

**EUROPEAN NEIGHBOURHOOD AND PARTNERSHIP INSTRUMENT –
SHARED ENVIRONMENTAL INFORMATION SYSTEM**

GEORGIA COUNTRY REPORT



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LIST OF ACRONYMS

BOD	Biological Oxygen Demand
CBD	Convention of Biological Diversity
CDM	Clean Development Mechanisms
CSI	Core Set of Indicators
DB	Data Base
DHI	Danish Hydraulic Institute
DNA	Designated National Authorities
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EEA	European Environment Agency
EECCA	Eastern Europe, Caucasus and Central Asia
ENPI	European Neighbourhood and Partnership Instrument
ERICA	European Rivers and Catchments
ESRI	Environmental Systems Research Institute
EU	European Union
GEOSTAT	Georgian Statistics Service
GHG	Greenhouse Gases
GIS	Geographic Information System
ICZM	Integrated Coastal Zone Management
IPCC	Inter-governmental Panel for Climate Change
ISO	International Organization for Standardization
JTF	Joint Task Force
LEPL	Legal Entity of Public Law
LRTAP	Long-Range Transboundary Air Pollution
MAC	Maximum Allowable Concentrations
MEA	Multi-lateral Environmental Agreements
MENR	Ministry of Energy and Natural Resources
MEP	Ministry of Environment Protection
NEAP	National Environmental Action Plan
NFP	National Focal Points
NIP	National Implementation Plan
NWCIS	National Water Cadastre Information System
NWP	Numerical Weather Prediction
OECD	Organization for Economic Cooperation and Development
POP	Persistent Organic Pollutant
PRTR	Pollutant Release and Transfer Register

SAICM	Strategic Approach to International Chemicals Management
SDPIA	Sustainable Development Projects Implementation Agency
SEIS	Shared Environmental Information System
SIC	Spatial Information Center
SOE	State of the Environment
TEIA	Transboundary Effects of Industrial Accidents
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United State Agency for International Development
WHO	World Health Organization
WOC	Water Objects Coding
WRF EMS	Weather Research and Forecast Environmental Modeling System

EXECUTIVE SUMMARY

This Country Report was prepared for the European Environment Agency by Zoi Environment Network, with inputs from SEIS focal points and based on the discussions during EEA/SEIS country visit in Georgia on 9-10 June 2011.

The report has been prepared to explore the options of developing Environmental Neighbourhood and Partnership Instrument (ENPI)-Shared Environmental Information System (SEIS) project in Georgia. The overall objective of the ENPI-SEIS project is to promote the protection of the environment in the ENPI countries. Specific objectives include identification and further development of environmental indicators; improvement of capacities in the field of monitoring, collection, storage, assessment and reporting of environmental data; promoting setting up national and regional environmental information systems in line with the SEIS principles; and tracking progress of the regional initiatives.

The expected long-term outcome of the process includes improved assessment of the quality of the environment at regional level by using common tools and methodologies; stronger institutional partnership at national level; trained experts in all SEIS components; and improved regional cooperation and partnership with regional and international bodies.

In the regional meeting held in Brussels in November 2010 the following priorities were agreed for ENPI East region by the representatives of the countries: freshwater, household and municipal waste, and atmospheric air.

Thus, this Country Report describes the existing institutional cooperation in Georgia in the field of freshwater, waste and air emissions, assesses current environmental inter-institutional cooperation in the three priority fields and identifies the country's capacity for taking SEIS implementation forward.

Chapter 1 of the report describes the inter-institutional cooperation and national governance for environmental information and statistics in the priority sectors, including the links among the different bodies. Chapter 2 of the report presents the reporting obligations of Georgia according to multilateral, regional and sub-regional environmental agreements, and also describes environmental data and indicator availability, including analysis of existing datasets. Chapter 3 on infrastructure describes the current status of environmental monitoring and information systems, including the structure and content of the monitoring and information systems used in the country and a description of the duties of those responsible for the management of the systems.

Chapter 4 analyzes the strengths and weaknesses for SEIS implementation in Georgia. It points out lack of comprehensive environmental statistics and dilapidated monitoring system, as major obstacles for SEIS implementation, while among the strengths mentions on-going Georgia-EU negotiations on EU Association Agreement that should enforce development of national strategy on institutional reforms and approximation towards EU's major environmental directives, guarantying overall access to environmental information and data sharing.

And finally, Chapter 5 proposes follow-up steps for implementation of ENPI-SEIS project in Georgia, in particular: 1) strengthening institutional capacities of key stakeholder organizations for proper information management and database use on wastes, water and air; 2) develop comprehensive waste inventory methodology; 3) introduce electronic forms for statistical accounting of wastewater discharges and ambient air pollution; 3) develop PRTR consistent and GIS based electronic database inventory of point and mobile air pollution sources; 4) move towards Indicator Based State of the Environment reporting practice in Georgia.

1. INTER-INSTITUTIONAL COOPERATION

The **Ministry of Environment Protection– MEP** is a major institutional body within the Government of Georgia responsible for overall governance and policy making for national environmental information and statistics, including collection, processing and maintenance of most of the environmental information. The main mission of the Ministry of Environment Protection, besides this, is the development and implementation of effective environmental policy mechanisms based on the principles of sound environmental management (www.moe.gov.ge). Other ministries, such as the Ministry of Energy and Natural Resources, the Ministry of Economy and Sustainable Development, the Ministry of Finances, the Ministry of Labor, Health and Social Protection, the Ministry of Agriculture, the Ministry of Regional Development and Infrastructure, also participate in the process of processing and dissemination of environmental information within the specific areas defined by their statutory mandates.

Since 2004 the Ministry of Environment Protection has undergone numerous changes caused by frequent reforms of the Georgian Government and the Cabinet. Until recently the Ministry had much wider functions and incorporated responsibility for management of natural resources, including licensing for ground and surface water use, extraction of mineral resources, permitting for environmental services, forestry management, protection against coastal erosion, radiation safety measures, environmental inspectorate for state environmental control, etc. Until recently functions and credibility of the Ministry of Environment was in a much better shape, defined mainly by the 2004 law and subsequent regulation acts on the Structure, Responsibilities and Rules of Activities of the Government, by which the following State Departments became structural parts of the Ministry:

- The State Department of Forestry;
- The State Department of Geology;
- The State Department of Hydrometeorology;
- The State Department for the Management of Reserves, Protected Areas and Hunting Farms;
- The State Department of Geodesy and Cartography.

The latest formulation of the government structure defined by Statement of the Government of Georgia for the Ministry of Environment dated March 16, 2011 re-delegates some of the key functions of the Ministry of Environment, including management of natural resources, forestry, geology, etc., to the Ministry of Energy. Moreover, the two Ministries have completely changed their structures and been re-formulated in the following way: the Ministry of Energy was renamed the **Ministry of Energy and Natural Resources** and the **Ministry of Environment Protection and Natural Resources** - was renamed the Ministry of Environment Protection.

Under the **Ministry of Environment Protection**, several structural units (departments, divisions, as well as semi-governmental agencies) operate as environmental data and information management hubs. Direct responsibilities of these data management units, among others, include control of data and information flow over the following priority areas: atmospheric air protection; climate change; water resources protection; waste management; disaster risk reduction, biodiversity conservation, radiation safety, etc.

Department of Integrated Environment Management of the Ministry of Environment Protection, with its sub-ordinate Divisions of: a) Ambient Air Protection, b) Water Resources Management, c) Wastes and Chemical Management, and d) Hydrometeorology and Climate Change have a major decision making role for the corresponding thematic areas of freshwater resources, municipal wastes, air emissions and climate change.

The main objectives for the Division of Ambient Air Protection is to ensure realization of the state policy on protection of atmospheric air quality, as well as identification of priority actions and

coordination of necessary measures for implementation of state policy on the quality of atmospheric air. In addition, the Division is responsible for identification and technical inventory, as well as conducting regular assessments on the emissions of harmful substances from stationary sources, consequently being recorded in the State Register on annual bases.

Water Resources Management Division of the Ministry is responsible for overall management of the surface water related issues in Georgia. The direct responsibilities of the Division include:

- defining priorities in the field of water resources protection;
- Initiating and drafting laws and regulations in the field of water resources protection;
- taking part in ecological expertise and environmental impact assessment reports on water related issues;
- collection of statistics on water use, data processing and analysis;
- drafting normative acts on maximum admissible discharges of pollution substances into the water bodies
- drafting technical regulations on water abstraction from the surface water bodies
- supporting compliance with international obligations of Georgia in the field of water resources protection

The Division keeps regular records on water use in special forms named as State Accounting on Water Use. These forms are filed by enterprise water users: industrial enterprises; agricultural units, including irrigation systems and fish farms; water supply and sanitation networks; thermal power plants; hydropower plants, etc.

The direct duties and responsibilities of the Waste and Chemicals Management Division include:

- determination of priority directions, as well as initiating and drafting of laws and regulations in the field of Waste & Chemicals Management;
- participation in the development of concepts, state programs and strategies for economic and social development;
- participation in ecological expertise and consideration of the environmental impact assessment reports;
- taking part in development of state register of hazardous substances;
- coordination of regulation of obsolete pesticides and outdated chemicals;
- coordination of regulation of waste and chemicals use, transit, import, export, re-export, transport, treatment and disposal in Georgia;
- support the compliance with international obligations of Georgia in the field of waste and chemicals management

In addition to the Waste and Chemicals Division of the Ministry of Environment Protection, there are other governmental and municipal institutions in Georgia sharing responsibility for waste management on local and regional levels. For instance, local municipalities under the Ministry of Infrastructure and Regional Development are dealing with municipal waste collection and disposal, as well as provision of statistical data on the household wastes; Ministry of Health is responsible for developing and implementing health, hygiene and epidemiological standards and norms; Revenue Service of the Ministry of Finance controls import/export and registration of chemical and maintains statistics on hazardous substances; Ministry of Economy and Sustainable Development issues permits for restricted materials, including hazardous substances; Ministry of Food and Agriculture is responsible for administering agro-chemicals (pesticides, herbicides, fungicides, insecticides), for quality assurance and developing pesticide catalog, etc. But in general waste management field in Georgia is not effective, does not comply with international standards and requirements. Municipal waste is disposed without sorting, recycling, re-using and composting. There is no special infrastructure for hazardous waste disposal and/or treatment.

The functions of the Division of Hydrometeorology and Climate Change include reporting obligations to the UNFCCC Secretariat. The Division is responsible for elaboration of the National Climate Change Policy and coordination activities for its implementation. It actively participates in the climate change related regional, national and global programs. The division maintains GHG

inventory database, reports to the UNFCCC secretariat through the National Climate Change Communications and promotes use of the Clean Development Mechanisms (CDM) in Georgia. As technical capacity of the Division for GHG inventory and reporting obligations is somewhat limited, it actively cooperates with other national and international institutions, including National Environmental Agency, relevant sectoral units of other ministries - Ministry of Agriculture, Ministry of Health, Ministry of Energy and Natural Resources, Ministry of Economy and Sustainable Development, GEOSTAT, NGOs, academic institutions, etc.

Department of Environmental Policy and International Relations plays general policy making and coordination role for environmental initiatives in the Ministry of Environment. It ensures reliability of the national policy documents to the international treaties and agreements. In particular, the functions of the Department include the following:

- design, coordination and monitoring of the national environmental programs;
- identification of priority measures for effective environmental protection activities;
- coordination and organizing National Environmental Action Planning (NEAP) activities
- coordination and organizing of the State of the Environment Reporting (SOE) activities;
- cooperation with relevant state institutions of the Government of Georgia and coordinating activities for initiating and drafting concepts, programs, action plans and other documents related to the protection of environment;
- monitoring of activities designed to implement national, regional and local environmental action plans, as well as sectoral action programs;
- coordinating activities of National Focal Points (NFPs) for international environmental agreements, conventions and treaties, etc.

Collection, maintenance and analysis of new environmental data, as well as its further processing as environmental datasets (or DBMS - database management system) is carried out by the **National Environmental Agency– NEA** (www.nea.gov.ge, www.meteo.gov.ge), a legal entity of public law (LEPL) operating under the Ministry of Environment Protection. NEA is the only institution in Georgia having legal mandate to carry out regular observation on hydro-meteorological processes, chemical and biological monitoring of marine, surface and ground waters, atmospheric air, as well as soil contamination, geological hazards, etc. NEA was re-established as a legal entity in 2005; however the agency has very long history of operating in Georgia. It is based on the former State Hydrometeorology Department following the multiple structural reforms due to the recent Government changes in Georgia. Predecessor of the Agency, the Tbilisi Physical Observatory, was established in 1837. Up until breakup of the Soviet Union, Hydro-meteorological Service of Georgia (also known shortly as Georgian Hydromet) had very strong position having financial (mostly subsidized from the central budget) and human resources to sustain and process data from 300 hydro-meteorological and agro-meteorological observation points; about 80 hydrological stations and 115 water quality observation points.

The National Environmental Agency consists of four structural units: Administrative Department, Department of Geological Hazards and Geological Environment Management, Department of Hydrometeorology and Department of Environment Pollution Monitoring. Functions of the Agency include the following:

- assessment of existing and forecasted situations on hydro-meteorological, geodynamic and geo-ecological processes in whole territory of Georgia, river basins and water bodies, territorial waters of the Black Sea and continental shelf;
- monitoring of meteorological, hydrological, geological and litho-dynamic parameters
- collection and dissemination of meteorological, hydrological, geological and pollution monitoring data on environment (atmospheric air, surface and marine waters, soils), level of radiation and bio-diversity monitoring
- elaboration of short-term, mid- and long-term forecasting on meteorological, hydrological, geological and environmental quality parameters and dissemination of this information among local self-governance, interested parties and general public;
- elaboration of risk assessments for hydro-meteorological, geological and ecological hazards and coordinating prevention activities for mitigation measures;

- preparation of yearbooks, bulletins, reviews, notes and other materials consisting of actual information on environment pollution and hydro-meteorological and geological hazards

As mentioned earlier, other state institutions and government agencies also play active role in overall environmental management in the country. One of the important state institutions by its functions and responsibilities in this regard, especially after structural reforms of the Georgian Government taking place in March 2011, is the **Ministry of Energy and Natural Resources– MENR** (www.menr.gov.ge). Main responsibilities of the MENR before the structural reform included policy making and developing functions in the energy sector, as well as overseeing construction and rehabilitation procedures of hydroelectric and fuel power stations, high-voltage power transmission lines, natural gas and oil pipelines, construction of renewable energy power stations, etc. In addition the MENR now includes two Legal Entities of Public Law (LEPL) that used to be part of the Ministry of Economic Development– the **Agency of Natural Resources** and the Ministry of Environment - the **Basic Sapling Nursery**. Besides these the following former Ministry of Environment structural units have joined the Ministry of Energy and Natural Resources: **Department of Forestry, Department of Geology, Service of Nuclear and Radiation Safety** and **Environmental Inspectorate**. However structural reforms of the MENR are still under way and it may change, or re-group in foreseeable future.

Ministry of Agriculture (www.moa.gov.ge) plays key role for monitoring of food safety and product quality, including quality of bottled mineral waters, through a semi-independent institution - the **National Food Agency** (www.nfa.gov.ge) operating under the Ministry of Agriculture as Legal Entity of Public Law. Other functions of the Ministry include control over using safe pesticides and agro-chemical for agriculture crop production; ensuring of the epizootic and phyto-sanitary safety and overall policy measures to re-introduce efficient management of irrigation systems in Georgia.

Ministry of Labour, Health and Social Affairs (www.moh.gov.ge) and its subordinate agency - the **National Center for Disease Control and Public Health** (www.ncdc.gov.ge), operating as a Legal Entity of Public Law, is to ensure the protection of public health, according to its Statutes adopted on 31 December 2005 by Governmental Resolution No. 249, art. 2 “The Annual National Report on Health Condition of Georgian Citizens” reflects the impact of environmental conditions on public health, particularly the sanitary condition of ambient air, the sanitary condition of water supply and ionizing radiation.

Revenue Service (www.rs.gov.ge) of the **Ministry of Finance** (www.mof.gov.ge) is the sole source for the most recent data on hazardous substances since the Service is responsible for registration and maintaining statistics on those substances.

One of the main tasks of the **Ministry of Economy and Sustainable Development** (www.economy.org.ge) concerning environment and natural resources management, up until recently known as the Ministry of Economic Development, was to issue licenses for the use of natural resources, including extraction of ground waters (considered as a fossil resource) and approve quotas in cooperation with the Ministry of Environment Protection. As it was already highlighted earlier, in March 2011 the natural resources management part of the Ministry’s functions was re-delegated to the newly established Ministry of Energy and Natural Resources. The Ministry however maintains some functions of environmental management through its **Department of Sustainable Development**, activities of which include:

- preparation of state strategy on Sustainable Development and supporting implementation of this program on a national level;
- participation in activities ensuring readiness of the country to cope with the global environmental challenges caused by global environmental processes;
- supporting identification and direction of the country’s investment potential and resources towards sustainable development;
- initiating and drafting sustainable development focused legislation to the Government of Georgia.

The environment-related activities of the **National Statistics Office** of Georgia (www.geostat.ge) have declined since recent structural reforms of 2010. As an independent sectoral unit the Environment and Natural Resources Statistics was carried out since 1979. By that time predecessor of the current GEOSTAT, the central Statistics Division of the Georgian SSR was responsible for about 25 statistical forms analyzing conditions of forests, water and land resources, atmospheric air, state reserves and national parks, hunting farms, geological resources, expenses carried for environmental protection, etc.

After breakup of the Soviet Union and in the early 1990s, efficiency and capacity of the GEOSTAT has declined considerably. However up until 2004, an Environmental Statistics Subdivision was operated within the Agricultural and Environmental Statistics Division of the then State Department of Statistics. In 2003, eight observation forms were employed for purposes of data collection, namely: on forest plantation works, on timber disposal; on illegal logging; on forest protection; on reserves and national parks; on State game reserves; on air protection; and on environmental expenditures. The first six forms were sent to all local government agencies responsible for forests and protected areas, while Form 7 on air protection was sent to all major enterprises. Form 8 on environmental expenditures was sent to enterprises on a random sampling basis (Second EPR of Georgia). After 2007 environmental statistics is no more practiced as an independent sector. In 2010 the State Statistics Department was re-structured as Legal Entity of Public Law (LEPL) – the **National Statistics Office**, operated as an independent entity and managed by Board of Directors accountable to the Cabinet of Ministers.

Inter-institutional cooperation in Georgia is administered via formalized and less effective procedural links that include official written requests for specific data and information and is applicable to governmental institutions mostly. All other open data is available on-line via web site of the ministries, or Aarhus Center of Georgia (www.aarhus.ge) and is accessible to general public. In terms of receiving statistical data on emissions of harmful substances in the atmosphere, or wastewater discharges in freshwater bodies, certain state institutions (in this case the National Statistics Office) is supposed to send an official written request to the Ministry of Environment Protection (MEP), or any other relevant institution owning the data, accompanied with the specific statistical forms to be filled. On the other hand, MEP follows its own procedures to request data on emissions and discharges from industrial enterprises and water users, response on which mostly comes non-electronically on a paper container. With rare exceptions of exchanging data in MS Excel formats, environmental data flow among the Georgian government institutions is executed through MS Word documents in the form of brief quarterly or annual bulletins.

The major data flow scheme in the fields of air protection, climate change, water resources and waste management is directed via National Environmental Agency (NEA) - the main data producer and owner to appropriate Divisions of the Ministry of Environment Protection, but also involves other government institutions, such as the Ministry of Health, Ministry of Energy and Natural Resources, Statistics Office, Emergency Department of the Ministry of Internal Affairs, etc. For instance, to produce annual the National Health Report of Georgia, the Ministry of Labour, Health and Social Affairs requests data on air, wastewaters& sanitation, soils, radiation safety, etc. from MEP; for producing statistics yearbook on Natural Resources and Environment Protection in Georgia the National Statistics Office requests data from Ministry of Energy and Natural Resources and Ministry of Environment Protection etc. One missing link that is planned to be developed would involve Ministry of Regional Development and Infrastructure in the data exchange scheme. However, as mentioned above, data exchange does not go beyond MS Word, or in the best case MS Excel, formats and sometimes is too formal and time consuming; even between the MEP and NEA direct access to the electronic data for internal use does not exist, although officially NEA is part of the MEP.

2. CONTENT

2.1. Country Reporting Obligations

Georgia is part of 13 global environmental conventions, as well as three protocols and three supplementary agreements to these conventions. In addition country has signed and ratified three regional MEAs - European conventions and two protocols related to water, air pollution and waste management. Consequently, country has obligations to fulfill and report for these conventions and agreements that are described in the sections below.

2.1.1. Reporting under the Global MEAs

Georgia is a party of the UNFCCC since 1994. The country fulfills its reporting obligations to the convention by submitting the National Communications on the Climate change. The first initial Communication was submitted in 1999; the Second Communication in October 2009. Both national Communications are available at UNFCCC website. In addition Georgia has prepared its GHG Inventory, as part of its National Communication: http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php.

Georgia ratified the Convention of Biological Diversity in June 1994 and further joined the Cartagena Protocol on Biosafety in September of 2008. Georgia closely follows its obligations towards CBD reporting and regularly submits national reports. The last, Fourth National Report was submitted in 2009 and is located at CBD secretariat website (www.cbd.int/countries/?country=ge), as well as the National Biodiversity Clearinghouse Mechanism website of the Georgian Ministry of Environment Protection (<http://chm.moe.gov.ge/index.php?page=CBDGeorgia&lng=en>). In addition, the National Biodiversity Strategy & Action Plan was approved by Government decree #27 on 19 February 2005. The document analyses the country's biodiversity issues and identifies problems. It outlines a 10-year national strategy for the conservation of the country's unique biodiversity, supported by a 5-year plan for specific activities required to achieve the objectives of the strategy. The Action Plan is available for download at both CBD and the Georgia's National Biodiversity Clearinghouse websites.

As a party to the Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete Ozone Layer, Georgia is responsible for taking necessary measures to protect the ozone layer and achieve phase-out schedules for ozone-depleting substances, as well as submitting the data on consumption of those substances annually. Georgia has reached significant progress regarding the phasing-out of the consumption of CFCs and halons and has reduced the consumption of methyl bromides since joining the Convention in 1995.

As a signatory to the Ramsar Convention of Wetlands of International Importance since April 1996 Georgia's reporting obligations include providing regular technical reports for the each Conference of the Parties (COP meetings). The latest National Report was submitted for COP10 in 2008 and is available for download from the Ramsar Convention website at: www.ramsar.org/cda/en/ramsar-documents-natl-rpts-cop10/main/ramsar/1-31-121-277_4000_0.

Georgia accessed and ratified all three conventions on hazardous wastes and organic pollutants: the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposals (since May 1999); the Stockholm Convention on Persistent Organic Pollutants (since May 2006); and the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (since December 2006).

As for the regulations of the Basel Convention, Georgia has no restrictions on the export of hazardous wastes and other wastes for final disposal and for recovery. The country restricts the import of hazardous wastes and other wastes for final disposal and for recovery. Moreover, Georgia restricts the transit of hazardous wastes and other wastes. According to the Basel

secretariat website member countries have annual reporting obligations. Georgia has been regularly fulfilling this obligation, however the latest report was submitted in 2007 and the country has failed to report the Secretariat since then (www.basel.int/Countries/NationalReporting/StatusCompilations/tabid/1497/Default.aspx).

Georgia joined the Stockholm Convention in April 2006, but failed to fulfill the obligation submitting first National Implementation Plan (NIP). However, the country was successful to elaborate the Chemical Profile under the Strategic Approach to International Chemicals Management (SAICM) process.

Georgia ratified the Rotterdam Convention in December 2006. The country maintains regular updates to the information required by the Convention secretariat (www.pic.int/Countries). The National Pollutant Release and Transfer Register is being developed since 2009 by the two Designated National Authorities (DNA) - Inspection of the State Sanitary Supervision of the Ministry of Labour, Health and Social Affairs of Georgia; and Waste and Chemicals Management Division of the Ministry of Environment Protection of Georgia.

After the country ratified the UN Convention to Combat Desertification (UNCCD) in 1999, Georgia fulfills its reporting obligation under the convention. The third national report on the measures implementing the UNCCD was submitted in 2006. Georgia has also submitted the National Action Plan to Combat Desertification (NAPCD) in 2003. The National Reports and the Action Plan are available for download from the UNCCD website. The fourth round of the reporting period was due in 2010, but was delayed and currently the country is working to submit one by 2012 (www.unccd.int/php/countryinfo.php?country=GEO).

2.1.2. Reporting under the Regional MEAs

One of the first regional MEAs that Georgia ratified after gaining independence was the Bucharest Convention on the Protection of the Black Sea against Pollution that the country joined in 1993. In 1996 Georgia started developing the Integrated Coastal Zone Management (ICZM) approach to fulfill the Strategic Action Plan for rehabilitation and protection of the Black Sea as part of the Bucharest Convention. The latest Strategic Action Plan for the Environmental Protection and Rehabilitation of the Black Sea was adopted in Sofia on 17 April 2009. As party to the Convention, Georgia regularly fulfills its obligations by participation in data collection and reporting procedures.

From the five European conventions (or UNECE Conventions), Georgia ratified only two: the Convention on Long-range Transboundary Air Pollution (joined in 1999) and the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention, in 2000). Although the country has not signed any of the eight protocols to the Air Pollution Convention, Georgia regularly provides data to the Convention Secretariat (so far submitted data up to 2008). As to the Aarhus Convention, the legislative and institutional analysis for implementation of the Convention was prepared in 2007. As for all member countries, Georgia has obligation for submitting National Implementation Reports. Two reports have been submitted so far by Georgia – the first in 2005 and the latest one in 2008. The next reporting phase is scheduled for 2011. National reports are available for download from the Aarhus Convention Clearinghouse at: <http://aarhusclearinghouse.unece.org/>

Georgia has not signed or ratified three other European conventions that also have trans-boundary significance: Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention); Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention); and Convention on the Transboundary Effects of Industrial Accidents (TEIA Convention). However, the country is proceeding with the preparatory works to become a full member and it is envisaged that Georgia soon will join all three conventions.

2.1.3. National Reporting Obligations

Georgia has obligations on environment related reporting on the national level, which is guaranteed by the national legislation and constitution of Georgia. Legal framework for this is the law on “Environmental Protection” (1996), Article 14. Preparation of the State of the Environment Report is regulated by the Presidential Decree: “Rules for the Development of the National Report on the State of Environment” (1999). Before 2007 the Ministry of Environment was responsible for annual reporting, however due to financial difficulties this was hardly fulfilled. In 2007 it was decided to switch to a three year reporting cycle and the decision was approved by the President of Georgia. The latest State of the Environment Report covers the period of 2007-2009 and was prepared and published with the financial support of the EC Delegation to Georgia. The report is bilingual - Georgian/English and covers the following issues:

- SECTION I: Socioeconomic Factors Affecting the Environment
- SECTION II: Air Protection
 - Ambient Air Quality
 - Climate Change
- SECTION III: Water Protection
 - Fresh Surface Waters
 - Groundwater
 - Black Sea Coastal Waters
 - Water Resources Use
- SECTION IV: Protection of Land Resources
 - Natural Disasters
 - Mineral Resources
- SECTION V: Nature Protection
 - Biodiversity (including protected areas and forests)
 - Fishery and Hunting
- SECTION VI: Wastes and other Environmental Issues
 - Wastes
 - Chemicals
 - Ionizing Radiation
- SECTION VII: Environmental Impact of Economic Sectors
 - Agriculture and Forestry
 - Transport
 - Industry and Energy
- SECTION VIII: State Environmental Management
 - Environmental Policy and Planning
 - Environmental Regulation and Control
 - Environmental Research, Education and Awareness Rising

However, this report cannot be considered as an indicator-based report, as recommended by UNECE, EEA and other international organizations and adopted by ‘Environment for Europe’ Ministerial Conferences in Kiev, Belgrade and most recently in Astana. Georgia does not publish a national health and environment report either that most European countries produce in accordance with the Ministerial Process on Environment and Health.

2.2. Description of Environmental Data Availability and Data Flows

2.2.1. Ambient Air Quality and Climate Change

Data on monitoring of ambient air quality that is being collected by the National Environmental Agency (NEA) in five Georgian cities at seven measurement locations is recorded in an electronic database. However, the raw data is not available for download from the NEA website and is

accessible only for the Ministry of Environment Protection for internal and analytical use. NEA produces annually air emission bulletins that are distributed in limited numbers to other stakeholders, government agencies and the Ministries. In addition NEA produces monthly bulletins 'Short Overview of Environmental Pollution in Georgia', where one chapter is dedicated to situation with air pollution. Some information is open for public use as analytical bulletins through the web site of the Aarhus Centre of Georgia (<http://www.aarhus.ge>). In addition MEP publishes annual Air Quality bulletins that also include descriptions on causes and mobile and point sources of air pollution.

Ministry of Environment Protection (MEP) circulates annually statistical forms on air pollution and emission of greenhouse gases (GHG) among large industrial enterprises that they have to fill in and report back to the MEP. In 2008, the form was supplemented by data reporting on: (a) type and volume of fuel consumed; (b) production volume, and (c) number of hours when the enterprise was operating. MEP calculates emissions from transport on the basis of fuel consumption data applying internationally agreed coefficients.

2.2.2. Water Resources

Processing and management of the data on water resources use, quality and quantity of surface watercourses and reservoirs are better organized. With the help of a number of international projects the water sector received considerable assistance for organizing data collection and flow. There have been works going on to develop and launch National Water Cadastre Information System (NWCIS), or Water Cadastre in Georgia. First attempt to establish web based data exchange mechanism for water related information was developed in 2004 through the USAID funded regional project - Water Management in the South Caucasus. Another USAID funded project - South Caucasus Water Program advanced further by launching idea of establishing GIS/DBMS based regional Water Cadastre Information System. This project has developed the following tabular databases for Georgia: Water Use Permits DB (water extract and discharge); Water Quality DB; Water Quantity DB; Actual Water Use DB. The tabular databases have been linked to the spatial (GIS) database system via specifically developed Water Object Coding system, similar to European river coding system – ERICA, and Spatial Geo-database interface. The Water Cadastre was planned as two-level on-line database system, accessible both for professional use at MEP, NEA and other interested government institution; as well as simplified version for public access of more generalized information.

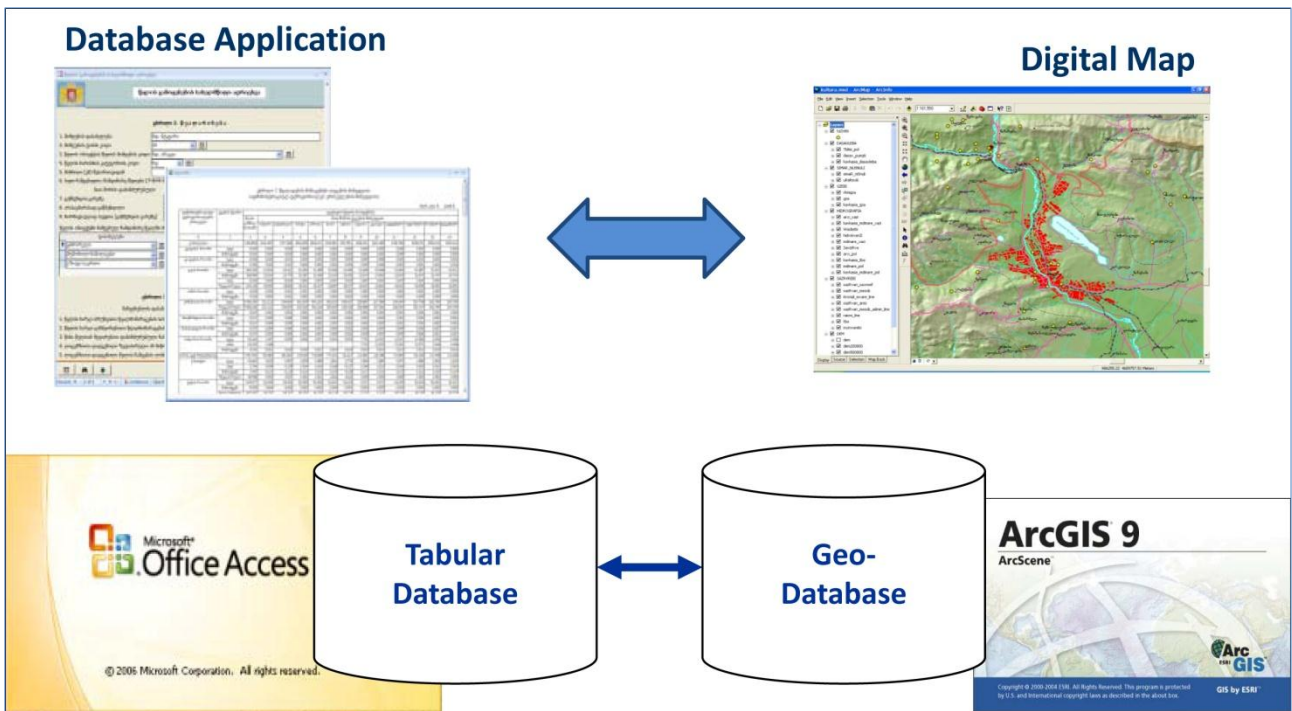


Figure 1: Graphical presentation of the NWCIS tabular and spatial database links

However, as the system had not been launched completely, only part of the tabular and spatial databases is available for internal use by MEP and NEA.

Technical support for development of water related database management system has been followed by EU funded water project - Trans-Boundary River Management Phase II for the Kura River Basin. This project paid more attention to the practical side of the Actual Water Use Database created specifically for the MEP's Water Protection Division. On the base of the existing State Water Registry paper forms the project has developed Actual Water Use database in electronic form. This database was further linked to a GIS system and information on users, ownership, water withdrawal, discharge permits, sectoral use, water quality categories, etc., was integrated in the system as well.

Data on hydrological monitoring (water levels on critical points) is available on-line at NEA's website (www.meteo.gov.ge) and is updated daily. This was made possible after installing automated hydrological and meteorological equipment at selected locations in 2010 with the joint efforts of the Government of Georgia and financial assistance of international donor organizations.

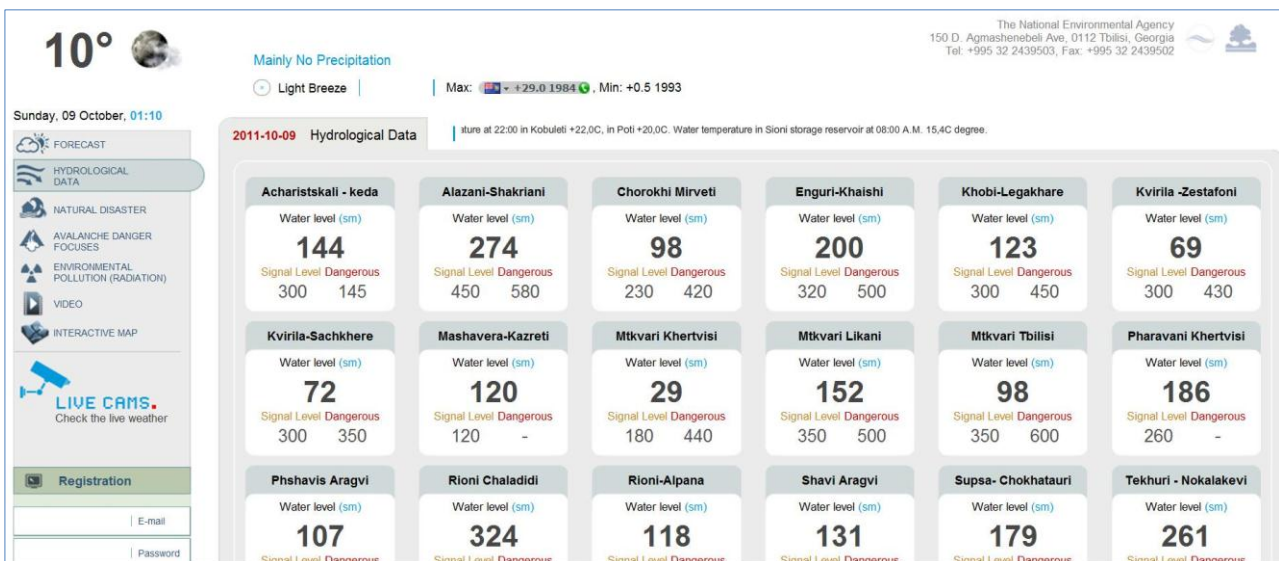


Figure 2: On-line hydrological information on major Georgian rivers provided by NEA

2.2.3. Waste

Data on solid waste inventory and access to it is least developed in Georgia. The reason for this is non-regular monitoring of the households, or any other solid waste utilization. More or less broad inventory was conducted only once - in 2007 with the help of UNDP and included household, industrial, medical and biological wastes. There is no comprehensive record of the amount of household solid wastes collected in Georgia, and as such, information on exact amount produced is not available. The amount has been calculated based on approximate values, including the population number and waste accumulation factors as assessed by experts.

Outdated and obsolete pesticides are accumulated throughout the country at former chemical enterprise stocks and at former collective farm depots. Pesticides lie in the open air, causing soil, groundwater and surface water pollution. Template database forms linked to GIS system, to record and locate obsolete pesticide and PCB sites were developed with the help of UNDP Georgia. However system has never been used and tested.

2.2.4. Environmental Statistics

As already mentioned, environmental statistics have deteriorated drastically in recent years. GEOSTAT does not have capacity to carry out its own environment-related statistical data collection and mostly uses information provided by the Ministry of Environment for further processing and publication. Up until 2004 GEOSTAT was practicing its own analytical studies using 8 environment-related survey forms:

- Survey on forest plantation works;
- Survey on timber disposal;
- Survey on illegal logging;
- Survey on forest protection;
- Survey on reserves and national parks;
- Survey on state game reserves;
- Survey on air protection;
- Survey on environmental expenditures

Since 2008, GEOSTAT does not use these statistical survey forms and produces only annual statistical review on Natural Resources and Environment Protection in Georgia that is based on the information provided by the Ministry of Environment Protection. In addition the Statistical Yearbook of Georgia includes the following environment and natural resources related sections: forest area and forest stock; reforestation; forest fires; fresh water consumption; waste water discharge into surface water bodies; number of stationary sources of air pollution; emission of pollution into the atmosphere; air pollution by industrial pollutants from stationary sources, and natural reserves and national parks.

2.3. Description of Environmental Indicator Availability

A formalized or adopted list of environmental indicators does not exist in Georgia. The Ministry of Environment Protection and the National Statistics Office regularly participate in UNECE's Inter sectoral Joint Task Force on Environmental Indicators. The UNECE Joint Task Force has developed a specifically designed core set of indicators and guidelines to apply in the Eastern Europe, Caucasus and Central Asia (EECCA). However Georgia made very limited progress on

development of its own indicators, or applying these guidelines in everyday life. The UNECE core set of indicators for EECCA region and their consistency with other environmental indicators adopted by major international agencies are shown below:

Table 1: UNECE JTF key environmental indicators for Easter Europe, Caucasus and Central Asia

UNECE/EECCAINDICATORS	UNECE/EPR indicators	UNSD/UNEP statistics	WHO environmental health indicators	CSD indicators	EEA core set of indicators
A. Air pollution and ozone depletion					
1. Emissions of pollutants into the atmospheric air	X	X	X		X
2. Ambient air quality in urban areas	X	X	X	X	X
3. Consumption of ozone-depleting substances	X			X	X
B. Climate change					
4. Air temperature					X
5. Atmospheric precipitation					
6. Greenhouse gas emissions	X	X		X	X
C. Water					
7. Renewable freshwater resources	X	X			X
8. Freshwater abstraction	X	X		X	X
9. Household water use per capita	X				X
10. Water losses		X			
11. Reuse and recycling of freshwater		X			
12. Drinking water quality			X		
13. BOD and concentration of ammonium in rivers	X	X		X	X
14. Nutrients in freshwater	X	X			X
15. Nutrients in coastal seawaters		X			X
16. Polluted (non-treated) wastewaters	X	X			
D. Biodiversity					
17. Protected areas	X			X	X
18. Forest and other wooded land	X	X		X	
19. Threatened and protected species	X				X
20. Trends in the number and distribution of selected species				X	X
E. Land and soil					
21. Land uptake	X	X		X	X
22. Area affected by soil erosion	X	X		X	
F. Agriculture					
23. Fertilizer consumption	X			X	
24. Pesticide consumption	X			X	
G. Energy					
25. Final energy consumption	X			X	X
26. Total energy consumption	X				X
27. Energy intensity	X			X	X
28. Renewable energy consumption				X	X
H. Transport					
29. Passenger transport demand	X		X	X	X
30. Freight transport demand	X		X		X
31. Composition of road motor vehicle fleet by fuel type	X				
32. Average age of road motor vehicle fleet			X		
I. Waste					
33. Waste generation	X	X		X	X
34. Transboundary movements of hazardous wastes	X		X		
35. Waste reuse and recycling	X		X	X	X
36. Final waste disposal			X		

To address UNECE guidelines and indicator requests, the countries are expected to report for six indicators to the each Joint Task Force meetings and gradually produce fact sheets on UNECE recommendations. Consequently at two last UNECE/JTF meetings in 2011 (July 11-13 and October 18-20), the Georgian Focal Points for UNECE's Inter sectoral JTF from Ministry of

Environment Protection and GEOSTAT have elaborated and presented evaluation factsheet on the status of the following 11 indicators (the last one was missing) in Georgia:

Table 2: Evaluation of twelve indicators in relation to the UNECE JTF indicator guidelines

Indicator	A. Effective inter-agency cooperation mechanisms to produce the indicator	B. Data quality assurance and control procedures for the production of the indicator	C. Publication of the indicator in statistical compendiums and state-of-the-environment reports
1. BOD and concentration of ammonium in rivers	The Laboratories (Central and regional ones) of the National Environmental Agency are responsible for physical-chemical analyses of surface water quality. Agency develops a data base where processed water quality data is stored. Then Agency sends information bulletin to the Ministry of Environment Protection.	ISO - 17025 The Agency Regularly carries out Quality Assurance laboratory tests. Laboratories participate in international inter – calibration examinations. Based on exam results, laboratory receives certificates. Beginning from 2010 BOD5 is measured in accordance with the ISO 5815: 2003 methodology, and Ammonium - ISO 6778: 1984	Monthly information bulletin “Short Review on Environmental Pollution of Georgia” with surface water quality data is available on the web-page http://www.aarhus.ge . Available information is provided in State of Environment (SoE) reports on the web-pages: www.moe.gov.ge ; http://www.aarhus.ge
2. Nutrients in fresh water	The laboratories (central and regional) of the National Environmental Agency are responsible for physical-chemical analyses of surface water quality. Agency develops a data base where processed water quality data is stored. Then Agency sends information bulletin to the Ministry of Environment Protection. Recently groundwater quality monitoring is not carried out.	ISO - 17025 The Agency regularly carries out Quality Assurance laboratory tests. Laboratories participate in international inter – calibration examinations. Based on exams results laboratory receives certificates. Nitrates (NO3) is measured in accordance with ISO 7890-3: 1988 methodology	Monthly information bulletin “Short Review on Environmental Pollution of Georgia”. Surface water quality data is available on the web-page http://www.aarhus.ge . Information is available in State of Environment (SoE) reports.
3. Nutrients in coastal seawaters	The Laboratories of the National Environmental Agency are responsible for physical-chemical analyses of Black Sea marine water quality. Based on the fact that monitoring is not regular and not done in the same sites the data are not used.	The Agency regularly carries out Quality Assurance laboratory tests. Laboratories participate in international inter – calibration examinations.	The data is submitted to the Commission on the Protection of the Black Sea Against Pollution (Istanbul, Turkey). Information is available in State of Environment (SoE) reports.
4. Area affected by soil erosion	There is no regular monitoring system on quality of land.	....
5. Pesticide use	The statistics on pesticides is obtained from sampling survey of agricultural holdings and GEOSTAT does not have any other sources of information.	In 2007, using the sample survey questionnaires of the agricultural holding, National Statistics Office of Georgia started to account for number of pesticides used in agriculture. However, the result was not favorable as majority of respondents found difficult to remember the number and type of used pesticides. In addition, the pesticides were purchased in various forms – dissoluble, powder, various dimensions – gram, kilogram, liter, which was causing difficulties in obtaining the good quality information. Therefore, the obtained information about pesticides	Statistical data about pesticides is published annually in "Agricultural statistics", in English and Georgian languages. The information is also available on GEOSTAT's official website (www.geostat.ge) and in State of Environment (SoE) reports (www.moe.gov.ge ; http://www.aarhus.ge)

		was considered as unreliable, however, the area of annual and perennial cultures processed with pesticides is known.	
6. Consumption of ozone-depleting substances	Data is collected based on specific questionnaire from customs service, importer companies and end-users.	Comparison of gained data from different sources. Data is collected by national experts.	Information is provided in State of Environment (SoE) reports.
7. Waste generation	The last national inventory of waste was conducted in 2007 in the frames of international project. Unfortunately, there are no revised data. Moreover, the problem is related to the generated waste statistics. There is no data collection system, as well as information exchange mechanism among relevant governmental institutions. Information on wastes is scattered. Namely, the Ministry of Agriculture, as the responsible governmental body for development of pesticides state catalogue, has information on obsolete pesticides and agrochemicals. The Revenue Service of the Ministry of Finances jointly with the Ministry of Environment Protection controls trans-boundary movement of wastes. The Technical and Construction Inspection of the Ministry of Economy and Sustainable Development is responsible for issuing permits and control on the waste import/export and transit. Local municipalities possess information regarding the generated household wastes.	....	This indicator currently is not published
8. Final waste disposal	According to the Georgian legislation, local municipalities are responsible for collection and final disposal of household wastes. Only big cities monitor the amount of waste entering the dumpsites daily. In all other municipalities waste registration is unsystematic. Furthermore, every village not covered by waste collection from the nearest municipal services, sets up its own spontaneous dumpsite. Moreover, there are no operated hazardous or inert waste disposal sites in Georgia. The latest hazardous waste dumpsite, existed in the Soviet times, was closed in 1985. Industrial wastes are mainly disposed at industrial sites and in their vicinity without fulfilling any environmental requirements. There are no treatment facilities for industrial	....	This indicator currently is not published

	wastes. Only medical waste treatment devices operate.		
9. Transboundary movements of hazardous waste	Georgia is the party of Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Disposal. Country follows Convention requirements closely. The Law on the Transit and Import of Waste within the Territory of Georgia was adopted in 1995. According to the law transit and import of industrial, municipal or other types of hazardous and radioactive wastes are prohibited. The Revenue service of the Ministry of Finance with the Ministry of Environment control Trans-boundary movement of waste. The Technical and Construction Inspection of the Ministry of Economy and Sustainable development is responsible for issuing permit and control waste import export and transit.	....	This indicator currently is not published
10. Ambient air quality in urban areas	The data on ambient air pollution quality is obtained based on the results of air pollution control stations belonging to the National Environment Agency of the Ministry of Environment Protection of Georgia.	Observations of air pollution are carried out on the basis of " A Guide to Air Pollution Control " - RD 5204 186-89 The main problem is insufficient quantity of air pollution control posts, as well as the lack of an automatic station.	Data on ambient air quality in urban areas is published monthly as an information bulletins and is available on line through a website of the Aarhus Center. Information is available in the State of the Environment Reports: www.moe.gov.ge ; www.aarhus.ge
11. Threatened and protected species	Data on protected area are available through the Agency of Protected Areas and the National Statistics Office with annual records for major bird and mammal species as well as plants and animals included in the Red List of Georgia. Commission of Endangered Species of the Academy of Sciences of Georgia conducted evaluation of species' status in 2006 in accordance of IUCN criteria, which provided basis for the updated Red List of Georgia	....	Red List of Georgia: http://chm.moe.gov.ge/webmill/data/file/citeli%20nusxa.pdf
12. Trends in the number and distribution of selected species	....	....	....

Although a formal Indicator list approved by the Government does not exist, Georgian Ministry of Environment Protection evaluates some indicators relevant to and consistent with the EEA Core Set of Indicators (CSI) and UNECE recommended indicator lists, especially with regards of water,

climate change, and ozone depleting substances. In the table below is given summary of Georgian environmental indicators and their consistency with the EEA CSI and UNECE JTF lists.

Table 3: Consistency of Georgian environmental indicators with EEA/CSI and UNECE/EECCA indicators

Environmental Indicators in Georgia	EEA CSI	UNECE EECCA
Emissions of ozone precursors	CSI 2	
Consumption of ozone-depleting substances	CSI 6	A-3
Emissions of pollutants into the atmosphere, by type of substance/gas		
Amount of removed pollution substances in the air per year/region		
Air pollutant emissions by point and mobile sources tones/year		
Average annual concentrations of major pollutant substances in the air		A-1 partially
Greenhouse gas emissions, tones/year	CSI 10	B-6
Use of water resources from freshwater and groundwater sources, l/person/day	CSI 18	C-8
Water consumption by sectors, mil.m ³ <ul style="list-style-type: none"> - Housing/communal sector - Industry - Irrigation, agriculture 		C-9
Share of population with access to drinking water supply network and sanitation (%)		
Discharge of the polluting substances into water bodies from urban areas, tones		
Oxygen-consuming substances in rivers (BOD)	CSI 19	C-13
Nutrients in freshwater	CSI 20	C-14
Nutrients in coastal waters	CSI 21	C-15
Bathing water quality (coastal)	CSI 22	
Urban wastewater treatment	CSI 24	C-16 partially
Municipal solid waste generation	CSI 16	I-33

3. INFRASTRUCTURE

3.1. Membership in Multi-Lateral Environmental Agreements

As mentioned in the previous chapters, Georgia is part of major global and regional environmental conventions, agreements and treaties that stipulate the country's obligations to monitor assess and report on environmental situation in Georgia. The table below demonstrates Georgia' membership and ratification dates for environmental conventions and protocols related to the ENPI-SEIS East priority areas – water resources management, atmospheric air pollution and waste management.

Table 4: International and regional MEAs signed by Georgia

Title	Date of Ratification by Georgia
United Nations Framework Convention on Climate Change - Kyoto Protocol of UNFCCC	May 16, 1994 May 28, 1999
Convention on Biological Diversity - Cartagena Protocol on Biosafety	June 2, 1994 September 26, 2008
The Vienna Convention for the Protection of the Ozone Layer - Montreal Protocol on Substances that Deplete the Ozone Layer	November 8, 1995 November 8, 1995
Ramsar Convention on Wetlands of International Importance	April 30, 1996
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposals	May 4, 1999
United Nations Convention to Combat Desertification	July 23, 1999
Stockholm Convention on Persistent Organic Pollutants	April 11, 2006
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	December 1, 2006
Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention) - The Black Sea Biodiversity and Landscape Convention Protocol - Protocol on the Protection of the Marine Environment of the Black Sea from Land-Based Sources and Activities	September 1, 1993 September 26, 2009 September 26, 2009
Convention on Long-range Transboundary Air Pollution	January 13, 1999
Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention)	February 11, 2000

3.2. Monitoring of Ambient Air Quality

As mentioned above, the only organization that has legal mandate to carry out environmental monitoring activities in Georgia is the National Environmental Agency (NEA), a legal entity of public law, operating as a sub-ordinate organization under the Ministry of Environment Protection. The NEA's Pollution Monitoring Department and its subsequent laboratories are responsible for monitoring ambient air quality, network of which has diminished to a minimum value in recent years. Up until the mid-1990s the State Hydromet, a predecessor of the NEA, had very well established air monitoring network in the 11 most industrialized cities of Georgia, with 34 monitoring stations in total, among which 8 stations were based in Tbilisi and 4 in Rustavi.

Currently ambient air quality monitoring is conducted at seven stations located in five cities: Tbilisi, Kutaisi, Batumi, Zestaphoni and Rustavi. Three stations are located in Tbilisi, but not all operate

with a full capacity and only limited parameters are being measured. Air samples at the observation points are taken three times a day on weekdays only (sampling is not automated). Concentration of the pollutants is compared to the national standards, or Maximum Allowed Concentrations (MAC) of harmful substances in ambient air determined by the Ministry of Labour, Health and Social Protection of Georgia in 2003. However, this document does not differ too much from the old Soviet norms for protecting ambient air quality. Therefore one of the priorities of the Ministry is to establish modern standards that will correspond to the EU norms and WHO recommendations. The Table-5 below demonstrates Georgian Maximum Allowed Concentrations (MACs) in ambient air in relation to the EU and WHO quality standards.

Monitoring of pollutant substances is not uniform in every Georgian city. Depending on the local conditions this may vary from place to place. For instance, the following pollutants are monitored in Tbilisi - dust, carbon monoxide, nitrogen and sulphur dioxides, lead; in Kutaisi - dust, sulphur dioxide, nitrogen monoxide and nitrogen dioxide; in Batumi - dust, nitrogen and sulphur dioxides; in Zestaphoni - dust, nitrogen dioxide, sulphur dioxide and manganese dioxide. Ground level ozone monitoring commenced in 2010 in Tbilisi and carbon monoxide in Kutaisi and Batumi. All existing stations monitor three pollutants: dust (or total suspended particulates), nitrogen dioxide (NO₂) and sulphur dioxide (SO₂), some of them carbon monoxide (CO), nitrogen monoxide (NO) and manganese dioxide (MnO₂). However, pollutant most harmful to human health and the environment – ground-level ozone (measured only in Tbilisi), fine particulates (PM_{2.5} and PM₁₀), volatile organic compounds, heavy metals (except MnO₂ and Pb) and persistent organic pollutants – are not measured in Georgia.

Table 5: Maximum allowed concentrations of harmful substances in ambient air according to Georgian, EU and WHO standards

Harmful substances	Maximum allowed concentrations (mg/m ³)			Concentration averaging period
	According to Georgian legislation	to WHO Recommendation	According to EU legislation	
PM 2.5	-	0.01	0.025	1 year
	-	0.025	-	24 hours
PM 10	-	0.02	0.04	1 year
	-	0.05	0.05	24 hours
Total suspended particulates (PM)	0.5	-	-	30 min
	0.15	0.12	-	24 hours
Nitrogen dioxide (NO₂)	-	0.2	0.2	1 hour
	-	0.04	0.4	1 year
	0.04	-	-	24 hours
	0.2	-	-	30 min
Sulphur dioxide (SO₂)	-	0.5	-	10 min
	-	-	0.35	1 hour
	-	0.05	-	1 year
	0.05	0.02	0.125	24 hours
	0.5	-	-	30 min
Carbon monoxide (CO)	-	100	-	10 min
	-	10	10	8 hours
	-	30	-	1 hour
	5	60	-	30 min
	3	-	-	24 hours
Lead compounds	-	0.0005	0.0005	1 year
	0.0003	-	-	24 hours
	0.001	-	-	30 min
Ground level ozone	-	0.12	0.12	8 hours
	0.03	-	-	24 hours
	0.16	-	-	30 min

In addition to mentioned monitoring points, the first semi-automated transboundary EMEP monitoring station has been installed in Abastumani with the help of Government of Norway. This station is aimed to support monitoring and evaluation of the Long-range Transmission of Air Pollutants in Europe under the Convention on Long-range Transboundary Air Pollution and in the pollution-free conditions measurements and anions in precipitation, PM₁₀ in the air and tropospheric (ground-level) ozone.



Figure 3: Environmental pollution monitoring network of Georgia

3.3. Monitoring of Surface Water Quality

As with air quality, the NEA's Department of Environmental Pollution Monitoring is in charge of regular monitoring of freshwater resources, both for surface and ground, as well as coastal sea waters. Routine monitoring of surface water quality in Georgia started in the early 1960s. By the end of 1980s and beginning of the 1990s regular monitoring (chemical and morphological) was practice at more than 120 points. Currently this number is down to 41 gauges on 22 rivers and 4 lakes. Since 2004 NEA works very vigorously to upgrade existing monitoring network, mostly thanks to financial assistance of foreign aid, in addition to the government funding.



Figure 4: Former network of water quality monitoring of Georgia in the 1980s

Current sampling frequency for water quality monitoring is practiced once per month for 33 different parameters, mostly physical and chemical. However sampling does not include some important compounds such as pesticides, characterized for intensive agriculture, industry and mining containing sectors of the economy. Therefore, sampling of these 33 parameters does not give full picture of pollution load in Georgia. It is important to modernize quality standards according to recommendations of the EU Water Framework Directive. Monitoring data is used to produce monthly environmental pollution bulletins distributed by NEA to the selected state institutions, also available through the internet on the web page of the Aarhus Centre of Georgia.

3.4. Hydrological and Meteorological Monitoring

Meteorological and hydrological monitoring has been practiced in Georgia since long time. First episodic meteorological observations are dated since 1832. After establishing full scale meteorological observatory in Tbilisi in 1844 meteorological observations become regular. Hydrological observations are carried out from 1905. Since then number of hydro-meteorological stations and frequency of observation were increasing rapidly, peaking at the mid 1950-60s. After that their number started gradually decreasing, but remained stable before the political and economic changes of the early 1990s. Since 1995 number of observation points has dropped rapidly and currently NEA operates only 21 hydrological gauges, 11 hydro-meteorological posts, 26 meteorological stations, 2 hydro-reservoir observation points and 3 marine stations.

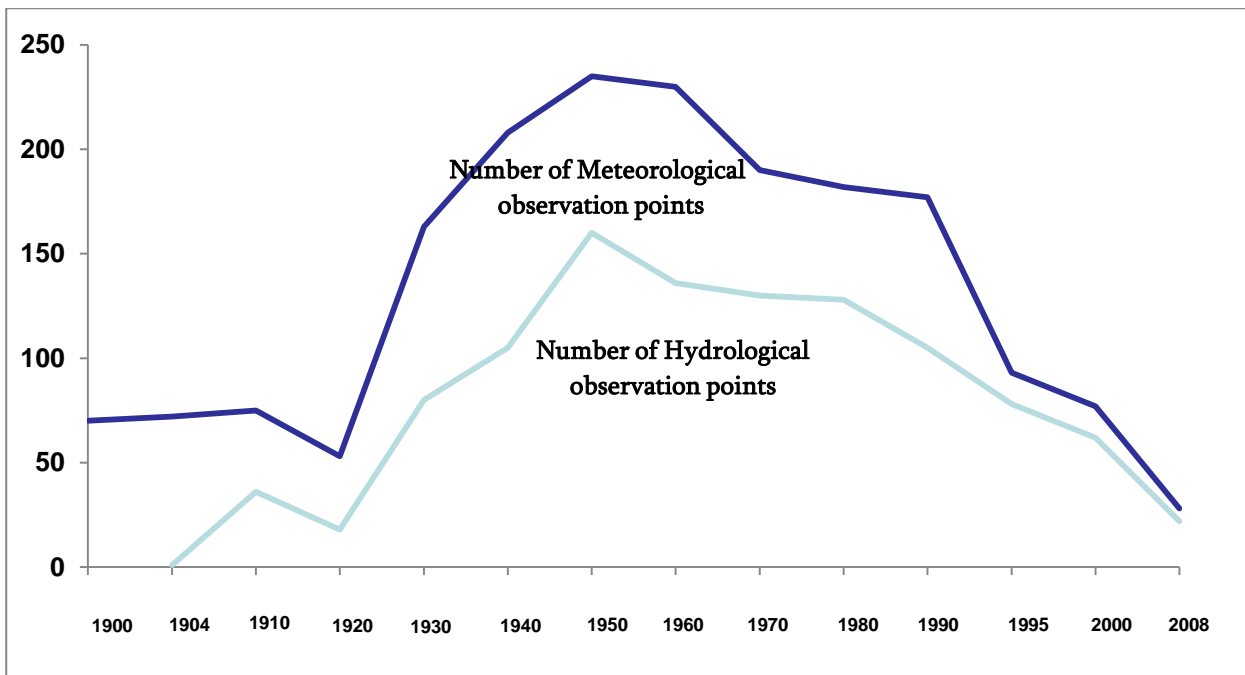


Figure 5: Change in meteorological and hydrological observation network in Georgia since 1900

Technical and scientific capacity of the Department of Hydrometeorology has been improving in recent years due to mostly foreign multiple donor funded water management projects. In particular, USAID, World Bank, EU, Governments of Finland and Canada invested in re-equipping existing network, establishing new automated gauging and meteorological stations, purchasing receiver of high resolution satellite information, installing and training long- and short-term forecasting and modeling software, etc.

For the moment the Department of Hydrometeorology is able to offer the following services in the frames of its competence:

Weather forecasts

- Short- and mid-term weather forecasts;
- Monthly weather forecasts;
- Daily water discharge forecast for the River Kura near Tbilisi and other locations (on demand);
- Three day water level forecasts on major rivers of Georgia;
- Decade/monthly/quarterly water discharge forecasts on major rivers of Georgia;
- Spring flooding forecast for major rivers and water reservoirs of Georgia;
- Short term special forecasts and warnings on snow avalanche threats;

Actual and historical hydro-meteorological data

- Historical record on any specific point and day, received from observational network: air temperature, atmospheric pressure, wind direction and speed, atmospheric processes;
- Daily information on actual hydrological data: water levels, velocity, relevant water discharge, runoff, water temperature, turbidity, etc.;
- Hydrological and hydro-morphological information on water reservoirs, including water levels, water temperature, water balance;
- Metadata on meteorological stations and posts, etc.

Other information and services are also available on demand for additional cost necessary for data processing and analysis.

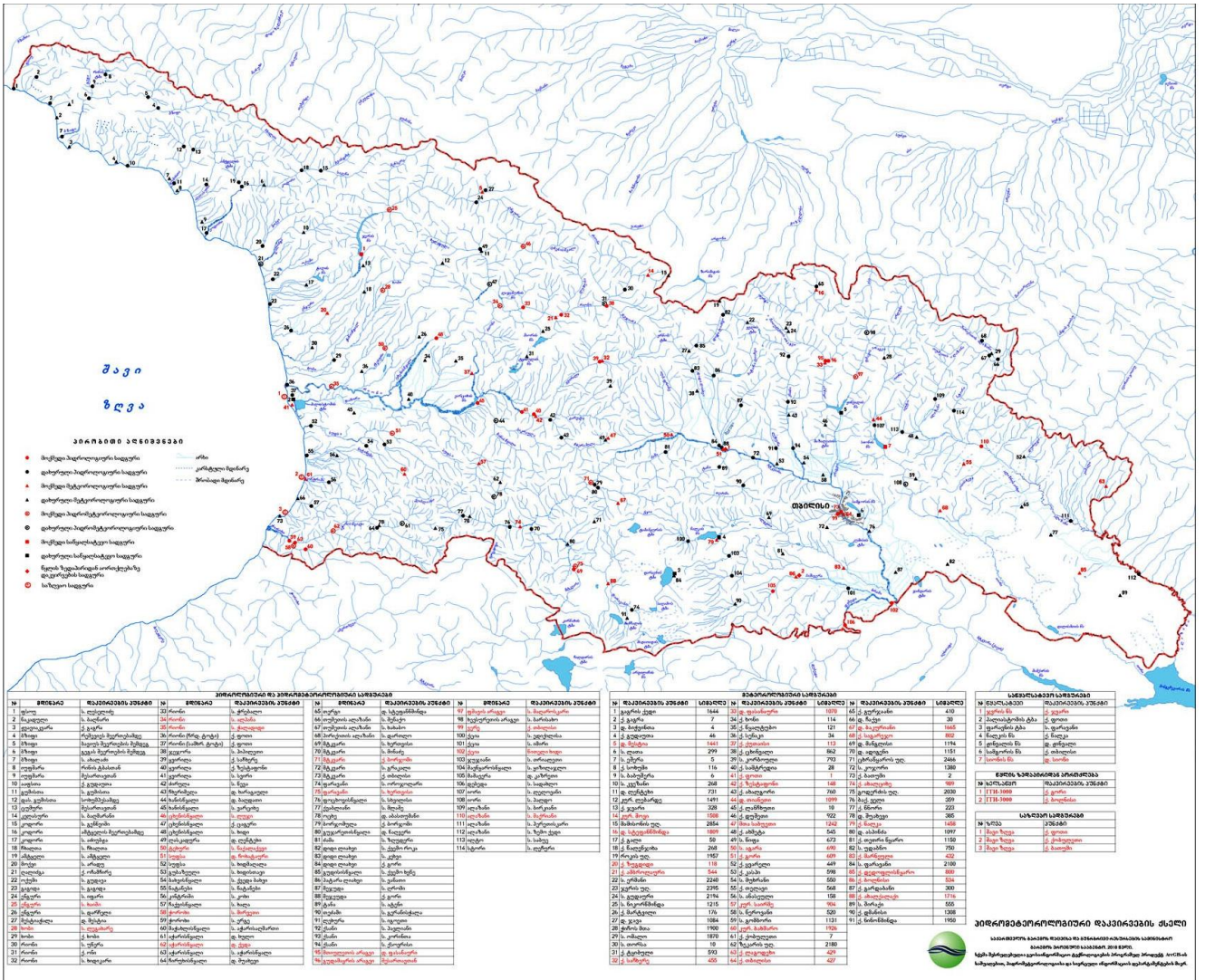


Figure 6: Current network of hydro-meteorological observation in Georgia

3.5. Groundwater Monitoring

The Ministry of Environment Protection of Georgia is responsible for management, control and monitoring of water resources in general, including groundwater. However, according to the Georgian legislation, groundwater is considered as a mineral resource, therefore management and licensing for extraction thermal, mineral or fresh waters from the groundwater aquifers until recently was responsibility of the Ministry of Economic Development. Since the latest institutional reforms of March 2011 legal mandate for it moved to the newly established Ministry of Energy and Natural Resources. NEA has responsibility to carry out groundwater monitoring in Georgia. However the monitoring network was abolished in 2004. By that time it covered some 2,000 observation sites. In the Georgia SOE report the MEP analyzes quality of groundwater aquifers based on the information obtained during the 1970-1990 monitoring cycle. There are plans to re-establish the groundwater monitoring, but the process is very slow, as it requires vast amount of financial and human resources.

3.6. Waste Monitoring and Inventory

There is no tradition for regular waste monitoring in Georgia. Even inventory of the household, industrial, medical, or chemical wastes is carried out only in some exceptional cases and depends

on available resources of a specific project. The reason for this situation is the lack of waste-related national legislation. A national law on waste has still not been adopted; neither is there any national strategy, action plan, or a policy on waste inventory.

The 1996 Framework Law on Environmental Protection establishes the principle of minimization of waste (in the implementation of the activity, priority is given to technology that ensures the minimization of waste) and the principle of recycling (in the implementation of the activity, priority is given to such materials, substances and chemical compounds, which may be reused, reprocessed, decomposed or degraded biologically without damaging the environment).

In the frame of international UNDP project in 2007 was carried out waste inventory on the territory of Georgia. The data corresponds only to the sites where the inventory has been carried out, and they correspond to only a fraction of the total industrial waste. Moreover, although the questionnaires tried to capture the volume of waste generated per annum and the amount of waste stored at the industrial sites, the final results do not clearly distinguish between these two types. Data is hence to be dealt with care and provide only an order of magnitude estimate. During the implementation of waste inventory project, the main focus was made on stationary sites, having potential of generating substantial volumes of waste.

Based on the data provided by the National Statistics Service, there were 4,632 reported industries in Georgia. 192 out of them are large, 497 medium and 3,943 small in 2005. The number of industries has significantly grown since 2005; evident updated data is essential. The main industrial regions are the same as was reported namely: Tbilisi, KvemoKartli, Imereti, ShidaKartli and Kakheti. Main polluting industries are located in these regions.

The above mentioned inventory states that 908,740 tons of accumulated industrial wastes are considered hazardous waste. Moreover, thousands of tons of waste from metallurgical, ferroalloy, mining and other industries, such as slag and gobs, were accumulated in industrial cities during the Soviet period. Some of those industries are currently not operating, and others have changed activity, but the waste remained in their premises. These sites still constitute hotspots with high concentrations of toxic waste, and no information exists on the amount and characteristics of waste present there.

According to the inventory report the data is based on estimates provided by the owners of the sites. There is no information regarding the toxicity of accumulated waste, their physical state and chemical composition. Evident the lack of updated information required for monitoring and controlling the industrial waste produced and managed. The inventory is weak on the part of commenting on issues of disposing, processing, recycling or sterilising the wastes. Consequently an inventory of industrial wastes and an overall waste management information system in Georgia are essential.

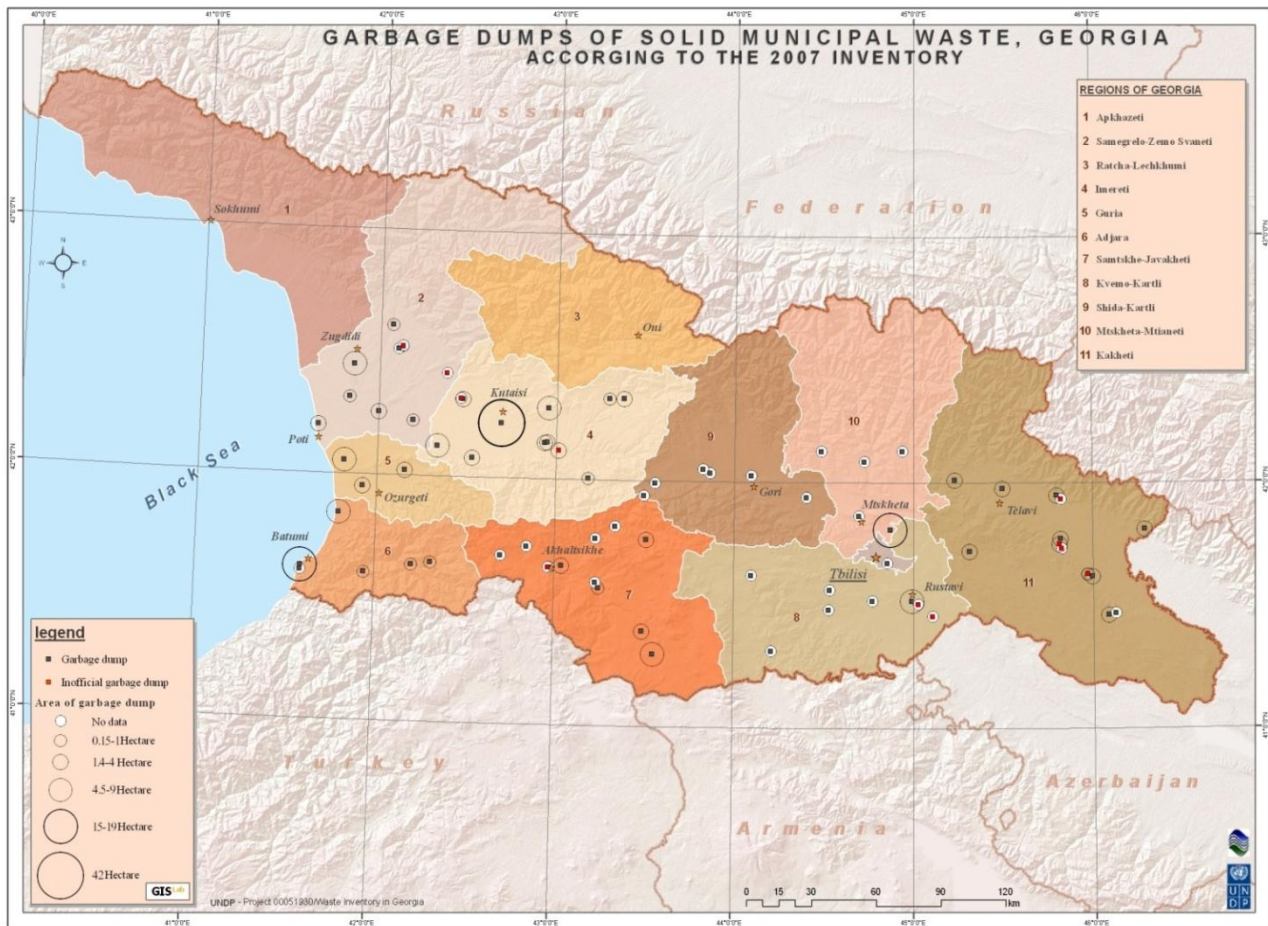


Figure 7: Dumpsites of municipal solid wastes in Georgia

3.7. Environmental Information Systems

Environmental data and information, both in electronic and paper formats, is very fragmented and scattered among multiple state- and non-governmental institutions of Georgia. Probably the most valuable and rich collection of operational and archive tabular environmental data and information is owned by National Environmental Agency (NEA) of the Ministry of Environment Protection of Georgia. The Agency receives and processes data from automated and regular hydro-meteorology, gauging and pollution monitoring stations. Format of the data is mostly in MS Excel, MS Access and, for some specific information, customized international formats. Besides this the NEA owns modern telecommunication system RETIM-2000 for receiving, processing and disseminating meteorological information from satellites. The system allows NEA to receive data in a textual, graphic and satellite imagery formats, and with the help of automatic weather stations and other on-line numerical weather prediction (NWP) systems (TOULOUSE, ARPEGE BRECKNELL, REDING, ECMWF), build the Weather Research and Forecast Environmental Modeling System – WRF EMS.

Apart from meteorology and weather forecasting, NEA owns and maintains water quality and quantity databases in MS Access format; 1:25,000 and 1:200,000 scale spatial hydrology data (river network and catchment areas) in ESRI ArcGIS Geo-database and Shape formats; Water Objects Coding System database based on the European Rivers and Catchments (ERICA) coding methodology in ESRI ArcGIS Geo-database and Shape formats; integrated water resources modeling and planning system for Georgia's river network for DHI's MIKEBASIN software format; these products were developed with the technical and financial assistance of the USAID funded project - South Caucasus Water Program in 2007. NEA also owns various thematic and

customized GIS data and maps on weather extremes, natural disasters, hydro-geological processes, etc.

The Ministry of Environment itself also owns some spatial data and information developed by various donor funded projects. Before the last institutional reforms, the Ministry's structure included a special unit in the form of Legal Entity of Public Law (SDPIA - Sustainable Development Projects Implementation Agency) overseeing implementation of these projects and maintaining information systems. Currently the datasets are maintained by specific sectoral Divisions of the MEP. Data on SEIS-East priority areas maintained by the Ministry includes: offshore and beach monitoring Geo-databases customized in ArcGIS software and consisting of the Blue Flag Beach Monitoring entry, Offshore Monitoring entry, and Beach Reporting entry.

The Ministry also maintains the following raster and vector datasets of Integrated Coastal Zone Management (ICZM) pilot GIS in ESRI ArcGIS shape file and GDB formats: 1:50,000 geo-referenced topographic maps, satellite imagery (ASTER), climate, economy, forestry, geology, infrastructure, landscapes, soils, natural disasters, vegetation, zoology, protected areas, etc.

Another institution that processes and maintains geo-spatial data and information is Geodesy and Cartography Service of the National Agency of Public Registry (www.napr.gov.ge) that used to be under the Ministry of Environment Protection before the last institutional reforms. In general the Service is responsible for defining state policy in the field of geodesy, digital and analog cartography, topography, GIS, remote sensing; regulations and guidelines for data sharing rules; introducing national standards for digital data processing, establishing network of the national GPS reference stations, processing, updating and providing legal access to the most up to date sources of different scale digital and paper topographic maps for entire country.

The Geodesy and Cartography Service maintains spatial databases developed for Background Map of Georgia (1:500,000), with the all essential layers (DEM, hydrology network, settlements, physical features, etc.), as well as more detailed digital layers of Black Sea coastal zone and boarder areas with Armenia and Azerbaijan in 1:10,000 scale developed for State Border Delineation; recently updated 1:50,000 digital topographic maps in paper format, as well as vector GIS layers in geo-database and shapefiles; 1:25,000 scanned and rectified geo-referenced topographic raster data maps, developed by USAID funded project - the South Caucasus Water Program (2007); spatial raster datasets - fragmented for specific areas: IKONOS, LADSAT, QUICK BIRD, etc.; nation-wide digital aerial ortho-photos, 50 cm resolution; aerial photogrammetry flight for entire country 1:40,000 (film) - ortho-photos; 1:25,000 hydrology network, watersheds, contour lines, DEM in geo-database and shape file formats.

As seen from the above, a centralized data hub for collecting, processing and dissemination of environmental data and information, stored in geo-referenced spatial and tabular forms does not exist. In 2006 Ministry of Environment Protection established the Spatial Information Center (SIC), a Legal Entity of Public Law, with the goal to assist Ministry of Environment Protection (that time – Ministry of Environment Protection and Natural Resources of Georgia) and other state institutions for similar functions. However in 2011, after the institutional reforms in the Ministry of Environment Protection, the Center was merged with the Ministry of Energy and Natural Resources as a unit in the Spatial and Geological Department. Currently the center maintains and processes data on Geology Funds, i.e. deposits of fossil fuels, metallic and none-metallic deposits, mineral resources, including ground waters, etc. The data mostly exists on a paper format and the main goal of the center from the very beginning is to digitize and develop electronic inventory of natural resources of Georgia in a geo-referenced spatial format.

4. MAIN STRENGTHS AND WEAKNESSES

Involvement of Georgia in the process of introducing Shared Environmental Information Systems under funding from the European Neighborhood Partnership Instrument for the East (Eastern Europe and South Caucasus) region may become a very powerful tool for boosting awareness on environmental issues in Georgia. This is even more important as the country's current priorities mostly focus towards economic and social security and as a result environmental sector is weakening notably. However, implementation of the SEIS-East priority objectives, as they were defined during the first regional meeting in November 2010 in Brussels, might be very challenging in Georgia. Main obstacles for that, among others, is a lacking comprehensive environmental statistics and dilapidated monitoring system. Both themes have been described in greater detail in the previous chapters, but the section below summarizes major weaknesses of Georgian environmental information sector for SEIS implementation:

- Old, soviet style of data collection and pollution monitoring for surface water bodies and ambient air quality observations;
- Absence of modern water quality classification and regulation guidelines;
- Insufficient number of water quality/quantity monitoring posts for surface water bodies and coastal waters;
- Absence of biological monitoring practice for surface water bodies;
- Absence of water quality and quantity monitoring system for groundwater aquifers;
- Lack of self-monitoring and absence of regular, state monitoring on wastewater discharge from industrial enterprises;
- Critically insufficient number of automated and regular monitoring stations for observation of ambient air quality;
- Absence of data collection and statistical analysis for municipal, industrial and hazardous wastes;
- Inconsistency of observed data with international standards and lack of quality assurance/quality control procedures on a regular basis;
- Absence of electronic statistical forms for data collection and exchange;
- Complicated and mostly non-effective procedures for communication and data and information exchange on inter-agency, institutional and stakeholder levels;
- Absence of appropriate legislative framework to regulate and guarantee collection of necessary data and exchange among stakeholder organizations;
- Absence of appropriate institutional (a designated agency) and technical capacity (ready to use data warehouse) for hosting and maintaining SEIS similar system in Georgia.

There are positive developments too within Georgia's environmental sector that should support SEIS implementation, although the list of strengths in this regard is relatively short. First and foremost this is the Government's on-going and highly prioritized course towards e-governance that will embrace all structural and sectoral fields of state governance, including environment and natural resources management. Other possible positive outcomes include:

- Skillful and trained human resources to carry out appropriate hydrological, water quality and ambient air pollution monitoring;
- Existence of appropriate technical capacity for environmental pollution monitoring (surface and coastal waters, ambient air, soils, etc.) in terms of well-equipped Central and the Black Sea regional laboratories in the premises of National Environmental Agency
- Georgia's ambition to join EU and on-going negotiations for signing Association Agreement that, among others, will oblige country to develop an overall national strategy on environment covering institutional reforms for ensuring implementation and enforcement of environmental legislation and gradual approximation towards major EU framework directives, including for water, air and waste, as well as for environmental governance, access to environmental information and data sharing.

5. NEXT STEPS: IMPLEMENTATION PLAN

Activities identified and defined as priority steps in the frame of ENPI-SEIS Project by the Ministry of Environment Protection are listed in the section below in priority order. First and foremost among them is building a unified waste management information system as part of the overall Environmental Information System in Georgia. This should be achieved by undertaking several necessary measures including: development of methodological guidance for inventory of industrial wastes; creation of data base and establishment of environmental information exchange system among relevant stakeholders all relevant national authorities/institutions. This activity could be considered as a pilot project for ENPI-SEIS implementation in Georgia. Main steps to address this activity in priority order and estimated time-line would be the following:

- Provide advice on possible legislative requirements that will become obligatory for each industrial site to report on generated hazardous and non-hazardous wastes by type and volume of waste (April-May, 2012);
- Help in developing statistical forms for enterprises, covering wastes generated per annum and indicated amount of wastes stored at industrial sites (June-August, 2012);
- Help to establish monitoring and reporting system for entities dealing with waste production and management (September-December, 2012);
- Assist in creation of comprehensive database on waste production and operation (September-December, 2012);
- Provide assistance in strengthening institutional capacities of key stakeholder organizations on proper information management and database use for effective decision-making and waste management planning practices (June-December, 2012).

In addition to these, the Ministry of Environment Protection finds the following issues appropriate to prioritize as possible capacity building interventions by ENPI-SEIS project in Georgia in the fields of water resources management and ambient air protection:

- Provide support in developing integrated water-use/water pollution (quality monitoring) database to be used by sectoral divisions of the Ministry of Environment Protection (September-October, 2012);
- Provide methodological and technical support for inventory and linking of water abstraction and wastewater discharge locations (legal and illegal) to electronic GIS system in Georgia (October-November, 2012);
- Provide assistance in developing PRTR-consistent and GIS-based electronic database inventory of point and mobile pollution sources in terms of tracking generation and release of harmful substances in the atmosphere (November-December, 2012);
- Provide support in developing electronic statistical forms for industrial enterprises on release of harmful substances in the atmosphere and discharge of wastewaters in surface water bodies (substituting old 2TP-Air and 2TP-Water paper forms) to be filled and submitted to appropriate divisions of the Ministry of Environment on-line (October-December, 2012);
- Provide technical and methodological support in developing web-based Environmental Information Portal accessible on-line on two different levels: 1) for internal use of Ministry of Environment Protection, National Environmental Agency and other appropriate government institutions - with detailed and comprehensive data and information; and 2) for general public -that will include aggregated and generalized information on air, water and wastes with possibility of extending to other thematic issues (January-December, 2013);
- Provide methodological guideline and technical support to introduce indicator-based State of the Environment reporting practice in Georgia (April-November, 2013).