legal and institutional base for the sustainable use of forests and other natural habitats			
B.1-o1. Develop and submit to the Parliament for approval a forestry legislation that is fully based on the principles of sustainable use	2014	MoENRP	State budget; donors
B.1-o1.2. Set up optimal entities for forest management	2014-2015	MoENRP	State budget; donors
B.1-o1.3. Establish mechanisms for the prevention and eradication of habitat degradation	2014	MoENRP	State budget. donors
B.1-o1.4. Conduct a preliminary assessment of the selected priority habitats, including their mapping and an assessment of primary limiting factors	2014-2016	MoENRP; research institutes; NGOs	State budget; donors

B.1-o1.5 Elaborate and adopt national guidelines for the management of grazing lands	2014-2016	MoENRP; MoA	State budget; donors
B.1-o1.6. Elaborate and adopt national guidelines for the management of wetlands	2014-2016	MoENRP	State budget; donors
B.1-o1.7. Elaborate and adopt national guidelines for the assessment of habitats	2014-2016	MoENRP	State budget; donors
Objective B.1-o2. Reduce pressures on forest ecosystems			
B.1-o2.1. Monitor the rate of the loss and degradation of forest habitats	2014-2020	MoENRP; NFA; NGOs	State budget; donors
B.1-o2.2. Improve the existing system of wood tracking to ensure timely detection of illegal logging	2014-2015	MoENRP; NFA	State budget; donors
B.1-o2.3. Establish fast growing forest plantations in forest clearances so that timber and fuel wood can be produced and provided primarily to local communities	2014-2020	MoENRP; NFA; land owners; companies	Private investments
B.1-o.2.4. Evaluate illegal logging at the regional and national levels	2014-2020	MoENRP; NFA; APA; NGOs	International donors
B.1-o2.5. Evaluate the impact of grazing on forests at the regional and national levels	2014-2016	MoENRP; NFA; APA; research institutes; NGOs	International donors
B.1-o2.6. Conduct pilot projects that demonstrate sustainable grazing methods and modern approaches that help reduce grazing pressure on the forest; promote the replication of successful approaches	2014-2020	MoENRP; NFA; APA; MoA; NGOs	International donors
B.1-o2.7 Elaborate a policy document on the combating of forest fires and support its implementation	2014	MoENRP; NFA; APA	International donors
B.1-o2.8. Ensure a clear definition and distribution of roles and responsibilities of central and local entities with respect to the detection of and response to wild fires	2014	MoENRP; NFA; MoIA; APA; Emergency Managemnet Department; local governments; NGOs	State budget. donors
B.1-o2.9. Conduct assessments to identify forested areas that are affected by pests and pathogens	2014-2015	MoENRP; NFA; APA; research institutes; NGOs	State budget. donors

B.1-o2.10. Elaborate an action plan for the combating of forest pests and diseases and support its implementation	2015	MoENRP; NFA; APA; research institutes; NGOs	State budget. donors

National Target B.2 By 2020, alien invasive species have been assessed with regard to their status and impact; their pathways have been evaluated and identified, and measures are in place to prevent their introduction and establishment through the management ofthese pathways; no new alien species have been recorded

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective B.2-o1. Prevent the distribution of new alien invasive species and control the existing populations of alien species			
B.2-o1.1 Identify, assess and prevent the existing and potential pathways of invasive alien species into the country's terrestrial, freshwater and marine ecosystems	2014-2018	MoENRP; APA; research institutes; NGOs	State budget. donors
B.2-o1.2. Assess the status and distribution of invasive alien species and conduct a modelling of the threats they pose to native biodiversity and ecosystems	2014-2018	MoENRP; APA; research institutes; NGOs	Donors
B.2-o1.3. Develop a legal framework and strategy for the management of invasive alien species	2015-2020	MoENRP; research institutes; NGOs	State budget. Donors
B2-o1.4. Establish effective measures for the control of the populations of marine alien species, including *Mnemyopsys leidi* and *Rapana venosa*	2014-2020	MoENRP; research institutes; NGOs	State budget. Donors
B2-o1.5. Conduct monitoring of invasive alien species within the framework of the National Biodiversity monitoring System	2014-2016	MoENRP; research institutes; NGOs	State budget. donors

National Target B.3. By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem functioning and biodiversity			
Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective B.3-o1 Assess the feasibility of reducing Black Sea eutrophication and implement relevant effective measures			
B.3-o1.1 Conduct a study on the causes and main sources of marine eutrophication	2014-2018	MoENRP; research institutes	State budget; donors
B.3-o1.2. Mitigate/eradicate the human causes of marine eutrophication through the establishment of relevant effective mechanisms	2014-2016	MoENRP; research institutes	State budget; donors
Objective B.3-o2. Significantly reduce pollution from agriculture by improving the institutional framework and restoring degraded agricultural lands and natural grasslands			
B.3-o2.1. Introduce amendments to the legislation on agriculture that ensure a reduction of pollution from agriculture, sustainable functioning of agroecosystems and the conservation of agrobiodiversity	2014	MoA; MoENRP	State budget
B.3-o2.2. Ensure the combating of pests and diseases by methods that do not impair the integrity of agrarian ecosystems	2017-2020	MoA; National Food Agency	State budget; donors
B.3-o2.3. Conduct three restoration pilot projects in the most contaminated/degraded pastures and six pilot projects in the areas with the most contaminated/degraded soils in selected municipalities	2015-2020	MoA; APA; NGOs; private sector	State budget; municipal budgets; international and private donors
Objective B.3-o3. Reduce the level of pollution of inland waters to ecologically acceptable levels			
B.3-o3.1. Adopt laws and regulations which ensure the effective regulation of the pollution of inland waters	2014-2016	MoENRP; research organisations; experts	State budget

B.3-o3.2. Establish a system to assess the biological state of inland water ecosystems	2014-2016	MoENRP; research organisations; experts	State budget; donors
B.3-o3.3. Establish a system to assess the chemical state of inland water ecosystems	2014-2016	MoENRP; research organisations; experts	State budget; donors
B.3-o3.4. Conduct monitoring of inland water ecosystems within the framework of the national biodiversity monitoring system	2014-2020	MoENRP; research organisations; experts	State budget; donors

National Target B.4. By 2020, the management of agricultural ecosystems and natural grasslands is improved

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective B.4-o1. Improve the legislative and institutional framework for conservation and sustainable management of agricultural ecosystems and natural grasslands			
B.4-o1.1. Introduce amendments to the legislation to provide for the sustainable management of community pastures and define the responsible entities	2015	Parliament of Georgia; MoA; regional administrations	State budget
B.4-o1.2 Establish terms and conditions for the leasing or privatisation of state-owned pastures	2014	MoESD; National Agency for State Property Management; MoA; local governments; NGOs; experts	State budget
B.4-o1.3. Elaborate and adopt a sectoral plan for the management of agrarian areas and the restoration of the most contaminated/degraded lands	2015	MoA; research organisations; NGOs	Donors
B.4-o1.4. Elaborate a scheme for the integration of management methods related to agroecosystems and natural grasslands into regional strategic documents and municipal annual work plans	2015	MoA; research organisations; NGOs; regional administrations and municipalities	Donors
B.4-o1.5. Integrate management methods related to agroecosystems and natural grasslands into at least three regional strategic documents and six municipal annual work plans	2018	Regional administrations and municipalities; MoA	Donors; local budgets
B.4-o1.6. Elaborate sustainable management plans for the pastures situated within protected	2014-2020	MoENRP; APA; MoA; local	Donors

areas		municipalities	
Objective B.4 – o2. Develop programs aimed at promoting sustainable management practices, certification and labelling schemes such as Best Agricultural Practices, organic farming and sustainable harvesting of wild plants			
B.4-o2.1. Implement pilot projects on the sustainable management of natural grasslands in at least six municipalities using specially designed certification and labelling schemes	2015-2020	MoA; APA; NGOs; private sector	State budget; local budgets donors; private sector
B.4-o2.2. Implement pilot projects on organic farming in at least six municipalities, including high mountain regions	2015-2020	MoA; NGOs; private sector	State budget; local budgets donors; private sector
B.4-o2.3. Implement at least four pilot projects on sustainable harvest schemes for wild-growing plants	2015-2020	MoESD; MoENRP; NGOs; private sector	State budget; local budgets donors; private sector
Objective B.4-o3. Assess the status of Georgia's agricultural ecosystems (including soils and ecosystem services provided) and natural grasslands			
B.4-o3.1. Assess the status of agricultural soils and natural grasslands; identify the most degraded, contaminated and high risk areas	2014-2017	MoENRP; MoA; APA; local governments	State budget; donors
B.4-o3.2. Assess the status of pollinators and entomophagous insects and develop recommendations for their conservation	2017	Resarch organisations	State budget; donors
B.4-o3.3. Conduct an inventory of state-owned grasslands	2014-2017	MoESD; National Agency for State Property Management; MoA; local governments; NGOs; experts	State budget; donors

National Target B.5. By 2020, the impact of fisheries on stock, species and ecosystems is within safe ecological limits

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**

Objective B.5-o1. Set quotas for commercial fishing within safe ecological limits and ensure effective protection of fish stocks through appropriate institutional and legislative framework			
B.5-o1.1. Assess the ecological consequences of commercial fisheries	2014-2015	MoENRP; research organisations	State budget; donors
B.5-o1.2. Identify commercial fish species and define their harvest quotas	2014-2020	MoENRP	State budget; donors
B.5-o1.3. Conduct monitoring of catches and populations of commercial marine fish species	2014-2020	MoENRP	State budget; donors
B.5-o1.4. Further refine fishing methods with respect to catching equipment and techniques (including the permitted mesh size and the prohibition of trawling, etc.)	2014-2015	MoENRP	State budget; donors
B.5-o1.5. Assess commercial fish stocks in the country's inland waters	2014-2016	MoENRP; MoESD; research organisations	State budget; donors
Objective B5-o2. Establish a sustainable system for aquaculture management (including legal and institutional frameworks) which can overcome the problem of institutional dispersal of responsibility for resource management and create institutional mechanisms for the coordination between all involved sectors on the ground			
B5-o2.1. Define suitable fish species and water bodies for aquaculture development and evaluate ecological and economic values of specific stocks	2014-2020	MoENRP; MoA; research organisations	State budget; donors
B5-o2.2. Prepare recommendations for ecologically-friendly fish breeding and pond productivity management methods	2014-2020	MoENRP; MoA; research organisations	State budget; donors
B5-o2.3. Integrate an ecosystem approach into aquaculture practices	2014-2016	MoENRP; MoA; research organisations	State budget; donors

National Target B.6 By 2020, a national system of sustainable hunting is in place which ensures the viability of game species

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective B.6 -o1. Establish a national sustainable hunting system (including legal and institutional frameworks) with the involvement of all stakeholders			

B.6-o1.1. Develop a national sustainable hunting strategy in a participatory manner using international best practices	2014-2015	MoENRP; NGOs; MoA; research organisations; private sector	State budget; donors
B.6-o1.2. Create a legal framework for sustainable hunting according to the national sustainable hunting strategy	2014-2015	MoENRP; NGOs; MoA; research organisations; private sector	State budget; donors
B.6-o1.3. Set up a system (framework and facilities) for hunter training and certification	2014-2016	MoENRP; NGOs; MoA; research organisations; private sector	State budget; donors

Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

National Targets	Corresponding Aichi Targets	Indicators	Objectives	Critical assumptions
C.1. By 2020, the status of biodiversity has been assessed through the improvement of scientific and baseline knowledge and the establishment of an effective monitoring system	12	C.1- i1. Existence of defined conservation statuses for all rare and economically important fauna species; existence of the updated national "Red List" C.1- i2. Existence of widely accepted checklists for major groups of organisms C.1- i3. Existence of a functional biodiversity monitoring system C.1- i4. Existence of guidelines on developing a "Red List" of crop landraces, domestic animal landraces and crop wild relatives C.1.- i5. Existence of a national "Red List" of crop landraces, domestic	C.1- o1. Establish the status of Georgia's biodiversity through species inventories and relevant assessments C.1- o2. Set up an effective and comprehensive biodiversity monitoring system	That effective coordination between governmental, donor and nongovernmental organisations exists

		animal landraces and crop wild relatives		
C.2. By 2020, the status of species - including 75% of “Red List” species - has been considerably improved through effective conservation measures and sustainable use	12.	C.2-i1. Changes in the conservation status of “Red List” species C.2-i2. Population trends of economically valuable species C.2-i3. Existence of an effective system for the mitigation of human-wildlife conflicts (through the development and implementation of a mitigation strategy and the identification and assessment of both involved species and the form and extent of conflicts)	C.2- o1. Implement effective species-specific conservation measures including reintroductions and encouragement of natural growth C.2- o2. Reduce the conflict between wildlife (especially large carnivores) and local farmers	That effective coordination between governmental, donor and nongovernmental organisations exists That effective intersectoral cooperation exists
C.3. By 2020, forest biodiversity is safeguarded through sustainable management policies and practices	11	C.3 - i1. Existence of newly adopted laws, regulations and standards	C.3-o1. Develop an optimal institutional framework for the Georgian forestry sector. C.3- o2. Elaborate and adopt new forestry legislation that promotes sustainable management of all forests, including community forests	That sufficient financial resources are available

C.4. By 2020, at least 12% of the country's terrestrial and inland water areas and 2.5 % of marine areas are covered by protected areas; areas of particular importance for ecosystem services are effectively and equitably managed via an ecologically representative system and other effective conservation measures; development of the protected areas network and its integration into the wider landscape and seascapes is ongoing	11, 5, 14, 15, 18	C.4-i1. The existence of adopted relevant regulations C.4-i2. Existence of an approved plan of the national protected areas network C.4-i3. The total area of protected areas C.4-i4. The number of connected protected areas and ecological corridors C.4-i5. Number of agreements on transboundary cooperation in PAs management C.4-i6. Existence of results from a protected areas management effectiveness assessment C.4-i7. Number of functioning consultation councils of protected areas	C.4-o1. Adopt necessary regulations for developing the protected areas network C.4-o2. Plan the national protected areas network C.4-o3. Increase total protected areas coverage C.4–o4. Initiate development of the protected areas network C.4–o5. Increase the effectiveness of protected areas management C.4–o6. Create support mechanisms for biodiversity protection and sustainable use with the participation of local communities and the private sector C.4–o7. Develop transboundary cooperation with protected areas of neighbouring countries	That the issue of PAs by all key stakeholders is recognized and that they have lent their support That sufficient financial resources and exist and that capacity of stakeholders has been improved
C.5. By 2020, the genetic diversity of farmed and domesticated animals, cultivated plants and of their wild relatives, including other socioeconomically as well as culturally valuable species, is maintained; strategies have been developed and implemented for safeguarding their genetic diversity	13	C.5- i1. *In situ* conservation status of farmed and domesticated animals and endemic species of cultivated plants and their wild relatives, including other socioeconomically as well as culturally valuable species C.5- i2. Existence of protected area management plans incorporating issues of agricultural biodiversity C.5- i3. Existence of a list of *ex situ* collections of national significance and their databases	C.5-o1. Facilitate on-farm conservation of endemic agricultural species and local landraces, as well as conservation of wild relatives of crops and micro flora of traditional fermented products where they were originally distributed C.5-o2. Implement *ex situ* conservation of endemic agricultural species and landraces as well as CWRs and micro-flora (starters/fungi) of traditional fermented products	That cooperation between governmental and scientific sectors exists

		C.5- I4. Existence of management plans of the *ex situ* collections of national significance		
C.6. By 2020, the pressure of human activities on the Black Sea and inland waters has decreased; the integrity and functioning of the aquatic ecosystem are preserved		C.6-i1. Number and abundance of species (biodiversity index) in the Black Sea and inland waters C.6-i2. Existence of management plans for selected freshwater fish species C.6-i3. Existence of new marine protected areas in the Black Sea C.6-i4. Number of artificial reefs installed in the Black Sea	C.6-o1. Restore the integrity of the Black Sea ecosystems and the diversity of species; set up 25 artificial reefs C.6-o2. Restore the integrity of inland water ecosystems and species diversity	That cooperation between governmental and other organisations exists

National Target C.1 By 2020, the status of biodiversity has been assessed through the improvement of scientific and baseline knowledge and the establishment of an effective monitoring system

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective C.1- o1. Establish the status of Georgia's biodiversity through species inventories and relevant assessments			
C.1-o1.1 Determine the conservation statuses of rare animal species and introduce changes to the National Red List accordingly	2014-2020	MoENRP; research organisations; NGOs	State budget; donors
C.1-o1.2. Create checklists of poorly-studied fauna—especially invertebrate groups	2014-2017	MoENRP; research organisations; NGOs	Donors
C.1-o1.3. Create electronic databases of fauna and flora	2014-2020	MoENRP; APA research organisations; NGOs	Donors

C.1-o1.4. Revise the existing list of plant species that are important for conservation and introduce relevant changes to the National Red List	2014-2019	MoENRP; research organisations; NGOs	State budget; donors
C.1-o1.5. Complete the identification of important plant areas	2014-2016	MoENRP; research organisations; NGOs	Donors
C.1-o1.6. Conduct inventories of plant and animal landraces and CWRs (including plants harvested for food and medicine), of endemic microflora found in traditional products and of related traditional knowledge; assess their statuses and create a relevant red list	2015	MoENRP; MoA; APA; Agrarian University of Georgia; research organisations; NGOs	State budget; donors; Shota Rustaveli National Science Fund; private sector
Objective C.1- o2. Set up an effective and comprehensive biodiversity monitoring system			
C.1-o2.1. Revise the national biodiversity monitoring strategy and action plan	2014-2015	MoENRP; research organisations; NGOs	State budget; donors
C.1-o2.2. Create a comprehensive institutional framework for biodiversity monitoring and implement biodiversity monitoring	2014-2020	MoENRP; research organisations; NGOs	State budget; donors

National Target C.2. By 2020, the status of species - including 75% of "Red List" species - has been considerably improved through effective conservation measures and sustainable use

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective C.2 - o1. Implement effective species-specific conservation measures including reintroductions and encouragement of natural growth			
C.2-o1.1. Conduct an economic valuation of rare and economically important species so that an adequate calculation can be made of (i) damage to the state caused by the unauthorised removal of these species and (ii) ecosystem services provided by the species	2015-2016	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.2. Revise the existing list of game species and set harvest quotas that are based on scientific data	2014-2020	MoENRP	State budget; donors

C.2-o1.3. Improve the procedures of calculating damage to the state in cases of poaching of endangered species	2014-2015	MoENRP	State budget; donors
C.2-o1.4. Implement the existing programme of goitered gazelle restoration in Georgia	2014-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.5. Develop and implement a red deer conservation management plan	2015-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.6. Develop and implement a nationwide bezoar goat conservation management plan and a reintroduction plan for Borjomi	2014-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.7. Implement the existing *Chiroptera* conservation management plan	2015-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.8. Develop and implement a brown bear conservation management plan	2014-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.9. Develop and implement a Eurasian otter conservation management plan	2014-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.10. Develop and implement a Georgian viper conservation management plan	2016-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.11. Develop and implement a Caucasian salamander conservation management plan	2014-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.12. Update and implement the existing Caucasian leopard conservation management plan	2015-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.13. Update and implement the Georgian tur(*Capra cylindricornis* and *C. caucasica*) conservation management plan	2014-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.14. Develop and implement a water bird conservation management plan	2014-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.15. Develop and implement a Georgian vulture conservation management plan	2015-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.16. Develop and implement a Georgian sturgeon conservation management plan	2016-2020	MoENRP; research organisations; NGOs; experts	State budget; donors
C.2-o1.17. Establish/strengthen artificial propagation and captive breeding programmes for rare and economically valuable plant and animal species.	2014-2020	MoENRP; research organisations; NGOs; experts	State budget; donors

C.2-o1.18. Ensure the conservation of at least 40% of critically endangered plant species through including them in *ex situ* collections.	2014-2020	Botanical gardens	State budget; donors
C.2-o1.19 Develop and implement conservation management plans for the stands of wooded plants affected by diseases and other factors (chestnut, Colchis box, Imeretian oak, pine, zelkova and elm)	2014-2020	MoENRP; APA	State budget; donors
C.2-o1.20. Upgrade existing seed banks so that they include at least 75% of threatened plant species and have seeds from at least 20% of those species readily available to supply species recovery programmes.	2014-2020	Botanical gardens	State budget; donors
C.2-o1.21. Restore at least 10% of the natural populations of threatened plant species	2014-2020	MoENRP; NGOs	Donors
C.2-o1.22. Assess the international trade of Georgian flora species	2016-2017	MoENRP; research organisations; NGOs	donors
C.2-o1.23. Increase the capacity of the Georgian CITES Management et Authority and the Georgian customs in implementing CITES through institutional strengthening and raising qualifications of its employees	2014-2020	MoENRP; The Revenue Service; research organisations; NGOs; experts	donors
C.2-o1.24. Conduct assessments of the wild populations of plant species that are involved in international trade.	2014-2020	MoENRP; research organisations; NGOs	donors
Objective C.2-o2. Reduce the conflict between wildlife (especially large carnivores) and local farmers			
C.2-o2.1. Identify and assess the most common forms of human-wildlife conflict and the species involved.	2014-2016	MoENRP; APA; research organisations; NGOs	State budget; donors
C.2-o2.2. Develop a human-wildlife conflict management strategy, including mitigation measures and an effective response scheme.	2016-2017	MoENRP; research organisations; NGOs	State budget; donors
C.2-o2.3. Set up units responsible for human-wildlife conflict management and response at the national and local levels	2016-2020	MoENRP; research organisations; NGOs	State budget; donors

National Target C.3. By 2020, forest biodiversity is safeguarded through sustainable management policies and practices

Action	Time frame	Responsible/Implementing agency	Source of funding (potential)
Objective C.3-o1. Develop an optimal institutional framework for the Georgian forestry sector.			
C.3-o1.1. Develop a forest policy, strategy and action plan in a participatory manner	2014 - 2015	MoENRP; NFA; research organisations; NGOs; experts	State budget; donors
C.3-o1.2. Promote active participation of the Georgian forestry authorities in international forestry processes (including Forest Europe); harmonise the Georgian forest policy, legislation and standards with EU requirements	2014 - 2020	MoENRP; NFA; NGOs	State budget; donors
C.3-o1.3. Define and implement an optimal institutional structure for the Georgian forestry sector: define the roles and responsibilities of the state and private sectors, local communities and local self-government authorities	2015 - 2016	MoENRP; NFA; research organisations; NGOs	State budget; donors
Objective C.3- o2. Elaborate and adopt new forestry legislation that promotes sustainable management of all forests, including community forests			
C.3-o2.1. Revise the forest code in a participatory manner	2014 – 2015	MoENRP; NFA; research organisations; NGOs	State budget; donors
C.3-o2.2. Adopt relevant forest regulations and standards, in a participatory way, that promote sustainable use of non-wood products, the restoration of natural forest landscape and adaptation to and mitigation of climate change	2014 - 2017	MoENRP; NFA; research organisations; NGOs	State budget; donors
C.3-o2.3 Elaborate and implement an optimal system of forest categorization: identify category V (IUCN) ecological corridors and forests of High Conservation Value (HCV) and assign them a relevant status	2014 - 2017	MoENRP; research organisations; NGOs	State budget; donors
C.3-o2.4. Assess the potential for the implementation of community forestry schemes; consider the role of women in the use of forest resources; implement pilot projects and support the replication of successful pilot projects	2014-2020	MoENRP; NFA; research organisations; NGOs	State budget; donors

National Target C.4. By 2020; at least 12% of the country's terrestrial and inland water areas and 2.5 % of marine areas are covered by protected areas;

areas of particular importance for ecosystem services are effectively and equitably managed via an ecologically representative system and other effective conservation measures; development of the protected areas network and its integration into the wider landscape and seascapes is ongoing

Action	Time frame	Responsible/Implementing agency	Source of funding (potential)
Objective C.4-o1. Adopt necessary regulations for developing the protected areas network			
C.4-o1.1. Improve the PA legislation (by the approval of a full set of regulations) using the latest IUCN guidelines	2014-2015	MoENRP; APA; Parliament of Georgia	State budget; donors
Objective C.4-o2. Plan the national protected areas network			
C.4-o2.1. Identify existing gaps in the protected areas system using modern methodologies of spatial analysis	2014-2015	APA; research organisations; NGOs	State budget; donors
C.4-o2.2. Develop a plan for the protected areas system and network development	2015-2016	MoENRP; APA; Parliament of Georgia; research organisations; NGOs	State budget; donors
Objective C.4-o3. Increase total protected areas coverage			
C.4-o3.1. Establish new protected areas of different categories	2014 - 2020	MoENRP; APA; Parliament of Georgia	State budget
C.4-o3.2. Expand existing protected areas as needed	2014-2020	MoENRP; APA; Parliament of Georgia	State budget
C.4-o3.3. Increase the international recognition of Georgia's protected areas and support the establishment of new protected areas using international instruments such as a Ramsar sites, UNESCO World Nature Heritage Sites and Biosphere Reserves.	2014 - 2020	MoENRP; APA; Parliament of Georgia; research organisations; NGOs	Donors
Objective C.4-o4. Initiate development of the protected areas network			
C.4-o4.1. Initiate the establishment of ecological corridors that consider national PA categories	2015-1020	MoENRP; Parliament of Georgia; APA; other relevant ministries and agencies; local governments; NGOs	State budget; donors
C.4-o4.2. Develop the Emerald Network of Georgia	2014-2017	MoENRP; Parliament of	Donors

		Georgia; APA; other relevant ministries and agencies; local governments; NGOs	
Objective C.4-o5. Increase the effectiveness of protected areas management			
C.4-o5.1. Develop the knowledge and capacity of the personnel of the APA and PA administrations through regular training programs	2014 -2020	MoENRP; APA; NGOs	State budget; donors
C.4-o5.2. Prepare management plans for protected areas that do not have them	2014 -2020	APA; Parliament of Georgia; research organisations; NGOs	State budget; donors
C.4-o5.3. Identify and demarcate the borders of protected areas	2014 -2020	MoENRP; APA; Parliament of Georgia; local governments	State budget; donors
C.4-o5.4. Assess the feasibility of various mechanisms for the avoidance/mitigation of any direct and indirect impacts on PAs from land use and/or development projects outside of PAs; introduce relevant changes to all related laws	2014-2016	MoENRP; APA; Parliament of Georgia; local governments	State budget
C.4-o5.5 Establish a regulatory framework for the enforcement of the APA's rights (given to it by law) to avoid/mitigate any direct and indirect impacts on PAs from land use and/or development projects outside of PAs	2016-2018	MoENRP; APA; Parliament of Georgia	State budget; donors
C.4-o5.6. Conduct regular assessments of protected areas management effectiveness	2014 -2020	APA; Parliament of Georgia; research organisations; NGOs	State budget; donors
C.4-o5.7. Increase involvement of stakeholders—especially of local communities (with due regard to gender equality)—in the management and planning of protected areas	2014 -2020	APA; local governments; other stakeholders	Donors
Objective C.4–o6. Create support mechanisms for biodiversity protection and sustainable use with the participation of local communities and the private sector			
C.4-o6.1. Assess the feasibility of introducing various types of PA management; implement pilot projects	2015 - 2020	MoENRP; APA; other relevant agencies; Parliament of Georgia; local governments; NGOs; local communities; private sector; other stakeholders	State budget; donors

C.4-o6.2. Assess the feasibility of and implement compensation mechanisms and incentives for biodiversity protection and sustainable use in PAs	2015 - 2017	APA; Government of Georgia; local governments; private sector; other stakeholders	State budget; donors
Objective C.4–o7. Develop transboundary cooperation with protected areas of neighbouring countries			
C.4-o7.1. Develop and agree upon a framework for transboundary cooperation between the PAs of Georgia and those of neighbouring countries	2014 -2017	MoENRP; APA; other relevant agencies; research organisations; NGOs	Donors
C.4-o7.2. Develop joint pilot projects (on tourism, monitoring, etc.) on transboundary cooperation between PAs	2017-2020	MoENRP; APA; other relevant agencies; research organisations; NGOs	Donors

National Target C.5. By 2020, the genetic diversity of farmed and domesticated animals, cultivated plants and of their wild relatives, including other socioeconomically as well as culturally valuable species, is maintained; strategies have been developed and implemented for safeguarding their genetic diversity

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective C.5-o1. Facilitate on-farm conservation of endemic agricultural species and local landraces, as well as conservation of wild relatives of crops and micro flora of traditional fermented products where they were originally distributed			
C.5-o1.1. Ensure improved access through improved cooperation between scientists and industrialists of both male and female farmers to seed/planting/breeding material of crop and animal landraces as well as to knowledge related to their cultivation/breeding	2016-2020	MoA; MoESD; research organisations; NGOs; private sector	State budget; donors; private sector
C.5-o1.2. Improve the recognition of crop and animal landraces and traditional products on the market through the development of certification schemes and the arrangement of regional fairs of local breeds and products, testing events, festivals and promotion campaigns	2016	MoA; MoESD; research organisations; NGOs; private sector; National Broadcasting Company	State budget; donors; private sector
C.5-o1.3. Implement on-farm conservation programs of identified crop and animal landraces in the regions of their origin (preferably in the support zones of the protected areas); conduct	2014-2020	APA; farmers; NGOS; private sector	State budget; donors; private sector

trainings for local farmers in conservation, cultivation/breeding, primitive selection and production and marketing of traditional products			
C.5-o1.4. Conduct an inventory of CWRs (incl. wild plants harvested for food and medicine) in protected areas and create maps of their distribution; incorporate their conservation in the management plans of their respective protected areas	2015	APA; NGOs; research organisations	State budget; donors
C.5-o1.5. Implement urgent intervention measures to save landraces that are under threat of imminent extinction	2015-2020	MoA; farmers; monastery farms; NGOs	State budget; donors; private sector
C.5-o1.6. Identify priority traditional fermented products and collect their starter cultures; study and isolate those starters	2015-2016	Research organisations	Donors
C.5-o1.7. Register starter cultures of the identified traditional fermented products according to the relevant IPR legislation and implement at last three projects to facilitate their commercial production	2016-2020	Research organisations	Donors; private sector
Objective C.5-o2. Implement *ex situ* conservation of endemic agricultural species and landraces as well as CWRs and micro-flora (starters/fungi) of traditional fermented products			
C.5-o2.1. Create a legal framework for state coordination of both the *ex situ* conservation of agrobiodiversity and the status and operation of the *ex situ* collections of national importance	2015	Parliament of Georgia; National Centre for Intellectual Property "SAKPATENTI"	State budget
C.5-o2.2. Adopt a list of *ex situ* collections of national importance and agree on their funding schemes	2015-2020	MoA; Agrarian University of Georgia; other research organisations	State budget
C.5-o2.3. Adopt a system for benefit sharing from and access to genetic material maintained in the *ex situ* collections in full compliance with the principles defined in ITPGRFA and the Nagoya Protocol of the CBD	2015-2020	MoA; Agrarian University of Georgia; other research organisations	Donors
C.5-o2.4. Establish a gene bank of sperm/embryos of domestic animal breeds/landraces	2017	Agrarian University of Georgia; other research organisations	Donors
C.5-o2.5. Permanently replenish the *ex situ* collections with samples of landraces maintained in the collections/gene banks of foreign countries using the instruments of ITPGRFA and the Nagoya Protocol of the CBD	2015-2020	Agrarian University of Georgia; collections of research institutes	Research institutes

C.5-o2.6. Organize targeted expeditions to enrich the collections of crop landraces (especially grapes, fruits, vegetables and forage crops) and CWRs, as well as the starter cultures of traditional products	2015-2020	Agrarian University of Georgia; collections of research institutes	Donors; private sector
C.5-o2.7. Improve the management/financing of the nationally important *ex situ* collections of local crop and domestic animal landraces/microflora of traditional products to ensure their long-term maintenance and renewal	2015-2020	Agrarian University of Georgia; collections of research institutes	Donors; private sector
C.5-o2.8. Conduct a full inventory of the samples kept in the *ex situ* collections of national importance; develop databases and set up an intellectual property rights management system according to currently effective legislation	2015-2020	Agrarian University of Georgia; collections of research institutes	Donors

National Target C.6 By 2020, the pressure of human activities on the Black Sea and inland waters has decreased; the integrity and functioning of the aquatic ecosystem are preserved

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective C.6-o1 Restore the integrity of the Black Sea ecosystems and the diversity of species; set up 25 artificial reefs			
C.6-o1.1 Create a new protected area covering the Sarpi-Kvariati and Mtsvane Kontskhi areas	2014-2020	MoENRP; APA	State budget; donors
C.6-o1.2. Define indicators to assess the health of Black sea ecosystem within the framework of the National Biodiversity Monitoring system	2014-2017	MoENRP	State budget; donors
C.6-o1.3. Identify damaged areas of the sea floor and determine the causes of the damage; prepare restoration plans for these areas as needed	2014-2015	MoENRP	State budget; donors
C.6-o1.4. Create artificial reefs to increase the size of the habitats of certain species	2014-2020	MoENRP	State budget; donors
C.6-o1.5. Create a map of Black Sea habitats	2014-2017	MoENRP	State budget; donors

C.6-o1.6. Conduct a study on the number and distribution of cetaceans in the Black Sea	2014-2020	MoENRP	State budget; donors
C.6-o1.7. Develop a conservation management plan for Black sea cetaceans	2014-2020	MoENRP	State budget; donors
C.6-o1.8. Develop a system of monitoring of cetaceans cast ashore within the framework of the National Biodiversity Monitoring system	2014-2020	MoENRP	State budget; donors
C.6-o1.9. Monitor bycatch, including the bycatch of cetaceans	2014-2020	MoENRP	State budget; donors
C.6-o1.10. Define the conservation status of marine fish species	2014-2015	MoENRP	State budget; donors
C.6-o1.11. Develop and implement a plan for the restoration of marine fish populations	2014-2017	MoENRP	State budget; donors
C.6-o1.12. Study the distribution and densities of sea invertebrates, especially those of commercial value (mussels etc.), and implement restoration measures if needed	2014-2017	MoENRP	State budget; donors
Objective C.6-o2 Restore the integrity of inland water ecosystems and species diversity			
C.6–o2.1. Assess the composition and populations of fish species in select inland waters	2014 – 2018	MoENRP; research institutes	State budget; donors
C.6–o2.2. Conduct full inventories and identify threatened species of plant life and invertebrate fauna in natural lakes that are especially important for biodiversity; implement relevant conservation measures as needed	2014 - 2020	MoENRP; research institutes	State budget; donors
C.6-o2.3. Develop and implementconservation management plans for select fish species	2014 - 2018	MoENRP; research institutes; NGOs	State budget; donors

Strategic Goal D. Enhance the benefits to all from biodiversity and ecosystem services

National Targets	Corresponding Aichi Targets	Indicators	Objectives	Critical assumptions
D.1. By 2015, the Protocol on Access to Genetic	16	D.1-i1. Ratification documents for	D.1 - o1 Ratify the Nagoya Protocol	That favourable

Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (the Nagoya Protocol) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) have been ratified and implemented		the Nagoya Protocol and ITPGRFA and enacted national legislation for their implementation	and ITPGRFA	circumstances for the ratification and implementation of ITPGRFA exist
D.2. By 2020, the impact of climate change on biodiversity is evaluated; ecosystems resilience has been enhanced through relevant environmental policies and activities	15	D.2- i1. Existence of a report on the study of climate change impact on biodiversity; recommendations for addressing the most pressing issues D2-i2. Number of national and local strategic plans in which climate change and biodiversity issues are integrated	D.2 - o1 Identify the factors related to climate change that cause biodiversity loss at the national level and elaborate measures to address them	That a long-term political will and favourable public opinion exist That effective intersectoral cooperation exists That coordination among governmental, NGO and scientific sectors exists

National Target D.1. By 2015, the Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (the Nagoya Protocol) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) have been ratified and implemented

Objective D.1-o1 Ratify the Nagoya Protocol and ITPGRFA			
Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
D.1-o1.1. Assess the institutional and financial implications of the ratification of the Nagoya Protocol; ratify the Protocol and adopt relevant legislation	2014-2015	MoENRP	State budget; donors
D.1-o1.2. Assess the institutional and financial implications of the ratification of the ITPGRFA; ratify and the Protocol and adopt relevant legislation	2014 - 2015	MoENRP	State budget; donors

National Target D.2. By 2020, the impact of climate change on biodiversity is evaluated; ecosystems resilience has been enhanced through relevant environmental policies and activities

Action	Time frame	Responsible/Implementing agency	Source of funding (potential)
Objective D.2-o1 Identify the factors related to climate change that cause biodiversity loss at the national level and elaborate measures to address them			
D.2-o1.1 Assess the impact of climate change on biodiversity in vulnerable areas(e.g. Dedoplistskaro, Gardabani, Sagarejo, the Black Sea coast, high mountain areas, The Iori Plateau, and Karasani Ridge) and protected areas; develop relevant recommendations using methodologies accepted among the research and NGO circles	2014-2015	MoENRP; research organisations; NGOs	State budget; donors
D.2-o1.2 Organize meetings and workshops to facilitate the integration of measures and recommendations against preliminarily identified problems related to climate change into sectoral strategic and local plans	2016	MoENRP; MoA	State budget; donors
D.2-o1.3. Conduct a feasibility assessment of the application of international mechanisms, suggested by UNFCCC (REDD+, international carbon market), in Georgia; this should be done in order to support biodiversity conservation.	2014-2015	MoENRP; research organisations; NGOs	Donors
D.2-o1.4 Implement appropriate international mechanisms that are suggested by UNFCCC (REDD+, international carbon market) for the benefit of biodiversity conservation	2015-2020	MoENRP; research organisations; NGOs	Donors; private sector

Strategic Goal E. Enhance implementation through participatory planning, knowledge management and capacity building

National Targets	Corresponding Aichi Targets	Indicators	Objectives	Critical assumptions
E.1. By 2020, knowledge has been enhanced on the values, functioning,	19	E.1-i1. Classification of Georgia's habitats applying the EU guidelines	E.1- o1. Harmonise the classification of Georgia's habitats with the European habitat	That coordination among governmental,

status and trends of biodiversity and the consequences of its loss; the corresponding science base has been improved		and recommendations E.1-i2. Existence of a regularly updated database of biodiversity (including priority habitats) E.1 – i3. Number of trained foresters, rangeland managers, wildlife managers, hunters and fishermen E.1 – i4. Number of forestry, hunting units and protected areas equipped with modern technologies E.1 – i5. Existence of updated forestry curricula at appropriate educational institutions	classification E.1- o2. Improve, widely share and apply the professional knowledge and scientific base of forestry, rangeland management, hunting, fishing, and protected areas	NGO and donor organisations exists
E.2. By 2020, teaching on biodiversity issues is improved in all stages of formal and non-formal education; continuous teaching of biodiversity is ensured and all necessary resources are available	19	E.2- i1. Existence of a national concept on teaching biodiversity issues E2-i2. Comprehensiveness of biodiversity-related topics in textbooks/manuals (relevant chapters) E2-i3. Biodiversity topics integrated in relevant training and professional development programmes for schoolteachers E2-i4. Improved incorporation of biodiversity issues in the curricula of higher and professional education E2-i5. Percentage of school and university students and teachers informed on biodiversity issues (results of quantitative and qualitative studies including the gender dimension)	E.2- o1. Establish and implement an effective system of formal and informal biodiversity education	That support of local governments exists That the ongoing education reforms with regard to teachers' certification have been successfully completed

		E2-i6. Number (by sector) of training courses in biodiversity provided for people employed in other sectors E2-i7. Number of biodiversity education programmes and programme participants at school clubs, national parks, museums and libraries		
E.3. By 2020, the interest and traditional knowledge of local people in biodiversity conservation and use are integrated into the legislation and strategies	18	E.3- i1. Existence of enacted relevant legislation and approved guidelines	E.3- o1. Restore the traditional knowledge related to biodiversity (incl. agricultural biodiversity) conservation and sustainable use	That a long-term political will and favourable public opinion exist That relevant strategic documents exist

National Target E.1. By 2020, knowledge has been enhanced on the values, functioning, status and trends of biodiversity and the consequences of its loss; the corresponding science base has been improved

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective E.1 –o1. Harmonise the classification of Georgia's habitats with the European habitat classification			
E.1-o1.1. Classify Georgia's habitats using classification methodology recommended by the EU	2014-2017	MoENRP; research organisations; NGOs	State budget; donors
E.1-o1.2. Create an updatable database of "27 Priority Habitats"	2014-2017	MoENRP; research organisations;	Donors

		NGOs	
Objective E.1-o2. Improve, widely share and apply the professional knowledge and scientific base of forestry, rangeland management, hunting, fishing, and protected areas			
E1-o2.1. Conduct training and extension activities for biodiversity monitoring experts, foresters, wild fire fighters, wildlife managers, freshwater fishing specialists and protected areas personnel	2014 - 2020	MoENRP; APA; NFA; research organisations; NGOs; national and international experts	State budget; donors
E1-o2.2. Update the current forestry curricula at universities	2014 - 2016	MoENRP; NFA; Agrarian University of Georgia; other universities	State budget; donors
E1-o2.3. Create databases for protected areas	2014 -2020	APA; research organisations; NGOs	State budget; donors
E.1-o2.4. Improve research and monitoring in protected areas	2014-2015	APA; research organisations; NGOs	State budget; donors

National Target E.2. By 2020, teaching on biodiversity issues is improved in all stages of formal and non-formal education; continuous teaching of biodiversity is ensured and all necessary resources are available

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective E.2–o1. Establish and implement an effective system of formal and informal biodiversity education			
E.2-o1.1. Develop national guidelines (topics and sources of information, teaching methodologies, a list of typical errors/misconceptions concerning biodiversity issues in the natural and social science textbooks) for teaching of biodiversity (including agrobiodiversity) and prepare recommendations for the National Teaching Plan	2014-2015	MoENRP; experts	State budget; donors
E.2-o1.2. Increase the national capacity for ensuring the production and use of high quality textbooks; prepare education materials suitable for use at preschool institutions and schools	2014-2016	MoENRP; MoESc; local government	State budget; donors
E.2-o1.3. Improve the biodiversity teaching component in training programmes for teachers in preschool institutions and schools	2014-2015	MoENRP; APA	State budget; donors

E.2-o1.4. Support the establishment and functioning of eco-clubs in schools to promote teaching of biodiversity-related topics	2014-2020	MoENRP; MoESc; local government	State budget; donors
E.2-o1.5. Improve the teaching of biodiversity (including of agrobiodiversity and the microbiology of traditional products) in the curricula of relevant professional and higher education institutions and develop relevant information resources	2014-2015	MoENRP; qualification raising campaigns	State budget; donors
E.2-o.1.6. Support short-term courses (at institutions of higher education) in biodiversity for specialists of various sectors related to biodiversity conservation and use	2014-2020	MoENRP	State budget; donors
E.2-o1.7. Promote the creation of educational ”platforms” (e.g. clubs, workshops, temporary and permanent exhibitions)at permanent providers of informal biodiversity education, such as protected areas, museums, libraries and youth centres	2014-2020	MoENRP; MoESs	Donors
E.2-o1.8 Provide trainings to PA staff so that they are able to lead education activities for different age groups	2014-2020	MoENRP; APA	State budget; donors

National Target E.3. By 2020, the interest and traditional knowledge of local people in biodiversity conservation and use are integrated into the legislation and strategies

Action	**Time frame**	**Responsible/Implementing agency**	**Source of funding (potential)**
Objective E.3 - o1. Restore the traditional knowledge related to biodiversity (incl. agrarian biodiversity) conservation and sustainable use			
E.3-o1.1. Establish effective mechanisms for public communication and participation in decisions at all levels that are made on natural resources utilisation; this should be done in accordance with the requirements of the CBD and international best practices	2014	MoENRP; research organisations; NGOs	State budget; donors

E.3-o1.2. Integrate traditions and customs that are in line with sustainable use principles into the legislation	2015	MoENRP; research organisations; NGOs	State budget; donors

13 IMPLEMENTATION AND RESOURCE MOBILIZATION

In comparison to the NBSAP-1, this National Biodiversity Strategy and Action Plan more effectively utilizes a holistic, cross-cutting and ecosystem-based approach. The authors envisage the involvement of a wider spectrum of ministries, local authorities, economic sectors and other stakeholders in its implementation.

The Ministry of Environment and Natural Resources Protection (MoENRP) will establish a Committee for Supervising and Monitoring of NBSAP Implementation that will include all relevant ministries and other stakeholders. This Committee will ensure the integration of biodiversity into various sectors and oversee and monitor the implementation of NBSAP-2on the basis of the indicators outlined for each national target.

The large number of actions in NBSAP-2 will not be carried out simultaneously, but gradually over time, and the Committee will be responsible for developing an Implementation Plan to prioritise and sequence the implementation of the actions.

Allocation of financial and human resources will be crucial for the implementation of NBSAP-2. A national Resource Mobilization Strategy (RMS) will be developed. As a basis for the RMS, the current allocation of resources for biodiversity in Georgia will be monitored based on the monitoring framework and guidelines developed by the CBD. (UNEP/CBD/COP/11/14/Add. 1).

The RMS will consider resources from all sources, including government allocations, contributions from external donors and “innovative” financing, i.e. through partnerships with the private sector.

It should be borne in mind that the NBSAP will lead not only to expenditures, but also to potential savings and revenues, and that what appears to be costs in the short term could well be investments in the longer term through the protection of ecosystem services. The savings and revenues can come from various sources, such as visitor entry fees to national parks, license fees for using natural resources and shifting from unsustainable to sustainable practices (e.g. in forestry and fishery). Through these savings and revenues, viable long-term businesses will be not undermined but secured.

ANNEX I: STRATEGIC GOALS AND THE AICHI BIODIVERSITY TARGETS

Strategic goal A. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.

Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.

Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

Strategic goal B. Reduce the direct pressures on biodiversity and promote sustainable use

Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.

Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.

Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.

Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.

Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic goal C. Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

Target 11: By 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Strategic goal D: Enhance the benefits to all from biodiversity and ecosystem services

Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

Strategic goal E. Enhance implementation through participatory planning, knowledge management and capacity-building

Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

ANNEX II: MAIN REGULATIONS AND POLICY DOCUMENTS IN THE AREA OF BIODIVERSITY

- The Constitution of Georgia (1995)
- The Convention on Biological Diversity (ratified by Resolution No 471 of the Parliament of Georgia, 21 April 1994)
- The Cartagena Protocol on Biosafety to the Convention on Biological Diversity (ratified by Resolution #305 of the Parliament of Georgia "On Accession to the Cartagena Protocol on Biosafety to the Convention on Biological Diversity", 26 September 2008)
- United Nations Convention to Combat Desertification (ratified by Resolution No 2141 of the Parliament of Georgia, 23 June 1999)
- United Nations Framework Convention on Climate Change (enacted in Georgia by the Cabinet of Ministers on 16 May 1996)
- The Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1997) (ratified by Resolution No 136 of the Parliament of Georgia, 11 February 2000)
- Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) of the Bonn Convention (ratified by Resolution No 768 of the Parliament of Georgia of 2 March 2001)
- Agreement on the Conservation of Cetaceans in the Black Sea Mediterranean Sea and Contigous Atlantic Area (ACCOBAMS), (ratified by Resolution No 769 of the Parliament of Georgia, 2 March 2001)
- Agreement on the Conservation of Populations of European Bats of the Bonn (ratified by Resolution No 1202 of the Parliament of Georgia, 21 December 2001)
- The Convention on Wetlands of International Importance, especially as Waterfowl Habitat (RAMSAR) (ratified by Resolution No 201 of the Parliament of Georgia, 30 April 1996)
- The Convention on the Conservation of European Wildlife and Natural Habitats (Berne, 1979) (ratified by Resolution No 940 of the Parliament of Georgia, 30 December 2008)
- The European Landscape Convention (2000) (Order of the President of Georgia #39, 9 June 2010)
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), (ratified by the Parliament of Georgia on 12 August 1996)
- Law of Georgia "On Environmental Protection" (1996)
- Law of Georgia "On the System of Protected Areas" (1996)
- Law of Georgia "On Wild Fauna" (1996)
- Law of Georgia "On Water" (1999)
- Law of Georgia "On the Protection of Atmospheric Air" (1999)
- The Forest Code of Georgia (1999)
- Law of Georgia "On the Red List and Red Data Book of Georgia" (2003)
- The Law of Georgia "On Fees for Natural Resource Use" (2004)
- The Law of Georgia "On Licenses and Permits"
- Law of Georgia "On the Basis of Spatial Organization and Urban Planning" (2005)

- Law of Georgia “On the Protection of Population and Territories from Natural and Human-Caused States of Emergency” (2007)
- Law of Georgia “On the Permits for Impact on Environment” (2007)
- Law of Georgia “On Ecological Expertise” (2007)
- Law of Georgia “On the Management of the Forest Fund” (2010)
- Law of Georgia “On the Structure, Powers and Order of Activity of the Government of Georgia” (2004)
- The Code of Administrative Procedures of Georgia (1984)
- The Criminal Code of Georgia (1999)
- The Second National Environmental Action Programme 2012-2016 (Resolution #127 of the Government of Georgia, 24 January 2912)
- National Biodiversity Strategy and Action Plan (Resolution #27 of the Government of Georgia, 19 February 2005)