Third National Environmental Action Programme of Georgia

2017-2021



Tbilisi 2018

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DECREE OF THE GOVERNMENT OF GEORGIA

№1124, 22 May, 2018 Tbilisi

On the Approval of the Third National Environmental Action Programme of Georgia

In pursuance to the Law of Georgia on “Environmental Protection”, article 15, paragraph 5, subparagraph "b", the enclosed “the Third National Environmental Action Programme” to be approved.

Prime Minister Giorgi Kvirikashvili

FOREWORD

The development of the National Environmental Action Programme is determined by Georgian legislation, as well as by the International obligations undertaken by the country. The 1996 Law on Environmental Protection requires that the National Environmental Action Programme be developed and implemented within a regular, five-year period. In addition, according to Article 304 of the Association Agreement between the European Union and the European Atomic Energy Community and their member States, of the one part, and Georgia, of the other part (Association Agreement between Georgia and EU), cooperation, among other things, considers the elaboration of 'The National Environmental Action Programme' as one that covers all of the national and sectoral environmental strategic directions in Georgia, as well as the institutional and administrative issues.

The Second National Environmental Action Programme of Georgia for 2012-2016 was adopted by Decree N127 of January 24, 2012 of the Government of Georgia 'On Approving the Second National Environmental Action Programme of Georgia'.

The Third National Environmental Action Programme of Georgia was developed via the coordination of the Ministry of Environmental Protection and Agriculture of Georgia with the financial support of the European Union and the assistance of local and European experts. The document represents the country's main strategic document in the field of the environment and natural resources protection, which defines the long-term strategic priorities of the sector and a specific action plan for the five-year period of 2017-2021.

The Third National Environmental Action Programme of Georgia reflects the coordinated actions of the stakeholder agencies (both state and the local self-government bodies). An inter-agency working group was created at the initial stage of drafting the document, which ensured the involvement of all stakeholder agencies in the development process.

At this stage, the Government of Georgia is unable to effectively carry out the environmental protection and improvement-oriented activities on the occupied territories, however, engages in close cooperation and dialogue with its partner international organizations and donors for development of the individual mechanisms in order to implement an unified state policy on environment protection within the country's occupied territories.

LEVAN DAVITASHVILI
Minister of Environmental Protection and Agriculture of Georgia

ACRONYMS

AA	Association Agreement
ANRS	LEPL Agency for Nuclear and Radiation Safety
A/R	Autonomous Republic
APA	LEPL Agency of Protected Areas
BAT	Best Available Technique
BAU	Business as Usual
BDD	Basic Data and Directions document
BIG-E	Batumi Initiative on Green Economy
BOD	Biological Oxygen Demand
BUR	Biennial Update Report
CBD	Convention on Biological Diversity
CBRN	National (Chemical, Biological, Radiological and Nuclear) Threat Reduction Action Plan
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLP	EU Classification, Labelling and Packaging Regulation
CLRTAP	Convention on Long-Range Transboundary Air Pollution
CoM	Covenant of Mayors
DANIDA	Danish International Development Agency
DCFTA	Deep and Comprehensive Free Trade Agreement
DES	Department of Environmental Supervision
EC	European Commission
EfE	Environment for Europe
EIA	Environmental Impact Assessment
EIEC	LEPL Environmental Information and Education Centre
ELV	Emission Limit Value
EMA	LEPL Emergency Management Agency
EMS	Emergency Management Service
EMEP	The co-operative programme for monitoring and evaluation of the long range transmission of air pollutants in Europe
EPR	Extended Producers Responsibility
EU	European Union
FAO	UN Food and Agriculture Organisation
GCF	Green Climate Fund
GDP	Gross Domestic Production
GEF	Global Environmental Facility
GEL	Georgian Lari
GIS	Geographical Information System
GIZ	German Society for International Cooperation
GHG	Greenhouse Gas
GHS	Globally Harmonized System (of Classification and Labelling of Chemicals)
GMO	Genetically Modified Organism
GoG	Government of Georgia
GWP	LTD Georgian Water and Power
HPP	Hydro-Power Plant
HZW	Hazardous Waste
IAEA	International Atomic Energy Agency
ICT	Information and Communication Technology
IFI	International Financing Institution
INDC	Intended Nationally Determined Contribution
IPPC	Integrated Pollution Prevention and Control Directive
ISO	International Standards Organisation
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
LDN	Land Degradation Neutrality
LEDS	Low Emission Development Strategy
LEPL	Legal Entities of Public Law
LMO	Living Genetically Modified Organisms
LTD	Limited Liability Company
LULUCF	Land Use, Land Use Change and Forestry
MAC	Maximum Allowed Concentrations
MARPOL	International Convention for the Prevention of Pollution from Ships

MEAs	Multilateral Environmental Agreements
MEPA	Ministry of Environment Protection and Agriculture
MES	Ministry of Education and Science
MFA	Ministry of Foreign Affairs
MLHSA	Ministry of Labour, Health and Social Affairs of Georgia
MoD	Ministry of Defence
MoESD	Ministry of Economy and Sustainable Development
MoF	Ministry of Finance
MoIA	Ministry of Internal Affairs
MRDI	Ministry of Regional Development and Infrastructure
NAMA	Nationally Appropriate Mitigation Action
NATO PfP	North Atlantic Treaty Organisation Partnership for Peace
NBSAP	National Biodiversity Strategy and Action Plan
NC	National Communication
NEA	LEPL National Environmental Agency
NEAP	National Environmental Action Programme
NEHAP	National Action Plan of Environment and Health
NFA	LEPL National Forestry Agency
NGO	Non-Governmental Organisation
ODS	Ozone Depleting Substances
OECD	Organisation for Economic Co-operation and Development
PA	Protected Area
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Hydrocarbons
PIC	Prior Informed Consent Procedure (for Certain Hazardous Chemicals and Pesticides in International Trade)
PM	Particulate Matter
POPs	Persistent Organic Pollutants
REACH	Registration, Evaluation, Authorization and restriction of Chemicals Regulation
RM	Roadmap
SAICM	Strategic Approach to Sound Management of Chemicals
SCP	Sustainable Consumption and Production
SDG	Sustainable Development Goal
SEA	Strategic Environmental Assessment
SEAP	Sustainable Energy Action Plan
SLM	Sustainable Land Management
SME	Small and Medium Size Enterprise
SPA	Special Protected Area
SSM	Swedish Radiation Safety Authority
SSSG	State Security Service of Georgia
TA	Technical Assistance
UASCG	United Amelioration Systems Company of Georgia
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organisation
UK	United Kingdom
USAID	United States Agency for International Development
US DOE	United States Department of Energy
UWSCG	LTD United Water Supply Company of Georgia
VOCs	Volatile Organic Compounds
WEEE	Waste Electronic and Electric Equipment
WB	World Bank
WHO	World Health Organisation
WFD	Water Framework Directive
WWF	World Wildlife Fund
WWTP	Wastewater Treatment Plant

CONTENTS

1. INTRODUCTION

This National Environmental Action Programme (hereinafter NEAP-3) identifies the environmental priorities of Georgia. At the same time, it establishes the strategic long-term goals, targets and activities required to improve the environment over the next five years.

The ultimate objective of the environmental policy, upon which the NEAP-3 is built, is sustainable, balanced development where the quality of the environment is considered equally along with all the socio-economic challenges. The main targets of environmental protection are: to avoid pressures from socio-economic activities through the careful planning of new developments, reducing already existing pressures to acceptable levels and improving the overall state of the environment. In the long-term, this shall ensure a healthy environment for future generations.

The obligation to develop a National Environmental Action Programme (NEAP) derives from the Law on Environmental Protection of Georgia (1997). In 2000, with the support of the World Bank, the Government of Georgia developed and adopted the first National Environmental Action Programme. The approval of this document has contributed to more dynamic cooperation between Georgia and various international financial institutions and donors. The NEAP-1 concentrated on activities aimed at ensuring the protection and improvement of the environment, as well as meeting the obligations of the Constitution of Georgia, international treaties and national legislation. The Second NEAP for 2012-2016 was developed in cooperation with a wider spectrum of stakeholders and with the support of the Government of the Kingdom Netherlands. NEAP-2 also set long-term goals, short-term targets and specific actions promoting the sustainable development of the country. In addition, NEAP 2 presented several cross-cutting issues common to the environmental sector. Given the complex and inter-sectoral nature of environmental problems, the NEAP 2 underlined the importance of policy coordination among stakeholders on both national and municipal levels.

The present NEAP-3 has been developed in accordance with the provisions of the Law on Environmental Protection, built upon the valuable experiences acquired during the development and implementation of NEAP-2, with a particular emphasis on the challenges brought in by the process of EU approximation. The NEAP-3 is influenced by and reflects the views of three major policy trends:

- The EU - Georgia Association Agreement;
- UN Sustainable Development Goals and the international treaties Georgia is party to;
- The National Policies and Strategic framework for Environmental Protection and Management.

The NEAP-3 also addresses the actual problems related to environmental quality and human health. The guidance is derived from the Social-Economic Development Strategy of Georgia ‘Georgia 2020’ approved by the Government of Georgian (Decree N400 17/06/2014) which provides the principles of development, including the principle on the rational use of natural resources, ensuring environmental safety and sustainability and avoiding natural disasters during the economic development process. In parallel to the NEAP-3, other sustainable development documents are being elaborated that will contribute to the integration process of socio-economic and environmental goals.

The NEAP is the main strategic document of the Ministry of Environmental Protection and Agriculture and other governmental agencies that implement or contribute to the implementation of environmental policy. Elaboration of effective environmental legislation, strengthening of national law implementation and enforcement, environmental monitoring, enhancing data processing and reporting system, as well as providing the government and the public with reliable information on the quality of the Georgian environment, are among the priority actions of the NEAP-3.

The Third National Environmental Action Programme of Georgia was developed according to the Policy Planning Guidelines prepared by the Administration of the Government of Georgia and approved by the Decree of the Government of Georgia No. 629 of December 30, 2016. The Programme is in compliance with the provisions of the Guidelines.

The overall strategic objectives of the NEAP-3 are as follows:

1. Improving the status of the environment and ensuring the protection/sustainable use of natural resources and preventing/minimizing risks that threaten human health and the welfare of the population.

In framework of this objective, the priority activities focus on measures that directly contribute to the improvement of the environment through prevention, mitigation and adaptation measures in the sectors of water management, waste and chemical management, quality of ambient air, risk management of natural hazards, forest and biodiversity, soil protection, radiation safety and last but not least, climate change. The targets and activities are in line with the national financial and economic constraints.

2. Increasing compliance with the obligations under regional and global environmental agreements to which Georgia is a Party and the further approximation with the EU's overall environmental policies, framework legislation and directive-specific requirements.

This process is well underway, through the prepared roadmaps for EU approximation in the environmental and climate change fields. The Third National Environmental Action Programme of Georgia reviews international environmental treaties, such as conventions, their protocols and agreements, and the various aspects of implementation of the legislation as well.

3. Increasing the capacities of administrative structures required to ensure efficient environmental management and the enforcement of environmental legislation.

This objective is related to the appropriate division of competences and responsibilities of the central administration and respective Legal Entities of Public Law (LEPLs) resulting from the implementation of the EU approximation and international environmental treaties, such as conventions, their protocols and agreements. The expected results of these objective are the efficient implementation and enforcement of environmental requirements via strengthening the capacity for environmental management on all governmental levels. This objective will also contribute to the further development of horizontal and vertical cooperation among authorities.

4. Promoting sustainable development through the integration of environmental aspects into social and economic sector policies

This objective aims at achieving better policy making through the balancing of economic efficiency and environmental effectiveness, among other things, by focusing on the opportunities offered by economic instruments. Within the framework of this objective, it is expected that a better sense of environmental responsibility is promoted within industry and amoong environmental service providers, as well as other actors in the field of the environment via mechanisms such as environmental self-monitoring, the implementation of environmental management principles, enforcement of integrated permitting, consideration of best available techniques and so on. The NEAP-3 is also paving the road to the Green Growth and Green Economy activities. Activities implemented under the NEAP-3 will also pave the way to achieving an environmentally sustainable approach that integrates environmental considerations into the activities of the various sectors, while at the same time paying attention to social needs and the push for economic growth.

2. ENVIRONMENTAL GOVERNANCE

Environmental aspects intersect with almost all development and social sectors. Balancing environmental performance and economic growth is a challenge for the governments of all countries, and Georgia is no exception. To achieve the ambitious goals set in the specific chapters below, it is necessary to integrate environmental issues into related policy fields and improve the environmental governance at the national level.

Environmental governance includes a wide range of activities such as the development of environmental policy and legislation, the implementation of environmental policy goals, law enforcement, the supervision/monitoring of the implementation progress and analyzing the achievements at the national level. A substantial portion of the proposed actions related to the improvement of the governance of the specific fields are presented in the thematic chapters below. Those actions are mostly site-specific or sector oriented and are not addressed in this chapter, which focuses more on cross-cutting topics and national level governance as part of the nationally integrated policy making and implementation process. In particular, the actions presented in this chapter mainly support the national level decision-making, policy and law development, enforcement, control and analysis, as well as data management related challenges such as data collection, analysis, reporting and IT-solutions.

2.1 CURRENT STATUS

The experience of developed countries has proved that environmental protection and economic development should be considered complementary, rather than opposite to each other. The development of western countries has demonstrated that economic prosperity can be achieved when a balance is maintained between development and using natural resources and that the welfare of society is guaranteed only when both environmental and social aspects are considered with the same level of significance as economic growth.

Effective environmental governance is the only solution to balancing environment protection and the economic development priorities of the country. To achieve this balance in the near future, the implementation of various activities in the field of the green economy should be set as one of the priority directions for the Georgian economy instead of going through the long path of traditional industrialization. The green economy objectives will be addressed separately in this NEAP-3 below (Chapter 13).

Prevention is a widely acknowledged environmental policy instrument. Prevention is also a lead principle included in the European Environmental Policy and legislation to which Georgia is committed through the EU-Georgia AA. Prevention requires significant input/contributions from all stakeholders involved in the planning process, starting from the developer and ending with the authorities issuing the permits. Nowadays, Environmental Impact Assessment (EIA) for specific activities and enviromental decision are the main tool in Georgia for preventing a negative impact on the environment. Smaller polluters are regulated by the environmental technical regulations. No assessment of potential adverse environmental impacts related to any strategic document (strategy, plan or program) is required today. This limits the opportunity to make environmentally conscious decisions during the early stage development of strategies and plans.

Remarkable changes are planned and progress has been made in the existing permit system. The new law (The Environmental Assessment Code (2017)) introduces the principles of the EU Environmental

Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) directives, as well as the approaches of the Convention on Environmental Impact Assessment in Transboundary Context (Espoo Convention) and its protocol on SEA and the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. Environmental assessment related new regulations, harmonized with EU directives, will be in line with the best international legal approaches. In particular, all activities which are likely to have significant impacts on the environment and human health and therefore, will be subject to EIA. The code also ensures a higher degree of public participation at the screening and scoping, as well as during the procedure for issuing Environmental Decision. The code establishs a list of new activities subject to the EIA. The list of activities are grouped into two annexes based on expected risk and degree of impact to the environment. Activities listed in Annex I are subject to mandatory EIA, while activities listed in the Annex II require a screening procedure based on which the decision on necessity of the EIA will be made. So it seems that the number of activities subject to EIA has increased, although activities listed in the Annex II will be made subject to EIA only on the basis of a screening decision. One of the important novelties of the Code is that It envisages unification of screening and scoping procedures in one step, giving the possibility to person to apply for the joint scoping and screening application during the screening procedure. Documents will be assessed simultaneously by the Ministry.This regulation will enable the person to save time and perform procedure in a very short period of time. The person may submit to the Ministry of Environmental Protection and Agriculture of Georgia a scoping application based on his/her decision (without going through the screening stage) and request the Environmental Decision. In this case the developer will save time stipulated for the stage of screening. Hence, the commencement of the administrative procedure will be possible from the stage of scoping.

The newly established SEA system and transboundary environmental impact assessment procedure will contribute to the integration of environmental and human health related aspects in strategic planning and the improvement of transboundary cooperation. Another significant ongoing process in this respect is the development of the integrated pollution prevention and control (IPPC) legislation, which is in line with the EU-Georgia AA requirements. The IPPC approach implies fundamental changes in the permit system, including the development of the relevant legal, institutional, administrative and procedural scheme and the application of modern environmental management principles, including the best available techniques (BATs) and emission limit values (ELV) as required by the AA.

Another instrument of environmental governance is the issuance of the appropriate licenses and permits in the field of environmental and natural resources protection.

According to the Law of Georgia 'On Licenses and Permits' (2005), the license for use is a type of license that entitles a legal person to use state resources. As of today, the following types of licenses are being issued for the use of natural resources in Georgia: a license for use of mineral resources (for obtaining and/or exploration and extraction of minerals); general license for forest use, which includes a special license for timber manufacturing and a special license for hunting (these licenses may also be issued separately); the license for export fir-tree conifers; the license forexport snowdrop bulbs and/or cyclamen tubers entered in the appendixes to the "Convention on International Trade in Endangered Species of Wild Fauna and Flora" (CITES); fishing license. The purpose of issuing a license for use is to ensure the sustainable and rational use of national resources. The Ministry of Economy and Sustainable Development of Georgia issues the licenses for use of minerals and the LEPL National

Environmental Agency of the Ministry of Environmental Protection and Agriculture of Georgia issues the licenses for all other natural resource of Georgia. The long-term licenses for timber use are no longer being issued (since 2012) due to the damage caused to the forests, deforestation and the misuse of forest management in the past, although licenses issued previously are still in force.

According to the Law of Georgia on 'Licenses and Permits', the Activity License is a type of license that entitles a legal person to carry out the activity defined by the law. The following activities are licensed in the field of environmental protection: the nuclear and radiation activity license, and a license for the use of Living Modified Organisms in a closed system.

According to the Law of Georgia 'On Licenses and Permits', the permit is a right to act during a defined or undefined term, which relates to the object and confirms the relevance of this activity to the provisions of the Law. The following permits are issued in the field of environmental protection: permit to export, import, re-export and the sea introduction of species, their parts and derivatives entered in the Appendixes to the CITES; Permit to import, export and transit waste; Permit to import, export, re-export and transit an ozone depleting substances; Permits to purchase and transfer radioactive materials; Permit to import and transit radioactive materials and raw materials from which the nuclear materials can be produced or manufactured, equipment containing radioactive substances, nuclear technology or know-how import, export and export of radioactive sources; Permit to export radioactive waste, as well as the environmental decision provided by the Environmental Assessment Code.

Enforcement of the law is a key segment to environmental governance. State control over environmental protection and the use of natural resources is being carried out by the State Subordinated Entity - Department of Environmental Supervision (DES) under the management of the Ministry of Environmental Protection and Agriculture through its Central Office and Territorial Bodies. The department is entitled to inspect the regulation sites, establish protocol for administrative offenses, issue a penalty cheque - administrative offense protocol, review the cases of administrative offenses and issue a resolution on the imposition of an administrative penalty, determine (calculate) environmental damage, require the payment of the damages along with the offense protocol or submit the relevant suit to the court. In the case that signs of a criminal offense are found, the department is entitled to send the case files to the respective agencies; to raise the issue on the cancellation of the licenses issued in the field of environmental protection and the use of natural resources (except for licenses for extraction and use of mineral resources), permitions, environmental decisions and the decisions on continuation of the current activities; to address the issuer of the licenses (except for licenses for extraction and use of mineral resources) permits, environmental decisions and decisions on continuation of the current activities for the purpose of defining the reasonable terms for the elimination of the violations; to present the administrative exigency on the violations revealed during the inspection, checking, reporting of or any other procedure for the activities of the regulation object for the elimination of the violations within a reasonable time or for abstaining from some actions and other. It is noteworthy that the current legislation on defining environmental damages and the results caused from it, sharply differs from the EU approach to the issue and requires a full review.

For the purpose of the implementation of the obligations of the EU Directives on Environmental Responsibility under the AA between Georgia and the European Union, within the scope of the EU-

funded project, the ministry has developed a draft version of the Law of Georgia on Environmental Liability, which should cover the whole reform of the environmental liability system. As a result, the goal of the new law will be to create a legal framework for remedying significant damages to the environment and preventing such damage, which will be based on the "polluter pays" principle.

Data management is essential for environmental management and governance. Data collection is based on status and emission monitoring. Therefore, monitoring is an essential part of the information system that provides data on the status of the environment and on the potential and existing sources of pollution. Monitoring capacity has been increased over the last few years and monitoring and measurement resources are growing steadily. Still, there are shortcomings in several fields of primary data collection (eg. statistical data required to make national level assessments), self-monitoring and the use of modelling for analysis and prognosis. Environmental data management is currently based on the national environmental data reporting system. More details on environmental monitoring and the related challenges are provided in the sectoral chapters.

Access to environmental information and public participation in decision making is crucial for good environmental governance. The respective national legislation and international agreements, including conventions and protocols that Georgia is a party to ensure a legal basis for the government to develop proper mechanisms for effective access to environmental information and public participation. Along with the website of the MEPA and its subordinated units providing various environmental information, the web page of the LEPL Environmental Information and Education Centre's (EIEC) of the MEPA provides information on environmental themes, projects, legislation, strategic documents, guidelines and so on. It also contains the texts of multilateral environmental agreements (MEAs) and national reports on the implementation of the provisions of MEAs, national reports on the state of the environment, a registry of environmental organizations, as well as infographics. The site also includes information pertaining to issued permits and other related information. The process of setting-up an environmental information management system is ongoing and once developed, is expected to ensure more effective access to environmental information as required by the current national legislation, the EU-Georgia AA and the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

The general public in Georgia has an opportunity to get involved in the decision making process via legally defined public hearing procedure on activities subject to EIA. The public can also use the hotline to inform the MEPA about any environmental problems they might notice. Other IT-based tools have been developed by the LEPL EIEC such as E-Notice – a notification service that distributes news regarding environmental legislation and public hearings and notifications pertaining to individuals in violation of Georgian legislation on environmental protection.

Environmental education is crucial to achieve effective public participation for living sustainably and fostering environmentally responsible changes in society. Education for Sustainable Development – The Georgian National Strategy and Action Plan for 2018-2022, is under development. The document is expected to advance the profile of environmental education within the educational system, facilitate coordination among stakeholders and raise environmental awareness so that each citizen has a responsible attitude towards the environment and can better contribute to the improvement of environmental awareness and hence, the sustainable development of the country.

2.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

A major portion of environmental policy and legislation is being developed by the Ministry of Environmental Protection and Agriculture (MEPA). The Ministry also plays a major role in environmental administration, issuing and enforcement of the permits, implementations of state control, data analysis and management in the field of environmental protection and use of natural resources (except for minerals, oil and gas) through its subordinated structural units as well as state subordinated entity and the Legal Entities of Public Law. The MEPA also coordinates the cooperation within the framework of regional and international MEAs. The specific functions of the MEPA per sector are described in detail in other chapters of the NEAP-3.

The integration of environmental issues into sectoral policies and actions demands commitment and the contribution of resources from other ministries and the government as a whole. Most crucial in this respect are the ministries that are either primarily involved in planning the development of the socio-economic sectors that cause major pressure to the environment or play a significant role in preventing/responding to environmental challenges. The Ministry of Economy and Sustainable Development, the Ministry of Regional Development and Infrastructure, the Ministry of Finance with its Customs Department, the Ministry of Internal Affairs, the Ministry of Labour, Health and Social Affairs and the National Statistics Office are key state institutions in this respect. In order to address complex environmental issues such as the organization of waste management, reducing air pollution in larger settlements and industrial areas, solving water quality and quantity issues, protecting forest resources and biodiversity and managing coastal zones and the Black Sea, close cooperation among the ministries and integration of environmental aspects into other planning documents is needed.

The Division of Environmental Protection and Natural Resources of the Adjara Autonomous Republic (A/R) manages forests on the territory of the A A/R (150, 117 ha) through its Forestry Agency except for those having the status of protected areas. In addition, the division participates in all relevant actions aimed at protecting the environment and human health.

Local self-governments are responsible for the management of natural resources of local importance, including water and forest resources and land owned by the respective municipality. Municipal waste collection, street cleaning, parks and other public spaces on the territory of a municipality and greening activities are also the functions of municipalities. Local self-governments issue construction permits for activities of certain categories, part of which could be the conclusion of ecological expertise.

The academic sector is also among the key stakeholders, as scientifically proven analysis is crucial for effective decision making and good governance. Currently, scientific institutes in the country focus mainly on problems related to geology, seismology, radiation safety, biodiversity, soil, and water resources. Environmental NGOs and SCOs also play an important role in the overall governance process through their support to the state agencies in building their capacities. NGOs also participate in various discussions and contribute to policy formulation process, as well as serve as watchdogs and monitor environmental performance.

Finally, the general public, as the final beneficiary of good environmental governance, should be considered as an important stakeholder. The public sets its standard demands to the bodies dealing

with the administration of environmental affairs. At the same time, progress can only be made when people in general start to contribute to the set environmental goals, including individual efforts of each person within society.

2.3 LEGAL AND POLICY FRAMEWORK

The main law providing the legal environmental framework is the Law on Environmental Protection (1996). However, it is outdated and does not respond to recent policy developments. It needs to be updated in order for it to have a sound legal basis for all sector laws and regulate cross-cutting environmental principles and modern instruments. In addition, various areas are regulated by the sector specific laws and by-laws, which are discussed in more detail in specific chapters of the NEAP 3.

Environmental legal drafting is currently intensive due to the EU-Georgia association process. The ratification of the EU-Georgia AA in 2014, provides a long-term perspective for the development of national policy in various fields, including the environment and natural resources. The AA also provides a solid legal basis for future lawmaking and the implementation process. Among other matters, it defines goals to be achieved within a clearly established timeframe for the following areas: (i) environmental governance; (ii) air quality; (iii) water quality and resource management (including the marine environment); (iv) waste management; (v) biodiversity protection; (vi) industrial pollution and industrial hazards; (vii) chemical management; and (viii) climate action. Sustainable forestry and fishery-related aspects are addressed in the Deep and Comprehensive Free Trade Area (DCFTA), which is the part of the EUAA. A number of draft laws (i.e. Law on Import, Export and Transit of Waste; Law on Water Resources Management) and bylaws, have already been prepared while others are either in the development stages or in the pipeline. The AA implementation roadmap that is being developed by the MEPA, sets concrete actions for meeting the AA requirements in a timely manner.

Another important document framing the national environmental policy is the United Nations Sustainable Development Goals (SDGs) that was approved in 2015. The SDGs set 169 targets that are to be achieved by 2030. A number of those targets capture environmental aspects and countries have to adjust their policies to these global targets. More information on the actions of relevant environmental SDGs are presented below in Chapter 13 on Green Economy and Environmental Dimension of Sustainable Development.

International treaties, to which Georgia is a party to play a significant role in the national policy formulating process. Georgia is a party to global and regional Multilateral Environmental Agreements (MEAs), including 18 conventions, a number of their protocols, amendments and agreements. One of the treaties influencing overall environmental governance at the national level and guiding Georgia towards better environmental democracy is the Convention on Access to Information and the Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention). Safeguarding the environmental rights of the population, the Aarhus Convention provides a strong basis for further improvements in the field of environmental governance. An overview of the MEAs is presented in Box 1.

Table 1. International Environmental Conventions and Protocols Georgia is a party to

AGREEMENTS	DATE OF RATIFICATION/ ACCESSION
Convention on the Protection of the Black Sea Against Pollution	1993
The Black Sea Biodiversity and Landscape Conservation Protocol	2009
Protocol on Protection of the Black Sea Marine Environment Against Pollution from Land Based Sources	2009
Protocol on The Protection of the Black Sea Marine Environment Against Pollution by Dumping	1993
Protocol on Cooperation in Combating Pollution of the Black Sea Marine Environment by Oil and Other Harmful Substances in Emergency Situations	1993
Convention on Biological Diversity	1994
Cartagena Protocol on Biosafety to the Convention on Biological Diversity	2008
United Nations Framework Convention on Climate Change	1994
Kyoto Protocol to the United Nations Framework Convention on Climate Change	1999
Paris Agreement	2017
Convention for the Protection of the Ozone Layer	1995
Montreal Protocol on Substances that Deplete the Ozone Layer	1995
London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer	2000
Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer	2000
Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer	2000
Beijing Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer	2010
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	1996
Convention on Wetlands of International Importance especially as Waterfowl Habitat	1996
Convention on Long-range Transboundary Air Pollution	1999
Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) to the Convention on Long-range Transboundary Air Pollution	2012
Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1999
United Nations Convention to Combat Desertification	1999
Convention on the Conservation of Migratory Species of Wild Animals	2000
Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS)	2001

Agreement on the Conservation of African-Eurasian Migratory Water birds (AEWA)	2001
Agreement Conservation of Bats in Europe	2001
Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention)	2000
GMO Amendment	2016
Convention on Persistent Organic Pollutants (POPs)	2006
Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	2006
Convention on the Conservation of European Wildlife and Natural Habitats	2008
European Landscape Convention	2010
Agreement Between the Republic of Georgia and the International Atomic Energy Agency for the Application of Safeguards in Connection with Treaty on the Non-Proliferation of Nuclear Weapons (INFCIRC/617)	2003
Protocol Additional to the Agreement between the Republic of Georgia and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons	2003
Convention on the Physical Protection of Nuclear Material (INFCIRC/274/Rev.1)	2006
Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (INFIRC/546)	2009
Convention on Early Notification of a Nuclear Accident (INFCIRC/335)	2010

In addition to international commitments, there are number of national strategic documents which provide the policy framework for the overall national environmental policy. Ensuring environmental safety and sustainability through the prevention of natural disasters and the rational use of natural resources is set as one of the three main principles in the Socio-economic Development Strategy of Georgia "Georgia 2020" (2014). The Regional Development Programme of Georgia (2015-2017) reflected a number of priority environmental goals, such as ambient air protection, developing water supply and sanitation, sustainable use of forest resources, waste management and implementing new mechanisms to reduce natural and anthropogenic hazards. The Strategy for Agricultural Development in Georgia 2015-2020 approved by the Georgian Government (Decree N167, 11/11/2015) has identified environmental protection and the sustainable management of natural resources as one of the priority areas. The document has a Strategic Direction 3.7 devoted to Climate Change, Environment and Biodiversity.

The Rural Development Strategy for 2017-2020 has three priority directions, one of which is environmental protection and the sustainable use of natural resource. This direction specifically includes the following targets: 1. Water, forest and other resources/ the improvement of water, forest and other resources in targeted rural areas; 2. Waste Management/ the promotion of sustainable systems of waste management in rural areas; 3. Climate change/ activities used to mitigate the negative impact of climate change. The relevant measures are given in the Action Plan of the Strategy. The Georgian Cultural Strategy "Culture 2025" and Action Plan for 2017-2018 covers issues related to environmental education.

Environmental Policy directions are outlined in the national budgetary and financial management framework – Basic Data and Directions (BDD). The BDD allocates multi-year budget ceilings based on government priorities that are established in the medium-term action plans of each ministry. The document reflects mid-term priorities of the ministries, their funding and objectives.

There are some specific sectoral environmental policy andstrategc documents adopted by the Government or the Parliament of Georgia. The "National Biodiversity Strategy and the Action Plan 2014–2020" approved by the resolution N343 of May 8, 2014 of the Government of Georgia, the "National Forest Concept of Georgia" approved by the Resolution of the Parliament of Georgia on "National Forest Concept of Georgia" (2013), "the National Action Program to Combat Desertification (2014-2022) approved by Decree No. 742, of December 19, 2014 of the Government of Georgia, the National Waste Management Strategy of 2016-2030 and the National Waste Management Action Plan of 2016-2020 approved by the Resolution N160 of April 1, 2016 of the Government of Georgia, are the main specific sectoral strategic documents, the major aspects of which are reflected in the Third National Environmental Action Programme of Georgia. The above strategic and policy documents are discussed in more detail in the specific chapters below.

Finally, the NEAP-2 was the main document guiding environmental policy during the period of 2012-2016. Some aspects of environmental governance have been scattered in the NEAP-2 also under various chapters.

2.4 PROBLEMS AND PRIORITIES

Environmental governance is crucial for planning and implementing adequate measures to address the existing environmental challenges. The NEAP-3 proposes a range of priority actions to improve environmental governance and increase the capacity of the state agencies of Georgia to support economic development without compromising the environment, to turn environmental values into benefits and to use ecosystem services for the sustainable and balanced development of the country.

The reflection of the obligations undertaken by the EU-Georgia AA in the national legislation of Georgia and their implementation is one of the priority directions of the country during the Third National Environmental Action Programme. The implementation of the new Law of Georgia on Environmental Assessment Code is particularly important for the improvement of environmental governance. Another significant legal aspect is related to environmental liability and further efforts should be made in order to put environmental liability principles in place in a timely manner through the adoption and implementation of the draft EL law. The initiation of the IPPC system is also important.

Along with EIA and permitting, licensing is also considered a tool of environmental governance. An effective licensing system ensures the sustainable use of natural resources.

Environmental law enforcement and supervision has made remarkable progress over the last few years. However, evolving legislation sets new challenges to the DES and other institutions involved in the supervisory process. New approaches (SEA, EIA; ELVs, integrated permitting, risk management control, etc.) demand the restructuring of the inspection process and procedures, raising the qualifications of inspectors, the development of sectoral guidelines, the provision of new monitoring equipment and the development of electronic systems for reporting on the inspections. It is also very important to reform the inspection system with respect to the damage assessment, which is not covered by the new draft law on EL and revise the existing methodologies.

Data management is crucial for policy analysis and planning, as well as for taking urgent actions in the cases of natural and anthropogenic disasters as mentioned above. Modern data management system provides the basis for the appropriate pressure-impact-response data collection and analysis. The primary benefit of such data provides the opportunity to analyze the effectiveness and efficiency of the government's environmental policy. The secondary objective is to secure smooth reporting to external stakeholders such as the secretariats of international agreements and other institutions. The quick and timely provision of data is required for fast responses in an effort to avoid the catastrophic loss of human lives, property or significant natural resources in case of natural or industrial disasters and pollution events. Developments are foreseen in all aspects of data management, from data collection to data processing, storage and analysis. The collection of primary data via monitoring and measurement is needed and planned. These aspects are addressed in the relevant chapters. Company self-monitoring is necessary as it entails vast opportunities in complementing the environmental primary data. The corresponding legal and practical actions are planned to expand this field of monitoring.

Considering all of the above mentioned, the increase of skills and experiences of the governmental staff, as well as all other stakeholders involved in the development and implementation of environmental policy and legislation is crucial. For example, the introduction of SEA and its application will be the greatest challenges, as it requires the development of experience, practice and the capacity-building of all governmental authorities, as well as swift coordination. The policy and legislative basis for these are coming into place, but the implementation of the ambitious objectives require input not only from various governmental authorities but from all stakeholders within society — municipalities, legal and private persons. In this respect, the relevant capacities within different authorities, as well as their coordinated activities, are needed to achieve the goals and targets set in the specific chapters below.

Finally, awareness of the various interest groups and the general public on environmental issues, on their role in shaping environmentally conscious and responsible society, as well as their righ to participate in the decision making process is crucial. Effective public participation can be achieved only through the proper environmental education system – both formal and informal. Environmental aspects are integrated into secondary education, and a number of educational initiatives are implemented by various organizations. The EIEC also promotes capacity building and environmental education for sustainable development in Georgia. The continuation of this process and the promotion of the overall level of environmental education, through both formal and informal education measures, is among the priorities of the NEAP-3.

Considering the above mentioned data, the following long-term goal and short-term targets have been set:

GOAL:
To ensure that an effective system for the prevention and/or response to existing and emerging environmental challenges is put in place.

TARGETS:
Target 1. The promotion of policy integration and improvement of environmental assessment, planning and reporting system.
Target 2. The improvement of the environmental data management system and rising environmental awareness.
Target 3. The improvement of environmental enforcement and supervision system.

2.5 ACTION PLAN

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY (IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1. Promotion of policy integration and improvement of environmental assessment, planning and reporting system								
1.1	Development of Georgia's national report "State of Environment 2014-2017"	Adopted national report Report chapters are developed based on international environmental indicators	150, 000	State Budget	MEPA		Lack of data needed for calculation of international indicators	2018 - 2019
1.2	Development of "National Environment and Health Action Plan" (NEHAP)	Adopted NEHAP Short term actions implemented, Medium and long term actions started	Donor Grant	World Health Organization	MLHSA	MNEPA	Prolongation of document adoption process	2017-2018
1.3	Development of "Environmental Education for Sustainable Development" strategy and action plan and its implementation	Adopted Strategy Short term actions implemented, Medium and long term actions started	23, 000	GIZ	MEPA EIEC	MES	Lack of financing Prolongation of Adoption procedures	2017-2021
1.4	Development of Environmental Impact Assessment methodologies	Developed methodologies	Donor Grant	Donor	MEPA		Lack of financing	2017-2018

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY (IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.5	Increasing capacity of the relevant authorities and stakeholders in EIA process	Methodologies developed and available to stakeholders Number of training courses carried out for the stakeholders Number (%) of new activities subjected to environmental assessment	Donor Grant	Donor	MEPA		Lack of financing	2017-2021
1.6	Implementation of Strategic Environment Assessment (SEA) system	Number of relevant national strategies, policies an action plans passed by strategic environmental assessment procedure	Envisaged within the existing budgetary resources[1]	State budget, budget of relevant authorities	MEPA	All Line Ministries	Lack of cooperation from relevant stakeholders	2018-2021
1.7	Increasing capacity of relevant authorities and stakeholders in SEA process	Number of authorities involved in strategic planning performing the SEA scoping, screening and reporting	Donor Grant	Donor	MEPA	All Line Ministries	Lack of financing	2018-2021

[1] The following wording describes administrative costs

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY (IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.8	Initialisation of Integrated permitting system	Developed institutional and legislative base for introduction of integrated permit system Stakeholders capable of applying, preparing and issuing permits	Donor Grant	EU	MEPA		Lack of Financing Lack of cooperation from relevant stakeholders	2019-2021
1.9	Development of the concept for introduction of best available techniques (BATs)	Developed concept for introduction of BATs Georgian BATs adopted and applied	Donor Grant	Donor	MEPA		Lack of Financing Lack of cooperation from authorities and other stakeholders	2019-2021
Target 2. Improvement of environmental data management system and environmental awareness raising								
2.1	Introduction of the Environmental component in in the Preschool Educational Programs at national level	Environmental components are introduced in study programmes of every kindergarten of Georgia Children are aware of the environmental problems and challenges.	Within the Budget Resources: 65, 000 Above Budget Resources: 50, 000	State Budget	MEPA LEPL Environmental Information and Education Center	LEPL Tbilisi Kindergartens Management Agency, all municipalities	Prolongationof the process	2017-2021

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY (IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
2.2	Introduction of environmental information management system	The operating electronic system, which includes at least the following database: 1. Wastes Reporting Database 2. Spatial Data System 3. Biodiversity Module 4. Desertification module 5. Climate Change Module 6. Water Reporting Database	Budget: 655 000 Donor: 86 650 Donor grant	State budget / donor, GEF/UNDP	MEPA LEPL Environmental Information and Education Center	UNDP	Lack of participation of stakeholders	2017-2021
Target 3. Improvement of environmental enforcement and supervision system								
3.1	Implementation of effective environmental liability system	Adopted law of Georgia on "Environmental Liability" and methodology for calculation of environmental damage	Donor Grant	EU	MEPA DES		Prolongation of Adoption procedures	2017-2018
3.2	Development and approvement of "Strategy to combat poaching"	Functioning system for identification of poaching	Donor Grant	Donor	MEPA DES		Lack of Financing Lack of expertise	2018-2020
3.3	Development of methodology to identify priorities for the inspection of permitted objects	Approved Methodology Yearly inspection plans developed according to methodology	Envisaged within the existing budgetary resources	State budget	MEPA DES		Prolongation of deveopment	2017-2020

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY (IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
3.4	Establishment of an electronic data management system for license conditions compliance reporting	Functioning electronic data management system Licence owners reporting in the system	Envisaged within the existing budgetary resources	State budget	MEPA DES NEA		Lack of Financing Lack of interest from licence holders Technical issues	2018-2019
3.5	Establishment of an industrial fishery self-monitoring and self-reporting system	Functioning electronic data management system Established system of live video-monitoring on vessels Accessible accurate data on fishery (quantity of fish, types of fish)	Donor Grant	Donor	DES MEPA		Lack of Financing	2017-2018
3.6	Capacity-building of the DES	Number of trained personnel Purchased new Equipment Increased number (percentage) of inspections performed	Budget: 2.877 Mill Donor Grant	State budget/ Donors	DES MEPA	EU GIZ USFS UNDP	Lack of Financing Lack of expertise	2017-2021
3.7	Establishing of fuel quality control system on naval transport	Number of trained inspectors (from Black Sea Protection Convention Division) Number of samples analysed	Donor Grant	Donor	DES MEPA		Lack of Financing Lack of expertise	2018-2021

3.
WATER MANAGEMENT

This chapter includes the management of different kinds of water: surface water, groundwater and seawater, including the coastal waters of the Black Sea. The quality of the ecosystems relying on water is addressed in the chapter on biodiversity.

3.1 CURRENT STATUS

Georgia is one of the richest countries in Europe in both surface and groundwater resources. In Georgia, fresh surface water resources per capita is 14, 000 m^3, while the same average figure in Europe is only 9, 300 m^3. Georgia's surface water resources are comprised of more than 26, 000 rivers, 850 lakes, 43 reservoirs, 734 glaciers and wetlands with a total area of 627 km^2. As for groundwater, the estimated amount of only fresh groundwater resources is 18 billion m^3 per year, while consumption rate, for example, in 2015 was only 1,077 M m^3. In addition, Georgia is rich in mineral and thermal groundwater. The role of the Black Sea, with its 320 km coastline in Georgia, is significant for the country in terms of economic development, including the tourism industry.

All rivers in Georgia belong to either the Black Sea or the Caspian Sea basins. 99.5% of rivers or streams areless than 25 km in length. The longest river is the Alazani River (362 km), which flows to the Caspian Sea. The second longest is the Rioni River (327 km), which contributes to the Black Sea. Georgia shares its surface water resources with its neighbours. There are 15 transboundaries flowing to or from Armenia, Azerbaijan, Russia and Turkey. These are the Mtkvari, Alazani, Iori, Ktsia-Khrami, Debeda, Chorokhi, Potskhovi, Psou, Sulak and Tergi rivers. Like the rivers, the lakes of Georgia are of relatively small size. The total surface area is counted of 175 km^2. Pharavani Lake is the biggest in terms of area (37.5 km^2) and Tabatskuri Lake in terms of water volume (221 M m^3). Two lakes – Kartsakhi and Jandara – are transboundary water bodies with Turkey and Azerbaijan respectively. In addition to natural lakes, there are 44 artificial reservoirs in Georgia with a total volume of 3, 315 M m^3. Most of them are used for energy generation and irrigation and some of them, for example the Jinvali Reservoir, is important for drinking water supply.

The overall quality of surface water in Georgia is satisfactory. The main problem is ammonium concentration, which exceeds the maximum allowable levels in most rivers and is attributed to residential and agricultural wastewater. The Suramula River and Tbilisi's small rivers are the most polluted with ammonium. In some rivers, high concentrations of heavy metals have been detected. The Kazretula, Mashavera and Kvirila rivers are the hot spots in this regard where the main source of pollution is from mining activity. Water contamination has also been observed in some sections of the Tskhenistskali River where the concentration of arsenic exceeds the allowable level nearby the old arsenic processing plant. In the Mtkvari River basin, Biological Oxygen Demand (BOD) concentrations do exceed the normative levels set for surface waters used for drinking water consumption but still meets the levels established for common consumption. *Escherichia coli (E.coli)* is measured only in the Aragvi River and no exceedances have been detected. *E.coli* exceedances have been detected only in some sampling points in lakes from time to time.

Data on water quality come from regular monitoring, which currently is conducted at 147 points of 74 rivers and 12 lakes for 36 chemical and microbiological parameters. Hydrobiological monitoring at 60 points of 25 rivers began startg in 2012. Hydrological monitoring was also re-established and currently, it is conducted at 39 points. However, it is difficult to gauge the dynamics of water quantity in the rivers of Georgia due to the disruption of the monitoring network that began in 1990. Moreover, due to the diversity in natural conditions, the above-mentioned number of hydrological

stations is not enough for studying and recording water resources. Therefore, further expansion of the hydrological observation network is necessary.

The main pressures placed on surface water resources come from the household sector due to the discharge of untreated urban wastewater into the surface water bodies. Only 46.5% of the population are supplied with wastewater collection service and only three wastewater treatment plants (WWTP) (Gardabani, Adlia and Sachkhere) are operational in Georgia today. An additional 10 WWTP (Gardabani, Kutaisi, Chiatura, Marneuli, Gudauri, Poti, Mestia, Zugdidi, Ureki and Kobuleti) are under construction or planned to be constructed in 2017-2019, which will ensure the appropriate treatment of urban wastewaters. The agriculture and industry sectors also pose challenges to Georgia's water resources. The main problems related to agriculture are linked to the unsustainable use of water for irrigation (156 M m3 in 2013), with losses exceeding 50 percent, and diffuse pollution caused by runoffs from the land (nitrates, phosphates and pesticides). Although, there are no contamination problems with phosphates observed, nitrogen compound levels (especially ammonium) are above the set limits as mentioned above.

As for industries, only some newer industries have WWTP, whereas the rest work without any treatment or pre-treatment system. Thus, untreated industrial water discharge causes additional burden to surface waters. Finally, the energy sector is another important field affecting water bodies. In the energy sector the non-consumptive use of water amounted to 23.5 billion m^3 in 2016 and further expansion of hydropower generation is expected. While HPPs are non-consumptive users, the majority of them have an impact on river flow, as they typically divert and/or impound water and consequently can affect rivers negatively if adequate dynamic environmental flow is not maintained. Currently, Georgian legislation does not define the meaning and the method of calculation of environmental flow. Approximmation of the existing Georgian legislation and standards to the EU and other international standards is needed.

Georgia, which is characterized by its diversity in tectonic, lithological, geochemical, geothermal and hydro-geological conditions, is rich in fresh, mineral (concomitant carbonic gas) and thermal groundwater resources. The carrying operational reserve of fresh groundwater resources is 24.5M m^3/day, while identified resources are much more and is estimated at 49.5 M m^3/day. These resources are unevenly distributed geographically: 63% of resources come from the West, 24% from East and 13% from South Georgia.

Mineral waters, with different physical-chemical properties, are widespread throughout Georgia and about 1, 800 wells and drilling holes have been studied. The proven operational reserve of mineral water resources in Georgia is 67, 000 m^3/day, which is only part of the overall volume. Thermal springs, as a renewable and ecologically clean type of groundwater, are also common for Georgia. The total debit of these thermal waters is approximately 110 000 m^3 per day including: 74,000 m^3 thermal waters with the temperature 20-50^{0}C, 28,000 m3 with the temperature 50-100 ^{0}C and 11,000 m^3 with the temperature more then 100^{0}C.

No systematic hydrogeological monitoring has been undertaken in Georgia since the 1990s. Therefore, existing information on the qualitative and quantitative status of groundwater come mainly from that period of time. Before 1990, the state hydrogeological observation network involved 493 water points, including 478 wells, 11 springs and 4 agricultural wells. Groundwater monitoring was restored in 2013 and nowadays 34 wells – in Kolkheti, Guria, Tskaltubo, Kartli, Marneuli-Gardabani, Alazani

and the Iori-Shiraki artesian basins – are equipped by automatic regime measurement devices. 11 wells will be added in 2017. Data received so far is satisfactory and no chemical or microbiological contamination has been detected.

The Black Sea is geographically very isolated from the oceans and about one-third of continental Europe belongs to its catchment area. Therefore, pollution of coastal waters and the quality and quantity of drained rivers are the main factors determining its overall environmental status. Black Sea pollution and overusing its resources during the last 50 years has resulted in the drastic deterioration of the water quality and ecosystem.

The discharge of untreated urban wastewater and marine littering by municipal waste are the main challenges to coastal waters of the Black Sea in Georgia and urban pollution has been intensifying with the increase of tourism activity in this region. Based on data obtained through the intensive seasonal monitoring of the coastal waters, the Sarfi-Kvariati and Gonio areas are of the best quality, while high a concentration of E.coli has been observed in places where untreated urban wastewater discharges into the Black Sea. The worst situation has been recorded at the Bartskhana River estuary where the concentration of E. coli was more than 24, 000/litre when the allowable standard is 10, 000/litre. To reduce untreated wastewater discharge in the sea, the Batumi (Adlia) WWTP was constructed and two others are under construction in Ureki and Kobuleti as mentioned above.

Marine littering with municipal waste is another problem for coastal waters. The uncontrolled dumping of municipal waste in the tributary river beds or the adjacent coastal areas, causes the littering of the beach and coastal waters. In turn, this poses risks to the environment, marine life, human health, and negatively affects tourism development.

The discharge of wastewater and municipal waste contributes to the enrichment of the Black Sea with nutrients and consequently, to the eutrophication process, which is the largest challenge for the Black Sea in general. Signs of eutrophication have already been observed in the coastal zone of Georgia too. Another risk to the Black Sea is its pollution with oil and oil products in the ports of Georgia. An especially high level of pollution is observed along the shipping routes (about 0.3 mg/l) and most likely this is a result of the release of ballast waters from ships. Only a few terminals (for example Batumi oil terminal) are equipped with the type of special infrastructure for accepting and treatment of ballast waters. In 2014, Georgia joined the International Convention on Control and Management of Ballistic Water and Sewing, which created a legal basis for ballast waters management.

3.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

The development and implementation of an overall policy in water resources management is the responsibility of the MEPA. Specifically, the ministry is in charge of developing legislation, conducting ecological expertise for environmental permitting, setting norms for water abstraction and wastewater discharge, collecting and processing statistical forms submitted annually by users of water resources (irrigation companies, hydroelectric and thermoelectric enterprises and industries), etc. The Ministry of Economy and Sustainable Development issues a license for the extraction of mineral resources, including the extraction of groundwater and supervises the implementation of the terms of the license granted. LEPL National Environmental Agency is responsible for the creation of monitoring systems that measure the quality of the surface and ground waters throughout the whole territory of Georgia.

Department of Environmental Supervision (DES) of MEPA controls implementation of the conditions of the permits and technical reglaments set for surface waters. The Black Sea related supervising actions within the internal and territorial sea waters, harbors, continental shelf and economic zone, are implemented by the special unit of DES – The Black Sea Conventional Service. In cases of sea pollution from ships, relief work is coordinated by the Maritime Transport Agency of the Ministry of Economy and Sustainable Development. The monitoring of coastal waters on the Adjara A/R territory is also conducted by the Division of Environmental Protection and Natural Resources of Adjara A/R. In addition, biological diversity and pollution monitoring is conducted by the Department of Fisheries and Black Sea Monitoring and the Department of Environmental Pollution Monitoring of the NEA.

The Ministry of Labour, Health and Social Affairs sets the standards and norms for both drinking and bathing water, while the control of drinking water quality falls under the oversight of the LEPL National Food Agency under the Ministry of Environmental Protection and Agriculture. The state-owned company Georgian Amelioration is also under the Ministry of Environmental Protection and Agriculture of Georgia and is responsible for managing water irrigation and drainage, as well as collecting the fees from the system's users through its regional offices.

Several companies carry out water supply and wastewater treatment within the various municipalities throughout the country. In particular, the United Water Supply Company of Georgia (UWSCG) under the Ministry of Regional Development and Infrastructure, serves the country's urban areas, with the exception of Tbilisi, Mtskheta, Rustavi and the Adjara A/R; Georgian Water & Power (GWP) operates in Tbilisi, Mtskheta and Rustavi; and water companies of the towns of Adjara A/R are responsible for water services in the Adjara A/R. The National Energy and Water Supply Regulatory Commission defines the rules and conditions for licensing drinking water supply activities. The methodology for establishing tariffs and service fee payments, as well as the tariff limits for water supply are also determined by the Commission.

The Ministry of Economy and Sustainable Development is responsible for the implementation of the state policy in the field of energy, the MoESD develops the long, mid and short-term programs of the energy sector, including the construction of the hydropower stations and coordinates their implementation.

A number of private companies, such as HPPs, fishing farms and industries that consume water resources are also among the important stakeholders.

3.3 LEGAL AND POLICY FRAMEWORK

There are several major laws and numerous sublegal acts regulating the protection and management of water resources in Georgia. However, current water-related legislation is inconsistent and does not provide for clear regulation of such important topics as for example, pollution prevention tools, ownership, and the possession and use rights related to water bodies, as well as water cadaster. The Water Law (1997) regulating water resources defines the main issues related to the protection and use of water. It defines the main principles of water policy and guarantees the security of state interests in water protection. However, it does not fully cover all aspects of water management, including the management of groundwater, which is regulated by the 1996 Law on Mineral Resources. The existing Water Law has an unworkable character because of the questionable legal validity of most of its provisions.

Nowadays, water abstraction and discharge is regulated only for those activities that are subject to Environmental Impact Assessment (EIA). No permit is needed for water abstraction and discharge for other activities. Although discharge and abstraction standards are set in the by-law on technical environmental regulations (Govermental Resolution #17, 03.01.2014), the absence of permit hampers proper planning and decision-making in water use, as well as complicates compliance monitoring by various water users.

No river basin management principles are set by current Georgian legislation. However, the new draft framework law on water resources management fully embraces all aspects of integrated water resources management (IWRM). The law, once adopted, will provide the legal framework for water management on river-basin principles with the MEPA as a central competent authority. The law also will provide for all other aspects of IWRM including the water classification system, water quality objectives and standards, water use, water resources planning, pollution prevention combined approach, economic tools, public participation, monitoring and enforcement and flood risk management.

The process of developing the river basin management plans has already begun. It should also be noted that the Socio-Economic Development Strategy of Georgia - "Georgia 2020" - defines the overall strategic objectives for the supply and sanitation sector, for instance, to serve the entire population with continuous 24 hours water supply and to rehabilitate the water supply and sanitation systems. The water supply and wastewater sanitation sector-related views are outlined in another national strategic document – Regional Development Program of Georgia 2015–2017- which considers the provision of public services, including water supply and sewage systems to rural areas and addressing wastewater treatment plants as one of the priorities for the upcoming years.

International environmental treaties and obligations play a significant role in framing water policy in Georgia. The EU-Georgia AA includes provisions of five EU directives on water and marine-related aspects (except for the flood directive) and the AA implementation Roadmap sets more than 25 actions for the approximation of Georgian legislation in the water sector with EU requirements. Other obligations are taken on by the country via international treaties. Specifically, Georgia is party to the Bucharest Convention on the Protection of the Black Sea against Pollution and the MARPOL Convention on Prevention of Pollution from Ships (as well as the International Convention on Oil Pollution Preparedness, Response and Co-operation). In addition, Georgia is party to the Ballast Water Management Convention and other international treaties concerning Black Sea protection against anthropogenic impacts (for example, the International Convention on Oil Pollution Preparedness, Response and Cooperation). Georgia has not ratified the Convention on Protection and Use of Transboundary Water Courses and International Lakes and the London Protocol on Water and Health. Neither bilateral agreements exist on Transboundary Rivers. The agreement between Azerbaijan and Georgia has been drafted and is subject to negotiations between the two countries.

3.4 PROBLEMS AND PRIORITIES

Inconsistencies within the water-related legislation is the main challenge for taking the proper steps towards the establishment of modern water management system at the national level. The AA sets obligations for Georgia on approximation of its legislation with the EU Water Framework Directive (WFD) and other water quality related regulations. Although the draft Water Law and some draft secondary legislation, reflecting EU approaches, is in place, further efforts are needed in order to first of all, adopt these pieces of legislation and second, ensure their effective implementation (e.g.

setting the proper institutional scheme for achieving integrated river basin management). Therefore, the development of a water resources management system is one of the priorities in the coming years.

The reduction of water pollution from the point and diffuse sources and securing the quantity of water resources for balanced water consumption is another priority. Untreated urban wastewater discharge in water bodies, diffuse pollution from agricultural activities and industrial pollution, as well as oil pollution from ships in the Black Sea causes deterioration of water quality, while water abstraction for irrigation purposes and non-consumptive use of water resources may lead to changes in the hydrological regime of rivers which in turn, will negatively affect water bodies in the long run. Therefore, measures should be taken towards lessening the pollution load and minimizing risks that may cause the aggravation of the status of all types of water bodies and ensuring sustainable water use.

Finally, for better planning and achieving the improvement/maintenance of the qualitative and quantitative status of water bodies, it is essential to have a robust database which can be obtained only through the comprehensive monitoring network. This is particularly important in light of the expected increased demand for water resources, especially for irrigation and energy generation purposes. Although the trend of monitoring network extension has been well-noticed in recent years, additional efforts are needed. The establishment of a reporting, data management and use system is also crucial for planning and implementing these adequate measures.

Considering the above mentioned datam the following long-term goal (2030) and three five-year targets have been identified in the water resources management:

GOAL:
To ensure good qualitative and quantitative status of surface and groundwater bodies as well as coastal waters for human health and aquatic ecosystems

TARGETS:
Target 1. Development of an effective system of water resources management
Target 2. Reduction of water pollution from the point and diffuse sources and ensuring sustainable use of water resources
Target 3. Improvement of the water quality and quantity monitoring and assessment systems

3.5 ACTION PLAN

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1. Development of the effective system of water resources management								
1.1	Finalization and promotion of the "Law on Water Resources Management"	Adopted "Law on water resources management"	Envisaged within the existing budgetary resources	State budget	MEPA		Lack of the support from the governmental institutions, Delay of the agreement procedures	2017-2018
1.2	Harmonization of the national marine legislation with EU legislation	Adopted changes in the "Law on the Maritime Area of Georgia"	Donor grant	EU	MEPA		Lack of donors' support. Lack of the support from the governmental institutions Delay of the agreement procedures	2018
1.3	Elaboration of the procedure of "development of the river basin management plans"	Adopted Governmental Decree "On the approval of the procedure of the development, consideration and endorsement of river basin management plans"	Envisaged within the existing budgetary resources	State budget	MEPA		Delay of the agreement procedures	2018

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.4	Establishment of the river basin management system under the Ministry of Environmental Protection and Agriculture	Established river basin management system	Envisaged within the existing budgetary resources	State budget	MEPA		Lack of the funds from the state budget Lack of technical skills	2018-2021
1.5	Improvement of water resources use statistics	Improved GIS system for data on water use as well as for quantitative and qualitative data of water resources Elaborated maps for 4 basins	Donor grant	Donors	MEPA		Lack of financing for implementation and maintenance	2021
1.6	Development and adoption of the river basin management plans	Adopted river basin management plans at least for 2 river basin/ districts	Donor grant	EU	MEPA	Ministries, municipalities, NGOs	Lack of funding Conflict of interests of various stakeholders	2018-2021
1.7	Establishment of the River Basin Councils	Adopted Governmental Decree "On the rules on composition and functioning of the River Basin Councils" ; At least 5 River Basin Councils established	Envisaged within the existing budgetary resources	State budget	MEPA	Municipalities, NGO	Lack of interest from the stakeholders	2018-2021

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.8	Initialization of the development of the draft of the Marine Strategy	Developed draft of the Marine Strategy	Donor grant	Donor	MEPA	Ministries, municipalities, NGOs	Lack of the support from the governmental institutions, Delay of the agreement procedures Lack of financing	2020-2021
Target 2. Reduction of the water pollution from the point and diffuse sources and ensuring sustainable use of water resources								
2.1	Development of the regulation of maximum admissible discharges (MAD) of urban and industrial wastewater in accordance with EU criteria	Adopted Governmental "Decree On discharge of wastewater"	Envisaged within the existing budgetary re-sources	State budget	MEPA	MRDI	Prolongation of development process	2018-2019
2.2	Identification of the sensitive areas for the urban wastewater discharge	Adopted Ministerial Decree on "Identified sensitive areas of urban wastewater discharge"	Donor grant	Donor	MEPA	MRDI	Lack of financial support	2021
2.3	Rehabilitation-construction of the urban sewage collection and treatment systems in the selected settlements	Urban WWTP exists in at least 10 settlements	149 000 000	ADB, SIDA, EBRD	MRDI UWSCG	MEPA Adjara A/R		2021
2.4	Rehabilitation of the Tbilisi-Rustavi Regional WWTP	Operational WWTP	64 590 000	Georgian Water&Power	Georgian Water&Power	MEPA	Lack of financial support	2018

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
2.5	Identification of nitrates polluted surface waters or waters at risk caused by agricultural sources and designation of nitrate vulnerable areas	Map of the nitrates polluted waters orwaters at risk. Defined nitrates vulnerable zones	Donor grant	Donor	MEPA		Lack of financial support	2019-2020
2.6	Establishment of action plans and regulations of good agricultural practices for nitrate vulnerable zones	Prepared action plans for the nitrate vulnerable zones	Donor grant	Donor	MEPA		Lack of financial support Expert knowledge	2020-2021
2.7	Introduction of environmental flow calculation practice	Environmental flow methodology is applied in practice	Envisaged within the existing budgetary resources	State budget	MEPA		Reluctance from water users	2019
Target 3. Improvement of the water quality and quantity monitoring and assessment systems								
3.1	Introduction of new surface water quality standards	Adopted Governmental Decree "On water quality ecological standards"	Envisaged within the existing budgetary resources	State budget	MEPA		Prolongation of development process	2018-2019
3.2	Expansion of surface (incl. the Black Sea) and groundwater quality monitoring network	Expanded network - 10% every year	2 345 800	State budget	MEPA NEA		Lack of technical, financial and human resources	2017-2021

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
3.3	Improvement of groundwater quality and quantity monitoring	Purchased and installed equipment on the selected wells Reports on water quality and quantity presented as the continuous time series	1 081 700	State budget	Ministry of Environmental Protection and Agriculture LEPL National Environmental Agency		Lack of technical, financial and human resources	2017-2020
3.4	Development of the surface water quality monitoring program	Adopted program of surface water quality monitoring	Envisaged within the existing budgetary resources Donor grant	State budget/ Donors	Ministry of Environmental Protection and Agriculture LEPL National Environmental Agency		Lack of technical, financial and human resources	2019-2020
3.5	Development of the marine water quality monitoring program	Adopted marine waters monitoring program	Envisaged within the existing budgetary resources Donor grant	State budget/ Donors	Ministry of Environmental Protection and Agriculture LEPL National Environmental Agency		Lack of technical, financial and human resources	2021
3.6	Preliminary assessment of the Black Sea waters for the achievement of their good ecological status	Report on the assess-ment of the Black sea water quality	Donor grant	EU	Ministry of Environmental Protection and Agriculture LEPL National Environmental Agency		Lack of technical, financial and human resources of the NEA	2019

4.
AMBIENT AIR PROTECTION

In general, air pollution plays a major negative role in causing adverse effects to people's health. Air pollutants cause illness and premature deaths. Pollution has especially severe effects on the vulnerable groups of the population, especially children, the elderly and persons already suffering from acute and chronic respiratory disease. Several air pollutants also harm the ecosystems, e.g. providing an additional load of nitrogen to water bodies, contributing to forest ecosystems deterioration and so on. In addition, air pollutants cause damage to the country's cultural and national heritage objects.

4.1 CURRENT STATUS

Data on ambient air quality on pollutants in Georgia are obtained from the existing national air quality monitoring network. Until 2016, the monitoring network was limited to one automatic and seven manual monitoring stations and therefore, did not provide sufficient information on air quality. In 2016, three manual stations were replaced by automatic stations in Tbilisi and two additional automatic stations were installed in Batumi and Chiatura. Hence, there are currently six automatic and four manual monitoring stations operational in Georgia today. In addition, there is one country background monitoring station (EMEP Monitoring station) in Abastumani. Although the number of monitoring stations has been increased, it still does not provide a comprehensive picture on air quality nationwide. Monitoring stations are mostly located near industrial areas and traffic hotspots and in these areas air quality for some components (i.e. dust and NO2) do not meet Georgian national air quality standards. However, the results of indicative measurement campaigns show that the air quality in other places (i.e. In the suburbs of the large citiess and in the small cities) is better. For some pollutants, the real data on air quality is not collected, so the information is based on qualitative assessments.

Based on available data, it may be stated that transport (especially in urban areas) and the energy sectors are the predominant sources of carbon monoxide (CO) and nitrogen oxides (NOx). Specifically, according to the State of the Environment report (2013), 79% of CO and 62% NOx come from the transport sector. As for the energy sector, numbers for the same pollutants are 20% and 18% respectively. The age and technical conditions of the existing car fleet, number of vehicles and traffic intensity, type and quality of fuel, insufficient development of public transport, etc., are among the main reasons causing air pollution from the transport sector. As for the energy sector, the CO emissions are mainly due to firewood and natural gas consumption in households, and NOx emissions are largely related to natural gas consumption. In addition, the energy and transport sectors are also responsible for the emission of Volatile Organic Compounds (VOCs). In particular, in 2013, 63 percent of these emissions came from the energy sector, mainly due to gas leakages from the natural gas supply network.

Text box 1. Selected statistical data on transport sector

As of 2015, in Georgia:

- There is one vehicle per 3.5 persons in Georgia. The same figure for Tbilisi is 2.9 persons
- The number of vehicles have increased by 7-10% annually
- The number of vehicles have increased by 3.4 times since 2000 (313, 700 – 1, 081, 400)
- 90.9% of vehicles in Georgia are more than 10 years-old.

Source: MEPA

Industry is another source of air pollution and 64% of particulate matters (PM) is attributed to industries (mainly cement and asphalt production). Air pollution from the industrial sector is observed particularly in the cities of Batumi, Rustavi and Zestafoni. The highest exceedance was recorded in Zestafoni, where the level of manganese dioxide (MnO2) exceeds the national Maximum Allowed Concentration (MAC) by five times due to the operation of the old ferro alloy plant.

4.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

The Ministry of Environmental Protection and Agriculture of Georgia (MEPA) is responsible for defining and implementing air quality policy at the national level. The Ministry is also responsible for reviewing the technical reports on the inventory of air pollution stationary sources and emission of the hazardous substances by them, as well as for reviewing and approving the projects on emissions limit values of the harmful substances in the ambient air. The latter is done by its subordinated National Environmental Agency (NEA). The enforcement of the defined air-quality standards and norms is the responsibility of the Environmental Supervision Department, which is also under the MEPA and performs its tasks through its central and regional offices.

The Ministry of Economy and Sustainable Development develops the technical regulations for the transport sector, ensures its submission to the government of Georgia for adoption and implements the overall transport policy in the country. The Ministry of Labour, Health and Social Affairs defines the maximum allowable concentrations of polluting substances. The National Statistics Office of Georgia provides statistical data on the economic activities that are necessary for emission inventory. Municipalities are responsible for the urban planning and development/maintenance of local road infrastructure. They are also responsible for local traffic management, the provision of parking spaces for the vehicles and regulation of parking/stop rules.

Private companies operating in the industrial, energy and transport sectors are important stakeholders that contribute to air pollution. Georgia has about 3, 000 installations with stationary sources of air pollution – few of which work at full capacity however. Companies are obliged to report their emissions to the MEPA annually. This kind of reporting is part of the emission inventory system and this data is incorporated into the planning and policy making process.

4.3 LEGAL AND POLICY FRAMEWORK

The Law on Ambient Air Protection (1999) creates the legal framework for the protection of ambient air. The law incorporates some international requirements as well. For the implementation of the law, a number of bylaws and technical regulations are issued. The existing legislative framework covers only some modern approaches and does not fully reflect the EU requirements set in the EU-Georgia AA such as the Best Available Techniques (BATs) and Emission Limit Values (ELVs).

Several legal amendments were adopted in 2016 to reduce transport emissions. Specifically, the national standard for petrol quality was adjusted to Euro 5 standard in 2017 and step-by-step improvement of diesel standards is envisaged and aims to meet Euro 4 standard (50 mg/kg) by 2019. To promote the import of cleaner cars, some economic incentives have also been introduced in Georgia. Currently, the import of electric cars is exempted from excise duty and import tax and in 2016, excise duty was reduced by 60% for all hybrid vehicles (up to 6 years-old). From January 1 of 2017, the excise duty was increased by approximately 25% for almost all vehicles, but iwas doubled for 10 year-old cars and almost tripled for cars older than 14 years.

In addition to national legislation, Georgia is party to international treaties in the air sector and is obliged to implement the requirements. Georgia is a party to the Convention on Long-range Transboundary Air Pollution (CLRTAP) and Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP). It is planned to become a party of other key protocols – the Gothenburg Protocol, Protocol on Persistent Organic Pollutants (POPs) and the Protocol on Heavy Metals by 2019.

The EU-Georgia AA is a key document defining air protection related strategic directions in the future. The AA includes selected provisions from five air protection related EU directives. The National Action Plan for the Implementation of the AA (2014) and AA Implementation Roadmap (2016), provide a set of measures to implement the AA requirements in given timeframes. These actions are adequately reflected in the present Action Programme.

Georgia, as part of international society, strives to adjust its policies to international processes. From that standpoint, the Sustainable Development Goals (SDGs) are given due attention. The air protection-related section of the present program is in line with the SDGs (Target 11.6) and set measures to reduce the adverse per capita environmental impact of cities with special emphasis on air quality.

4.4 PROBLEMS AND PRIORITIES

The current regulatory framework for ambient air protection is considered ineffective in regulating emissions from transport and other economic sectors. For example, since 2004, technical checks (road worthiness test) of light duty vehicles (80% of the fleet) has no obligatory character that provides a solid basis to assume that most light vehicle are not technically well functioning, which is the main reason for air pollution from within the transport sector. Another example is PM10 and PM2,5, which are among the most significant air pollutants. National legislation sets limit values for more than 600 substances as air pollutants and there are no limit values defined for PM10 and PM2,5. All these significantly differ from the EU approach. The national limit values for most common pollutants, such as SO2, NO2, NOX, lead, benzene, CO, arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons (PAHs) are not in line with EU standards either. The introduction of BATs, including the integration of the new ELVs for specific stationary sources is also considered essential for the reduction in the emission of air pollutants. Therefore, amending the national legislation and transposing some of the EU standards as required by the AA is one of the priority directions in the coming years. In addition, establishing a well-functioning legal framework is also a necessary precondition for regulating air emissions from various sectors.

The quality and reliability of data on air quality is a necessary precondition for better planning in this field. The air quality monitoring network has been significantly expanded in recent years as mentioned above. Still, the national air quality monitoring and assessment system needs further improvement to provide comprehensive information for adequate policy decisions.

Finally, information on air quality has to be supplemented by the information on emission sources. Lack of statistical data allowing emission inventory and the identification of the pollution sources is another hindering factor for effective planning. Adequate technical, financial and human capacities are needed for this purpose within the state agencies involved in data collection and processing. The introduction of a projection system is important for the development of efficient emission reduction measures and the implementation of the forthcoming international obligations e.g. CLRTAP. As a

positive supplementary effect, the improved information on emission sources also contributes to the climate change policy that will be addressed in details further in the program.

To address the above-cited challenges and priorities, the following long-term goal (2030) and short-term targets for the next five years are set in the ambient air protection field:

GOAL:
To ensure that air is clean and safe both for human health and the environment throughout Georgia

TARGETS:
Target 1. Reduction of air emissions through the regulation of air pollutants from various economic sectors
Target 2. Development of an air quality monitoring and assessment system
Target 3. Improvement of the state system for emission inventories and the establishment of the emission projections system

4.5 ACTION PLAN

No.	ACTIVITIES	INDICATORS	COST ESTIMATE	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1. Reduction of air emissions through regulation of air pollutants from various economic sectors								
1.1	Harmonization of air protection legislation with EU legislation	Updated ambient air-related legislation	Donor grant	EU	MEPA		The lack of donor support delay of agreement procedures.	2018-2019
1.2	Establishment of emission limit values (ELVs) for large combustion plants	Adopted by-law "on establishment emission limit values (ELVs) for combustion plants"	Donor grant	Industrial emissions and industrial hazards EU Twinning Project	MEPA	MoESD	Delay of agreement procedures	2017-2019
1.3	Inventory of petrol storing and loading equipment and establishment of appropriate technical requirements aimed at reduction of VOC emissions	Report on inventory of existing facilities Amendments made in Government Decree #60 and #65 on Safety Norms of Petrol Stations/ Oil Storage Terminals of 15.1.2014 (establishing requirements for petrol storage terminals, loading equipment, mobile containers) Reduced VOC emissions from terminals for storing and loading petrol t/year	Donor grant	EU/Other Donors	MEPA	National Statistics Office of Georgia DES MoESD	Delay of agreement procedures Lack of finance resources	2018-2021

No.	ACTIVITIES	INDICATORS	COST ESTIMATE	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.4	Establishment maximum VOC content limit values for paints and varnishes and determine regulations for products placement on the market	Adopted Government order on establishing maximum (limit) VOC content limit values for paints and varnishes, analytical methods and control system including introduction of requirement for product labelling; Reduced VOC emissions from paints and vanishes t/year	Donor grant	EU/Other Donor	MEPA	MoESD MoF	Lack of finance resources delay of agreement procedures	2018-2021
1.5.	Application of limit values for the Sulphur content of certain liquid fuels (heavy fuel oil, gas oil and marine fuel)	Adopted by-law "on quality standards of certain liquid fuels (determines also sampling procedure, analytic methods and their implementation)" Reduced of Sulphur dioxide emissions (SO2) due to the combustion of liquid fuels t/ year,	Donor grant	Energy Community	MEPA		Delay of agreement procedures.	2017-2021
1.6	Gradual approximation of road diesel quality to European standards	Implemented legislative changes; Quantity of samples taken on Sulphur content; Reduced sulphur dioxide (SO_2) emissions by 33% from diesel-powered vehicles.	Envisaged within the existing budgetary resources	State budget	MEPA		Delay of procedures to submit new law	2017-2018
1.7	Titening regulation to reduce impact from construction sector on ambient air quality	Adopted regulation on safety and environmental measures in construction process	Envisaged within the existing budgetary resources	State budget	MoESD	MEPA Municipalities	Delay of agreement procedures	2017-2018

No.	ACTIVITIES	INDICATORS	COST ESTIMATE	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.8	Establishment of a modern and effective system for mandatory road worthiness test for all types of vehicles		Envisaged within the existing budgetary resources	State budget	MoESD	MEPA MoIA	Lack of finance resources	2019
1.9	Promotion of upgrading the fleet and use of ecologically clean vehicles		Envisaged within the existing budgetary resources	State budget	MoESD	MoESD		2018-2020
Target 2. Development of the air quality monitoring and assessment system								
2.1	Full automation and further expansion of monitoring network	Monitoring network is expanded by at least 3 automatic and 1 mobile stations	Budget: 1,371,875 Donor grant	State budget/ donor	MEPA NEA		Lack of finance and human resources	2017-2021
2.2	Creation of an automatic stations data management system and provide data on the website in real time	Monitoring Data available on web-site	Envisaged within the existing budgetary resources Donor grant	State budget/ donor	MEPA NEA		Lack of finance and expertise knowledge	2017-2018
2.3	Establishment and classification of zones and agglomerations for air quality assessment and management	Adopted by-law “on classification of zones and agglomerations”	Donor grant	EU	MEPA		Delay of agreement procedures	2020
2.4	Implementation of air quality indicative measurements in a different city on a quarterly basis	Published quarterly reports on air quality on specific air pollutants	399, 897	State budget	MEPA NEA			2017-2021

No.	ACTIVITIES	INDICATORS	COST ESTIMATE	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
2.5	Establishment of air quality assessment regime and criteria corresponding EU requirements	Adopted by-law "on Air Quality Standards"; Adopted by-law introducing requirements for air quality assessment.	Envisaged within the existing budgetary resources Donor grant	State budget / donor	MEPA		The lack of expertise knowledge in order to draft sub-law delay of agreement procedures	2017-2018
Target 3. Improvement of the state system for emission inventories and establishment of the emission projections system								
3.1	Introduction of electronic online data registration system for stationary sources and their annual air pollutant emissions	Functioning electronic online registration system air pollutant emissions from stationary sources Search system of stationary sources and their annual emissions and interactive map	141, 000	State budget	MEPA	MoF	Delay of implementation of emission inventory electronic system	2017
3.2	Further development of emissions inventory and establishment of emission projection system from various economic sectors	National report on annual emissions; Increased volume of emission inventory and quality improvement; Existing system of emission projection	Donor grant	EU Secretariat of CLRTAP	MEPA	MoIA National Statistics Office of Georgia, LEPL "Land Transport Agency"	Lack of statistical data difficulties occurred in improvement process of inventory The lack of necessary expertise knowledge for preparation projection methodology	2017-2019

5.
WASTE MANAGEMENT

The development of sound waste management and the prevention of the pollution caused by the waste is one of the priorities of the government of Georgia. Municipal and hazardous waste dumped illegally in the ground or improperly sealed landfills poses problems for soil and water (contaminated leachate pollutes surface and groundwater) and decomposing of organic matter cause remarkable emissions of methane, contributing to climate change. Improper handling of the waste, for example burning oils or plastic, produces toxic emissions to ambient air. Uncontrolled landfills and dumpsites are potential sources of diseases and are unsightly.

5.1 CURRENT STATUS

Despite a number of positive steps taken in recent years in the field of waste management in Georgia, the challenges that have accumulated in this sector over the years need to be adequately addressed in order to achieve the proper waste management standards at the national level.

Approximately 900,000 tons of municipal waste is generated annually in Georgia[2]. As for hazardous waste (HZW), information is limited just to some concrete waste streams such as obsolete pesticides accumulated from past activities (4,000t), polychlorinated biphenyl (PCB) (600t), waste containing arsenic substances (120,000t) and healthcare waste (1,500t annually). Until recently, the absence of waste recording and a reporting system is the main reason for the lack of information on HZW.

Georgia has 60 registered (official) municipal waste landfills and uncontrolled dumpsites in or nearby almost all villages. Only three of the country's official landfills (Tbilisi, Rustavi and Borjomi) were constructed in line with EU standards and three more regional landfills are in the pipeline (Adjara A/R, Imereti and Kvemo Kartli). As of 2016, 13 of the registered landfills were closed and 28 sites were upgraded. No noticeable actions have been taken on closing and remediating the dumpsite areas.

Out of the generated municipal waste, 700,000 tons of waste are disposed on official municipal waste landfills. There is no operational hazardous and inert waste landfill. Only a limited amount ofcertain types of HZW is incinerated. As no separate collection and recycling systems of specific waste streams exist, all types of generated waste (hazardous, non-hazardous and inert) end up at the municipal landfills. Therefore, landfills pose a high risk to human health and the environment.

Currently, waste collection services are not yet offered in most rural areas and waste disposal and recycling systems are still limited in Georgia. Waste management today is not a self-sustained system and is subsidized by the state or local budget. This is mainly due to the absence of a proper tariff policy and the ineffective fee collection system for waste management services. Specifically, the level of municipal waste fees determined by the municipalities is low and does not cover all costs for waste collection, transportation, treatment and/or disposal. Fee collection mechanisms are not effective either.

5.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

In the field of Waste Management, the Ministry of Environment Protection and Agriculture is responsible for the development and implementation of the unified state policy of waste management, elaboration of the National Waste Management Strategy, the Biodegradable Municipal Waste Management Strategy and the Waste Management National Action Plan and for the execution of

[2]National Waste Management Action Plan of Georgia (2016-2020)

the waste management state control. The Ministry carries out these functions through the Wastes and Chemicals Management Department and other relevant structural subdivisions. The state control of the waste management is carried out by the State Subordinated Entity - Department of Environmental Supervision of the MEPA, and by the Ministry of Internal Affairs of Georgia and the Municipalities within the scope of their competences.

The MEPA is the competent authority for the Basel Convention while trans-boundary shipment of waste on the spot is controlled by the Customs Department of the Revenue Service under the Ministry of Finance (MoF).

The Ministry of Labour, Health and Social Affairs of Georgia (MLHSA) and the Ministry of Environmental Protection and Agriculture of Georgia are responsible for the management and control of medical and animal waste respectively. The Ministry of Economy and Sustainable Development of Georgia defines waste transportation related requirements.

The municipalities are responsible for managing the collection, transportation and treatment of municipal waste until it reaches the transfer stations. The state-owned Solid Waste Management Company of Georgia under the Ministry of Regional Development and Infrastructure (MRDI) is responsible for the establishment and management of the regional non-hazardous landfills (except for non-hazardous waste landfills placed on the territories of the administrative boundaries of the Adjara A/R and Tbilisi Municipality), closure and upgrade of the existing disposal and management of transfer stations. The construction, operation and closure of landfills in the Adjara A/R and in the city of Tbilisi are the responsibilities of the relevant authorities in Adjara and Tbilisi municipalities respectively.

Waste generating companies and those which might be involved in waste management through waste recovery/recycling are other important stakeholders who play a significant role in the overall process of waste management.

5.3 LEGAL AND POLICY FRAMEWORK

The new waste law, the Waste Management Code came into force in January 2015. Prior to that, waste-related issues were regulated by a number of legal acts and to some extent by relevant conventions. To implement the Waste Code, which is based on the principles and approaches envisaged by the EU-Georgia AA and best international practices, a variety of secondary legislation hs been adopted and other legislation is to be developed as required by the Waste Code.

The Waste Code does not regulate waste generated from extractive industries (mining waste) and radioactive waste. Radioactive waste related aspects are tackled by the Law on Radioactive Waste (2015). Mining waste is supposed to be regulated by the Law on Mineral Resources. However, the law is not complete and does not correspond to the EUAA requirements. Mining waste poses a high risk to the environment and human health and therefore, will be regulated based on the relevant EU Directive.

Transboundary movement of the waste in Georgia is regulated by the Law on Import, Export and Transit of Wastes (1995). However, this law does not fully cover the requirements of the Basel Convention “on the control of transboundary movements of hazardous wastes and their disposal” including early notification procedures. To address the existing legislative gap in this regards a new

draft law on import, export and transit of waste (the Basel Law) has been developed and is to be adopted.

International aspects of the waste policy are largely framed by the commitments taken by the country under relevant conventions and AA. Specifically, Georgia is a party to the Basel Convention as mentioned above and the Stockholm Convention on Persistent Organic Pollutants, which set special requirements for its member states. Georgia has also signed but not ratified the Minamata Convention on Mercury, which requires the regulation of mercury when both this is a product and waste. Waste management related aspects are envisaged in the AA as well, which includes three EU waste-related directives.

The main national policy document, defining the vision and setting the 20-year objectives and targets in waste management, is the National Waste Management Strategy for 2016-2030, which was adopted by the government of Georgia in April of 2016. The National Waste Management Action Plan for 2016-2020, which was developed and adopted parallel to the strategy, defines the respective measures for achieving the set targets within the next five years. It also defines the responsible agencies, estimated costs and potential sources of financing. The strategy complies with the code that sets out the waste management hierarchy (prevention, preparation for re-use, recycling, other recovery, including energy recovery and disposal) and with the precaution, polluter pays, proximity and self-sufficiency principles) of Waste Management. The strategy is also in harmony with key EU environmental management principles. These two strategic documents create a solid basis for a systematic approach in waste management.

The need for developing modern systems for solid waste management and the associated infrastructure throughout Georgia is emphasized in the Social-Economic Development Strategy of Georgia "Georgia 2020" (2014). Another strategic document – the Regional Development Programme of Georgia for 2015-2017 – set the improvement of physical infrastructure and environment protection as one of the priorities and considered investing in waste management very important for improving the business environment in the regions.

Georgia is also committed to the SDGs. Specifically, to responding to the 11.6 target of SDGs, which implies the reduction of the adverse impact of cities, by paying special attention to waste management, Georgia has set its national indicator, meaning that 100% of urban solid waste (municipal waste) will be regularly collected and 80 % well managed by 2030.

5.4 PROBLEMS AND PRIORITIES

Despite the progress made in recent years, intensive work still needs to be undertaken in order to achieve the establishment of a modern waste management system at the national level. Despite the Waste Management Code (2015) being in place, some pieces of legislation are still missing. For example, the Waste Code does not cover mining waste, so a a separate law needs to be developed. In addition, for the implementation of the Waste Management Code, a number of bylaws have yet to be elaborated and approved. Some new concepts, like the Extended Producers Responsibility (EPR) introduced by the Waste Management Code also need to be addressed in legal and policy documents adequately in order to facilitate its implementation in practice.

Waste management needs a proper planning and implementation system in place. Until recently, the absence of a planning mechanisms was among the main drawbacks hindering the development

of this sector. Panning requires a robust data collection system, which was also missing in Georgia. Recent legal initiatives being implemented in this regard, pave the way to better data collection, reporting and planning. However, its implementation in practice still needs additional efforts.

The lack of waste separation activities and the absence of incentives, limits the re-use, recycling and waste recovery opportunities in Georgia, which are among the main pillars in waste management. The absence of a tariff policy and effective cost recovery mechanism for received waste management services (for both citizens and companies), as well as low tariffs and insufficient fee collection, are another set of challenges. This results in the poor condition of the technical equipment and infrastructure, which are not in line with international standards. Special attention should be drawn to Hazardous Waste Management starting from prevention and on-site separation to its final safe handling (incineration or disposal). All these need intensive capacity building of all involved parties which should be a continuous process throughout the whole system establishment and operation period.

Finally, proper infrastructure is crucial for waste collection, treatment, and disposal or at any other stage of waste management. The development of a countrywide waste collection network, the construction of new landfills (for hazardous, non-hazardous and inert waste) in line with the EU requirements, closing the old ones as well as illegal dumpsites, are among the main priorities nowadays in the waste management sector in Georgia.

To address the above described challenges in a timely manner, a long-term goal and five-year targets have been set:

GOAL:
To ensure that waste is prevented, reused, recycled/recovered and/or disposed of in a safe way for human health and the environment

TARGETS:
Target 1: Establishment of an effective waste management system
Target 2: Development of waste treatment and safe disposal infrastructure
Target 3: Implementation of the polluter pays principle and Extended Producer's Responsibility obligations.

5.5 ACTION PLAN

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1: Establishment of effective Waste Management system								
1.1	Harmonization of Waste Management legislation to EU regulations	The national waste management legislation is in line with EU directives / regulations dates	Donor grant	Donor	MEPA		Delaying the approval process Lack of Financing	2017-2019
1.2	Implementation of International Conventions obligations in the national Waste management legislation	Updated legislation (The Law of Georgia "on Waste Import, Export and Transit) based on Basel Convention	Donor grant	Donor	MEPA		Delaying the approval process Lack of Financing	2017-2018
1.3	Development and endorsement of the first Municipal Waste Management plans (for 5 years)	Approved waste management plans for all municipalities	Envisaged within the existing budgetary resources Donor grant	Donor/Local budgets	Municipalities	MEPA	Lack of support from the Municipalities; Lack of financing of the municipalities	2017-2018
1.4	Monitoring and control of the development/implementation of Company waste management plans	The number of company waste management plans agreed by the MEPA	Envisaged within the existing budgetary resources	State Budget	MEPA		Lack of capacities within private sector	2017-2021
1.5	Establishment of waste collection and transportation system	Implemented and approved system of registration/ certification of waste collection and transport operators. The number of registered / certified operators	Envisaged within the existing budgetary resources	State Budget	MEPA	Municipalities MRDI (Solid Waste Management Company) MoESD		2018

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.6	Establishment of national hazardous waste management system	Implemented Separate collection system of hazardous waste The number of registered / certified operators	880 000	Donor	MEPA		Lack of financing; Appearance of non-legal parallel businesses	2017-2020
1.7	Defining certain obligations for the waste producers	legislation for the Extended Producers Responsibility (EPR) is on place	Donor grant	Donor	MEPA	MoESD	Delaying the approval process Lack of Financing	2017-2018
1.8	Achievement of national waste collection minimum index	Collected: Municipal waste – 90% hazardous waste – 50%	Envisaged within the existing budgetary resources Donor grant	Donors/Local budgets	Municipalities	MEPA	Lack of Financing	2017-2020
Target 2: Development of Waste treatment and safe disposal infrastructure								
2.1	Improvement of the existing official landfills management, operation during the transition period and closure	number of Renovated landfills number of closed landfills	18 000 000	State budget	MRDI LLC Solid Waste Management Company of Georgia	MEPA	Lack of Financing	2017-2021
2.2	Closure/ Remediation of municipal dumpsites	The number of closed dumpsites	Envisaged within the existing budgetary resources Donor grant	Local budgets/Donor	Municipalities	MEPA	Lack of Financing	2017-2020
2.3	Establishment of Modern Regional landfills and waste transport stations	The number of modern regional landfills and transport stations	324,000,000	EBRD, KWF	MRDI LLC Solid Waste Management Company of Georgia	MEPA	Lack of Financing	2017-2021
2.4	Development of the hazardous waste management infrastructure	The number of constructed hazardous waste infrastructure	Donor grant	Donor	MEPA		Lack of Financing	2017-2021

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 3: Implementation of polluter pays principle and Extended Producer's Responsibility obligations								
3.1	Development of the cost recovery system for the private sector and Municipalities	Effective waste fee collection system in municipalities is on place and landfill gate fees identified; Existing tariff system for companies revised	Envisaged within the existing budgetary resources Donor grant	Donor/Local budgets	Municipalities	MEPA MoESD MoF MRDI	Lack of financing; Lack of controls and monitoring systems	2017-2020
3.2	Defining private and public sector cooperation forms in waste management	Developed Policy Document defining cooperation forms in waste management between private and public sectors	200,000	Donor	MEPA	MoESD MoF	Activities related to complexity (there are too many different forms depending on the activity type)	2017-2018
3.3	Implementation of measures for the management of different specific waste streams	Properly managed: Batteries - 20% Waste Oils - 50% Packaging waste - 40% WEEE - 20% Waste Tyres - 50% Accumulators - 60% End of Life Vehicles (ELV) - 20%	Donor grant	Donors/Private sector	MEPA	MoESD	Lack of Financing	2017-2020
3.4	Implementation of Extended Producer's Responsibility encouragement mechanisms	Increased rate of specific waste streams prevention and recycling	1,175,000	Donor	MEPA	MoESD MoF	Delaying the mechanism development/approval process Resistance from the private sector	2017-2020

6. CHEMICALS MANAGEMENT

The use of natural and artificial chemical substances in industry, agriculture and households is an integral part of modern life. However, chemicals may pose serious risks to human health and the environment if not handled adequately. Therefore, safe management of chemicals is significant in order to reduce environmental pollution at the source and decrease risks to humans and ecosystems.

6.1 CURRENT STATUS

Available information on the use of chemicals, and especially industrial chemicals, is very limited in Georgia. An integrated database (register) of chemicals imported, used and exported is lacking. Thereforethe information on the types and amounts of chemicals produced and/or used in Georgia is missing. Common information on the observation of chemical safety requirements is not available either.

Generally, the following types of chemicals are currently in use in Georgia: agrochemicals (fertilizers, pesticides and herbicides.), disinfectants, pest control chemicals, petroleum products, detergents, glues, solvents, paints and other chemicals for household use. It shall be noted that two significant environmentally sensitive groups of chemicals – Ozone Depleting Substances (ODS) and Persistent Organic Pollutants (POPs) are not produced in Georgia and their import and transit are either prohibited or strictly regulated.

6.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

Chemical management at the national level is divided between various ministries and governmental agencies. Specifically, the Ministry of Environmental Protection and Agriculture (MEPA) of Georgia issues permits for the production of chemicals and the construction of storage facilities for toxic and other hazardous substances. The MEPA also issues permits for the transboundary transportation of substances regulated by the Montreal Protocol on Ozone Depleting Substances – (ODS) and implements a procedure of prior informed consent in the case of the import of chemical substances specified in the Rotterdam Convention (on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade). The functions of the Ministry include the control of the import, labeling, storage, production (packaging), transportation, selling and safe usage of pesticides and agrochemicals; the control of the quality of pesticides and agrochemicals for sale; the uncovering and control of violations during trade with chemicals and pesticides. The MEPA is responsible for overseeing the compliance with permit conditions. The ministry is also in charge of ensuring the coordination of the implementation of the National Action Plan for the implementation of the Stockholm Convention on Persistent Organic Pollutants and for the inventory, assessment and management of persistent organic pollutants in the country. The MEPA is also involved in the development process of the legislation related to chemicals management and is authorized to conclude the appropriate international agreements. The LEPL National Food Agency of the Ministry is responsible for the registration of agrochemicals and pesticides and production of the State Catalog of Registered Pesticides and Agrochemicals.

The Ministry of Labour, Health, and Social Affairs (MLHSA) of Georgia, within its competence, is responsible for the classification of chemical substances and setting rules for assigning toxicity and hazard classes to chemicals, as well as determining the requirements for packaging and labelling. The MLHSA is also responsible for setting tolerances for pesticides and other agrochemical residues in food and drinking water, establishing the hygienic norms of harmful chemical content in ambient air and in the air of the working environment and soil, setting rules and norms for the use of disinfectants and supervising their implementation.

The Customs Department of the MoF of Georgia is responsible for the regulation and control of the transboundary transportation of chemicals. The special state entity - Emergency Management Service (EMS) is responsible for assessing all potential threats posed by chemicals and for ensuring emergency responses on the whole territory of the country, The EMA is also involved in the control over the management of chemicals. This Service also carries out the initial assessment for the identification of potential hazardous substances and ensures the evacuation of affected people and isolation/localization of contaminated sites.

Moreover, the Interagency Coordinating Council for Countering Chemical, Biological, Radiological and Nuclear (CBRN) Threats has been established under the State Security Service of Georgia to ensure better coordination on matters related to chemicals (and other fields that pose risks). The competences of the Council include the periodical revision and update of the National Chemical, Biological, Radiological and Nuclear (CBRN) Threat Reduction Strategy, development of the Action Plan for the implementation of the strategy, revision and update of the Action Plan as appropriate and overseeing its implementation, coordination of activities carried out by different agencies in the chemical, biological, radiological and nuclear field.

Along with the state agencies, the accredited scientific-research laboratories, identifying chemical substances and determining their concentrations in food and the environment, are also involved in the management of chemicals if requested.

6.3 LEGAL AND POLICY FRAMEWORK

There is a remarkable gap in chemicals management legislation at present, as there is no framework law on the management of chemicals in Georgia. The Law on Hazardous Chemical Substances (1998) was abolished in 2010 and a new law has not yet been established. Some aspects related to chemical substances are regulated by the Law on Pesticides and Agrochemicals (1998) and the Law on Licenses and Permits (2005). Specifically, the Law on Pesticides and Agrochemicals regulates relations arising from the registration, manufacture, labelling, packaging, marketing, storage, handling, use, decontamination, disposal, information exchange, advertising, and export-import of pesticides and agrochemicals, while the Law on Licenses and Permits obliges legal persons to obtain permits in cases of import, export, re-export and transit of ozone depleting substances. These laws cover only a small part of the chemicals that are used in Georgia. Although a number of regulations related to specific issues have been developed and enacted following these laws, the national legislation pertinent to chemicals management is incomplete.

The management of chemicals in Georgia is being implemented in accordance with the requirements of the national legislation and commitments undertaken by the country through a number of international treaties. Specifically, Georgia is a party of the following environmental conventions: The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (the PIC Procedure), the Vienna Convention for the Protection of the Ozone Layer and the Stockholm Convention on Persistent Organic Pollutants. As it was mentioned above Georgia has signed, but has not yet ratified the Minamata Convention on Mercury. Furthermore, policymaking related to the management of chemicals in Georgia is greatly influenced by the UN Environment hosted Strategic Approach to Sound Management of Chemicals (SAICM), which provides a policy framework of chemicals management to participating countries.

The National CBRN Threat Reduction Strategy and Action Plan for 2015-2019 is an important national policy document in the field of chemicals management. It addresses the issue of chemical safety and defines actions for the prevention, identification, preparedness and response for specific threats. Furthermore, the Action Plan specifies the kinds of actions to be implemented for the development of international cooperation in the field of CBRN threat reduction.

The EU-Georgia AA commits Georgia to undertake specific actions for improving chemicals management. Specifically, according to the AA, Georgia has to align its national legislation with the three EU regulations: on Import and Export of Chemicals and on Classification, Labeling and Packaging of Chemical Substances and Mixtures (the CLP Regulation) and on Ozone-depleting substances. Chemicals management contributes largely to other safety, health and environmental actions. The implementation of the principle of the pollution prevention as it is laid down in the EU Industrial Emissions Directive, SEVESO Directive on the Control of Major Accident Hazards Involving Dangerous Substances, Water Framework Directive, Clean Air Policy, etc. all rely on the proper management of chemicals. Specific aspects of these areas of environmental concern are covered in other chapters of the NEAP-3, but chemicals management set a significant prerequisite to reduce the existing or potential harm caused by the chemicals. It should also be mentioned that along with the CLP Regulations, the EU regulation on Registration, Evaluation, Authorization and Restriction of Chemicals (REACH Regulation) is one of the cornerstones of the EU Chemicals policy and is to be paid due attention in Georgia also in setting up the chemicals management system.

The Sustainable Development Goals (SDGs) set the specific target (12.4) to be achieved in chemicals management. In particular, it is planned to achieve the environmentally sound management of chemicals and reduce significantly their release into the air, water and soil by 2020 in order to minimize their adverse impact on human health and the environment.[3]

Upgrading the system for the registration of pesticides and chemicals allowed for use in the country and the revision of the list of pesticides that are currently in use for the purpose of the selection of pesticides that are less harmful to human health and the environment are among the priorities of the Strategy for Agricultural Development in Georgia for 2015-2020.

The Georgian National Implementation Plan of the Stockholm Convention on Persistent Organic Pollutants (POPs) is another policy document in the field of chemicals management. The plan is currently being updated to include the inventory of nine new substances added to the Stockholm Convention in 2011 and the assessment of the current plan.

6.4 PROBLEMS AND PRIORITIES

The current chemicals management system in Georgia is rather weak. An incomplete legal basis (except for the legislation related to pesticides and agrochemicals) and a lack of data are among the major challenges hindering the introduction of European practice of chemicals management in Georgia. For the implementation of the Georgia-EU AA and the National CBRN Threat Reduction Action Plan, the relevant legislation in the field of chemicals management has to be developed and approved. Since the EU has implemented the UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS), the relevant amendments, reflecting GHS have to be made to the national legislation also.

[3]Sustainable Development Goals (Goal 12)

Adequate information, necessary for the management of chemicals, is also missing as mentioned above. The introduction of an effective integrated system (preferably an online system) will significantly promote the exchange of data on transboundary transportation or issued consents/ permits. This system will contribute to the efficiency of the various agencies involved in the field of chemicals management. Therefore, the improvement of the legal basis, as well as data collection and the creation/maintenance of an integrated state register of chemicals is crucial for improving the chemicals management system at the national level.

In addition to establishing a proper system for chemicals management, certain chemicals are subject of special attention due to their dangerous character. POPs (pesticides, PCBs, dioxins, furans, etc.) and ODSs are among these chemicals and there is a need to address them adequately in order to lessen the risk they create to the environment and human health. Mercury is another chemical that poses a risk to human health and needs to be handled in a safe manner. By signing the Minamata Convention on Mercury, Georgia confirmed its willingness to take steps in introducing the modern practice for Mercury management. However, some preparatory actions are to be implemented before the convention is ratified by the country.

Taking specific measures regarding the above listed chemicals and improvement of their management practice will also contribute to the implementation of the obligations undertaken by Georgia under the relevant international agreements in the field of the chemical product management, including the environmental conventions and will also facilitate to the strengthening of the international cooperation.

It is worth mentioning that chemicals pose a particularly high risk to the environment and human health in the case of industrial accidents. To minimize these risks, the necessary legal framework must be developed and the appropriate capacities must be strengthened in the state agencies. Georgia has undertaken the obligation to implement certain provisions of the EU Seveso II Directive on industrial accidents by the EU AA as well. Therefore, the implementation of an integrated inspection system for dangerous industrial facilities is foreseen.

All of the above mentioned leads to the following long-term goal and 5-year targets in the field of chemicals management:

GOAL:
To ensure that chemicals are managed in a sound and environmentally friendly manner

TARGETS:
Target 1: Improvement of the chemicals management system
Target 2: Improvement of the management of certain chemicals such as POPs, ODSs, mercury and mercury compounds at national level
Target 3: Implementation of an integrated inspection system for dangerous industrial facilities

6.5 ACTION PLAN

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1: Improvement of the chemicals management system								
1.1	Elaboration and adoption of the law "on chemicals management"	Adopted law on Chemicals Management	Donor grant	Donor	MEPA	EMS MLHSA MoESD LEPL Revenue Service	The lack of financial and expert support from the donor's; The delay in the adoption of legislative act	2017-2019
1.2	Creation and operation of the unified state register of hazardous chemicals	Unified functioning database of the hazardous chemicals	Donor grant	Donor	MEPA	EMS MLHSA MoESD LEPL Revenue Service	The lack of financial and expert support from the donor's	2017-2021
1.3	Implementation of unified identification mechanism for the chemically contaminated objects	Approved mechanism for identification of chemically contaminated objects	Donor grant	Donor	MEPA	EMS MLHSA MoESD	The lack of financial and expert support from the donor's	2017-2020
1. 4	Elaboration/Adoption of the legislation on classification, labelling and packaging of substances and mixtures	Adopted legislative act on classification, labelling and packaging of substances and mixtures	Donor grant	Donor	MEPA	MoF	The lack of financial and expert support from the donor's; The delay in the adoption of legislative act	2017-2021

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.5	Organization of trainings for the appropriate personnel of the Customs Department on transboundary movement of the certain hazardous chemicals defined by Rotterdam Convention	The number of trained staff	Donor grant	Donor	MEPA	LEPL Revenue Service	The lack of financing and expertize	2019-2021
Target 2: Improvement of management of certain chemicals such as POPs, ODSs, Mercury and Mercury compounds at national level								
2.1	Updating the National Implementation Plan (NIP) on POPs	Adopted Updated National Implementation Plan	Donor grant	Donor	MEPA		The delay in the adoption of legislative act	2017-2018
2.2	Performing POPs inventory and assessment of their impact on the human health and the environment	Prepared inventory report	Donor grant	Donor	MEPA		The lack of financial and expert support from the donor's	2017-2020
2.3	Implementation of assessment and remediation measures for the obsolete pesticide contaminated sites	The amount of the remediated areas contaminated by obsolete pesticides decreased	Donor grant	Donor	MEPA		The lack of financial and expert support from the donor's	2018-2021
2.4	Decontamination of the PCB stocks in Georgia	Assessment report on PCB stocks; The amount of decontaminated PCB; Developed PCB decontamination technology	Donor grant	Donor	MEPA		The lack of financial and expert support from the donor's	2019-2021
2.5	Reduction of the environment pollution with Dioxin-furans	Assessment of the environment pollution with Dioxin-furans has been carried out	Donor grant	Donor	MEPA		The lack of financial and expert support from the donor's	2019-2021
2.6	Reduction of ODS consumption	Consumption is decreased by 35%	Donor grant	Donor	MEPA	MoF		2017-2020

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
2.7	Developing the by-law on establishment of the quota system on importing ODS containing equipment	Adopted by-law	Donor grant	Donor	MEPA	Mof		2017-2018
2.8	Developing the by-law on management (recovery, recycling, reclaim and destruction) and monitoring of ODSs	Adopted by-law	Donor grant	Donor	MEPA			2019-2021
2.9	Carrying out Initial Assessment of Mercury sources	Identified quantity of the Mercury sources; National Report about Mercury	Donor grant	Donor	MEPA		Failure of the implementing organization to comply with its responsibilities	2017
2.10	Elaboration of the legislative basis for the management of Mercury and Mercury compounds	Legislative act "On Mercury"	Donor grant	Donor	MEPA		The lack of financial and expert support from the donor's; The delay in the adoption of legislative act	2018-2020
Target 3: Implementation of the integrated inspection system for dangerous industrial facilities								
3.1	Elaborating and adopting of law on Major Accident prevention	Adoption of law on Major Accident prevention	Donor grant	Donor	MEPA		The delay in the adoption of legislative act	2017-2018
3.2	Elaborating and adopting of by-law On Safety Documentation and Major Accident Prevention Measures	Adoption of by-law On Safety Documentation and Major Accident Prevention Measures	Donor grant	Donor	MEPA		The delay in the adoption of legislative act	2018
3.3	Supporting the improvement of capacities for inspection and control of the dangerous facilities	The number of trained staff	Donor grant	Donor	MEPA	MoIA MLHSA MoESD		2017-2018

7.
BIODIVERSITY PROTECTION

Nature does provide with a number of life-sustaining ecosystem services, like food, timber and non-timber products, clean water. Ecosystems protect environment by prevention of erosion and landslides, they create conditions for recreation and tourism, etc. Human life and welfare as well as development of many economic sectors in the country rely significantly on these ecosystem services. Main ecosystems are forests, freshwater bodies and wetlands, marine and coastal areas, high-mountains, semi-deserts and steppes. Degradation of ecosystems and the extinction of species is a global problem and Georgia also faces a number of serious challenges in this respect.

7.1 CURRENT STATUS

The Caucasus is considered as one of the distinguished regions of the world with respect to biodiversity. Georgia is rich in various types of ecosystems, habitats and associated species. 4, 130 vascular plants, 812 mosses, 7, 000 fungi species and 16, 054 fauna species have been recorded in Georgia, 758 of which are chordates (19 mammals). A high level of endemism is evident in Georgia around 21% of flora is endemic to the country. Many plant and animal species are critically endangered or have already been extinct. For example, with regard to mammals, four species are extinct at the national level and five species are critically endangered (lynx, leopard, striped hyena, red deer and wild goat). Threatened species are included on the Red List of Georgia, which, at present, includes 141 animal species and 56 wood plant species. Species are closely linked to their habitats that provide them required resources. Therefore, species protection cannot be separated from habitats/ecosystem/ biodiversity protection.

Intensified agriculture, infrastructure development, illegal hunting, fishing and logging, the pollution of the environment, unsustainable tourism and recreational activities are considered as the main pressures and causes for the loss of species and degradation/fragmentation of habitats/ecosystems. For example, within the period of 1995-2005, the trout population has decreased by at least 30% and only 15 nesting places remain for the Eastern Imperial Eagle (Aquila heliaca) in Georgia. Another example is the Cinereous Vulture (Aegipius monachus), one of the rarest Carrion Birds in Georgia (and worldwide), which is affected significantly by the degradation of nesting habitats, direct disturbance by humans and hunting[4].

Among the marine mammals found in the Georgia's Black Sea waters, the bottlenose dolphin (Tursiops truncatus) is most at risk and numbers about 100 only. All six species of sturgeon (Acipenser sturio, A. stellatus, A. gueldenstaedti, A. nudiventris, A. persicus and Huso huso) which are found in Georgian coastal waters and river deltas are also threatened and are included in the national Red List. A. sturio is also included in the IUCN Red List as critically endangered.

Protected Areas (PAs) is an effective tool for protecting species and habitats. Currently, the total area of Georgia's PAs amounts to 597, 556 ha (8.57% of Georgia's territory). Javakheti Protected Area (including Javakheti National Park and five managed reserves), Pshav-Khevsureti Protected Area and Machakhela National Park, as well as 21 Natural Monuments have been established since 2011. Accordingly, since 2011, the country's protected areas network has increased by 88, 234.3 ha (17.3%).

[4]Georgia's Fifth National Report to the Convention on Biological Diversity (2014)

7.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

The Ministry of Environmental Protection and Agriculture (MEPA) of Georgia is the key state authority responsible for the implementation of state policy in the field of environmental protection and state management of environmental protection and use of natural resources (except for mineral resources, oil and gas) as well as elaboration of measures for protection and regulation of biodiversity components (plant and animal species, their habitats and generally the ecosystems) and participation in this process, selecting Emerald Sites. Elaboration of state policy in establishment, functioning and management of the protected areas system, coordination and control of actions are also the ministry's responsibility. Temporary or permanent abolition of protected area, reduction of its territory or downgrading of its category can only be made by the Parliament of Georgia on the basis of the conclusion of the Ministry of Environmental Protection and Agriculture of Georgia.

The Department of Biodiversity and Forestry Policy is a structural unit of the Ministry. Its functions include participation in developing and implementing of state policy in protection and conservation of the components of biodiversity and management and regulation of biological resources, throughout the Georgia, within the scope of its authority, as well as participation in developing of state policy in forest management and supporting its implementation. Protected areas (382 017 ha) and their resources are managed by the LEPL Agency of Protected Areas (APA) and the State Forest Fund, except for the forests of local importance. Protected areas of the State Forest Fund and the Forest Fund parts located on the territories autonomous republics of Abkhazia and Adjara are managed by the LEPL National Forestry Agency (NFA).

State control in the field of environmental protection and use of Natural resources (except for minerals, oil and gas) is executed by the State Subordinated Entity - Department of Environmental Supervision of the Ministry. The Ministry sets quotas for the use of biological resources and issues the licenses for the use of natural resources (except for the license for obtaining or using mineral resources) through the LEPL National Environmental Agency. Functions of the Ministry include also regulation of fishing and hunting related processes, organizing and coordinating the state system of biodiversity monitoring, development of aquaculture in Georgia and regulation of legal aspects of aquaculture development. The MEPA is also responsible for the preservation of animal and plant agro-biodiversity through its LEPL Scientific-Research Center of Agriculture, which was established in 2014.

Ilia State University and the Botany and Zoology institutes within the system of this university conduct research and monitoring of biodiversity and submit information and recommendations to the MEPA as requested. In addition, universities and research institutes are outsourced to undertake biomonitoring on particular species based on tender requirements announced by the MEPA. Non-governmental organizations (NGOs) operating in the field of biodiversity also implement important and necessary analytical and research activities, which are used by the MEPA for making some specific decisions.

The LEPL National Agency for Cultural Heritage Preservation under the Ministry of Culture and Sport of Georgia is a partner of the LEPL Agency of Protected Areas in the process of preparing nominations for UNESCO natural world heritage sites.

7.3 LEGAL AND POLICY FRAMEWORK

In Georgia, the main legal acts regulating nature and species protection are the Law on Environmental Protection (1996), the Law on Wildlife (1996), the Law on the Red List and Red Book of Georgia (2003) and the Law on the System of Protected Areas (1996). Fishery and establishing of hunting farms are regulated by by-laws. New draft laws on Biodiversity and on Hunting have been prepared, which are considered to become the main legal instrument in this field, as well as for the alignment of Georgian legislation to the EU requirements and implementation of multilateral agreements related to biodiversity. In addition, there are a number of laws on the establishment and management of specific protected areas. Prohibiting or allowing introduction of living genetically modified organisms (GMOs) in Georgia, their use, distribution and introduction to nature, as well as other issues related to living GMOs are regulated by the Law on Living Genetically Modified Organisms (LMOs) (2014), which was developed in line with the Cartagena Protocol on Biosafety to the Convention on Biological Diversity (CBD). The law also regulates transboundary movement and the use of LMOs in the locked systems.

Georgia is a party to all of the major international agreements relevant to biodiversity conservation and has to comply with their requirements. Georgia is a party to following environmental conventions, their protocols and agreements: CBD and its Cartagena Protocol on Biosafety, Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), the Ramsar Convention on Wetlands of International Importance, the Convention on Conservation of European Wildlife and Natural Habitats (Bern Convention), the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), the Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea (ACCOBAMS) and the Bonn Agreement on the Conservation of Populations of European Bats.
The main national policy document formulating national policy in the field of biodiversity is the National Biodiversity Strategy and Action Plan (NBSAP) for 2014-2020 (2014), approved with the Decree of the Government of Georgia N343, of May 8, 2014, and developed in line with the CBD. NBSAP sets 21 national targets and respective actions, which aim to preserve the values of biodiversity, raise public awareness regarding the significance of biodiversity and benefits derived therein, integrate biodiversity aspects in various sectors and enhance biodiversity status and the mitigation of threats to biodiversity. The NBSAP contains well reflected targets and activities for protected areas as well.

The EU-Georgia AA also sets concrete requirements for Georgia which were translated into actions in the AA Implementation Roadmap (RM). The RM covers actions related not only to conservation activities, but also to sustainable fisheries, the designation of emerald sites, awareness raising, etc. Another policy document setting a clear target in this field is the SDGs, which encourages countries to take urgent actions “to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species”.

Biodiversity-related aspects are reflected in the Strategy of Agricultural Development of Georgia (2015-2020), approved with the decree N67 of February 11, 2015, which defines climate change, environment and biodiversity conservation as one of the strategic directions for the agricultural development (Direction 3.7). Specifically, good agricultural practices, biodiversity conservation and environmental sustainability programs, developing/managing gene bank for the conservation of agro-biodiversity and promoting climate smart agriculture practices, are given due consideration in the document.

7.4 PROBLEMS AND PRIORITIES

The degradation and fragmentation of natural habitats is the main reason behind reduced populations of plant and animal species. Due to the intensive recent developments in the sector of energy (i.e. construction of hydropower stations), agriculture (i.e. overgrazing) and infrastructure (i.e. construction of roads), pressures on natural habitats are increasing. If not addressed adequately and timely, this may cause not only fragmentation but also pollution of natural habitats (i.e. by pesticides and fertilizers). The degradation of habitats has a negative impact on populations of various plant and animal species. Therefore, the integration of biodiversity aspects at early phases of the planning and decision making process is crucial. The ongoing law-drafting process, which aims to bring national legislation in line with the AA requirements, is promising in this regard. Specifically, the new Environmental Assessment Code introduces an EU approach with respect to EIA and SEA. Other instruments are envisaged by the draft law on biodiversity. All of these will promote the integration of biodiversity aspects, along with the others, at the planning and decision making stages. The EIA and SEA issues are addressed in chapter 2 on environmental governance.

Apart from the adverse impact on biodiversity from the degradation/fragmentation of habitats due to various economic activities, the unsustainable use of natural resources is another problem posing a threat to species and ecosystems/habitats, including water habitats. The upcoming Law on Biodiversity, as well as a draft law regulating hunting and fishing, which are in line with the AA, will create a favorable legal framework for the sustainable management of biodiversity. It is also expected that this law will promote the prevention of illegal fishing and hunting, which, despite the improved enforcement system, still remains a problem in Georgia and poses a significant threat to biodiversity. Due to the irregular monitoring of biodiversity and consequently, the lack of comprehensive data, it is difficult to pass judgement on the specific impact of the unsustainable use of biodiversity and illegal fishing and hunting. However, a recorded number of revealed illegal actions identified by DES, deserves a due consideration.

A special emphasis should be placed on marine biodiversity, which is under threat due to eutrophication and pollution of the Black Sea by oil and heavy metals, as well as spreading of invasive species. Presently, there are 26 invasive species recorded in the Black Sea and their impact on marine ecosystems is drastic. For example, one of the invasive species known as the veined rapa whelk has caused a decrease in the populations of filter feeding bivalve mollusks, which has led to the deterioration of water quality. It has also lead to a decrease in the food bases of benthic fish, including important species such as sturgeon.

The regular monitoring and existence of reliable data on biodiversity, including marine biodiversity, are crucial for planning and establishing a sustainable management practice in Georgia. Thus, the creation of adequate legislation, a regular monitoring system, as well as the promotion of the law enforcement process, is central in this regard.

Certain species and habitats are of particular concern due to their status or importance in supporting biodiversity. Examples of these kinds of habitats include sites for resting, reproduction and nesting of migratory birds, forests or meadows of high conservation value and so on. It is necessary to pan and implement the respective measures aiming at the protection of these sites. The designation of Emerald sites and the establishment of an Emerald network according to the Bern Convention (equivalent to Natura 2000 habitat areas) will be instrumental in addressing this challenge and requires studies, identification of sites and designation. As of today, the designation process has been

initiated for 34 sites, but further expansion is needed. It is also necessary to implement measures for the conservation of endangered and vulnerable species such as deer, chamois, lynx, tur, sturgeon, trout and dolphins. Therefore, protecting and preventing the loss of certain species and habitats is one of the priorities.

In the light of all above mentioned, the expansion of protected areas is an obvious step for ensuring the protection of species and their habitats. Despite the considerable progress achieved in this direction, in respect of geographical coverage of the country and representativeness of Georgian biomes, critical gaps still exist, in particular in the Central Caucasus mountain range (the regions of Svaneti, Racha, and Lechkhumi). Though, some procedures for the establishment of a Racha protected area have already started. World Wildlife Fund (WWF) is conducting a feasibility study after which the relevant legislation act will be prepared. Moreover, PAs are isolated and no protected area network has yet been developed in Georgia. The absence of a PA network is a significant obstacle for free movement of animal species and for their conservation respectively. Therefore, there is a need to establish a PA network.

In addition to the expansion of PAs and the establishment of a PA network, protection of biodiversity and concrete species, as well as the rational use of natural resources, it is crucial that each PA has its own management plan. The engagement of the local population in the management of PAs is key for the improvement of management systems. Cooperation with other stakeholders, raising awareness of the general public, increasing social responsibility and promoting behavioral changes are among the aspects which need special attention in this regard. Raised awareness coupled with an improved law enforcement system will significantly promote the effective management of protected areas.

Protected Areas in addition to the protection of biodiversity, have good potential to promote the development of ecotourism in the country, which will have a positive impact on the socioeconomic status of the local population. To balance the protective and recreational functions of PAs, it is important to have ecotourism development strategies and action plans for PAs considering the carrying capacity of each area, as well as its potential in terms of attracting eco-tourists. The appropriate infrastructure and services for various target groups are to be developed/ improved.

Considering all of the above mentioned, the following long-term goal and 5-year targets have been formulated:

GOAL:
To ensure that biodiversity is, conserved, restored and sustainably used, ecosystem processes and services are maintained, and a healthy environment is sustained

TARGETS:
Target 1: Promotion of sustainable management of biodiversity
Target 2: Protection and prevention of the loss of species and habitats
Target 3: Expansion of the protected areas network
Target 4. Improvement of the protected area management system
Target 5: Promotion of sustainable eco-tourism in protected areas

7.5 ACTION PLAN

TARGETS	ACTIVITIES	INDICATOR(S)	COST ESTIMATE (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1: Promotion of sustainable management of biodiversity								
1.1	Assessment of status of selected species fromGeorgian Biodiversity	Reports of conducted assessment and inventory	Envisaged within the existing budgetary resources Donor grant	State budget/ Donor	MEPA		Lack of financial and human resources	2017-2021
1.2	Finalization and adoption of the law on biodiversity	Adopted Law	Donor grant	GIZ	MEPA		Difficulties in achieving consensus among the stakeholders	2017-2018
1.3	Development of Legislation on hunting and fishing	Developed Legislation on hunting and fishing	Donor grant	Donor, GIZ, FAO	MEPA		Difficulties in achieving consensus among the stakeholders	2019-2020
1.4.	Establishment of effective Biodiversity monitoring system	Functioning monitoring system	Envisaged within the existing budgetary resources Donor grant	State budget/ UNDP, GIZ	MEPA		Constrains in financial and human resources	2017-2021
1.5	Development of National Strategy on Sustainable Hunting	Developed National Strategy on sustainable hunting	Envisaged within the existing budgetary resources Donor grant	State budget/ Donor FAO	MEPA		Procedural delays	2018-2020
Target 2: Protection and prevention of the loss of species and habitats								
2.1	Conducting conservation measures regarding endangered species (identified in NBSAP)	Number of elaborated and implemented conservation plans for the identified species	Envisaged within the existing budgetary resources Donor grant	State budget/ Donor	MEPA		Lack of financing; Conflict of interests with land owners	2018-2021

TARGETS	ACTIVITIES	INDICATOR(S)	COST ESTIMATE (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
2.2	Identification and designation of special protection areas (SPA) for bird species	Number of established SPAs	Envisaged within the existing budgetary resources Donor grant	State budget/GIZ/ Donor	MEPA	Ilia State University NACRES	Lack of financing;	2017-2018
2.3	Improvement of Habitat protection	Number of established emerald sites and identified eco-corridor areas	Envisaged within the existing budgetary resources Donor grant	State budget/GIZ/ Donor	MEPA		Lack of financing	2017-2021
2.4	Research of pressure on inland water eco-systems	Results of researches on pressure on inland eco-systems	Envisaged within the existing budgetary resources Donor grant	State budget/ Donor	MEPA	Ilia State University NACRES		2017-2021
2.5	Designation of 5 Emerald sites	Sites designated by Georgian Government	Envisaged within the existing budgetary resources Donor grant	State budget/ Donor	MEPA		Site designation process delay Lack of financing	2017-2018
2.6	Study and selection of candidate Emerald sites for their designation	Reports about studied territories	Envisaged within the existing budgetary resources Donor grant	State budget/ Donor	MEPA		Lack of financing	2017-2020
Target 3: Expansion of protected areas network								
3.1.	Establishment of new protected areas	Adopted laws on the establishment of following Protected Areas: Racha protected area Erusheti protected area Pontus Oak managed reserve Rioni Delta protected area	Donor grant	WWF	MEPA APA		Absence of Financing	2019-2021

TARGETS	ACTIVITIES	INDICATOR(S)	COST ESTIMATE (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
3.2.	Creation of support Zones in new protected areas	Created Buffer Zones in newly established protected areas	Donor grant	KFW	MEPA APA		Lack of Financing; Conflict of interests with local population	2019-2021
3.3.	Expansion of existing protected areas	Amendment to the law adopted: Expansion of the: Kazbegi National Park	Envisaged within the existing budgetary resources	State budget	MEPA APA	State Institutions	Lack of Financing	2018-2019
3.4.	Prepare nomination of the sites of world heritage and submitting for approval	The list of world heritage sites are submitted for approval	295,000	Succow Foundation WWF	MEPA APA	Succow Foundation	Lack of Financing	2018-2020
3.5.	Presentation of new protected areas for a Green List	At least one protected area is presented for the "Green List"	30,000	Donor	MEPA APA		Lack of expertise and financing for conducting technical-economic researches	2018-2020
3.6.	Development of cooperation between the protected areas of the cross-border and neighbouring countries of Georgia	Transboundary cooperation concept and implementation mechanism developed Pilot projects with the protected areas of the cross-border and neighbouring countries of Georgia started	Donor grant	TJS	MEPA APA		Lack of Financing; Conflict of interests with the priorities ofother countries	2018-2020
Target 4. Improvement of protected area management system								
4.1.	Development of Qualification raising concept for Agency of protected areas staff	Training manuals and modules developed Number of trainings and internships for the staff of the Agency of Protected Areas	Donor grant	Donor	MEPA APA		Lack of Financing	2017-2018

TARGETS	ACTIVITIES	INDICATOR(S)	COST ESTIMATE (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
4.2.	Development of management plans for protected areas	Developed management plans for protected areas	300, 000	Donor	MEPA APA		Lack of Financing	2018-2020
4.3.	Creation of law enforcement guidebook for protected areas	Adopted law enforcement guidebook for protected areas	30,000	Donor	MEPA APA		Lack of Financing	2018-2020
4.4.	Development of biodiversity status monitoring plans for protected areas including cross-border monitoring system	At least 10 biodiversity status monitoring plans are developed (which include, where appropriate, transboundary monitoring issues)	Donor grant	Donor	MEPA APA		Lack of Financing; Conflict of Interests with the priorities of other countries	2016-2020
4.5.	Establishment of a modern technology-based system of law-enforcement proceedings (data accounting and analysis)	Law enforcement proceedings based on modern technology tested at least in 4 protected areas	200,000	Donor	MEPA APA		Lack of Financing	2018-2020
4.6.	Developing/ Implementing a restoration/conservation plan for endangered species of national parks	Conservation/ restoration plan of species in national parks is prepared and is ongoing	Donor grant	Donor	MEPA APA		Lack of Financing	2017-2021
Target 5: Promotion of eco-tourism on protected areas								
5.1.	Development of sustainable tourism strategies and action plans for protected areas	Developed sustainable tourisms strategies and action plans for 12 protected areas actively used by tourists	200,000	Donor	MEPA APA / territorial administrative units			2017-2020
5.2.	Developing of new ecotourism infrastructure and services on the protected areas	New tourist infrastructure developed The number of visitors increased by 10%	Envisaged within the existing budgetary resources Donor grant	State budget /Donor	MEPA APA		Lack of financing	2017-2020

8. FOREST MANAGEMENT

Forests, provide important ecosystem services. First of all, it is an important biome for biodiversity. Forests provide water regulation and soil protection functions. Forests have become even more important in light of the climate change, as they serve as a carbon sink. Finally, forests are a source of timber and non-timber products having significant economic and social importance for the local population and for the whole country.

8.1 CURRENT STATUS

Forests occupy about 40% of the territory of Georgia covering 2 620 676 hectares in total. Around 95–98% of Georgian forests are natural and about 98% are located on the slopes of the Greater and Smaller Caucasus mountain ranges. Forests are highly diverse due to the country's nine climatic zones, ranging from wet subtropical to everlasting snow. Beech (Fagus orientalis) and fir (Abies nordmanniana) are the dominant species in Georgian forests. Spruce (Picea orientalis), hornbeam (Carpinus caucasica), oak (Quercus spp.), chestnut (Castanea sativa), pine (Pinus spp) and alder (Alnus) are other common and widespread species in Georgia.

Services provided by forests in Georgia are diverse:

- First of all, forests are harbors for many endemic and relic species of plants and provide habitats for globally rare and endangered animals;
- Because most of forests are mountainous, they play an essential role in water regulation and soil protection and unsustainable exploitation of forest often leads to erosion, increased risk of flooding and water shortage;
- According to the First Biennial Update Report (BUR) of Georgia (2013 inventory) to the UNFCCC, Georgia's forests absorb a volume of CO2 equal to 25.1% of the country's gross greenhouse gases (GHG) emissions;
- Forests have important cultural, recreational and social functions, as the forests in Georgia are a source of fruits, nuts, mushrooms, medical plants, honey and other non-timber products, which are collected by those within the rural population;
- And finally, forests are sources of timber which is crucial for well-being of country's population.

100% of Georgia's forests are owned by the state. However, in 2006-2012, long-term special logging licenses (5-20 year) were issued to private companies for the use of forest timber resources. This type of transfer of forest lands to private companies without inventory under the existing weak monitoring/inspection system is assessed as a practice incompatible with sustainable forest management. This approach has resulted in additional challenges rather than achieving sustainable forestry practice. As of today, in total, about 7% of forests remain licensed by 38 license holders and by 2029, all licenses will expire.

Illegal logging, forest diseases and forest fires are the main threats to forest ecosystems in Georgia. The existing forest licensing regime, the lack of legal instruments and capacity to monitor the process of use of forest resources by private investors, the limited number of forest guards, and the high demand by local populations for firewood are among the major factors creating the grounds for illegal actions in forests. Forest diseases, caused by pests and pathogenic fungi, are another risk to forest ecosystems. Specifically, spruce, chestnut, Colchic box and pine trees are greatly affected by these pests and diseases in various regions of Georgia. Although some activities aimed at managing forest diseases were initiated in June of 2013 (i.e. against spruce bark beetle), more efforts are needed to address this threat. Frequent forest fires cause additional damage to forests. According

to the official statistics for period of 2008-2014, fires affected 200 ha per year on average, with an average of 24 forest fires per year and forests with coniferous composition are at a higher risk. Burning activities for agricultural purposes are the main cause of fires in the forests, as well as in the windbreak areas.

All these resulted in the degradation of forest ecosystems. Still, detailed and complete data on the composition and the state of the forests does not exist, as no national inventory has been undertaken since the 1990s. From 2013, the country renewed the inventory process but due to limited resources, it may need a couple more years to accomplish the process before it will be able to provide updated and comprehensive information on forests.

Since 2000, number of reforms has been implemented in forest sector in order to introduce sustainable forest management practices. Due to the absence of a clearly defined strategy and action plan, the processes did not develop consistently. The frequent changes in the legislative framework, structure and leadership, lack of investments in human and technical resources were the reasons establishing of sustainable forests management system was not achieved. As a result of unsustainable processes, the sector became unattractive which led to the loss of qualified employees. These factors resulted in decrease of the capacity of forest management bodies.

8.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

The Ministry of Environmental Protection and Agriculture of Georgia is the highest national body of executive government responsible for the elaboration, implementation and enforcement of national forest policy, by means of its structural entities. Forest policy making on national level is the responsibility of the Department of Biodiversity and Forest Policy under the Ministry, while the executive bodies are LEPL National Forestry Agency and its regional offices, LEPL Agency of Protected Areas and territorial administrative units of the Agency. On the territories of autonomous republics of Abkhazia and Adjara, Forest Fund, except for protected areas, is managed by the corresponding authorities of the autonomous republics of Abkhazia and Adjara.

Control of enforcement is a function of the State Subordinated Entity under the MEPA – the Department of Environmental Supervision, which supervises the whole territory of Georgia through its territorial units.

In addition to the above mentioned State bodies, Akhmeta Municipal government is involved in the management of forests, as it manages the Tusheti Protected Landscape and the forest areas within it, and so is Tbilisi Municipality City Hall, which manages the green plantations (forests) around Tbilisi. The Ministry of Economy and Sustainable Development is another state institution involved in forest management in relation to land use.

Other key stakeholders in this field are scientific research institutions, private companies and the general public – especially the local population, who are heavily dependent on forest resources. Today, the Vasil Gulisashvili Forestry Institute, under the Agricultural University of Georgia, is the key scientific research institution in country conducting fundamental theoretical experimental research within the forestry sector. The Institute is also involved in consulting activities, though with very limited financial and human resources. As for private companies, forest use license holders and a few companies, which are specialized in conducting forest inventory, are to be mentioned.

8.3 LEGAL AND POLICY FRAMEWORK

According to Article 233 of the EU-Georgia AA, Georgia recognizes the importance of sustainable forest management and commits to "adopting measures to promote the conservation of forest cover and combat illegal logging and related trade". The way this commitment is formulated provides some flexibility for Georgia in selection of legislative and other relevant measures to fulfill the commitment. The actions necessary for achieving the goal set out in the AA are detailed in the EU-Georgia AA road map.

Another internationally announced commitment of the country is based on sustainable development goals. Specifically, one of the targets (15.2) of sustainable development goals is to promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation. Georgia, as a party of the international community, undertook a conditional responsibility to implement sustainable forest management practices and restore / afforest areas by 2030.

In addition to the above international commitments, Georgia is involved in the Pan-European political process for the sustainable management of the continent's forests. Georgia is also a party to the CBD and forest related requirements are reflected in the National Biodiversity Strategy and Action Plan developed in accordance with the requirements of the CBD (see Chapter 7).

Conservation of sustainable ecosystems, including forests, is crucial not only for the conservation of biodiversity, but also in regards to the mitigation of adverse effects of climate change. According to the Intended Nationally Determined Contribution submitted to the UN Framework Convention on Climate Change, Georgia commits to strengthen its law enforcement and introduce sustainable forest management practices for mitigation of climate change.

The National Forest Concept approved by the Parliament of Georgia with the decree (2013) on Approval of "National Forest Concept of Georgia" (2013) is the main policy document which defines forest management principles and establishes priority directions in the development of forestry. Improvement of forest management planning, ensuring rational use of forest resources, determining the most appropriate practices of forest ownership, response to climate change aspects and elaboration of relevant national legislation, as well as raising education and public awareness are set out in the National Forest Concept as main priority directions for implementation of sustainable forestry in Georgia.

The importance of forest protection, forest management and introducion of innovative technologies is well acknowledged in "Georgia 2020". The strategy emphasizes the role of forest ecosystems and their services (recreation, water regulation, soil protection, etc.) in the improvement of socio-economic condition of the population. By adopting the Decree in 2013, the Parliament of Georgia expressed its firm will to promote sustainable forest management at the state level.

The existing Forest Code (1999) is outdated and does not correspond to the principles of sustainable forest management. Therefore, state forest fund managementrelated aspects are mainly regulated by secondary legislation. Specifically, governmental decree #242 of August 20, 2010, on Approval of Forest Use Rules, Decree of the government of Georgia #241 of August 13, 2010, on Approval of Rules of Forest Maintenance and Restoration and Decree of the government of Georgia #179 of July 17, 2013 on Approval of Rules of Forest Inventory, Planning and Monitoring. To fill the legislative gaps

and address the existing legal inconsistencies, a new Forest Code has been drafted and is expected to be approved in the near future.

All of the above documents contribute to the formulation of forestry policy at the national level. To achieve the international and national targets, the process of forest reform has been started.

8.4 PROBLEMS AND PRIORITIES

Over the last decades, no nationwide inventory has been undertaken in Georgia as mentioned above. This information gap makes long-term forest planning and effective management difficult. Record keeping and monitoring is also weak and needs improvement in order to reveal the emerging challenges in a timely manner and to plan and implement the appropriate measures accordingly. Another challenge for sustainable forest management is the existence of inconsistent and outdated legislation, which does not respond to either strategic priorities of the country in the forestry sector or the EU-Georgia AA requirements. Therefore, ir order to achieve sustainable forest management in line with the EU-Georgia AA, as well as other international requirements and best practices, it is necessary to have comprehensive and precise information on forest resources, its composition, quantity and quality, as well as the relevant legislation (the Forest Code and supporting secondary legislation) in place. This legislation should also respond to and reflect the needs of the local population.

For many years, the high degree to which the local population has depended on forests for firewood, timber and non-timber products has resulted in forest degradation. In addition, forest degradation is caused by the unregulated grazing in forest, with a serious problem of overgrazing.. Absence of forest roads forces local population to harvest firewood from nearby forest areas, frequently illegally, rather than in allocated cut areas. This pressure on forests is aggravated by forest diseases and forest fires due to the negligence of the local population and forest visitors. Therefore, defining alternative ways of providing energy supply to the local population, as well as the prevention of degradation and the restoration of degraded forest areas is critical for the proper functioning of forest ecosystems.

After Georgia gained its independence, interest towards forestry was low. Many forest engineers and technicians left the forest sector. Only a small part of young people was willing to study forestry and work in this sector, which resulted in today's lack of qualified forest staff.

Strengthening the capacities of all units involved in forest management and supporting the forestry education system is crucial in addressing the existing and emerging challenges in the forestry sector. Forest management requires special skills and knowledge at all levels starting from forest guards/rangers and ending with top management. Introducing the regular and needs-oriented on-job training mechanism, promoting formal and informal education, supporting scientific research and expanding cooperation with the relevant institutions of partner countries with the purpose of experience/knowledge sharing are necessary.

Finally, extending forest functions beyond the use of timber and non-timber products is also important. Specifically, the recreational services of forests should be intensively promoted and supported. Identification of specific recreational forest areas, as well as the development of necessary infrastructure, will promote the development of sustainable eco-tourism in forest fund areas that will in turn, promote job-creation and revenue generation for the local population.

The following long-term goal (2030) and 5-year targets are to be achieved in order to address the above-described challenges:

GOAL:
To improve the overall condition and ecological functions of forests through establishment of a sustainable forest management system in Georgia

TARGETS:
Target 1: Improvement of legal framework and implementation of the Sustainable Forest Management system.
Target 2: Reduction of pressure on forests through promoting the use of alternative fuel sources and the improvement of qualitative and quantitative characteristics of forests.
Target 3: Capacity building for forest policy development, management and control entities.
Target 4: Promotion of the use of forest ecosystem services.
Target 5: Promoting development of forest education and public awareness.

8.5 ACTION PLAN

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY (IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1: Improvement of legal framework and implementation of the Sustainable Forest Management system								
1.1	Finalization of the "Forest Code"	Forest code approved by Georgian Parliament	Donor grant	WB, EU	MEPA		Delaying of the approval process	2017-2018
1.2	Development and adoption of bylaws relevant to the Forest Code	Adopted bylaws	Donor grant	WB GIZ	MEPA		Delaying of the approval process	2018-2019
1.3	Development and introduction of national principles, criteria and indicators for sustainable forest management	Developed document on National principles, criteria and indicators for sustainable forest management Principles and criteria reflected in the National legislation	3 700 000 Donor grant	GIZ	MEPA		Delaying of the process	2018 - 2021
1.4	National forest Inventory	National forest inventory report prepared	14,680 000	GIZ	MEPA		Lack of funding Lack of qualified personnel	2017-2020
1.5	Forest management inventory in priority regions and development of forest management plans	Forest management inventory report Developed forest management plans for at least 40% of the area of Forest Fund of Georgia	3,740,000	State budget	MEPA NFA		Lack of funding Lack of qualified personnel	2017 - 2021
1.6	Verification of Georgian Forest boarders and their registration	Verified and registered outer boarders of Georgian forests	Donor grant	Donor	MEPA NFA		Lack of funding	2018-2021
1.7	Development of Forest monitoring and information system	Developed forest monitoring and information system	3,700,000	GIZ	MEPA		Lack of funding	2017 - 2020

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY (IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.8	Categorization of the forests and forest lands according to the functional purpose	Defined categories of the forests and forest lands	Envisaged within the existing budgetary resources	State Budget	MEPA		Accuracy of forest related information	2019-2021
Target 2: Reduction of pressure on forests through promoting the use of alternative fuel sources and the improvement of qualitative and quantitative characteristics of forests								
2.1	Development and approval of a state program for providing population and public entities with fuel resources	Approved short and medium-term programs for elimination of energy deficit Short and medium-term programs Reduced use of firewood	Donor Grant	Donor	MEPA		Delaying development/ approval of the program	2018-2021
2.2	Promotion of access to alternative fuel sources for population and public entities	Produced biomass from forest and agricultural waste Amount of saved timber by using biomass	Donor Grant	Donor	MEPA		Lack of funding Lack of interest from population	2018-2021
2.3	Development of national plan for restoration of degraded forest areas and restoration of identified priority areas	a) Developed national plan for restoration of degraded forest areas b) at least 30% of degraded areas restored according to priorities	Donor Grant	Donor	MEPA	Relevant agencies of Adjara A/R	Lack of funding	2018-2021
2.4	Regulation of grazing in forest	Allocated grazing areas in forests, established quotas and the relevant regime	Envisaged within the existing administrative resources Donor grant	State budget, Donor	MEPA Forest management bodies		Delay of process	2019-2021

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY (IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
2.5	Conduct studies related to spreading of pests and diseases, planning and implementation of combat measures	Conducted studies Developed pests and diseases combat plans Area of combat measures in forests	Envisaged within the existing administrative resources Donor grant	State budget Donor	MEPA Forest management bodies		Lack of funding	2017-2021
Target 3: Capacity building for forest policy development, management and control entities								
3.1	Assessment of the capacity of forest policy making body, determination of necessities, and institutional strengthening	Report on assessment of forest policy making body developed Recommendations on optimising the forest policy making body Implemented institutional changes	Donor grant	GIZ, EU	MEPA		Delaying implementation of the recommendations	2017-2021
3.2	Evaluation of capacities, identifying needs and institutional strengthening of the forest management entities	Developed forest management entities evaluation report Recommendations for the optimization of forest management entities Implemented institutional changes	Donor Grant	GIZ; WWF; EU	MEPA Forest management bodies (NFA, APA, Adjara A/R, Akhmeta municipality)		Delaying the implementation of the recommendations	2017-2021
3.3	Evaluation of capacities, identifying needs and institutional strengthening of the forest control entities	Development of forest control entities evaluation report Recommendation for the optimization of forest control entities Implemented institutional changes	Donor Grant	GIZ; EU	MEPA (DES, NFA and APA) Relevant agencies of Adjara A/R		Delaying the implementation of the recommendations	2017-2021

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY (IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 4: Promotion of the use of forest ecosystem services								
4.1	Evaluation of multifunctional potential of forests	Forests evaluated, identified and classified according to the following categories: 1. Protected 2. Protective 3. Touristic and recreational 4. Productive	Envisaged within the existing budgetary resources Donor grant	State budget; Donor	MEPA	Relevant agencies of Adjara A/R	Technical and financial limitations	2017 - 2021
4.2	Improvement of necessary infrastructure required for tourism development on the Georgian forest fund territory	Developed tourism infrastructure	Donor Grant	Donors	MEPA	MoESD National Tourism Administration	Lack of funding	2017 - 2021

9.
SOIL PROTECTION

Soil is a fundamental natural resource on which life depends. It provides a number of essential services on which society relies. Soil supports biodiversity and ecosystems. Soil is also a carbon sink as it has the capacity to bind the carbon, playing a vital role in the fight against climate change. Soils have been degraded over the last 200 years due to human activities among which intensive agricultural production and industrial activities have played the main role. Soil degradation impacts soil dependent socio-economic activities like agriculture and livestock farming, forestry and tourism. The pressures unfortunately still remain, and these pressures have to be addressed in order to at least reduce the pressure to the soil from existing processes.

9.1 CURRENT STATUS

Georgia has a total land area of 69,500 square kilometers, out of which 40% is occupied by forests. Agricultural land takes the biggest share of fertile soil and makes up 43% of total land area. 26% of agricultural land is cropland, 9% is a permanent cropland and 64% is pastureland and 1% is residential and economic buildings and yards.

Due to the climate and topography, natural soil erosion takes place on quite a large scale in Georgia. Of the 3 million ha of agricultural land, 35% is degraded because of erosion. Water erosion is more common in the western part of the country, while the eastern part of Georgia suffers from wind erosion mainly due to the destruction of the windbreaks and other human activities. Overgrazing both in the western and eastern Georgia is among the most significant factors accelerating soil degradation processes.

Soil erosion is particularly obvious in eastern Georgia where natural desertification processes, due to climatic conditions, is intensified by human activities as mentioned above and overgrazing is the leading factor. The Georgian semi-arid zone (Kakheti) has been historically used as winter pastures (from September to April) for livestock (mainly sheep), moving from the northeast and central parts of the country with seasonal migration from summer pasture to winter pasture. However, there are insufficient winter pastures to cope with the concentration and recent increase of the flocks. There are seasonal concentrations of large sheep herds in the semi-arid zone with uncontrolled grazing. For example, in the Shiraki Valley, pasture land covers 57, 000 ha and hosts over 400, 000 heads (more than half of the country's stock) during more than seven months. This high concentration of livestock and the intensive use of pastures leads to overgrazing and consequently soil degradation in those areas. It should also be noted that a certain part of the pasture lands is located along the occupation line of the occupied territories of Georgia – the Abkhazia and Tskhinvali Region/South Ossetia and the local population is unable to use these pasture lands. Therefore, the population is forced to use other pastureland, which increases the pressure on those pastures. Grazing is hardly controlled on state-owned lands. The majority of the country's pastures are not privatized and only 11% of state-owned pastureland is leased. Approximately 1.1 million hectares of Georgia's state-owned land, classified as pasture, suffers from overuse and lack of oversight. As a result, many pastures are overgrazed, degraded and produce low yields.

Overgrazing threatens local plant biodiversity and also promotes the replacement of the original vegetation by unpalatable or grazing- resistant species (weeds) and leads to lower species diversity. Soil salinization and its pollution by hazardous chemicals are other factors in Georgia leading to the deterioration of soil quality and limiting the potential of the use of soils. Salinization is observed in eastern Georgia mainly due to irrigation, which at the same time is needed to improve soil fertility and increase re-cultivation capacity. However, irrigation has to be planned and implemented in a way

to avoid secondary salinization problems. As for the contamination of soil by different chemicals exceeding the Maximum Allowed Concentrations (MAC), it is mainly observed in the country's industrial regions. For example, in Ambrolauri (Racha-Lechkhumi and Kvemo Svaneti Region), there is a high concentration of arsenic in soils; in Chiatura (Imereti Region), manganese concentration in soils is slightly elevated; and in Bolnisi (Kvemo Kartli Region), where heavy metals exceed limits in soils due to leaking from copper mining and tailings. It should also be mentioned that the pollutants might be transported into the soil with deposition of air pollutants emitted from the neighboring pollution sources or even carried by the winds from transboundary sources. Pollutants can appear in the soil with water or waste. High content levels of chemicals might be caused by natural reasons as well.

No maps on salinization or soil pollution by heavy metals are available at present, as comprehensive data on overall quality of soil are still missing. The only thematic maps (1:500, 000) of lands exposed to wind and water erosion (actual and potential areas), as well as maps on lands under acidification and the state of the nutrients in the soils are developed by the Ministry of Environmental Protection and Agriculture (2013).

9.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

The Ministry of Environmental Protection and Agriculture of Georgia is the main national policy-making institutions in the field of land resources and soil protection. According to the national legislation, soil protection- related aspects are directly or indirectly linked with the competences of the MEPA.

The MEPA ensures the development and implementation of the unified state policy on sustainable management of soil protection and coordinates the planning and implementing measures against land degradation and desertification.

The Ministry is responsible for the agricultural production, soil fertility, plant protection, animal husbandry development and mechanization of agriculture. In addition, Georgian Melioration Ltd. implements irrigation system management and state control. In 2013, the Soil Resources Management Division was created in the Amelioration and Land Resources Management Department under the ministry. The structure of the ministry includes the LEPL Laboratory of the Ministry of Agriculture, which implements scientific research work on soil degradation. The laboratory conducts soil analysis for the farmers and cooperates with the extension services in the regions of Georgia. The NEA, under the MEPA, is responsible for soil quality monitoring. State soil monitoring was terminated in 1991 and it was re-established only in 2013 in large industrial cities of Georgia. Currently, samples are analyzed in about 30 settlements for the content of heavy metals. The intention is to extend the soil quality monitoring network and further improve monitoring capacity.

There are several other laboratories in Georgia conducting soil analyses, including the H. Feri named Ecological Agriculture and Nature Protection Laboratory at Agrarian University and the private laboratory called Multi Test.

As for the scientific institutions, the Institute of Agro-chemicals and Soil is the only organization operating in Georgia. However, its capacities are very limited and consequently, its contribution to making scientifically-proven decisions regarding soil-related issues is very low.

Farmers and other land managers, developers, planners and construction companies are also important stakeholders, as their understanding and attitude is crucial in protecting soil functions and managing soils sustainably.

9.3 LEGAL AND POLICY FRAMEWORK

The main legal act on soil protection in Georgia is the Law on Soil Protection (1994). The law aims to ensure the integrity of the soil surface, conservation and increased soil fertility. The Law excludes the use of fertile soil for any other than agricultural purposes. The Law prohibits the removal of topsoil from construction sites without preliminary study and an approved project and requires the removed topsoil to be stored for reuse. In the case of temporary use of the land from where the soil is planned to be removed, such as cases of mining or a landfill, the area must be re-cultivated using the stored topsoil.

Other significant pieces of legislation in the field of soil protection are the by-law on Conservation of Soils and Reclamation and Improvement of Soil Fertility (2003) and the law on Soil Conservation and Fertility Restoration and Improvement (2003). The following legal acts on agricultural land use and food security also set the criteria for the use of the soil and land:

- The Law on Recognition of Ownership Rights on Land Plots being under the Usage of Natural Persons and Legal Persons (2007) regulates the legalization of ownership rights on land plots, which are being used by natural and legal persons in an unlawful way
- The Law on Pesticides and Agrochemicals (1998) that aims to ensure the effective use of pesticides and agrochemicals and facilitate the legal basis for their safe usage for humans and the environment.
- The Law on Vine and Wine Act (1999) that regulates the legal relationships related to the production and sale of grape seedlings, grape wine and other grape origins alcoholic beverages.
- The Law on New Species of Plants and Animals (2010). The law regulates the relationship related to the legal protection and usage of the new breeds of animals and plants and extends to all the new breeds and species of animals and plants
- The Code of Food/Animal Food Safety, Veterinary and Plant Protection (2012). The Code aims to protect the human life and health, consumers' interests, the health and well-being of the animals, the health of the plants.

The national legal and policy framework is significantly influenced by the international treaties and agreements Georgia is committed to. The UN Sustainable Development Goals (SDG) and the UN Convention to Combat Desertification (UNCCD), Georgia is party to, are key strategic documents in this respect. One of the key activities agreed to in the UNCCD is the achievement of Land Degradation Neutrality (LDN), which supports SDG Target 15.3, which aims to combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strives to achieve a land degradation-neutral world by 2030. The objective of the LDN is to maintain or even improve the amount of healthy and productive land resources over time and to stay in line with national sustainable development priorities. The heart of LDN are Sustainable Land Management (SLM) practices that help close yield gaps and enhance the resilience of land resources and communities that directly depend on them while avoiding further degradation.

There is no specific soil-related directive in the EU-Georgia AA. However, the approximation of national legislation in water, air, chemicals, waste and other sectors, as well as in overall governance

with the EU directives as required by the AA, will influence the soil related legal framework as well (i.e. draft law on environmental liability), and this sector will significantly benefit in terms of framing better legal and policy framework.

Georgia's Second National Action Program to Combat Desertification (NAP) for the years of 2014-2022 is the main national strategic document in the field of desertification/land degradation. The NAP defines national objectives and proposes the action plan that Georgia commits to implement by 2022. The aligned NAP addresses the international priorities identified and already established by the 10-year strategy of the UNCCD. The program and its actions are in line with the NAP.

Another national policy document is the Agricultural Development Strategy (2015-2020), which considers land degradation aspects as one of the most acute problems within the agriculture management sector in Georgia. The improper management of pesticides and fertilizers, problems in drainage systems and uncontrolled management of waste, as well as natural disasters intensified by climate change, are defined as the major causes for decreasing the fertility of land resources. The document identifies the set of measures for the improvement of the situation. This includes the proper management of fertilizers and pesticides, waste monitoring, the improvement of melioration infrastructure and the implementation of early warning systems for natural disaster management.

The environmental protection and sustainable management of natural resources is one of priority directions of the Rural Development Strategy for 2017-2020. Although no specific objective or measure is defined for soil degradation related aspects, the actions like the improvement of the management of water, forest and other resources, as well as the promotion of sustainable systems of waste management, will bring indirect benefits for soil protection.

9.4 PROBLEMS AND PRIORITIES

Soil erosion by wind and rain, as well as soil compaction (reducing agricultural productivity and water infiltration) and the decline of organic matter in the soil, are the main threats to soils in Georgia. All these threats may be magnified by climate change. Soil erosion and the loss of fertility will eventually lead to soil degradation and desertification, which will significantly affect the food security and socioeconomic state of the country. In addition, soil quality can deteriorate via pollution emmited from the industrial sector. Therefore, the reduction of these pressures and the restoration of degraded soil is among the country's key priorities.

Although soil pollution monitoring was restored recently, the further extension of the soil monitoring network and regular monitoring of soil quality is still needed. Robust data and its availability is crucial for the proper planning and implementing measures in an effective and efficient way.

In order to address those challenges, adequate legislation is needed. The current Law on Soil Protection (1994) is outdated and does not fully reflect the current socioeconomic situation. Although there are several legal acts regulating agricultural activities as mentioned above, there are gaps and desertification and/or land degradation issues are not addressed adequately. For example, there is no legal basis allowing the monitoring of private agricultural plots that might be polluted and relevant acts for protecting the soil from pollution are also missing. Soil protection measures are not considered sufficiently in the legislation concerning agricultural activities either. Therefore, improvement in the related legislation is needed in order to close the gaps and address the existing and emerging challenges that consider international requirements and best practices.

Finally, the reduction of pressures on soil and the prevention of its degradation, require adequate knowledge among stakeholders and capacity at the national level. The impact of human actions on soil fertility may not be seen for many years, but steps should be taken today to addres this problem. Safeguarding soils for future generations means managing them better, reducing degradation and building resilience to increasing pressures in order to provide a sustainable food supply and cope with a changing climate. Therefore, the following long-term goal (2030) and short-term targets have been developed:

GOAL:
To ensure the protection and sustainable use of land resources

Target 1. Reduction of land degradation / desertification and the restoration of degraded areas
Target 2. Establishment of a monitoring system for degraded/eroded and polluted soils

9.5 ACTION PLAN

No.	ACTIVITIES	INDICATORS	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1. Reduction of land degradation / desertification and restoration of degraded areas								
1.1	Preparation of new Act on Soil Protection	The Act on Soil protection adopted	Envisaged within the existing budgetary resources	State Budget	MEPA		Delay of Adoption	2018-2019
1.2	In order to achieve land degradation neutrality: a) Assessing the situation in the country for achievement land degradation neutrality target; b) Identification of National Targets for achievement land degradation neutrality; c) Preparation of the Land Degradation Neutrality National Strategy	a) Information on land cover; land productivity (metric: net primary productivity) and carbon stocks above and below ground (metric: SOC) available. b) Identified National Targets for achievement of land degradation neutrality c) The Land Degradation Neutrality National Strategy adopted	Donor grant	UNCCD Global Mechanism, GEF, State Budget	MEPA	UNCCD Global Mechanism		2018-2020
1.3	Preparation of the Sustainable Land Management concept	The Sustainable Land Management concept adopted	Donor grant	GEF	MEPA			2019

No.	ACTIVITIES	INDICATORS	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.4	Preparation and adoption of soil recultivation methodology	The recultivation methodology ready and adopted	Envisaged within the existing budgetary resources	State Budget	MEPA	MoESD		2019-2020
1.5	Identifying traditional methods of agricultural production and sharing best practices with stakeholders	Number of adopted approaches	Envisaged within the existing budgetary resources	State Budget	MEPA			2018-2020
1.6	Desalinization of Agricultural land in Signagi Municipality	Rehabilitated lands in ha	Donor grant	GEF	MEPA			2018-2019
Target 2. Establishment of the monitoring system for degraded/eroded and polluted soils								
2.1	Creating of soil degradation monitoring system	Functioning data base on state of soil GIS map of soils	Donor grant	GEF	MEPA			2018-2020
2.2	Determining the maximum allowable concentrations of chemical substances in the soils of Georgia	New limit concentration values adopted	Envisaged within the existing budgetary resources	State budget	MEPA	MLHSA		2018-2020

10.
CLIMATE CHANGE

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The negative effects of climate change are evident worldwide. The melting of frozen water on the Earth has resulted in an unprecedented rise in sea levels. Throgh changes in weather patterns, the world's oceans have become hotter than before and climate change poses a major threat to agriculture, energy, tourism and other sectors of the economy. Climate change's impact on human health threatens natural habitats and ecosystems. Forests have become more prone to deadly diseases. Finally, the extreme weather events caused by climate change also threaten human lives and infrastructure. Consequently, climate change places heavy burdens on food security, economic development of countries and the welfare of the population. The international community focuses all efforts on combating the threats that have both increased and intensified due to climate change.

10.1 CURRENT STATUS

The global phenomenon of climate change has a strong impact on Georgia's environment. The negative consequences of climate change in Georgia include the rise in temperatures, changes in precipitation patterns, reduction in water availability, rise of the Black Sea water level, an increase in frequency and intensity of floods, flashfloods, landslides and mudflows, the decrease of rainfall and the extension of evaporation, to name only a few.

Based on the latest National Greenhouse Gases (GHG) Inventory Report, in 2013, the total GHG emissions of the country was 16,391 Gg (thousand tons) CO2eq. The country's emission profile indicated the leading position of the energy sector by 57% of national emissions. The industrial sector has an 18% contribution to the total emissions followed by agriculture (17%) and waste sectors (8%). Within the energy sector the highest emissions are from the transport sub-sector, 33% (3,096 Gg CO2 eq) of total emissions from the energy sector, followed by the manufacturing industries and construction source-sectors with 21% of the total energy sector emissions, volatile emissions from coal and natural gas related activities at 20% of total energy sector emissions, household / commercial / institutional sectors with 13% of total energy sector emissions and electricity and heat production with 10% of total energy sector emissions.

A significant reduction in GHG emissions (lowest value 8,799 Gg CO2eq in 1995) was caused by the collapse of the centrally planned economy in the early 1990s. According to the First Biennial Update Report (BUR), GHG emissions in Georgia in 2013 constituted 16,391 Gg CO2eq, which is about 34% of the 1990 emissions level (47,975 Gg CO2eq). In most cases, economic growth will be accompanied with an increase in GHG emissions if no efforts are made to combat this process. Therefore, it is important to limit this increase by advancing investments in low carbon technologies throughout the country.

The adverse impact of climate change on ecosystems and the economy pose severe threats to Georgia's sustainable development. Geographical location, complex dissected landscape, land cover diversity and specific climate, containing almost every type of climatic zone, set the conditions for a wide variety of negative consequences of climate change in Georgia. Climate change is also the main trigger or co-factor in several adverse environmental effects:

- due to rising the sea level and the appearance of other factors, the Black Sea has damaged houses and infrastructure along the coast
- in highlands, the growing frequency and intensity of floods, flashfloods, landslides and mudflows have caused a huge amount of damage to the economy
- due to decreasing rainfall and enhanced evaporation of semi-arid regions, eastern Georgia is under the threat of desertification

- the frequent and intensive heat waves have affected human health
- increases in temperature, changes in precipitation patterns, reduction in water availability, forest fires and spreading pests and diseases have worsened the growth and productivity of forests.

Climate Change also affects various economic sectors, particularly the agricultural sector. Georgia's agricultural sector plays a key role in the country's economy. The farmers in Georgia take a principal role in providing one of the fundamental needs of society: a safe, secure, and affordable food supply. This underlines the importance of the relationship between climate change impact on agriculture and food security. During the last decades, the negative consequences of climate change (rising temperatures, increased winds and reduced water availability) have significantly reduced agricultural productivity.

The environmental problems in the agriculture sector of Georgia are mostly caused by the changes in precipitation and temperature patterns associated with future costs mainly in rural areas. In 2000, severe drought reduced the production of cereals to close to zero and almost 400,000 hectares of agricultural land was damaged. Within the last decade the occurrence of droughts in eastern Georgia has increased. Severe droughts accompanied by high temperatures (40-42^{o}) have been observed every year. The high temperatures double the frequency of the occurrence of intense droughts in the region.

Among the negative impact of climate change affecting the economic development of the country are coastal flooding and storm-hazards caused by rising sea levels and water warming, which is correlated with storm intensity. The rise of sea levels will affect the Black Sea and its coast. In order to minimize economic losses, it is vital to assess and implement adaptation measures. According to the National Communication (NC) of Georgia to the UNFCCC, the costs of the adaptation measures in the coastline area are estimated at about GEL 1.5 billion. In absence of these adaptation measures, the estimated losses only in just the tourism sector alone are expected to reach about GEL 5 billion by 2030. The priority should be given to integrated coastal planning and management instruments due to the very high social costs involved, rather than investment only in the abatement of coastal erosion. The combination of various technologies for coastal zone protection are recommended by the second Technology Needs Assessment report of Georgia to prevent significant damage caused by the Black Sea level rise. Other effects of climate change in Georgia related to natural hazards are described in the chapter on Natural Hazards.

Tourism is another dominant economic sector of Georgia suffering from climate change. This sector has a growing tendency and comrises 6.7 percent of total GDP. The climate of the country is a key competitive advantage in the tourism sector. However, climate change poses threats to the tourism industry in the case of neglecting its consequences. The winter tourism centers are sensitive to the amount and quality of snow. The main problems are associated with the shortage of snow in the winter season. The temperature becomes relatively comfortable for tourists in summer resorts. However, abundant precipitation can endanger the tourism season and lower tourism-related revenue.

Climate change, causing changes in precipitation patterns and water body regimes, affects the hydro resources that are considered as an alternative environmentally sound source of electricity. Nowadays, a large share of electricity generated in Georgia comes from hydropower, which has been developed extensively over the last decades. The development of alternative energy sources, such as wind and solar power requires more effort than before. A very positive step has already been takem

however by constructing the first wind farm (with a capacity of 20.7 MW) in Georgia. Currently, the construction of new wind farms with a total capacity of about 300 MW is under consideration. The inefficient energy system was inherited by the Georgian economy from the Soviet Union. In order to improve the energy system in Georgia, energy efficiency measures are taken into account in households, industries and service sector, but much has to be done in this respect. The National Energy Efficiency Action Plan (NEEAP) has already been prepared and will soon be approved.

10.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

The Ministry of Environmental Protection and Agriculture of Georgia (MEPA) is the state agency responsible for defining and implementing Georgia's climate change policy at the national level. The Ministry is also responsible for conducting inventory and monitoring of the climate change processes in Georgia, as well as for the elaboration of the unified state Policy of Agricultural development and control of its implementation. In addition, the Ministry also coordinates the prevention measures of global climate change manifestations and the process of the development of adaptation measures.
The main function of the Ministry of Economy and Sustainable Development of Georgia is the stimulation of economic growth in the country through the development and implementation of effective economic and energy policies and strategies. The Ministry develops and implements energy efficiency measures in the energy, industry, construction and transport sectors. It also works on the development of the resource effective production and elaboration of the Green Growth Strategy. The enhancement of renewable energy and supporting energy efficiency measures in the Ministry is supervised by the Energy Department. The Ministry of Economy and Sustainable Development of Georgia closely cooperates with the Ministry of Environmental Protection and Agriculture of Georgia to carry out climate sensible energy policy.

The municipalities of Georgia are also key stakeholders, as they are also vulnerable to climate change. It is highly important to support climate change adaptation in the regions of Georgia through the institutionalization of climate change adaptation and mitigation measures at both the local and national levels by building the capacities of local authorities.

10.3 LEGAL AND POLICY FRAMEWORK

The international treaties and agreements significantly influence national policy of climate change due to its global nature. In October of 1994, Georgia ratified the United Nations Framework Convention on Climate Change (UNFCCC) and in June of 1999, accessed to the Kyoto Protocol. In 2010, Georgia acceded to the Copenhagen Accord and declared that "Georgia will take steps to achieve a measurable, reportable and verifiable deviation from the baseline scenario (below "Business as Usual" levels) supported and enabled by finance, technology and capacity building."

The Paris Agreement on climate change entered into force for Georgia in 2017. In 2015, prior to the adoption of the Paris Agreement, Georgia submitted its Intended Nationally Determined Contribution (INDC) to the UNFCCC. According to the INDC, Georgia plans to unconditionally reduce its GHG emissions by 15% below the Business as Usual (BAU) scenario by 2030. This number will mean a 34% reduction in emission intensity per unit of GDP from 2013 to 2030. Conditional to a global agreement addressing the importance of technical cooperation, access to low-cost financial resources and technology transfer, this 15% can be increased up to 25%. At 25%, Georgia's reduction in greenhouse gas emission intensity per unit of GDP from 2013 to 2030 would be approximately 43%. The 25% reduction would also ensure that by 2030, GHG emissions in Georgia will stay 40% below 1990 levels.

In order to fulfil its obligations under the Paris Agreement, the MEPA has planned the development of a 'Climate Action Plan' (CAP) before 2020 and its implementation in the following years. As one of the first steps, a revision of the Georgian INDC is planned to be conducted based on which, the new NDC will be developed and submitted to the UNFCCC secretariat by 2019.

The EU-Georgia AA is another key document shaping the Climate Change commitments at the national level. Specifically, the AA stresses the need for cooperation on the following areas: mitigation of climate change, adaptation to climate change, carbon trade, integration into industrial policy on climate change issues and the development of clean technologies. The agreement explicitly mentions the cooperation on the preparation of the Low Emission Strategy (LEDS), as well as Nationally Appropriate Mitigation Actions (NAMA), and the measures aimed at promoting technology transfer based on the technology needs assessment.

The preparation of LEDS started in 2013. It aims to (a) provide an integrated comprehensive pathway for long-term sustainable development; (b) take into account the country's development objectives and unique circumstances; (c) promote transformational development; (d) help the country meet international climate change commitments; and (e), help the country to access financing from both public and private sources.

The concept related to Nationally Appropriate Mitigation Actions (NAMAs) has become a key element of negotiation on mitigation in the UNFCCC process. Georgia is actively involved in the preparation and implementation of projects for NAMAs. Within the framework of this initiative, the following NAMAs have either been implemented or are under preparation: Adaptive Sustainable Forest Management in the Borjomi-Bakuriani Forest District; the Efficient Use of Biomass for Equitable Climate-Proof and Sustainable Rural Development; Energy Efficient Refurbishment in the Georgian public building sector; and Vertically Integrated Nationally Appropriate Mitigation Action (V-NAMA) with a focus on the urban transport sector.

The Georgian Laws on Environmental Protection (1996) and on Ambient Air Protection (1999) acknowledge the significance of GHG emissions and stress the need to implement mitigation measures. It is highly expected that Georgia's contribution to global greenhouse gas emissions will increase driven by the increasing trends of the projections of population and economic development. However, by joining the Paris Agreement, Georgia is going to contribute to the international commitment by reducing its national GHG emissions.

Climate change mitigation and adaptation actions are more effective if they are integrated into sectoral policies. The integration of climate change issues into sector programs that cause the biggest GHG emissions (transport, energy, industry) would have the greatest effect in the reduction of GHG emissions. At the same time, public awareness raising and the enclosure of climate change to educational programs enhance the sustainable development supportive decisions in the long-term. The importance of actions addressing climate change effects at the national level is acknowledged in the Social-economic Development Strategy of Georgia "Georgia 2020". The document declares that "it will be necessary to attract environmental investments from the international funds of the UN Framework Convention on Climate Change (Green Climate Fund (GCF), Global Environmental Facility (GEF)) in order to meet the requirements of the Convention. This will facilitate the process of introducing energy-saving, environmentally-friendly modern technologies in Georgia". The Agricultural Strategy for 2015-2020, among other activities, integrates climate change-related

aspects and aims to introduce climate-smart agricultural practices in the country. It is expected that the soon-to-be implemented Strategic Environmental Assessment (SEA), will further facilitate the integration of climate change issues in sectoral policies.

One of the main objectives of the government of Georgia is to improve the country's preparedness and adaptive capacity by developing climate resilient practices that reduce the vulnerability of highly exposed communities. In this regard, the climate-related risks and adaption measures are initiated to integrate in the national key strategy and program papers.

Georgia strongly supports the EU initiative - Covenant of Mayors (CoM). For seven years, by joining the municipalities and cities of Georgia to the CoM, vertical coordination dialogue has advanced between both the central and local governments with regard to climate change mitigation. The intensification of the dialogue has a dual effect for better coordination. On one hand, the local governments have been exchanging knowledge on translating national climate goals to their action plans and on the other hand, the mitigation targets and needs raised by the municipalities and cities have been included in national climate-related strategies. For instance, the Sustainable Energy Action Plans (SEAPs) prepared under the CoM have been translated into the development of GHG emission scenarios, such as business as usual and alternatives.

Currently, there are fourteen signatory local administrative entities, including 10 cities and 4 municipalities. They took the obligation to reduce greenhouse gas emissions by 20% by 2020, compared to the value defined by the Business as Usual (BAU) scenario, which is the equivalent of approximately 846 Gg of CO2 emission reduction. Nine cities and one municipality have submitted their Sustainable Energy Action Plans (SEAP) showing emission reductions mostly from the transport and public sectors.

The new initiative offered by the commission regarding the CoM for climate and energy is open for the cities of Georgia in order to strengthen climate actions towards developing adaptive capacity and enhancing mitigation measures vis-a-vis promoting secure, sustainable and affordable energy.

10.4 PROBLEMS AND PRIORITIES

To achieve long-term benefits, it should be highlighted that climate change mitigation and adaptation does not only serve environmental goals. This is an integrated process that improves the efficiency of the economy as well. Energy efficiency, the diversification of energy sources, and shifting to alternative energy sources are cost intensive. Although, in the long run, these measures will provide better energy independence and lower operational costs for the whole economy. Climate change also has serious negative effects on Georgia's critical economic sectors as mentioned above and may lead to significant economic losses. According to expert opinion, the estimated economic losses without adaptation measures during 2021-2030 could be about GEL 25-30 billion, while adaptation measures could cost up to GEL 2.5-3 billion. Therefore, the implementation of adaptation measures is a key area under the given climate change trends.

Another important arena are the mitigation measures planned within the framework of the LEDS for the following sectors: energy, industry, transport, residential, agriculture, LULUCF (Land Use, Land Use Change and Forestry) and waste. The implementation of the SEAPs within the CoM will also significantly contribute to the reduction of GHG emissions and the climate change mitigation process. Finally, in order to properly implement any adaptation or mitigation measures, it is necessary to track

climate change process in Georgia related to permanent studies and analyses. The UNFCCC requires from each party to communicate regularly all possible information on processes related to climate change. Therefore, the preparation of NCs and biannual update reports is essential procedures for the country.

In order to address the above described cross-sectoral challenges, the following long-term goal and short-term targets have been defined below:

GOAL:
to achieve a reduction of GHG emissions and ensure the security of the population of Georgia through the implementation of mitigation and adaptation measures.

Target 1: Creation of prerequisites for greenhouse gas emission reduction
Target 2: Increase the adaptive capacity of the country
Target 3: Implementation of the reporting obligations under the UNFCCC

10.5 ACTION PLAN

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1. Creation of prerequisites for greenhouse gas emission reduction								
1.1	Preparation of Low Emission Development Strategy (LEDS)	LEDS document approved by the Coordination Committee	Donor grant	USAID	MEPA	MoESD	Procedural delay of approval of the LEDS	2017
1.2	Developing of "Climate Action Plan 2021-2030"	Adopted `Climate Action Plan 2021-2030"	Donor grant	GIZ, donors	MEPA		The action plan not approved by the ministries, responsible for the implementation of plan	2017-2019
1.3	Developing of Nationally Determined Contribution (NDC)	The NDC is registered in the UNFCCC registry system	Envisaged within the existing budgetary resources Donor grant	State budget Donor	MEPA	MoESD	Delay of approval by the Government of Georgia	2017-2019
1.4	Development of long term 2050 low emission development strategy	The document is approved by the Coordination Committee	Donor grant	Donor	MEPA	MoESD	The long term low emission development strategy not approved by the Coordination Committee Lack of funding	2018-2021
1.5	Developing of Nationally Appropriate Mitigation Actions (NAMAs)	2 NAMAs are registered in the UNFCCC NAMA registry	Donor grant	Donor	MEPA	To be defined with the donors	Lack of funding	2017-2020
1.6	EU initiative Developing of Sustainable energy action plans for EU initiative "Covenant of Mayors" (CoM) signatory cities	Sustainable energy action plans approved by the CoM secretariat	Envisaged within the existing budgetary resources Donor grant	State budget, Donor	Signaroty cities of CoM	MEPA MoESD	Not accepted by the CoM secretariat	2017-2020

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.7	Developing of "Green City Program" in Batumi and Kutaisi	"Green City Development" Program Results in Batumi and Kutaisi: increase in green spaces, development of climate friendly transport systems and etc. Sustainable urban transport strategy and policy framework document are developed. Emission reduction in thousand tonnes of CO_2 eq	Donor grant	GEF	Kutaisi City Hall Batumi City Hall	MEPA MoESD	GEF does not approve Kutaisi Green City Program	2017-2021
Target 2. Increase of country's adaptive capacity								
2.1	Initiating of Multi-Hazard Early Warning System	Improved hydro-meteorological and agrometeorological network Floodplain zoning for hazard and risk maps are prepared Early warning system is prepared and implemented in the country Structural and non-structural flood protection measures are implemented	Donor grant	GCF, UNDP	MEPA	All partners	Not financed by GCF	2017-2021
2.2	Developing of National Adaptation Plan	Approved "National Adaptation Plan"	Donor grant	GCF	MEPA	MoESD MRDI MoIA Municipalities	GCF has not approved the project document for financing	2017-2020

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
2.3	Identification of vulnerability of the coastal zone of Georgia and planning of adaptation actions	Adaptation actions for coastal region of Georgia are identified and prioritized	Donor grant	World Bank	MEPA		Lack of funding	2018-2020
Target 3. Implementation of reporting obligations under the UNFCCC								
3.1	Preparation of the 2nd Biennial Update Report (BUR) to the UNFCCC	BUR document is received by the UNFCCC secretariat and published on web site	Donor grant	GEF, UNDP	MEPA		Lack of funding Lack of expetize	2017-2019
3.2	Preparation of the 4th National Communication (NC) to the UNFCCC	NC is received by the UNFCCC secretariat and published on web site	Donor grant	GEF, UNDP	MEPA		Lack of funding	2017-2021
3.3	Preparation of the 3rd Biennial Update Report (BUR) to the UNFCCC	BUR document is received by the UNFCCC secretariat and published on web site	Donor grant	GEF, UNDP	MEPA		Lack of funding	2019-2021

11.
NATURAL HAZARDS RISK MANAGEMENT

This chapter is devoted to the natural processes that pose serious socioeconomic risks to Georgia. Today, traditional approaches focused on emergency response are still prevalent in the country. It is necessary to improve the entire risk management cycle along with the development of capacities to respond effectively to emergency situations. Therefore, the main focus of this chapter referrs to risk assessment related to natural hazards - floods, flash floods, hail, avalanches, droughts, landslides, falling rocks, debris/mudflows and other natural phenomena. The monitoring and assessment of hydro-meteorological and geological processes are significant compounds in risk prevention and assessment. For these reasons, those activities are given due attention in this program. Hydro-meteorological aspects and geological processes do play an important role in the development of natural hazards. Therefore, the actions are divided into hydro-meteorological and geological hazards.

11.1 CURRENT STATUS

Georgia's geographical location, its relief and various climate-forming conditions, unstable hydrological network, complex geological setup and natural disasters stipulated by these factors, pose significant natural threat to the country. The settlements and municipalities in Georgia are placed under four categories of hazard risks: non-dangerous, low, medium and high. Landslides, debris flow, falling rocks and mudflows are considered major geological hazards, while floods, flash floods, hail, avalanches and droughts are qualified as the most frequent natural hydro-meteorological phenomena in Georgia.

Landslides are frequently associated with significant economic loss, and in some cases, they even cause human death in Georgia (49 victims between 1995-2016). Landslides damage buildings, agricultural lands, roads, and other infrastructure. As for debris/mudflows, due to the extremely sensitive geological conditions in Georgia, they take place in almost all mountainous river basins and during the last 22 years (1995-2016), 94 people have died because of mudflows. More than 3,000 water bodies, transformed by debris/mudflows, have been recorded in Georgia and the total area of these river basins amount to more than 22% of the country. Falling rocks and rock avalanches are also frequent in Georgia due to its complex landscape. 50% of the country's territory is characterized by more than 200 incline, and slopes are mainly built on rocky and semi-rocky layers. Therefore, active gravitational processes - falling and rock avalanche, are observed almost everywhere. Such processes are particularly intensive during the winter and spring seasons, and the population and infrastructure in the mountainous regions, are always within the risk zone. Earthquakes trigger the rock avalanches and other geological processes (e.g. earthquakes in Racha-Imereti (1991), Pasanauri-Barisakho (1992), Tbilisi (2002), Oni (2009) and Vani (2010). Other factors include extreme hydro-meteorological phenomena and the negative impact that result from large-scale human activities. The complete control of geological processes is impossible, but using modern methods it is possible to forecast the probability and scale of the event via a risk assessment system.

Within the hydro-meteorological processes, floods, flash floods, hail and droughts are among the most damaging natural hazards in Georgia. Floods and flash floods are typical for all rivers in Georgia. An especially high risk of floods and flash floods is observed in the river basins of Imereti, Samegrelo, Guria, the Mtskheta-Mtianeti regions, as well as the nearby territories of the Mtkvari River and the left bank of the Alazani River. In 1968 and 1987, floods and flash floods destroyed more than 400 houses, 1, 500 agricultural facilities and 16 km of railway. 80, 000 ha of agricultural lands were also lost or damaged. In 2015, the flash flood in the Vere River basin accompanied by landslide, debris/mudflow and other natural events, took more than 20 human lives and caused significant economic damage.

Hail is observed on the whole territory of Georgia. Its intensity and frequency is higher in eastern Georgia. However, in 1997, the hail dramatically affected not only the eastern part of the country, but also the Oni, Ambrolauri, Adigeni and Zestaphoni regions. During this period, agricultural crops and harvests were lost, house roofs and vehicles were damaged and poultry and domestic animals were killed. The economic damage exceeded GEL 35 million.

Avalanches are typical for the mountainous regions of Georgia. A high frequency of avalanche was observed in 1970-2005. Around 176 human lives were lost and more than 20, 000 people had to resettle. Drought is most common in Shida Kartli, Kvemo Kartli Kakheti, Samtskhe-Trialeti and the Zemo Imereti regions, but also takes place throughout the whole territory of Georgia. For example, in 2000, drought was observed on more than 50% of the territory of Georgia and lasted 7 months. The damage exceeded GEL 300 million.

The increasing trend of the intensity and frequency of hydro-meteorological and geological phenomena due to climate change has been observed worldwide, including in Georgia. Therefore, the assessment of risk zones and risk origins, risk monitoring and risk management becomes even more important today. Significant work has already been undertaken in Georgia in this regard. Although state capacity in natural hazards monitoring and risk-assessment has weakened since 1993, the situation has significantly improved in recent years. Still, natural hazard risk management requires fundamental improvement in the country.

11.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

The LEPL National Environmental Agency (NEA) under the MEPA, is mandated to monitor ongoing hydrological, climatological, meteorologicaland geological events. The Department of Geology, under the NEA, during the spring and autumn seasons, conducts integrated geological monitoring in all regions and municipalities of Georgia. The department regularly publishes the Annual Info Bulletin, which contains information not only on existing data and analysis of events, but the future prognosis as well. The analytical part includes results from the assessment of extreme geological hazards and the estimation of the millimetres of rainfall that can trigger specific landslides and debris flows/ mudflows (rainfall thresholds). The bulletin provides comprehensive future risk prognosis based on category of risk. The risk prognosis does indicate the area that would be possibly affected, the types of geological phenomena, damages registered and mitigation measures (both structural and non-structural) to be implemented. All these measures are prioritized by the Department of Geology. Included in the bulletin are GIS maps with the localization and classification of various geological hazards (landslides, debris/mudflows, rock falls etc.). Since 2014, the Department of Geology of the NEA has been carrying out the geological survey and preparing state geological maps and reports.

The Hydro-meteorological Department under the NEA, carries out hydrological and meteorological monitoring and provides Georgia with short and medium-range forecasts for potential extreme weather situations. The department has operational access to meteorological radar data owned by other agencies, which creates the possibility of producing short-term and detailed forecasts of precipitation, floods and flash floods. The Department of Hydrometeorology operates a telecommunication center that is in charge of gathering and disseminating hydro-meteorological data. The center is equipped by technological standards set by the World Meteorological Organization. The center also has an opportunity to make and optimize the synoptic products from the world's leading centers of weather forecasts that are necessary to create short and medium-term weather forecasts for the country. The department also ensures the early warning of all the relevant agencies defined by the MEPA.

In order to coordinate the issues of state security and emergency situation management at the highest level of decision making, a specially authorized body– the Emergency Management Service (EMS) - was established in accordance with the amendment No.1621 of December 7, 2017 to the Law of Georgia on "Civil Security" which is a special state entity under the direct supervision of the Prime Minister of Georgia, ensuring the prevention of emergency situations, preparedness of the entire system, emergency responses and organization of the rehabilitation works in the zone of the emergency situation as well as implementation of the national security activities in order to resolve the civil security issues.

The functions of the institution include the development of the proposals for the prevention of natural threats and the response measures. The National Center for Crisis Management (Department) established under the EMS is equipped with all the necessary means for proper functioning. During crisis situations, the Center operates under the direct subordination of the Prime Minister. The Center actively follows the Prime Minister's instructions. The Center is also supported by the government of the United Kingdom. Within the framework of this assistance, training/seminars as well as staff testing are regularly conducted at the Center. The UK experts regularly share their experiences that focus on the strategic level of crisis management. It is planned to update the existing method of threat assessment, namely, to determine the natural threats as one of the risks. Based on the revised matrix of risks, the Service lays out the risk reduction strategy and the necessary resources to prepare a four-year plan for its implementation. The National Center for Crisis Management provides risk management at the government level. In particular, it informs the Prime Minister of the potential threats to the country's national interests, prepares plans for all kinds of crises and analyzes the efficiency of the measures taken to overcome the crisis situation in the post-crisis period. In addition, the National Center for Crisis Management ensures the coordination of the state agencies and maintains a database durung crisis situations.

The Emergency Management Agency (EMA), under the EMS, hosts the Department of Civil Safety with its Prevention, Planning and Supervision Division and the Standing Secretariat of the Expert-Advisory Council. This division is mandated to coordinate risk reduction, prevention and preparedness activities across the country. For this purpose the Division develops the National Response Plan that strengthens disaster preparedness for effective responses at all levels by providing thepolitical framework for disaster management, capacity-building (institutional basis) for the implementation and enforcement, identifying, assessing and monitoring disaster risks and enhancing early warning, ensuring knowledge and education related to safety matters during emergencies and reducing the risk factors of emergency situations. The Expert-Advisory Council deals with natural and man-made emergency prevention and loss-reduction, the coordination of experts in the field of civil emergency planning within NATO and Partnership for Peace programs (NATO PfP). The Operational Management Center operates under the EMA as well, with its main responsibility to inform the Executive Authorities of the unified emergency management system and authorized persons in the case of emergency, and involve administrative-territorial units relevant to the primary response to the emergency situations, fire-rescue forces and means of the municipal bodies

The Department of Spatial Planning and Construction Policy, under the Ministry of Economy and Sustainable Development, is in charge of the development, implementation, coordination, management and monitoring of spatial, urban planning and construction activities, including technical regulations and building codes.

It should be mentioned that the production union "Delta" under the Ministry of Defense of Georgia carries out the artificial impact works on hail. This greatly helps to prevent or mitigate possible damages caused by the hail.

The Ministry of Internally Displaced Persons from Occupied Territories, Accommodation and Refugees is mandated to develop a system for the management of migration caused by natural disasters (eco-migration), which provides monitoring of migration processes, prepares predictions and implements resettlement processes induced by natural disaster risks. It also develops an adaptation-integration program of eco-migrants in new settlements and maintains a database.

11.3 LEGAL AND POLICY FRAMEWORK

The main legal act on hazards is the Georgian Law on Civil Safety (2014) which aims to protect the population and land from natural and man-made emergency situations and is a major law for disaster management in Georgia. The law predominantly addresses civil protection, defining the functions and competencies of various state entities at the stages of preparedness, response, prevention of emergency situations and early recovery action, as a part of the immediate response stage. It introduces a common system of emergency management and centralized control of command at all levels (central/national, regional, municipal, and Adjara A/R).

The EU-Georgia AA includes provisions from the Flood Risks Management Directive (2007/60/EC). In particular, basic national legislation on flood risks management shall be developed and preliminary flood risk assessments conducted, as well as flood risk maps developed within the set deadlines.

The Civilian Safety National Plan was adopted by the government of Georgia in 2015. The plan defines the cooperation modalities among the various state stakeholders in the case of emergency situations caused by various factors (radioactive, chemical, biological pollution, spread of diseases, fires and so on).

By the Resolution N4 of January 11, 2017, the Government of Georgia approved the "National Strategy for the Disaster Risk Reduction of Georgia for 2017-2020 and its Action Plan".

11.4 PROBLEMS AND PRIORITIES

Disaster risk reduction gradually evolved as a priority for the government and there has been progress in addressing disaster risk issues at the sectorial level. The reactive approach of disaster response should be moved to a more proactive disaster risk reduction approach. Assessing risks and considering risk reduction within the overall planning process rather than focusing on responding to disasters as they occur, becomes more and more realistic given the improved understanding and increased interest of key stakeholders on the issue. However, there is a need to develop capacities for reducing existing risks, avoiding new risks, and improving preparedness for efficient responses to disasters.

The legislative and policy framework for disaster risk assessment reduction has gaps and institutional arrangements and multi-stakeholder coordination mechanisms are not yet fully functional. The efficiency of risk assessment and the management system has to be increased. Technical, human and financial capacities exist, but are not well coordinated, prioritized and systematized across the appropriate sectors, governance levels and institutions.

An Atlas on Natural Hazards and Risks in Georgia is available, although its use is not sufficiently promoted. Decision-makers need improved understanding of hazard and risk management and the benefits of its use. National, local and sectorial development plans do not consistently use multi-hazard risk assessment results. The hazard data collection and mapping remains predominant, and they are being conducted in a sectorial or project-based manner.

Georgia's complex relief and geographical conditions requires a more intensive hydro-meteorological and geological monitoring network for the assessment of current and expected hydro meteorological and geological phenomena. It is necessary to conduct specialized agro-meteorological observations in high-risk regions during droughts, use remote methods of observation (satellite) and the introduction of modern technologies for short, medium and long-term drought forecasts. It is very important to have precise measuring means, such as radar meteorological stations. In addition, strong computing techniques (supercomputer) are needed for accurate weather forecasts. Additional efforts should be made to extend the hydro-meteorological monitoring network in order to obtain robust data for making forecasts as accurate as possible. Data collection, processing and management are significant challenges in the development of Georgia's risk assessment and management system. An increase in data processing capacity (soft and hardware, shills) should be promoted in order to increase hazard preparedness and prevent losses and damages. Various institutions in charge of risk assessments use different kinds of Information and Communication Technology (ICT) infrastructure. No common IT platform for risk assessments has been developed or selected at the national level. Data on the varous types of hazards is collected by an assortment of agencies/institutions/ministries in different manners. Also, they are not collected, standardized and stored in a common database. Georgia has taken its first steps to address this situation. EMA has set up a database system to collect data during and after disasters. At the moment, Georgia is working on a project on historical data (disaster loss database).

To address the above challenges, the following long-term goal and short-term targets have been defined.

GOAL:
To avoid the loss of lives and reduce the negative impact on human health and ecosystems, as well as to minimize economic losses.

Target 1: Improvement of hazard identification, risk assessment/analysis, prevention and monitoring systems

11.5 ACTION PLAN

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1: Improvement of hazard identification, risk assessment / analysis, prevention and monitoring systems								
1.1	Implementation of flood and flash-flood risk assessment and management system	Identified flood risk zones Assessed flood and flash-flood risks Flood and flash-flood risk reduction and preparedness plan completed for flood risk zones	24, 000	State budget, Donor	NEA	MEPA	Lack of technical and financial resources; Delays in the preparation of the legal framework	2017-2021
1.2	Renovation of geological monitoring system for Tbilisi city	Identified geological processes in Tbilisi Developed hazard zones GIS map for Tbilisi	192,000	State budget	NEA	MEPA	Technical difficulties in implementation	2017-2021
1.3	Creation of large-scale geological hazard zoning GIS maps for whole country	Identified geological processes (Landslide, debris flow/mudflow etc.) in Georgia; Geological hazard zoning GIS map of Georgia Basic data compiled for the risk mitigation and accident prevention	Budget: 2,127, 123 Donor grant	State budget, Donor	NEA	MEPA	Lack of financial or technical resources	2017-2021
1.4	Creation of GIS geological hazard database	Database on historical and current Geological hazards operational Stronger basis for the hazard risk assessment Preparedness for the risk strengthened	394,000	State budget	NEA	MEPA		2017-2021

No	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.5	Expansion of hydro-meteorological monitoring stationary network	Number of installed hydro-meteorological and meteorological automatic stations and posts (30 per year) Increased capacity of Early Warning, more precise prediction, increase in cost-effectiveness	State budget: 3,500 000 NEA budget: 3,534, 064 Donor: 3,000, 000	State budget Donors	MEPA NEA			2017-2020
1.6	Creation of hydro-meteorological electronic database	Database on historical and current hydro-meteorological monitoring data Access to the system granted	2,275, 500	State budget, Donor	MEPA NEA			2017-2020
1.7	Creation of short, medium and long-term early warning system of droughts	The number of issued warnings / recommendations	2,252, 700	Budget of LEPL National Environmental Agency	MEPA NEA			2019-2021
1.8	Elaboration of the mechanisms for measuring losses / damages and mitigation tools for impacts caused by the catastrophes	Developed software for damage losses	Donor grant	UNDP, Swiss Cooperation Office	EMS	MEPA MoESD MRDI	Prolongation of elaboration process	2017-2020

12.
RADIATION SAFETY

Ionizing radiation is defined as the radiation of particles from the radioactive substances or high frequency waves, which possess sufficient energy to cause ionization in the medium through which it passes. The ionizing radiation plays an important role in everyday life. Radiation-related activities are closely linked to the use of radioactive materials and other sources of radiation in medicine, industry and scientific research. Sources of ionizing radiation may be natural (space, earth crust, construction materials, radon, and food) or man-made (x-ray, pharmacological and industrial radioisotopes, fuel) and the scope of their application in everyday life has been expanding. However, as the ionizing radiation can damage living cells, which frequently becomes the precondition for tumor and poses other risks to human health, it is necessary to ensure the proper protection of humans from the negative impact of ionizing radiation.

12.1 CURRENT STATUS

Nuclear and radiation activities in Georgia are highly regulated. In recent years, significant changes in the sphere were introduced, namely regarding the implementation of the International Atomic Energy Agency (IAEA) recommendations and the shaping of an independent regulatory body. Significant achievements have been reached in the field of medical application of ionizing radiation. A number of new medical facilities were made operational, using linear accelerators, multi-slice computer tomography, as well as Positron Emission Tomography (PET).

A progress has also been made towards radioactive waste and orphan sources of radiation, which was identified as one of the most challenging issues during the previous NEAP-2. About 350 orphan sources of radiation were identified in Georgia between 2000 and 2010, which were left without control after the collapse of the Soviet Union. By 2016, all of these orphan sources of radiation and radioactive waste were stored safely either in the temporary storage facilities or their respective disposal site. It has also has to be outlined that in 2015 Georgia was granted “Nuclear Free” status at the Nuclear Industry Summit, with the removal and return to the country of origin of its last remaining highly-enriched nuclear sources.

Monitoring of the radiation levels in Georgia is done on a daily basis. In fact, gamma radiation is measured in 15 stations located throughout Georgia. Out of these, 7 stations are automatic. Daily radiation monitoring data is available on the National Environmental Agency’s (NEA) web-site.

It should also be noted that the ionizing radiation sources needed for various fields (e.g. industry, medicine, etc.) are not produced in Georgia. Nuclear and radiation related activities in Georgia are regulated by the relevant license or permit.

12.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

The Ministry of Environmental Protection and Agriculture (MEPA) of Georgia is the national authority defining and implementing the nuclear and radiation safety policy in the country. The ministry implements its functions in this field via its Agency for Nuclear and Radiation Safety (ANRS), which was established as an independent body in 2016 as recommended by the International Atomic Energy Agency (IAEA). With this institutional reform, the radioactive waste management function has been passed to the ANRS and control over radioactive waste storage was recovered. The department of the radioactive waste management being established under the ANRS operates the radioactive waste disposal sites and storage. The ANRS authorizes nuclear and radioactive activities (issues licenses and permits) and controls radiation facilities and activities through planned and unplanned inspections. The Ministry of Environmental Protection and Agriculture of Georgia carries out the control of radionuclides in food, drinking water, animal fodder and soil.

Apart from the MEPA, other state agencies are also involved in the regulation of nuclear and radiation safety related aspects. Specifically, the State Security Service is responsible for the prevention of illicit trafficking of nuclear and radioactive materials, while the Ministry of Internal Affairs liquidates consequences of accidents, ensures the physical protection and control of radioactive sources and facilities. Engagement in the abatement actions in the case of nuclear accident is the function of the Ministry of Defense. The Customs Department under the MoF is responsible for controling the export, import and transit of nuclear and radioactive materials. The rues for medical checks of personnel exposed to radiation and admissible radiation limits in case of accidents are set by the Ministry of Labour, Health and Social Affairs. The metrological calibration of installations is the responsibility of the Ministry of Economy and Sustainable Development and the Ministry of Foreign Affairs supervises the implementation process of the obligations taken by the country through international treaties. Other stakeholders include hundreds of facilities which use ionizing radiation sources during their operation.

12.3 LEGAL AND POLICY FRAMEWORK

The Law on Nuclear and Radiation Safety (2012) regulates the activities of physical and legal persons who are dealing with nuclear and radioactive materials, as well as other ionizing radiation sources. Another important legal act is the Law of Georgia on Radioactive Waste (2015), which regulates the legal relations between state authorities and the physical or legal persons who are carrying out the radioactive waste management activities, radioactive waste treatment and/or activities related to the creation of radioactive waste. This law also defines the requirements for safety and protection of radioactive waste management for radioactive waste related activities and the relevant objects.

Additionally, issues related to the nuclear and radiation safety are regulated by Subordinate Acts. In particular, Resolution N450 of August 27, 2015 on the approval of Technical Regulations – Radiation Safety Norms and Basic Requirements for the Treatment of Ionizing Radiation Sources – determines the requirements regarding the control and safety of ionizing radiation sources, the basic safety norms for the protection of workers, the population, patients and other persons under the influence of medical radiation from the hazards caused by the ionizing radiation sources, for the control of the ionizing radiation sources in case of emergency irradiation, and the requirements for safety and the relevant information. Technical Regulations approved by the government of Georgia by Resolution N317 of July 7, 2016, Radiation Safety Requirements in the Field of Medical Irradiation, defines the basic requirements for radiation protection of personnel, patients and the population working within the medical field and allowable and referential rates of medical irradiation.

The Resolution N150 of December 8, 2014, of the Minister of the Environment and Natural Resources Protection “on the approval of the rules on the illegal circulation of the nuclear and radioactive substances” establishes the rule for carrying out the further responding activities to the suppression of the nuclear and radioactive substances by the Authorized Bodies on the territory of Georgia for the purpose of nuclear and radiation safety. The Resolution No. 2 of January 22, 2016 of the Minister of the Environment and Natural Resources Protection of Georgia “on the approval of the Rules for the Inspection of the Nuclear and Radiation Activities” defines the preconditions and procedures for the inspection of the activities regulated by the Law of Georgia on "The Nuclear and Radiation Security". Procedures related to the radiation monitoring of the metal scrap and also the legal basis for the radiation inspection of the metal scrap is determined by the technical regulations on - "The Radiation Monitoring Rules of the Metal Scrap" approved by the Resolution N756 of December 31, 2014 of the Government of Georgia.

One of the framework documents determining national policy in this field is the National Strategy for the Reduction of Chemical, Biological, Radiation and Nuclear (CBRN) Threats approved by by the Resolution N164 of February 14, 2014 of the Government of Georgia and the National Action Plan developed on its basis (2015). The overall goal of this document is to ensure the unification of the individual actions as a consensual approach against CBRN threats. The prevention, detection, readiness, response and international cooperation are the main directions of the National Strategy of the CBRN. Radioactive waste management is one of the priorities which needs planning and implementation of the actions in the long-term perspective. It is necessary to institutionalize radioactive waste management for which the government of Georgia approved Decree N640 of December 30, 2016 "National Strategy of Radioactive Waste Management for 2017-2031 and Action Plan for its implementation for 2017-2018". The document determined the effective means of human and environmental protection against harmful ionizing radiation at all stages of radioactive waste management, both in the present and in the future. The strategy will promote the implementation of both national and international security standards, in order to achieve the effective protection of society and the environment from the adverse impacts of ionizing radiation. Accordingly, the strategy creates the possibility of bringing the national legislation into compliance with international norms and standards. Another very important document is the State Border Management Strategy of Georgia approved by Decree No. 226 of March 13, 2014 of the government of Georgia, which envisages an integrated approach to State Border Management and the control measures of nuclear and radioactive substances on the border.

The Integrated Nuclear Security Support Plan 2015-2019 approved by the georgan Government (Decree N2171, 7/11/ 2015) sets six objectives and respective measures for meeting those objectives. The plan is a roadmap for improving the cooperation of agencies involved in nuclear safety measures. International treaties and agreements play a significant role in framing the national policy in the field of radiation safety. In particular, Georgia has an agreement with the IAEA for the Application of Safeguards in Connection with the Treaty on the Non-proliferation of Nuclear Weapons and is a party to the Protocol Additional to the Agreement between the Republic of Georgia and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons. Georgia is also a party to the following international treaties: the Convention of Physical Protection of Nuclear Materials, the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, the Treaty on the Non-Proliferation of Nuclear Weapons; the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency Accident. The EU-Georgia AA sets concrete obligations in the field of nuclear and radiation safety and the elaboration of legal acts, aiming to approximate national regulations with the EU and IAEA requirements are ongoing.

12.4 PROBLEMS AND PRIORITIES

The main priority in the field of nuclear and radiation safety is the protection of human health and the environment from the negative effects of ionizing radiation. For the practical implementation of this overall goal it is important to continue the revision of the existing practices and legislation, analyze the gaps in legislation and make amendments if needed. All this has to be done by taking into account the constantly evolving technologies and best practices. All stakeholders, both public and private, have their role in it and the actions planned are guided by these principles.

One of the main challenges for the successful implementation of nuclear and radiation safety related regulations and protection mechanisms is the absence of effective specialized education and training system. Another, related issue is the lack of qualified staff. However, the development of an education strategy and an increase in awareness among the general public in the field of nuclear and radiation safety is planned.

Therefore, the following long-term goal (2030) and three 5-year targets have been set for radiation and nuclear safety:

GOAL:
To ensure radiation safety of people and the environment

TARGETS:
Target 1: Improvement of national nuclear and radiation safety legislation
Target 2: Promotion of capacity-building in nuclear and radiation safety
Target 3: Improvement of the education system and awareness raising.

12.5 ACTION PLAN

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1: Improvement of national nuclear and radiation safety legislation								
1.1	Accession to the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency	The Convention is acceded	Envisaged within the existing budgetary resources	State budget	MEPA ANRS	IAEA	Government commitment	2017
1. 2	Implementation of the Radiation Waste Strategy (15 Year) and Action Plan (2 year)	Actions completed Revised Action Plan (2 cycles)	Envisaged within the existing budgetary resources Donor grant	State budget SSM, EU	MEPA ANRS			2017-2018
1.3	Improvement of security measures at the radiation Waste locations	Improved security infrastructure at 2 radiation waste locations (storage and disposal sites)	Envisaged within the existing budgetary resources Donor grant	State budget / US DOE	MEPA ANRS		Lack of human resources	2017-2021
1.4	Conduction of assessment and monitoring of radiation levels in various regions of Georgia (Shida Kartli, Mtsheta-Mtianeti, Kvemo Kartli, Kakheti)	Reports on radiation levels	51, 000	State budget	MEPA ANRS			2018-2020

No.	ACTIVITIES	INDICATOR(S)	COST ESTIMATES (LARI)	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 2: Capacity-building in Nuclear and Radiation Safety								
2.1	Development of the waste management infrastructure	Design of the facility initiated and completed Construction permit obtained Constructed waste conditioning workshop	Donor grant	IAEA	MEPA ANRS		lack of funding	2017-2021
2.2	Raising the qualification of Nuclear and Radiation Safety Agency staff through international trainings	Number of re-trained staff, Number of trainings	Donor grant	IAEA	MEPA ANRS		Cancelation of trainings	2018-2021
Target 3: Improvement of education system and awareness raising								
3.1	Elaboration of the Education and Training Strategy in Nuclear and Radiation Safety	Developed Strategy	Envisaged within the existing budgetary resources Donor grant	State budget IAEA	MEPA ANRS	MoESD; MoIA; MoD; MHLSA; MFA; MoF; SSSG		2017-2018
3.2	Raising Awareness of General Public about Nuclear and Radiation Safety	Number of conducted seminars and trainings with different interest groups	Envisaged within the existing budgetary resources Donor grant	State budget/ Donors	MEPA ANRS		Lack of interest from society	2018-2021

13.

GREEN ECONOMY AND ENVIRONMENTAL DIMENSION OF SUSTAINABLE DEVELOPMENT

The NEAP-3 proposes a range of specific actions that aim at the development and implementation of alternative approaches to traditional economic activities. Resource and materials efficiency, issues like waste minimisation and prevention, sustainable water use, increased producer responsibility, environmentally conscious consumption, etc. shall pave a path to the green economy. Shifting towards green growth requires efforts from all civil society groups, including those who supply goods or services and those who use those goods and services. The transition to a green economy is a gradual, long-term process and requires much more time than the timeframe of this action program, but the steps to initiate the actions supporting the achievement of the long-term goals have to be made now and they need to be supported. Special features and a wide range of stakeholders and long-term perspectives and dedication to sustainable development are the main reasons why the actions supporting the green economy are concentrated in a separate chapter of the NEAP-3.

13.1 CURRENT STATUS

Green growth and the green economy are described by the United Nations as significant in supporting sustainable development. Green growth was part of the Millennium Development Goals (MDGs) and is highlighted in the Sustainable Development Goals (SDGs) that have been universally adopted by the UN and all countries in 2015. The government of Georgia recognizes the green economy as one of the key instruments for the future development of the country and has taken the initiative to contribute to sustainable development through its voluntary efforts. The promotion of ecosystem services, clean production, environmental education and green jobs are of high importance. Georgia has undertaken active measures to adjust the SDGs agenda and its targets to the national circumstances and to advance the implementation of all 17 goals. There is common recognition in the government that the green economy will bring benefit to both people and nature.

Georgia is rich in natural resources and biodiversity. Large areas of the country's nature are still pristine and a significant share of the land has not been affected by human activities. It is one of the key priorities of the government to maintain these values that are addressed in the various chapters above. At the same time, significant environmental impact of development has been observed on certain Georgian territories and the environment in some regions have been severely affected by previous and current socioeconomic activities. Generally, the desire for economic growth often outweighs the objectives. It is not solely caused by the development of industry or business, but the society has its role in it as well, supporting the growth concept without considering environmental issues. The green economy and green growth involve society as a whole and is not only limited to stakeholder groups. The government is committed to strengthening the positive trends and reduce the unfavorable ones.

The green economy depends on the environmental supply-demand chain. As such, it is crucial to achieve a certain volume of products or services on the market that satisfy customers and contribute to sales. To achieve that balance, efforts from both providers and customers should be made. It is worth mentioning that in several sectors, the foundation for sustainable production and consumption is already in place. However, one of the main challenges of the green economy are the higher prices of environmental goods or services, the increasing number of Georgian agricultural producers producing goods in an environmentally sound way and the growing number of consumers ainterested in organic food who are ready to make their choices based on other values rather than merely on cost. Another positive example in sustainable management is tourism. Environmental actions taken by the owners of the country's tourism infrastructure, promoted by the tourism companies, are

supported by tourists willing to prefer and pay more for eco-friendly services. Though more action needs to be addressed to develop this field.

There is a lot of space for improvement in energy consumption and materials efficiency. Resource efficiency is one of the key topics in the green economy. The burdens associated with the inefficient use of natural resources, the generation of waste, and emissions released into the air and discharges to water bodies should be significantly reduced in the green economy. A number of concrete steps have been proposed in the previous chapters of the NEAP-3 that will contribute to the greening of the economy and to making it more efficient. Modern economic models like the circular economy, individual business schemes like the environmental management system or ecosystem services are being promoted by the government. Certain potential lies in the development of the eco-labelling, which will assist producers to provide credibility to their products or services and provide objective information to the eco-conscious users.

The international community has been providing Georgia with more assistance in building the basis for green growth. Within the framework of the second platform “Economic Integration and Convergence with EU policies" the “Greening Economies in the Eastern Neighbourhood” (EaP GREEN) program was implemented in Georgia together with the five other EaP countries by the Organization for Economic Cooperation and Development (OECD), the United Nations Economic Commission for Europe (UNECE), United Nations Environment Programme (UN Environment) and the United Nations Industrial Development Organization (UNIDO) with the financial support of the EU. Its overall objective was to move towards a green economy by decoupling economic growth from environmental degradation and resource depletion. It also aimed at reforming policy instruments, adopting new analytical tools, improving access to finance, supporting capacity development and rolling out pilot projects in the private sector.

Under this program, UNIDO implemented a demonstration project on Resource Efficient and Cleaner Production (RECP) in Georgia. The objective of the project was to improve resource productivity and environmental performance of private companies in the industrial sectors and thereby contribute to sustainable industrial development and the overall green economy. The project cooperated directly with the representatives of small and medium-sized enterprises (SMEs) and established resource efficiency and clean production clubs in the various regions of Georgia.

The OECD project on “Promoting Better Environmental Performance of Small and Medium-sized Enterprises” studied the main conditions and opportunities that can promote the improvement of the effectiveness of environmental protection, as well as the development of the relevant energy-efficient technologies in SMEs and promote government-to-business and business-to-business dialogue for sustainable production and the growing importance of green markets.

13.2 INSTITUTIONAL FRAMEWORK AND KEY STAKEHOLDERS

Society as a whole is a stakeholder in the green growth process. Everybody will benefit by implementing a green-minded approach, but each person has to contribute. The major sectors contributing to green growth are the government with its domain of activities, entrepreneurs, businesses and sectors related to households.

The Administration of the Government of Georgia (GoG) has established a joint technical working group involving experts from different line ministries and the National Statistics Office of Georgia (Geostat) to facilitate the validation of SDGs at the national level and to discuss the process of integration of SDGs in the legal and institutional framework. In the near future, environmental aspects in development programmes/strategies will soon be assessed via a strategic environmental assessment (SEA) procedure, a tool that is discussed in greater detail in the Environmental Governance chapter. Active and efficient cooperation among authorities is a prerequisite for the effective mainstreaming of environmental topics in the sector policies and planning, as the issues are often cross-cutting and actions in one sector have an impact on the other sector.

The role of the government is to support the green economy and manage the activities that are under state control. The central government aims to define a national policy, as well as the legal and regulatory frameworks, and technical standards that need to be applied on a national scale. It also acts as a facilitator in the knowledge-sharing and technical capacity-building process, and allocates budgetary resources to specific programs. Within the governmental bodies, the main actors in the introduction of green economy principles are the Ministry of Economy and Sustainable Development (MoESD) and Ministry of Environmental Protection and Agriculture (MEPA). The process is supported by other ministries and authorities as well, including the Ministry of Regional Development and Infrastructure, the Ministry of Education and Science (MES), Geostat and others.

Municipalities also have a certain role to play in supporting green growth and the green economy. Tbilisi is the most progressive in terms of the greening agenda and reforms. However, a few other medium-sized cities have also experimented with public green transport improvements and other activities supporting the green economy and sustainable development. Some municipalities have been developing the Sustainable Energy Action Plans (prepared within the Covenant of the Mayor's Initiative (CoM)). So far, 14 administrative entities have joined the CoM and are committed to reducing carbon emissions in their communities by at least 30% by 2030.

13.3 LEGAL AND POLICY FRAMEWORK

The green economy directly and indirectly supports compliance with the requirements of the EU-Georgia AA and the DCFTA. The implementation of green economy and sustainable development principles are on the agenda of the GoG and it will focus on improving the living standards of its citizens and their environment. The basis for green growth in Georgia has already been set out in a number of strategic policy documents.

A major policy document that has an impact on the medium-term planning is the Social-Economic Development Strategy of Georgia 2020, which refers to the principle of the rational use of natural resources, ensuring environmental safety and sustainability and avoiding natural disasters during the process of economic development. Georgia 2020 also highlights that "the main goal of state policies as far as innovation and technological sophistication are concerned is to facilitate the transfer and introduction of innovative activities and modern technologies both at the national and regional levels. The state will facilitate the introduction of environmentally friendly technologies, the development of the green economy" and will encourage foreign investment focused on environmentally friendly and resource-efficient technologies.

In 2016 Georgia joined the OECD Green Growth Declaration, which is a useful tool for strengthening efforts to pursue green growth strategies. The document could be considered as part of the response to economic development and job creation through the more sustainable use of natural resources and the valuation of ecosystem services.

The Ministry of Economy and Sustainable Development, supported by GIZ, has drafted the Green Growth Policy Paper for Georgia, which aims to serve as the basis for political discussion on how to implement a green growth approach and for developing a green growth strategy, as the EU-Georgia AA draws attention to sustainable development and the green economy. In particular, Article 301 notes that "the Parties shall develop and strengthen their cooperation on environmental issues, thereby contributing to the long-term objective of sustainable development and greening the economy. It is expected that enhanced environment protection will bring benefits to citizens and businesses in Georgia and in the EU, including through improved public health, preserved natural resources, increased economic and environmental efficiency, as well as use of modern, cleaner technologies contributing to more sustainable production patterns."

Furthermore, the government began working on the Green Growth Strategy within the framework of the EU-funded project "Greening Economies in the Eastern Neighborhood" (EaP GREEN). Generally, UN Environment leads the implementation process of the "Supporting Policy Setting" activity under which the national Green Economy and Sustainable Consumption and Production (SCP) policy frameworks are developed and integrated into the national economic and development planning and implementation processes. Like other countries, Georgia is assisted similarly in the policy development process. The strategy will help identify sectors and economic opportunities with the greatest potential to generate green jobs, stimulate green production and propose a framework for the assessment of green growth intervention and key policy options to achieve national sustainable development objectives.

Some sectoral strategies of Georgia include certain aspects of green growth. For example, the GoG has developed and adopted the SME Development Strategy for Georgia 2016-2020 and SME Development Strategy Action Plan for 2016-2017 with the aim of developing a more favorable environment for SMEs, enhance their competitiveness and innovation capacities, which will eventually lead to income generation and job creation, resulting in inclusive and sustainable economic growth. The document includes concrete actions, like (1) developing a special training program related to resource efficiency and clean production, (2) providing consultations on the environmental performance of SMEs and (3) conducting environmental manager courses in order to promote green practices among SMEs and develop the capacities of companies in environmental management.

The Ministry of Economy and Sustainable Development also promotes the development of alternative energy sources such as wind and solar energy. Also, one of the country priorities is the improvement of energy efficiency - the National Energy Efficiency Action Plan (NEEAP) includes specific energy efficiency measures for buildings as well as industry, transport and the energy sectors. Georgia has officially joined the energy community and has thus declared its readiness to align its legislation with the EU energy efficiency directives.

The national goals of the sustainable management of the tourism sector are presented within the Georgian National Tourism Strategy adopted in 2015. Georgia's long-term tourism goal is to develop the country as a sought-after tourist destination, increase the country's international profile and bring more benefits to the nation. One of the guideline principles of the strategy is long-term sustainability based on the concept of "Geotourism" which is focused on the geographic conservation of the destination point, including the protection of the environment, cultural heritage sites and the well-being of the local population.

The nationalization process of the Sustainable Development Goals (SDGs) has already started and is being coordinated by the administration of the GoG. The document mainly refers to the measures taken by the Georgian government to adjust the SDG agenda and its targets to the national circumstances. This means the integration of SDGs in national priorities and incorporating SDG indicators in other national strategies and priority areas. For the mid-term goals, the MEPA has taken responsibility for over nine targets under 5 different goals that cover the following topics: climate change, waste management, air quality control, ESD, fishery, biodiversity and forest management. Parallel to these targets, the ministry is working on the international targets and goals of the SDGs under the international multilateral environmental agreements and processes that Georgia is party to.

The Eighth Environment for Europe (EfE) Ministerial Conference Batumi 2016 played an important role in promoting green economy development in Georgia. The country, together with other UNECE countries, endorsed the Pan-European Strategic Framework for Greening the Economy and took the voluntary commitments to support the transition towards a green economy and contributed to the implementation of the SDGs. Georgia submitted the following four voluntary commitments under the Batumi Initiative on Green Economy (BIG-E): (1) The elaboration of the Green Growth Strategy in Georgia, (2) the development and implementation of the ESD Strategy and Action Plan, (3) the promotion of Green SMEs and resource efficient production and consumption in Georgia, (4) the development of the Extended Producer Responsibility Policy. Finally, the development and implementation of these commitments into precise actions is reflected in the thematic sections of the NEAP-3.

Changes in the educational system to promote sustainable development and the green economy are supported by governmental actions: the environment and sustainable development principles have been introduced to the assessment criteria of elementary level school books. Thus, these principles will be reflected in the study programs of the elementary level of public schools.

13.4 PROBLEMS AND PRIORITIES

The shift to more environmentally friendly activities cannot be achieved at once, as green growth is a cross-cutting and complex development issue requiring scientific knowledge, innovation, public understanding, careful development planning, responsible enforcement of efficient economic policies and legislation and enhanced human and institutional capacity at the national level. The development of a green economy requires time, but the processes have to be started. Environmental innovation has the largest export potential, but even the technologies and methods that have already been tested in other countries and are well-established need support in their initial phases in Georgia. An increasing number of international institutions are eager to assist Georgia in introducing these methods and the GoG has expressed its readiness to support the development of the green economy and sustainable development principles and policy at the national and local levels.

Considering the fact that Georgia is at the initial stage of its transition towards a green economy, it is important to prioritize several actions. The measures in this phase mainly are focused on the development of the relevant supportive policies and programs, as well as guiding the implementation of the pilot projects in various economic fields and activities, building up national administrative capacities. It is recognized that the development of the green economy and green growth will result in higher productivity and thus competitiveness on global markets, enhanced environmental quality of life, more resilient ecosystems and economies and new business opportunities.

There are a number of activities that are directly linked to the green growth and sustainable development goals in specific chapters of this NEAP and they are not repeated here. Nevertheless, the long-term goal and short-term target for achieving the green economy has been formulated as follows;

GOAL:
Transition to a green economy and the implementation of an environmental dimension of sustainable development

Target 1: Promotion of knowledge development, support in the elaboration and implementation of the green economy and sustainable development policies and their mechanisms at the national level

13.5 ACTION PLAN

No.	ACTIVITIES	INDICATOR	COST ESTIMATES	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
Target 1: Promotion of knowledge development, support in elaboration and implementation of green economy and sustainable development policies and their mechanisms at the national level								
1.1	Elaborating the Green Growth Strategy	The Green Growth Strategy available Sectoral activities included in the appropriate sectoral plans	Donor Grant	EU	MoESD	UN Environment	No commitment and cooperation from stakeholders	2017-2018
1.2	Promoting Greening SMEs and Resource Efficient Production and Consumption in Georgia	Consultations/trainings held with SMEs Recommendations provided for the SMEs	Envisaged within the existing budgetary resources Donor grant	State budget, Donor	MEPA	MoESD	Lack of funding; Lack of interest from private sector	2016-2020
1.3	Coordination and reporting on the implementation of "Batumi Initiative on Green Economy (BIG-E) voluntary commitments	Progress reports on the implementation of BIG-E is prepared and submitted	Envisaged within the existing budgetary resources	State budget	MEPA	MoESD	Lack of provided information Lack of stakeholder involvement	2017-2021
1.4	Reducing the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	Amount of collected and well managed urban solid waste Effective waste management system in place Improved air quality in the cities	Donor grant	Donor Support Needed	MEPA	MRDI	Problems in engagement of stakeholders Lack of interest by the public Weak coordination	2017-2021

No.	ACTIVITIES	INDICATOR	COST ESTIMATES	SOURCE OF FINANCING	IMPLEMENTING ENTITY(IES)	PARTNER ORGANIZATION	POTENTIAL RISKS	TIME FRAME
1.5	Adoption and implementation of National Energy Efficiency Action Plan	Adopted Action Plan Developed energy efficient measures for energy intensive sectors	Donor grant	EBRD; SIDA	MoESD	MEPA	Delay of adoption procedures	2017-2021
1.6	Development of Renewable Energy Sources Promotion Action Plan	Developed action plan	Donor grant	UNDP	MoESD	MEPA MRDI		2017-2018
1.7	Introduction of modern energy efficiency and sustainable energy development approaches	Improved legislation Number of implemented projects	Donor grant	DANIDA	MoESD	MEPA		2017-2021

14.
NEAP -3 MONITORING

The NEAP-3 is a policy instrument that contains specific targets and activities that will be implemented in a dynamic and ever-changing environment. The targets and activities contained in the NEAP-3 document have been identified through an integrated and inter-sectoral approach. The objective is to maintain its status as a key basic planning document in the field of the environment for years to come. Therefore, the monitoring procedures are foreseen as a part of the program, making the NEAP-3 subject to regular reviews in order to ensure its fulfillment.

The Law on the Environment of Georgia (1996) stipulates that a NEAP is to be developed every five years and implemented subsequently since its adoption by the government. The law, however, does not regulate specifically the obligation on reporting on the NEAP implementation. Nevertheless, the "Policy Planning Document" (2016), approved by the Government of Georgia through its Decree No. 629 of December 30, 2016, defines that the annual reports should be prepared by the responsible ministry (MEPA), which should define the report parameters and be responsible for data collection and analysis. In addition, the Policy Planning Document requires that the reports must be approved by the minister and is to be sent to the administration of the government of Georgia.

Referring to the above-mentioned, the preparation of the annual monitoring reports for the NEAP-3 will be coordinated by the MEPA. The organizations and agencies responsible for achieving the objectives and goals of the program should be included in the preparation process and provide all the necessary data to the MEPA. On the basis of the received information, the MEPA should prepare the report on the implementation status of the NEAP 3 and send it to all relevant stakeholders.

Monitoring will be carried out once a year by the MEPA. After the third year of implementation, a mid-term evaluation will be initiated. The mid-term evaluation can be done either in-house by the MEPA or by contracted evaluators. Regular monitoring will be carried out until 2021 when the results of the monitoring and mid-term evaluation will be taken into account in the process of the preparation of the NEAP-4. This will allow using the information on progress, problems and shortcomings of the NEAP-3 during the NEAP-4 development.

The MEPA also should ensure access to the information on the overall progress of the document for all relevant stakeholders. This should be done by uploading the reports on the MEPA homepage. Thereby, the implementation of the NEAP-3 is made transparent and open for continued stakeholder contributions. The general public and societal organizations will be, therefore, provided with insights into the advancement of the implementation process and will have the opportunity to provide their feedback and comments.