

The Ministry of Protection of the Environment and Natural Resources



Measures on Strengthening Georgia's Capacity Building for Global Environmental Protection

Desertification/Land Degradation

Thematic Report

Project

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The assessments and opinions included in the document may not reflect the official views of the Ministry of Protection of the Environment and Natural Resources of Georgia.

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1.0. Preface

This document has been prepared with the support of the Global Environment Facility (GEF) and the UN Development Program (UNDP) within the frames of the project Measures on Strengthening Georgia's Capacity Building for Global Environmental Protection. The project aims at estimating the current capacities in Georgia and elaborating a strategy and a program for their strengthening in terms of implementation of the global conventions of the United Nations in Georgia.

The document discusses the national potential for meeting the requirements of the Convention to Combat Desertification, particularly, the existing financial, material-technical, institutional and human resources; it reveals the political, economic, legal, organizational and staff problems, which hamper the effective meeting of commitments designated by the Convention.

The capacities were assessed and the problems revealed at three hierarchy levels – systemic, institutional and individual levels. It was analyzed whether the current political-economic environment and legal-institutional arrangement ensure that the commitments designated by the Convention to Combat Desertification are met, how effective the work of governmental and academic institutions, NGOs and individuals is in this direction and which basic factors hamper their activities.

The capacities of the country and the needs for strengthening these capacities were revealed through obtaining, studying and analyzing the information about desertification, land degradation and sustainable development (legal acts, strategic documents, technical and analytical reports, etc.), as well as through interviewing the representatives of interested organizations and meeting with particular groups. The interested organizations were selected on a basis of their role in combating desertification/land degradation, as well as in accordance with previous surveys and reports (the National Action Program to Combat Desertification and the national reports). The activities of up to 30 organizations were surveyed.

According to the Convention to Combat Desertification, “**desertification**” means land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities.

“**Arid, semi-arid and dry sub-humid areas**” means areas, other than polar and sub-polar regions, in which the ratio of annual precipitation to potential evapotranspiration falls within the range from 0.05 to 0.65.

“**Land degradation**” means reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns, such as:

- (a) soil erosion caused by wind and/or water;
- (b) deterioration of the physical, chemical and biological or economic properties of soil; and
- (c) long-term loss of natural vegetation.

“**Combating desertification**” includes activities which are part of the integrated development of land in arid, semi-arid and dry sub-humid areas for sustainable development which are aimed at:

- (a) prevention and/or reduction of land degradation;
- (b) rehabilitation of partly degraded land; and

(c) reclamation of desertified land.

Box 1: What is meant by the term “Capacity Building”?

The term “capacity building” is used in many contexts, often with little reflection regarding its meaning. Over the last few years experts from many countries have been moving towards a common definition of the term and there is now general agreement that “capacity building” can be taken as “the actions needed to enhance the ability of individuals, institutions and systems to make and implement decisions and perform functions in an effective, efficient and sustainable manner”.

At the *individual* level, capacity building refers to the process of changing attitudes and behaviors, most frequently through imparting knowledge and developing skills through training. However it also involves learning by doing, participation, ownership, and processes associated with increasing performance through changes in management, motivation, morale, and levels of accountability and responsibility.

Capacity building at the *institutional* level focuses on overall organizational performance and functioning capabilities, as well as the ability of an organization to adapt to change. It aims to develop the institution as a total system, including its constituent individuals and groups, as well as its relationship to the outside. In addition to improvements in physical assets, such as infrastructure, institutional capacity building involves clarification of missions, structures, responsibilities, accountabilities and reporting lines, changes in procedures and communications, and changes in the deployment of human resources.

At the *systemic* level capacity building is concerned with the creation of “enabling environments”, i.e. the overall policy, economic, regulatory, and accountability frameworks within which institutions and individuals operate. Relationships and processes between institutions, both formal and informal, as well as their mandates, are important.

Capacity building can occur at local, national, or global levels and amongst any individual or group of stakeholders – individuals, entities or institutions, as well as at an overall systems level.

Interactions between the different levels are also important to overall capacity. Capacity is relevant in both the short term (for example, the ability to address an immediate problem) and the long term (the ability to create an environment in which particular changes will take place).

Capacity may imply “action”, or “inaction”, depending on the result desired. Capacity building does not always involve the creation of new capacity, but often the redeployment or release of latent capacities.

2.0. Introduction

2.1. Global problem of desertification and land degradation

Desertification is a global environmental problem with over 250 million people suffering its negative social-economic effects. One third of the entire land (over 4 billion hectares) belongs to a category of dry lands, which especially face a threat of desertification. Africa experiences a serious desertification problem.

Along with posing a danger to the environment in the effected regions, desertification triggers a great deal of social and economic problems (such as poverty, starvation, migration, social conflicts).

Desertification is caused by both natural and anthropogenic factors. Natural factors include climatic relief features, geodynamic processes, sedimentation of rivers and reservoirs, drying up of underground waters, etc. While the anthropogenic factors include irrational use of nature (unsustainable use of forests, overpasture, incorrect agricultural practice, irrational use of water resources), incorrect spatial planning and its absence, high population density, intensive urban development, etc.

Primarily the problem of desertification was associated only with the drought and land degradation phenomenon in arid, semi-arid and dry sub-humid areas. Subsequently, the meaning of this concept has expanded and is now considered in the context of land degradation. This means that a geographical area of the problem is much broad with more wide-scale negative social-economic and ecological outcomes. In the UNDP/GEF database on land degradation projects¹, land degradation is explained as: soil and wind erosion, denudation, chemical pollution, loss of organic matter, fertility and vegetation cover, abrasion, loss of humus layer, drying up of underground waters, etc.

Over 110 countries throughout of the world, including 80 developed ones, face the problem of land degradation. 70% (5200 million hectares) of dry agricultural lands also face degradation.

2.2. The problems of desertification and land degradation in Georgia

Desertification is a vital problem for Georgia as well. For this land-hungry country with 0,14 ha arable lands per capita, the loss of each hectare poses a great danger in terms of conservation of the environment and social-economic development of the country.

Georgia is not directly located near the desert area. However, on the background of the anticipated global warming and in case of systemic droughts its eastern part (Kakheti, Shida Kartli, Kvemo Kartli and partially southern Georgia) may really face desertification.

The Southern-Eastern part of Georgia (the regions of Dedoplistskaro, Signagi, Sagarejo, as well as Shida Kartli and Kvemo Kartli) is most vulnerable to desertification. The desertification processes are especially active here due to unsustainable use of land resources (incorrect irrigation, deforestation, overgrazing, etc.) and climatic effects (reduction of precipitation). Over 3000 hectares of lands, including the Valleys of Shiraki, Eldari, Iveri, Taribana, Natbeuri,

¹ Source: GEF-UNDP Strategic Partnership, Capacity Development Initiative, Country Capacity Development Needs and Priorities, Regional Report on Eastern Europe and Central Asia, September 2000

Naomari, Ole and Jeiran-Choli, are already desertified². The desertification problem is of transboundary importance. Neighboring Armenia and Azerbaijan also face this problem.

Recently the desertification processes have activated in Southern Georgia (Akhalsikhe, Kvabuli), where as a result of complete destruction of windbreaks within past decades, wind erosion processes have strengthened.

Noteworthy, that compared with desertification, the problem of *land degradation* is more wide-scale in Georgia and represents a serious problem for the entire country, including western Georgia and high mountain regions. For the present, as a result of various natural factors and human activities over 35% of agricultural lands are degraded³.

Soil erosion is a very serious problem of land degradation in Georgia. Lack of struggle against this phenomenon has significantly promoted the activation of erosion processes. For example, in the eighties the total of 380 000 hectares were eroded, while now this figure has increased up to 1 million hectares⁴, including 380 thousand ha of arable lands, 570 thousand ha of pastures and haylands and 87 thousand ha of the Black Sea coastal line. In arid and semi-arid regions of eastern Georgia 105000 hectares of arable lands suffer wind erosion. This parameter covers 17 administrative districts (Khashuri, Kareli, Gori, Tskhinvali, Akhalkalaki, Caspi, Mtskheta, Gardabani, Marneuli, Bolnisi, Sagarejo, Gurjaani, Dedoplistskaro, Tetrtskaro, Dmanisi, Akhalsikhe and Akhalkalaki).

Soil erosion is conditioned by climatic relief factors, active geodynamic processes, irrational wood cutting, and incorrect agricultural activities (intensive agriculture, overgrazing, unsustainable irrigation activities, extraction of mineral resources under open pit conditions, etc.).

Besides erosions, *soil salination* and *swamping* is a very serious problem for the country. A great part of lands are heavily or partially salinated. 59 220 hectares are heavily salinated, while 54 340 hectares are partially salinated. Total area of humus soils, which need melioration, amount to 15 000 ha⁵.

Land degradation and destruction processes are especially intensive after particular natural calamities, such as landslides, snowslides, floods, etc.

Soil salination is basically caused by unsustainable and ineffective irrigation activities. For past decades the irrigation-drainage systems were built without taking into account the soil and relief factors. Significant network losses took place. As a result the plots were swamped, the level of ground waters increased and secondary salination and swamping of lands took place. Currently the situation is much grave. Generally, the soils in eastern Georgian need irrigation. Due to lack of financial resources for past decades, most irrigation-drainage systems are not operating. The irrigation-drainage areas have significantly decreased, and the amount of salinated soils increased, accordingly. For example, in 1992 a total of 422 000 ha of agricultural lands was irrigated and 130 000 ha drained. In 2000 this parameter decreased to 240 000 ha (57%) and

² Source: The National Environmental Plan of Action, the Ministry of Protection of the Environment and Natural Resources, Tbilisi, 2000.

³ Source: The National Sustainable Development Assessment Report, the Ministry of Protection of the Environment and Natural Resources, Tbilisi, 2001.

⁴ Source: The State Program on Land Protection and Upgrading Soil Fertility, Tbilisi, 2002; Caucasus Environment Outlook, CEO-2002; UNEP/GRID-Tbilisi;

⁵ Source: The National Action Plan to Combat Desertification, Tbilisi, 2003;

70 000 ha (54%) respectively⁶. Currently it is impossible to rehabilitate the existing irrigation and drainage systems, that triggers swamping of plots and accordingly, secondary salination and swamping.

Drying up of ground waters caused by incorrect exploitation of aquifers, irrational use of resources and significant decrease of the level of underground water horizons, reduces the process of capillary raising and triggers dehydration of plant roots.

Although, lack of finances hampers conducting of systematic observations and there are no modern data over chemical pollution of soils, in the opinion of experts, *soil pollution* is a very serious problem today. Compared with the eighties, use of pesticides has presently decreased from 29000-34000 tons to 1700 tons⁷. However, it is quite possible that heavy metals, which are included in these agrochemicals, can be accumulated in agricultural plots. Currently, one of the possible sources of pollution of lands with pesticides is overdue pesticide storehouses, which are out of control. Moreover, as a result of break-up of the centralized system of agrochemical delivery, illegal import and use of pesticides takes place. This also can be one more sources of land pollution.

Mineral resources are still extracted in the country under open pit conditions and no doubt, that soils and water resources around the extracting companies are extremely polluted. And what is most important, pollution of soils with oil-products across oil and gas pipelines under construction is not excluded as well.

So, Georgia faces the following desertification and land degradation problems:

- Wind and water erosion;
- Loss of fertile soil layer;
- Chemical and radioactive pollution of soils;
- Reduction/drying up of water resources in eastern Georgia;
- Reduction/loss of biodiversity;
- Salination, swamping and acidification of soils;
- Geodynamic processes: landslides, floods, etc.

The above-mentioned problems are basically caused by:

- Oroclimatic factors;
- Global warming⁸;
- Irrational agriculture;
- Irrational, unsustainable use of water resources;
- Non-regulation of river regimes;
- Deforestation;
- Uncontrolled use of chemicals;
- Pollution with solid wastes;
- Sedimentation of pollutants emitted during fuel combustion;

⁶ Source: The World Bank Irrigation and Drainage Consumer Associations Development Project, Summary, Tbilisi, 2001.

⁷ Source: Preparation of the National Action Plan on implementation of the Stockholm Convention on Persistent Organic Pollutants, project document, UNDP/GEF, 2002

⁸ Global warming poses a serious threat to the Caucasus glaciers and causes their melting due to high temperature, low humidity and reduction of atmospheric precipitation. If these processes become systematic, they will speed up the glaciers' retreating and trigger primarily the local and then the regional changes. Hence, the Caucasus ecological balance is endangered, moreover if the processes become irreversible.

- Extraction of mineral resources under open pit conditions;
- Extraction and transportation of oil and gas products;
- Incorrect spatial planning/absence of spatial planning;
- Pollution of air and water as a result of extraction of mineral resources under open and closed pit conditions and use of polluted water for irrigation;
- Impact of radiological accidents and uncontrolled radioactive sources on agricultural lands;
- Lack of financial and technical resources to combat desertification/land degradation;
- Weakness and inefficiency of institutional potential;
- Low level of ecological awareness, especially among farmers.

2.3. The Convention to Combat Desertification and the Commitments of the Parties

The international community has long recognized that desertification is a major economic, social and environmental problem of concern to many countries in all regions of the world. In 1977, the United Nations Conference on Desertification (UNCOD) adopted a Plan of Action to Combat Desertification (PACD). Unfortunately, despite this and other efforts, the United Nations Environment Programme (UNEP) concluded in 1991 that the problem of land degradation in arid, semi-arid and dry sub-humid areas had intensified, although there were "local examples of success".

As a result, the question of how to tackle desertification was still a major concern for the United Nations Conference on Environment and Development (UNCED), which was held in Rio de Janeiro in 1992. The Conference supported a new, integrated approach to the problem, emphasizing action to promote sustainable development at the community level. It also called on the United Nations General Assembly to establish an Intergovernmental Negotiating Committee (INCD) to prepare, by June 1994, a Convention to Combat Desertification, particularly in Africa. In December 1992, the General Assembly agreed and adopted resolution 47/188.

The Convention to Combat Desertification was adopted on 17 June 1994 in Paris. The representative from Georgia also signed the document. In 1999 the Parliament of Georgia ratified the Convention. Thus, Georgia officially became one of the Parties to the UN Convention to Combat Desertification.

The supreme goal of the Convention is to combat desertification and mitigate the effects of drought in affected or threatened areas, especially in Africa, through implementing effective measures, international cooperation and partnership.

The Parties to the Convention are committed to:

- give due priority to combating desertification and mitigating the effects of drought, and allocate adequate resources in accordance with their circumstances and capabilities;
- promote cooperation among affected country Parties in the fields of environmental protection and the conservation of land and water resources, as they relate to desertification and drought;
- establish strategies and priorities, within the framework of sustainable development plans and/or policies, to combat desertification and mitigate the effects of drought;
- address the underlying causes of desertification and pay special attention to the socio-economic factors contributing to desertification processes;

- promote awareness and facilitate the participation of local populations, particularly women and youth, with the support of non-governmental organizations, in efforts to combat desertification and mitigate the effects of drought; and
- provide an enabling environment by strengthening, as appropriate, relevant existing legislation and, where they do not exist, enacting new laws and establishing long-term policies and action programs.

In pursuing the objective of this Convention, the Parties shall adopt an integrated approach addressing the physical, biological and socio-economic aspects of the processes of desertification and drought. In particular, pursuant to articles 9 and 10 of the Convention, the Parties shall prepare and implement national action programs to identify the factors contributing to desertification and practical measures necessary to combat desertification and mitigate the effects of drought. The National Programs should also:

- specify the respective roles of government, local communities and land users and the resources available and needed;
- incorporate long-term strategies;
- offer measures to avoid the problem;
- allow for modifications to be made in response to changing circumstances;
- enhance national climatological, meteorological and hydrological capabilities and the means to provide for drought early warning;
- promote policies and strengthen institutional frameworks which develop cooperation and coordination, in a spirit of partnership, between the donor community, governments at all levels, local populations and community groups, and facilitate access by local populations to appropriate information and technology;
- provide for effective participation at the local, national and regional levels and
- require regular review of, and progress reports on implementation of programs.

Moreover, national action programs may include some or all of the following measures to prepare for and mitigate the effects of drought:

- establishment and/or strengthening, as appropriate, of early warning systems and mechanisms for assisting environmentally displaced persons;
- strengthening of drought preparedness and management, including drought contingency plans;
- establishment and/or strengthening, as appropriate, of food security systems;
- development of sustainable irrigation program for both crops and livestock.

The Parties shall encourage the coordination of activities carried out under this Convention and, if they are Parties to them, under other relevant international agreements, particularly the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity, in order to derive maximum benefit from activities under each agreement while avoiding duplication of effort.

The Parties shall encourage the conduct of joint programs, particularly in the fields of research, training, systematic observation and information collection and exchange, to the extent that such activities may contribute to achieving the objectives of the agreements concerned.

And finally, the Parties are committed to periodically prepare and submit national reports to the Conference of the Parties.

3.0. Capacities at a systemic level

This chapter analyzes the capacities at a systemic level in terms of combating desertification and land degradation. It aims to assess planning the measures on combating desertification and management skills, the level of political, legal and economic support, provision with relevant financial, human and information resources, as well as integration and correlation of system elements. In particular, this chapter of the document gives answers to the following questions: does the political-economic, social and financial environment promote the effective implementation of measures on combating desertification and land degradation? Is the struggle against desertification and land degradation planned at national, regional and local levels? Is it based on the approaches of sustainable development and integrated management of resources? Are the issues of desertification and land degradation integrated into the strategies and plans of social-economic development? Are these strategies and plans implemented effectively? Is the current normative base effective? Is the current organizational and management system effective and provided with appropriate resources? What kind of correlation and integration do the system elements have?

3.1. Planning of struggle against desertification/land degradation

3.1.1. Planning of struggle against desertification/land degradation within the framework of environmental planning

Planning of struggle against desertification and land degradation is a part of the country's environmental planning. Article 15 of the Law of Georgia on Environmental Protection envisages the introduction of the environmental planning system, which should include long-term strategic planning (sustainable development strategy), five-year planning (National Environmental Action Plan) and environmental management plans elaborated for the subjects of activity. National environmental action plans can be developed at regional, local and departmental levels.

Currently the country is establishing the environmental planning system, as well as developing its elements. The long-term sustainable development strategy has not been elaborated yet. However, there exists a 5-year National Environmental Action Plan ratified in 2000. The plan includes the key environmental problems, as well as the short and medium-term measures on their settlement. With the support of the Secretariat of the UN Convention to Combat Desertification, the National Action Plan for Combating Desertification and Land Degradation was developed in the country and later approved by the President of Georgia on 2 April 2003. Georgia has also developed the GEF-funded and UNDP-supported regional management plan on conservation of arid and semi-arid ecosystems. Out of strategic documents and plans existing in the cognate fields of combating desertification/land degradation, the biodiversity strategy and national action plan, the national action plan on climate change and the plans on integrated management of the Alazani and Khrami basins are rather important.

The National Environmental Action Plan of Georgia (NEAP) is the key document of Georgia's environmental policy, which was prepared by the Ministry of Protection of the Environment and Natural Resources with the financial support of the World Bank. The plan, which will last for 5 years, includes the short and medium-term investment and technical (legislative and institutional changes) measures on settlement of key environmental problems.

The desertification problem is not focused separately in the National Environmental Action Plan either among national or global issues. This problem is discussed in the general context of land

resources. The program draws prior attention to erosion of agricultural soils and further, to their salination, swamping and pollution with chemicals.

The Program on Rational Use of Land Resources offers a number of investment and institutional measures. The Ministries of Agriculture and Environmental Protection shall implement the measures.

The program also envisages implementation of particular measures in the cognate spheres of combating desertification and land degradation, such as restoration of agrobiodiversity, development of a concept on conservation and sustainable use.

Box 2. Measures under the National Environmental Action Plan for 2000-2005 years

Investment measures

- Implementation of demonstration projects on use of best ecological practices in agriculture, that will foster introduction of such practices in this field;
- Measures on combating soil erosion, particularly construction of windbreaks and planting of perennials on mountainsides, as well as construction of anti-erosion buildings.

Institutional measures

- Elaboration of the national land protection program, which will thoroughly describe the current state and tendencies of land degradation through use of geoinformation systems; clarify natural and anthropogenic processes, which promote land degradation and establish anti-degradation measures; schedule realizable investment measures taking into account the economic and financial state of the country.
- Development of guiding documents and training of farmers regarding best agricultural practices, that will help them select and use best agricultural methods taking into account the climatic and geographical factors of various regions.

If we analyze the NEAP measures regarding land resources, we will see that they simply aim to protect soil. The program does not envisage the measures on restoration of soils and combating desertification. A list of measures is rather scarce, the selection and priority criteria are uncertain, their cost and feasibility is not estimated as well. The sources of financing are not well defined. In particular, only one or two donors are mentioned, while the capacities of state and private sectors to fund the measures are not discussed at all. Moreover, the principles of integrated management of sustainable development and natural resources are not envisaged. Accordingly, such measures which aim at integrated use and protection of natural resources within catchment-basins (including water and land resources) are not addressed at all⁹.

NEAP recommendations are being fulfilled gradually, however with violation of time limits. They are basically financed from international sources. The international financing is basically directed to the projects on agricultural development, biological farms promotion, farmers' training, development of irrigation and drainage consumer organizations, which have already been implemented or are under implementation at the Ministry of Agriculture and Food with the support of the Global Environment Facility and the World Bank. These projects also envisage

⁹ Prior to elaboration of NEAP, Georgia had no experience either in environmental planning or in sustainable and integrated management of natural resources. Hence, naturally, the plan failed to prove ideal. Still, NEAP, which is the first strategic environmental document, concentrating national environmental priorities, should be considered as a progressive document.

the aspects of land protection, melioration and rational use of land resources (see detailed information about these projects in chapter 5).

Several NEAP measures are funded through the state targeted programs. Due to the budgetary backlog and its annual sequestration, these programs receive much less funds than scheduled. Therefore, they are implemented partially (see detailed information about state programs financing in chapter 3.5.1).

The National Action Plan on Combating Desertification in Georgia (NAPCD) was elaborated in 1999 by the Noah's Ark Center for the Recovery of Endangered Species (NACRES) through direct coordination of the Ministry of the Environmental Protection. Other interested departments and scientific-research institutes, as well as local governmental bodies, participated in developing the plan.

Basing on the key strategic principles of the Convention to Combat Desertification, NAPCD points out the areas threatened by desertification, defines the key factors causing desertification and schedules short and medium-term (2003-2007) measures on combating desertification, with possible outcomes and terms of implementation. In particular, the program offers the measures on biodiversity conservation, raising environmental awareness of the population, monitoring desertification, as well as other measures on international cooperation and the economic incentives for their implementation.

The National Action Plan to Combat Desertification is relatively short-term and envisages limited financing. It focuses on the desertification issues and does not aim at settling the land degradation problems throughout Georgia. Hence, it emphasizes the most sensitive regions in terms of desertification, such as arid and semi-arid regions, and practically does not cover other areas. Moreover, the program gives priority to the measures on holding scientific researches, developing strategies/plans and implementing pre-project works, while it neglects infrastructure and institutional measures directed to mitigation or settlement of land degradation and desertification problems. Besides, the program does not envisage any measures on conservation of water resources that makes the document unilateral.

The most important deficiency of the program is that no detailed researches were conducted to identify the problems and to plan the measures (due to limited funds and terms); basically expert opinions were used. This document looks like a concept rather than a particular program. The measures included are rather general and basically submitted at a conceptual level. The program does not reveal particular project proposals, including demonstration projects. Moreover, the program does not include the criteria and methods for assessment of measures and generally, it is quite unclear whether the priority of these measures was estimated at all. It is also very obscure, whether cost estimates took place, how real they are and whether they are based on scientifically based methods. Moreover, the program does not define the possible sources of financing. Neither the institutional mechanisms of the program implementation are suggested. And, finally it does not define the criteria for monitoring and assessment of the program implementation.

Time will show how the National Action Plan to Combat Desertification will be implemented in Georgia, since the program was ratified in spring 2004 and its realization has not started yet. However, one thing is quite clear. The program is very expensive. It is doubtful that the state budget will allocate funds for it. Hence, the program realization will significantly depend on international support. On this background, apparently only those measures will be implemented which appear interesting for donors. So, Georgia should spare no efforts to make donors' priorities and the county's interests meet each other.

Along with short and medium-term measures on biodiversity conservation, **the Biodiversity Conservation Action Plan** envisages important measures on combating desertification and land degradation, in particular: introduction of management plan on conservation of ecosystems in arid and semi-arid areas, passportization and zoning of pastures, definition of load numbers and restoration through phytoengineering methods. Noteworthy, that the same measures are included in the National Action Plan to Combat Desertification, and strict coordination is necessary while financing the measures in order to avoid doubling.

The strategy on adaptation to climate changes and the climate change action plan were prepared within the frames of the UN Framework Convention on Climate Change. Among the measures included in the strategy and the plan, the measures on adaptation of vulnerable ecosystems and economic sectors to droughts are rather important. In particular: development of drought and pest-tolerant crop varieties, replacement of spring crops by winter crops, rehabilitation of irrigation systems, implementation of bioengineering measures on protection of natural ecosystems, use of underground waters in desertified areas, irrigation of pastures, cultivation of pastures and hay lands and creation of forest lines, selection of drought-tolerant timber species, etc. The measures on adaptation of water resources to droughts and high precipitation are scheduled as well.

Although, the above-mentioned measures are rather important in terms of combating droughts and desertification, the mentioned strategy and plan include only their mechanical list without the key goals of these measures, the terms of their implementation, the cost, mechanisms and indicators of implementation. Hence, they cannot be considered as real strategic action documents.

The management plan on conservation of arid and semi-arid ecosystems in Georgia was developed in 2000 by NACRES with the support of UNDP and GEF. Now, the plan is under implementation. The plan defines the scopes of conservation of over 108000 km² of arid and semi-arid ecosystems in the South Caucasus, as well as the measures on achieving these scopes and the legal, institutional and financial mechanisms of implementing these measures. The following key tasks are worth noting:

- Introduction of rational and sustainable land use methods;
- Implementation of measures on restoration of key species of arid and semi-arid ecosystems;
- Restoration of biotopes;
- Reduction of poaching in the region;
- Conducting of long-term scientific researches;
- Promotion of monitoring system development;
- Perfection of the laws on protection of ecosystems and promotion of their implementation;
- Raising of environmental education and public awareness;
- Creation of a special financial mechanism of conservation.

In particular, the management plan suggests the measures on conservation of biotopes and species, scientific researches, institutional development, perfection of legal base and environmental education. It also includes the detailed analysis of the institutional and financial mechanisms for implementation of measures. In terms of a financial mechanism, lack of state financing is well perceived. Hence, the plan offers preparation of pilot projects and special grant programs, which should be implemented through the specialized international biodiversity fund.

Still, the plan is made up so that separate blocs of measures should include elaboration of detailed projects with relevant expenditure records and terms. Therefore, it is a concept (or strategy) rather than a detailed management plan and is less practical for decision-makers. Moreover, like other plans, it does not include the criteria and methods for prioritizing the measures. It is quite clear that the relevant measures were scheduled on a basis of the problems revealed as a result of a preliminary research; however it is not defined under which criteria they were selected and whether these criteria were acceptable for the interested parties. And, finally, one of the deficiencies of the plan is that it is a recommendation document and has no legal status, which is extremely important for gaining political support (see details about the implementation of the plan in chapter 5).

The Alazani and Khrami-Debed basins integrated management plans were elaborated in 2002 within the frames of the USAID-supported project “Water Resources Management in the South Caucasus”. The Azerbaijani, Georgian and Armenian non-governmental organizations and private advisory firms participated in development of the documents. The local interested parties were also actively involved in the planning process.

In terms of combating desertification/land degradation, the Alazani and Khrami-Debed basins integrated management plans are rather interesting since they aim at water resources protection and rational use in the areas (Kakheti, Kvemo Kartli) threatened by desertification and land degradation. They are also important in terms of regional cooperation.

The Alazani and Khrami-Debed basins integrated management plans reveal the problems of protection, management and use of water resources existing in the two river basins, taking into account the key water functions (water supply, irrigation, hydro energy, health care and conservation of ecosystems). They schedule the investments measures, as well as the legislative and institutional changes to be implemented within 10 years.

Since a river basin is a uniform system with intercrossed ecosystems and natural resources, along with the water resources management measures, the plan also offers other measures, such as forest planting, struggle against erosion processes, etc. The plans also include particular project proposals and short-term demonstration projects.

In order to plan water resources, the initiative groups were created within the frames of the Alazani and Khrami-Debed basins with the participation of the representatives from the interested governmental agencies, local government and self-government bodies, NGOs and local communities. Problems and measures were assessed as a result of multi-component analysis with the direct participation of the initiative groups. What is more important, the institutional framework for integrated planning and management of basins, which envisages the establishment of councils with the participation of the interested sides, was offered while planning. Several models regarding the status, functions, structure and financing of the councils were developed and analyzed.

The Alazani and Khrami-Debed basins integrated management plans need perfection, especially, in terms of elaboration of the detailed project proposals, estimation of their cost, efficiency, sustainability and institutional provision. Moreover, since the mentioned plans are mainly the recommendation documents, with the purpose of their legalization and political support, it is necessary to approve them by local government or self-government bodies, to attract relevant finances and establish an institutional mechanism (council) for river basins managements.

3.2.2. Integration of the struggle against desertification/land degradation into social-economic development and sectoral strategies or programs

According to the current legislation of Georgia, the integration of environmental measures into the social-economic development processes should occur within the frames of the sustainable development strategy, while the integration of various state sectoral strategies, programs and action plans should occur in general processes of the country's social-economic development – through indicative planning of social-economic development. The country has not elaborated a sustainable development strategy so far. However, there exists the national self-assessment report on sustainable development prepared in regard with sustainable development for the 2002 Johannesburg World Summit. The report suggests particular recommendations regarding the development of the strategy. As for indicative plans, currently only short and medium-term (one, five-year) planning is realized.

The current system of the social-economic development planning was founded in 1997 following the adoption on the law “On the principles of indicative planning for social-economic development.” Under the law, the indicative plan for social-economic development includes the strategy of the country's social-economic development, key trends, tasks and ways and methods of their implementation for the time being. The indicative plan can be elaborated for short-term (one year), medium-term (5 years) and long-term (10-20) period. The plan should include a general concept on social-economic development, the forecasts for social-economic development and the mechanisms for implementation of the concept (economic regulators system) or a complex of legal, economic and institutional measures and state targeted programs, which are necessary to implement the plan.

The state targeted programs represent the key mechanism for implementation of the indicative plan. They are developed by state, scientific or other organizations in order to solve any problems of state importance, including the environmental ones, and then submitted to the Ministry of Economy. A special commission set up by the Ministry will discuss the suggested programs. The program initiators, as well as the representatives of interested departments will participate in the selection of targeted programs. Since the targeted programs are selected, a list of programs to be implemented primarily is made and ratified by the President of Georgia. The list of ratified programs along with the financial parameters is submitted to the Finance Ministry for budgeting. Since the expected budget revenues are essentially small compared with the funds necessary for implementation of the ratified targeted programs, only one part of these programs will receive budgetary financing.

In terms of integration of desertification and land degradation issues into general and branch strategies of social-economic development, it is important to analyze current and previous indicative plans, as well as the strategies and programs existing in agrarian and forest sectors. It is also rather interesting whether the desertification/land degradation issues are reflected in the Poverty Reduction Program, which is a multi-sectoral, long-term program.

Indicative plan for social-economic development of Georgia – according to the measures submitted in the indicative plans we can say which issues represent a priority for the country. However, it should be noted that very often the criteria for setting these priorities are obscure and the process of selection of measures is not always impartial. Financing definitely depends on the Ministry of Economy, which is responsible for making a final list of priority measures and even guarantees financing for this or that program.

The environmental part of the 2003 indicative plan did not include the issues of desertification and land degradation, although the list of priority measures submitted by the Ministry of the Environmental Protection to the Ministry of Economy included:

- Research of desertification processes in Georgia;
- Inventory of soils polluted with oil and oil-products in the regions of Kakheti and Kvemo Kartli;
- Conducting water cadastre in the Alazani and Aragvi river basins.

The plan was ratified without the above-mentioned measures and its environmental part envisaged funding of the following state targeted programs relatively connected with land degradation:

- Program on inventory and utilization of outdated pesticides (GEL 20 thousand);
- Program on surveying air, water and soil quality in the areas adjacent to the Eurasian transport corridor and forecasting the expected results (GEL 20 thousand).

Unfortunately, after ratification both these programs were withdrawn from the plan and an amendment was made to it. In particular, the above-mentioned GEL 40 thousand was earmarked to fund the program on monitoring the Baku-Tbilisi-Ceyhan pipeline construction.

The 2003 indicative plan also envisaged the elaboration of the sustainable development concept. Moreover, the agricultural part of the state targeted programs included the measures on rational, sustainable use of land resources and land market development:

- Provision of farmers with agricultural machinery, elaboration of a governmental program to support creation of service centers in the regions, promotion of large farms in the country;
- Development of relevant normative acts on perfection of land management, acceleration of registration and formation of free land market.

As for the previous indicative plans, they included the measures on combating land degradation and rehabilitation of land resources. Now, these measures are being implemented within the frames of the targeted programs. In particular, during 1999-2002 years GEL 208 640 was allocated to fund the measures on chemical melioration of soils and GEL 359 201 – on combating soil erosion, within the frames of the state targeted programs on combating soil erosion and improving low-productive acid soils. Noteworthy, that a real level of funding was 1,4-1,5 times less, than envisaged by the plan.

Hence, the analysis of the last five years indicative plans showed that the government pays scarce attention to the complex problem of desertification. The issue is basically discussed in the context of soil erosion. While, soil erosion is recognized as one of the national priorities and the struggle against soil erosion is entered in the list of measures to be funded by the state in 1999-2005 years. Still, even those measures, which are included in the indicative plans, are not financed in due form. Therefore, they are implemented only partially.

The development of ***the Poverty Reduction and Economic Growth Program*** was launched in Georgia in 2000. The program is long-term (up to 2015). It establishes a national strategy for social-economic development and poverty reduction, reveals the links between various social-economic sectors and schedules the measures to further promote poverty reduction and improve social-economic situation in the country.

The program defines the key trends and sectors of social-economic development of the country, and schedules further measures. Environmental protection is considered one of the key priorities,

while desertification/land degradation – one of the key problems of this field. Therefore, several measures on settling this problem are suggested.

In particular, it is necessary to assess the tendencies and risks of desertification, to develop national and regional programs on combating desertification and to implement complex measures against soil erosion. Moreover, several measures, which do not directly serve land degradation, are also envisaged. In particular, the program suggests the estimation of the current waste storage system and the preparation of offers for its improvement, as well as the creation of early warning systems to combat natural calamities (droughts, floods, etc.) and liquidate its consequences through elaboration of state programs and mechanisms and raising public awareness.

Several other measures suggested in economic fields are also rather important to combat desertification and land degradation.

In the agricultural field the program suggests the measures on improvement of infrastructure, research of soil fertility and introduction of sustainable methods of farming, creation of agrarian credit and insurance systems and establishment of regional and local advisory centers for farmers. All these measures will promote the introduction of sustainable agricultural practice and rational use of lands.

Special attention must be paid to the following measures of land management: further privatization of vacant state-owned agricultural lands, privatization through purchasing of rented agricultural lands, introduction of a relevant cadastre and land registration system for the country and further improvement of corresponding legislative base; elaboration of state targeted program of soil fertility improvement and identification of respective sources of finance; development of land and real estate market through the involvement of banking and insurance system and establishment of private institutions of real estate evaluators, soil specialists, surveyors and lawyers.

For the development of forestry the following measures should be implemented: to conduct phased privatization of forest areas, to improve mechanisms regulating functioning of former collective farms' forests and recording of their incomes. Other measures aim at promoting the development of commercial forest sector (gradual privatization of state-owned forests, development of timber processing and furniture production sectors, etc.).

Thus, the Poverty Reduction Program includes the direct measures on combating desertification/land degradation, as well as the measures, which promote final settlement of this problem.

Noteworthy, that the Poverty Reduction Program is the first, long-term, multi-sectoral program. However, it includes a great deal of deficiencies. In particular, the document does not offer the mechanisms of funding priority measures. Moreover, many measures included in the program coincide with the actions envisaged by other sectoral strategies and programs. The program contains numerous priority measures, the implementation of which may cause mutually exclusive outcomes. Priority actions are discussed only by separate sectors, instead of being integrated.

The state program on land protection and soil fertility improvement was elaborated in 2002 by the Ministry of Agriculture and Food of Georgia. The Academies of Sciences and Agriculture also actively participated in the program development.

The mentioned program is a part of the country's agrarian policy and aims at soil conservation and fertility improvement. The program, which will last for seven years, is divided into two stages. The first stage will be realized during 2003-2006 years, the second – during 2007-2010 years. Several measures are being implemented since 1999 within the frames of the state targeted programs. Soil conservation and fertility improvement program envisages complex measures, starting from combating erosion to recultivation of degraded soils and melioration (except hydromelioration). It also envisages monitoring of soil fertility and pollution and creation of databases. The program also defines the sources of financing the scheduled measures. In particular, protection of state-owned soils against erosion and chemical melioration of low-productive acid soils should be realized within the frames of the state targeted programs, while soil research, elaboration of recommendations and other technical measures should be implemented at the expenses of farmers and land users on a contractual basis through a special service of the Ministry of Agriculture or a private and legal persons. It is also possible to grant soft and long-term credits to farmers to purchase chemicals and agricultural machinery. Particular privileges are implied for those farmers who raise soil fertility.

Besides structural measures, the program includes a list of normative-methodological measures necessary for the program implementation. And, finally the program defines an institutional framework of its realization. In particular, the Ministry of Agriculture is responsible for the program realization. The program also envisages the involvement of the Ministry of the Environmental Protection and the Academies of Sciences and Agriculture in the processes.

Hence, the soil conservation and fertility improvement program is very complex and expensive. Taking into account the recent tendency of allocating the funds from the state budget, the program is expected to be realized only partially and with delay. Thus, it is necessary to seek for international support. Moreover, since the programs on soil conservation, combating desertification and poverty reduction overshadow each other in many aspects, their coordinated implementation is necessary to avoid doubling of measures. In its turn, it requires the establishment of closer ties between the Ministries of Agriculture and Environmental Protection.

The National Forestry Development Program was developed within the frames of the National Environmental Action Plan with the support of the World Bank. It analyzes the current situation in the forestry sphere and defines the key principles and trends of its development. The major objective of the program is to maximize the environmental and economic benefits from its forests and to promote priority activities for transition to market economy. According to the program, forest reform should be implemented in four directions: 1) Sustainable development of forestry sphere; 2) Introduction of financial or economic methods of forest management; 3) Integration of forestry institutions into general economic reform; and 4) Attracting international support to the forestry development in Georgia.

Although the program includes correct provisions, it is still very general. It does not define short, medium and long-term objectives and priorities. Therefore, the program is less practical for decision-makers.

The National Forestry Development Program has further become a basis for development of the State Program on Conservation and Development of Forests in Georgia and the long-term and wide-scale Forest Development Project, under which a new national forest policy will be elaborated.

The State Program on Conservation and Development of Forests in Georgia was elaborated by the State Forestry Department as one of the instruments of introduction of the state strategy. It represents a medium-term investment program and covers a period from 1998 to 2005 years. The

program aims at implementing a number of practical structural measures, including afforestation. Almost all the goals included in the program are ambitious. For example, it envisages afforestation on the area of 2300 ha, however the Georgian Government cannot finance this measure. Hence, the program realization is practically impossible.

The Concept on Agrarian Policy was developed by the Ministry of Agriculture and the Academy of Agricultural Sciences. It includes agro-ecological priorities as well.

The Strategy for Sustainable Agricultural Development and Food Security is under elaboration at the Ministry of Agriculture and the Academy of Agricultural Sciences (the Scientific-Research Institute for Agrarian Radiology and Ecology).

3.2.3. Conclusions

- Analysis of planning the struggle against desertification/land degradation showed, that particular actions are planned and realized in the environmental planning system at both national and local levels¹⁰.
- Planning is relatively short-term and measures are envisaged for 5-7 years. Lack of basic information and relevant knowledge about strategic planning, as well as absence of long-term development perspectives in the country, hampers long-term planning.
- Current plans and programs are general documents and do not include necessary political, legal, institutional and financial mechanisms of their implementation.
- The plans do not include or include scarce criteria for defining the priority measures.
- Future measures are basically planned without assessment of their feasibility and mobilization of appropriate funds. This is caused by lack of knowledge and experience in strategic planning.
- Experience in natural resources integrated planning/management is very scarce and the interested parties mostly manage by narrow departmental interests. Accordingly, the resources integrated management principle is not used among the criteria for assessment of priority measures.
- Local authorities of those areas which are threatened by desertification do not actively participate in the national planning of combating desertification, while wide strata, including local population, are not involved in this process at all.
- Compared with a national level, which is characterized with a great deal of strategic documents and action plans, planning is extremely weak at a local level. Current regional and local plans (arid and semi-arid ecosystems conservation plan, the Khrami and Alazani basins integrated management plans) are simply unofficial, recommendatory documents and need a legal status to be granted by local government and self-government bodies.
- Implementation of these plans is basically funded by international financial organizations and donor countries. However, during funding various measures, donors often guide by their own criteria and priorities. Sometimes, their interests do not coincide with the primary needs of the country.
- Mobilization of funds from the state budget is very complicated and very often real funding is far from the scheduled one.
- Lack of coordination among the interested parties at a national level, as well as among central and local authorities.
- Long-term priorities for combating desertification/land degradation are not scheduled in the sustainable development strategy, since the strategy itself does not exist yet. The

¹⁰ Noteworthy, that the National Environmental Action Plan discusses the desertification/land degradation problem in the context of soil erosion and pollution. It does not mark it out as a priority.

measures on combating desertification are named among the environmental priorities in the Poverty Reduction and Economic Growth Program of Georgia – the only long-term strategic document on social-economic development. This problem is also included in short-term social-economic development (indicative) and various sectoral programs or plans. However, only a mechanical list of priority measures is given in these documents without their relevant integration with each other.

- Weakness of intersectoral coordination and integration is caused by a great deal of sectoral strategies, programs and action plans at a national level, where one and the same measures are often repeated.
- Sectoral strategies include the problem of combating desertification in the form of short and medium-term measures on combating soil erosion and soil fertility improvement. The goals and scopes of these programs are rather ambitious and do not take into account the country's capacities to provide financial, human and technical resources. Therefore, very often they are doomed to failure from the very beginning.
- And, finally, although the issue of combating desertification and land degradation is more or less reflected in the general and sectoral strategies on social-economic development, really it does not represent a priority for the country. It is confirmed by a level of funding allocated by the state budget on these strategies, programs and plans.

3.3. Legal base

This subchapter discusses the national legislation, which regulates the issues related to land resources, including desertification and land degradation. It also analyzes the positive and negative sides of this legislation, how effective it is and what factors hamper its implementation.

The desertification and land degradation issues are more or less regulated by the legislation of Georgia.

Generally, the Law of Georgia on Environmental Protection creates a legal base for management and conservation of the environment and natural resources in the country, which includes the key principles for environmental protection, the goals and the mechanisms for achieving these goals. The regime of environmental impact assessment and regulation of environmental permit-granting procedures is defined by the Laws of Georgia on Environmental Permits and on State Ecological Expertise. The following laws regulate land resources protection and rehabilitation: the laws On Soil Conservation, On Soil Conservation and Rehabilitation and on Land Melioration. A number of environmental laws also include particular requirements for land resources conservation or eradication of the reasons causing their degradation. These laws are: The Law on the System of Protected Areas, the Forest Code, the Law on Pesticides and Chemicals, the Law on Protection of Plants against Harmful Substances, the Law on Entrails of the Earth, etc. And, finally Georgia has developed the legislation on land management, which regulates the legal principles for ownership and use of land resources. While regulating these issues the legislation envisages rational use of lands, prevention of land fragmentation, land resources conservation and rehabilitation.

Each above-mentioned law imposes administrative or criminal liabilities for violation of the law, defined by relevant provisions of the Georgian Code of Administrative Offences and the Criminal Code.

The spatial planning legislation is a separate issue, which is developed very weakly and is represented only in the bylaws based on the Soviet-old normative documents.

3.3.1. Legislation on Protection of Land Resources

The Framework Law of Georgia on Environmental Protection (1996) includes the goals and principles of management and protection of the environment and natural resources, the citizens rights and obligations in the environmental sector, the powers of state agencies and the criteria for their distribution, as well as the administrative and economic mechanisms of environmental protection, collection of information, its analysis and dissemination.

In terms of protection of land resources, the law on environmental protection requires introduction of particular norms, defining the quality of soil and the use of chemicals in soil. The law also envisages limitation of use of mineral fertilizers, stimulants, chemicals of different kind in the environment so as not to endanger the health of humans, animals, plants or soil. According to the law, the Ministry of the Environmental Protection through coordination with the Healthcare Ministry will elaborate and approve the norms for the use of chemical substances (including those for plant protection and land melioration) in the environment. The norms of environmental load are defined at using natural ecosystems, landscapes and other areas. They envisage setting of quotas for the use of natural resources, taking into account the principles of sustainable development. The Ministry of the Environmental Protection is completely responsible for imposing these norms.

Since the law on environmental protection is a framework law, its provisions require elaboration of particular laws and bylaws. Therefore, it is strengthened by the laws and bylaws regulating various environmental sectors and fields.

The laws on environmental permits (1997) and on state ecological expertise (1997) regulate the impacts of human activities on the environment, including land resources, through environmental impact assessment, state ecological expertise and granting of complex (integrated) environmental permits. Environmental permits are granted by the Ministry of the Environmental Protection on condition of implementation of mitigative measures and fulfillment of environmental requirements and norms. The subject of the activity is responsible for environmental impact assessment, while the Ministry of the Environmental Protection is responsible for conducting state ecological expertise. The law provides public participation at any stage of environmental impact assessment.

The Law of Georgia on Soil Protection (1994) aims at protecting soil cover, conservation and growth of its fertility. It defines the key requirements of soil protection and the powers and obligations of state agencies.

Under the law, the state agencies are committed to implement soil protection measures, to organize the preparation, import and use of soil ameliorants, to research and monitor the soil cover, to control and supervise the law implementation, to develop and implement the concepts and programs on soil protection and cooperate with international organizations. Local government bodies are committed to implement soil protection measures in the regions and supervise the fulfillment of soil protection requirements by landowners and land users. Soil protection measures are financed by the state budget on a contractual basis with landowners and land users.

The 1994 law on soil protection is general and includes a number of deficiencies, such as:

- It is unclear, which bodies are responsible for law implementation and how their powers are distributed;
- The law does not define the rights and obligations of landowners and land users;

- The provisions on control and supervision are extremely general and do not include the rules and procedures of law implementation, as well as the obligations of competent bodies;
- The law does not define the mechanism of its fulfillment; neither any instructions are given regarding those bylaws under which the law should be realized;
- Since the law on soil protection was adopted prior to the framework law on environmental protection, it does not reflect all the requirements envisaged by the framework law. For example, it does not define any norms for using pesticides and chemicals in soil;
- The law does not define how the society should participate in decision-making process or obtain particular information;
- The law simply regulates the soil protection issues, while fully neglects the desertification aspects.

Since the law on soil protection is extremely general and does not include the fulfillment mechanisms, it failed to work. Hence, it is necessary to adopt a new, more effective law.

The 2003 Law of Georgia on Soil Conservation and Fertility Revival-Improvement aims at soil conservation, revival and improvement, its rational use and protection against natural or anthropogenic impacts, recultivation of damaged areas, regulation of particular issues of soil quality, norms for using pesticides and agro-chemicals, as well as those relations which may arise while implementing these measures. In particular, with the purpose of soil conservation and fertility improvement, the law suggests a more perfect list of soil conservation measures compared with the law on soil protection from 1994. Unlike the old law, the new one focuses on conservation and improvement of saline, acid and stony soils, as well as on conservation of natural covers in high mountainous and rocky regions, protection of river banks and coastal lines, combating desertification, etc. Unlike the law on soil conservation, this law defines two regimes of soil conservation and fertility improvement: restrictions and prohibitions. Restrictions are imposed on those activities, which may cause land degradation, while prohibitions are enforced in case of those measures, which cause aggravation of soil quality and create preconditions for desertification, swamping, salination and other negative processes. However, it is unclear, how these two regimes should be differed, how they will be implemented and what kind of liabilities will be imposed on violations.

According to the law, landowners (private or legal persons) are obliged to observe the laws on soil conservation and fertility revival-improvement and inform the state agencies about the measures implemented in the field of soil conservation and fertility improvement, also to inform the State Department for Statistics about use of fertilizers and agro-chemicals.

The law defines the sources of funding the measures on soils conservation and fertility revival-improvement.

The transitional and conclusive provisions of the law includes the normative acts to be adopted within 2 years in the field of soil conservation and fertility revival/improvement, which regulate the issues of using agro-chemicals, definition of the soil fertility level, soil fertility monitoring, state supervision over land protection and use, soil recultivation, conservation of lands degraded by tecnogenic influence, conservation of degraded lands, compensation of environmental losses caused by land degradation, etc.

The 2004 law on soil conservation and fertility revival/improvement is more detailed compared with the previous law from 1994. However, it creates a general framework of field regulation

with a vast list of bylaws necessary to be adopted for its implementation. Moreover, it includes a number of deficiencies. Particularly:

- The measures on soil conservation and revival/improvement are general with no mechanisms of their implementation;
- The functions of authorized state agencies are not specified and are often very obscure;
- The law does not define the functions for control and supervision, as well as soil fertility monitoring among various departments, that creates preconditions for overshadowing, copying and ineffective implementing of functions by them;
- The law does not specify those state agencies, which are committed to monitor particular components of soil fertility;
- The law does not specify mutual obligations of departments regarding exchange of information;
- The law does not define the state management functions of the Ministry of Agriculture, and the role of the State Land Management Department is not specified at all. The role of various departments and distribution of powers among them in the field of protection of agricultural lands, protected areas and forests is unclear as well. These functions are dispelled in relevant branch laws and provisions. But, since the law on soil conservation and fertility revival/improvement is the key law, which covers any categories of lands, the law should include the powers of relevant departments and the distribution of their functions in various fields.
- The law does not define the role of the Ministry of the Environmental Protection in defining and implementing the state policy in the field of soil conservation and fertility revival/improvement. While, the framework law on environmental protection entitles the Ministry to define the state policy in the field of environmental protection, including conservation of land resources and combating desertification. Under the law on soil conservation, the Ministry is committed to control and supervise, as well as to monitor soil fertility. However, according to transitional provisions, the Ministry is responsible to elaborate and ratify a number of ordinances and decrees. This is obviously beyond the control and supervision functions.
- The law does not define the criteria for distribution of powers between the central and local bodies, as well as the competences of local bodies;
- Although the law demands planning and implementation of measures on combating desertification, it does not specify what these measures mean and what kind of responsibilities are laid on relevant bodies. It would be desirable if the law focuses in a special chapter on Georgia's commitments to the UN Convention to Combat Desertification, as well as on the mechanisms of meeting these commitments and the duties of relevant departments, as defined in the laws on environmental protection and on protection of atmospheric air with regard to the relevant international agreements.
- The status of the 1994 law is uncertain, since it is not marked anywhere that the old law is considered invalid after adoption of the new one.

Since the law on soil conservation and fertility revival/improvement was adopted in May 2003, we cannot judge about the status of its realization and efficiency. A number of bylaws are still to be adopted and enforced.

The 1997 Law of Georgia on Melioration of Lands (with amendments made in 2000 and 2001 years) regulates legal relations between the state agencies on the one hand and physical and legal persons on the other in the field of melioration of lands (hydro melioration, cultural-technical measures, chemical melioration, forest melioration, protection of soils against erosions and other natural calamities). The law is spread on the measures over land melioration and protection of agricultural lands against natural calamities.

Under the law, the land melioration and pasture irrigation systems, as well as the complex hydro technical buildings can be either state-owned or private. The common melioration systems and independent complex hydrotechnical constructions, which serve wide areas (two or more administrative districts), are state-owned and all the expenses on their exploitation and maintenance are covered from the state budget. The state-owned internal agro-melioration network, simple hydro-technical constructions and local systems are transferred to melioration (irrigation, drainage and watering of pastures) associations, which are non-commercial legal persons and are responsible for accounting of supplied water and its rational distribution among landowners, as well as for maintenance of the systems existing under their supervision and conservation and improvement of the melioration background. Each member of the association is obliged to provide unlimited use of internal networks and simple hydrotechnical constructions located on their plots by the association. The above-mentioned systems are financed by the state budget, as well as through the funds withdrawn from the land users (water consumers), in particular, due to the difference between retail and wholesale tariffs.

According to the law, the form of ownership is a basis for distribution of powers among the state agencies, physical and legal persons in the field of land melioration.

State management and control of land melioration is realized by the Melioration and Water Economy Department of the Ministry of Agriculture and Food.

The law grants wide functions to the Melioration and Water Economy Department of the Ministry of Agriculture and Food in the field of melioration. Like other laws, these functions are not defined thoroughly in this law as well. Many provisions of the law are general and do not include the details of its implementation. Moreover, the law does not indicate a list of those bylaws, through which the law should be implemented. The law does not include the procedures and the rules of control and supervision, as well as the competences of relevant bodies. The powers of central and local bodies are not distributed as well. And, finally, the law does not include the requirements for accountability and public informing.

The implementation of the law on land melioration has promoted the settlement of legal relations in the field of land melioration and the establishment of an appropriate institutional framework.

Following the law implementation, up to 70 Melioration System Consumers Associations were established in the country. It may become a precondition for *enlargement of lands* and accordingly for their more rational use. However, due to lack of finances the associations find rather difficult to undergo registration and most of them exist as initiative groups. The key problem arises while transferring the property located on the territories of the associations to them. In particular, the associations are obliged to pay a notarial fee, which makes 1-2% of key assets.

The law implementation is hampered by lack of stable administrative and financial mechanisms. Neither the normative-methodological base has been developed so far. State financing is very scarce and is enough only for minimal exploitation of networks, while the most part of existing systems need capital repair and rehabilitation. Water tariff is symbolic, however even this tariff is not paid by reason of insolvency of water consumers, absence of water accounting system and old Soviet mentality of farmers. Moreover, the institutional potential of the Melioration Department is weak, especially that of local departments, which are directly responsible for exploitation and maintenance of the state-owned systems. The measures on chemical melioration and combating natural calamities are not financed at all.

The World Bank-funded Irrigation and Drainage Systems Rehabilitation Project significantly promotes the law implementation. Along with rehabilitation of irrigation and drainage systems, the project envisages establishment of farmers associations and transfer of internal networks to them on an usufruct basis.

With the purpose of conservation, restoration and sustainable development of ecosystems, biodiversity, natural formations and cultural areas, *the 1996 Law on the System of Protected Areas* lays the foundation for establishing new protected areas in Georgia in conformity with international standards. The law defines 6 categories with various regimes of protection of the environment and natural resources, including lands resources. Besides these categories, in Georgia it is permitted to recognize some categories of protected areas, which are included in the international network.

Although the law does not directly regulate the land resources protection, it contains particular requirements and mechanisms, including restrictions and prohibitions, which should provide complex conservation of the environment and natural resources, including land resources, in the protected areas.

Each category of protected areas includes various regimes for restricting human activities.

Several categories of protected areas, such natural reserves, national parks, natural monuments and sanctuaries are state-owned, while mixed-type ownership is permitted in other categories.

In Georgia the protected areas shall be created for the purpose of protecting and renewal of the most important national heritage – unique, rare and distinctive ecosystems, plant and animal species, natural formations and cultural areas; ensuring the development of scientific, educational, recreational and natural resource preserving arrangements.

The state of the environment and natural resources is controlled and any permitted activities regulated. The state of the environment and natural resources is also controlled outside the protected areas, in the so-called buffer zones, through environmental impact assessment and granting of environmental permits.

A number of legal, social-economic and cultural barriers were revealed since the law came into effect. These barriers significantly hamper the effective implementation of the law. Among these barriers there are imperfection of the law, absence or weakness of the mechanisms for its implementation and lack of financial resources.

The following key deficiencies can be marked out:

- The duties of competent bodies are general and obscure, that gives a chance for free interpretation of the law;
- The law does not distribute the powers of the state agencies involved in management and protection of protected areas;
- The duties and responsibilities of various agencies on the joint management and control territories, for example in the multiple use areas, are uncertain;
- The issues of interdepartmental coordination and public participation in the decision-making process are not reflected in the law. Therefore, very often we come across a clash of interests among the departments and the local population, especially, in respect that the current social-economic development planning system is imperfect, the interdepartmental cooperation is weak and no criteria for setting priorities exist in the country at all.

- The economic and financial part of the law contradicts with the current financial-budgetary legislation, which envisages the transfer of tax revenues to the state budget.

Lack of detailed information about land use and land ownership is one of the factors that hampers the law implementation. The problem of providing the local population with alternative resources and employment in exchange of imposing strict regime of activities in the protected areas is very acute as well.

Due to a great number of responsible departments, non-distribution of powers among them, low level of liabilities for violations, absence of equipment and financial incentives, it is impossible to conduct effective control and supervision of the law implementation.

In addition, we come across particular financial problems connected with the establishment of protected areas, when it is impossible to attract state funds for this purpose.

The Forest Code of Georgia (1999) establishes legal grounds for conducting tending, protection, rehabilitation, and use of the Georgian Forest Fund and its resources. In terms of combating desertification/land degradation, the code is important since it envisages protection of forests as the systems with land protection, climatic and water regulation functions, as well as conservation and sustainable use of the environment and natural resources, including land resources, research and regulation of their mutual influence.

According to the code, Georgian forests and their natural resources are united in the Georgian Forest Fund, which can be either state-owned or private. The key component of the Georgian Forest Fund is the State Forest Fund, which, under its institutional management, is divided into Protected Areas of the State Forest Fund and the State Local Forest Fund. The State Forest Fund consists of the lands of the state forests and the state forest fund. The lands of the State Forest Fund are also divided into forest, agricultural and non-forest lands.

The code entitles the relevant state agencies, authorized bodies or forest users to implement particular measures on protection of the State Forest Fund.

It envisages establishing protection regimes for the different categories of the Usable State Forest Fund. A special protection regime is established for resort and green zone forests as well as for floodplain forests, and subalpine stripes of forests. Decision on establishing special protection regime for forest areas with special soil protection and water regulation functions is made by the President of Georgia. The following activities are prohibited in the usable State forests and lands under the special protection regime: a) carrying out final cuts; and b) activities of Categories 1 and 2 as defined in the law of Georgia “On Environmental Permit”. Special regulations for restricting forest management and forest use in the territories of the usable State forests and lands under special protection regime are set by the State Department of Forestry as well as local government and self-government bodies.

According to the forest code, forest use shall be carried out in the ways not harmful for human health, the environment, biodiversity, animal wildlife, historic, cultural, and natural monuments. Forest use planning prioritizes long-term forest use and the types of forest use with the least scope of resource extraction, also diversified forest use and simultaneous application of several types of forest use.

The code also envisages planning of measures on tending and rehabilitation of forests by any legal or physical persons, so that to avoid any damage to the environment.

A special permit is needed to use the agricultural lands of the State Forest Fund. Those responsible for violation of the forest legislation are obliged to recoup for damages caused to the Forest Fund or to restore the previous condition of forests if possible. Illegally extracted timber or other forest resources should be withdrawn.

Like other current laws, the forest code also includes a number of deficiencies. For example, it does not contain particular mechanisms (rules, procedures) necessary for the law implementation. Therefore, the code envisages adoption and implementation of over 30 normative documents. However, this process is passing very slowly.

The forest code envisages the establishment of a difficult departmental hierarchy in the field of regulation of forest resources, however the powers of these departments are not defined and distributed.

The National Biodiversity Conservation Action Plan emphasizes that the measures on tending and protection of forests are aimed at establishing sustainable and highly productive forest stands, that may cause reduction of diversity of forest species. Generally, the forest resource management system defined by the forest code does not correspond with the principles of sustainable development. It is basically oriented to use of forests with exploitation purposes. This finally triggers degradation and loss of forest biodiversity.

The forest code also fails to regulate the use of forests and the management of the forest fund in former Soviet farms and municipal forests, which remained without owner after the disintegration of the Soviet Union. Hence, illegal cutting and grazing has become an usual phenomenon here.

The situation is extremely difficult in the field of law enforcement as well. On the background of the poor social-economic conditions in the country, violations often take place and their effective eradication is often impossible, due to lack of necessary financial and technical resources, on the one hand, and reigning corruption, on the other. The facts of illegal cutting of forests by local population, who have no other sources of income, are observed very often. Lack of highly skilled law enforcers and necessary equipment (transportation, binoculars, cameras, mobile phones, radio transmitters) for providing control also hampers the process of law enforcement. Their wages are extremely low. This factor stimulates their formal attitude towards the job, on the one hand, and encourages corruption, on the other.

Absence of new data for maintaining the State Forest Cadastre also hampers the process of law enforcement. The implementation of the World Bank-funded forest sector development project, which along with many investment components envisages strengthening of the forestry sector's institutional potential, raising of public awareness and creation of the forest information systems, will significantly promote the real implementation of the code.

The Law of Georgia on Protection of Plants against Harmful Substances

The Law of Georgia on Protection of Plants against Harmful Substances, which was adopted in 1994, aims to protect cultivated plants, pastures, hay lands and forests against harmful substances (insects, diseases, weeds). The law defines that production, transportation, use and storage of plant protection means should occur under relevant rules, norms and technologies.

In terms of combating desertification/land degradation, the law envisages protection of agricultural lands and forests against harmful substances, and accordingly, conservation of soil fertility, on the one hand, and introduction of technical, hygienic and ecological requirements, including restrictions and prohibitions, on the other.

The 1998 Law of Georgia on Pesticides and Agricultural Chemicals is very important in terms of desertification/land degradation, since it serves protection and improvement of soil fertility through rational and safe use of chemical ameliorants. The law defines legal principles for effective use and safe consumption of pesticides and agrarian chemicals. At the same time, it settles the relations which originate in the process of preparation of pesticides and agrarian chemicals, their registration, production, marking, packaging, realization, storage, transportation, use, utilization, accommodation, export-import and exchange of information. The law sets the rules, terms and requirements for safe use of pesticides and agrarian chemicals, which are implemented under the instruction “On storage, transportation, realization and safe use of pesticides and agro-chemicals”.

The Laws of Georgia on Subsoil (1997) and on Oil and Gas Operations (1999) are very interesting in terms of combating desertification/land degradation, since they help regulate the operations on extraction of subsoil resources, oil and gas, which are directly related to land resources and traditionally represent the key anthropogenic factor of their degradation. Proceeding from the requirements of the laws On Environmental Permits and On State Ecological Expertise, the mentioned laws envisage granting of environmental permits to the subjects of activity on condition that the latter undertake the responsibility to assess environmental impact, to implement mitigative measures (including restoration-recultivation of damaged soil layer) and other environmental requirements and norms. Moreover, the subjects of activity need the licenses on use of natural resources. According to the license conditions, the subjects of activity should observe the environmental norms and requirements, including protection of soil against pollution, recultivation of damaged layers of soil, elaboration of plans on liquidation of accidents, and in case of temporary and final suspension of activity, holding of conservation or liquidation works in accordance with the technical and environmental safety requirements.

The Law of Georgia on Water (1997) aims at rational use of water resources and their protection against pollution and drying up. Thus, along with achieving its objectives, the law should promote the localization and eradication of desertification, which is basically caused by lack of water resources, as well as their drying up.

The law of Georgia on nuclear and radiation safety (1998) aims at protecting the population and the environment of Georgia against harmful influence of radiation and settles the legal relations connected with safety of nuclear and radiation activities. The law defines the state norms (sanitary, radiation safety standards and other norms, standards and rules) in the field of radiation protection, demands licensing of nuclear and radiation activity, sets safety requirements for this activity and defines the requirements and rules for radioactive waste management (including the entire circle), that creates a precondition for protecting all the components of the environment, including land resources, against radiation influence.

3.3.2. The legislation of Georgia on land ownership and use

3.3.2.1. Review

The law on ownership of lands of agricultural use (1996) creates legal grounds for rational use of lands of agricultural use. It defines the rules for purchase or sale of agricultural plots with the participation of state agencies in this process. The law is spread on agricultural lands, as well as plots and lots, if they are located in the settlements and belong to the farms, as well as in the breeding areas.

According to the amendments made to the law in 2003, the state budget envisages setting up of the Special Fund to fund the projects on regulation of land market, rational use and protection of lands, restoration and improvement of their fertility, etc.

The law on land registration (1996) creates a legal regime for the state registration of rights to land. The state registration of rights to land is an integral part of the land cadastre and includes necessary data on borders, the quantitative and qualitative and legal status of a plot of land and objects of property immovably associated with land. For the purposes of registration the territory of Georgia shall be divided into zones (mainly according to administrative regions and large towns), each zone being divided into sectors, the sector - into blocks, the block - into lots.

A land registry of the geographical area shall be set up in the administrative centre of each registry zone. The registry shall register land and its associated real estate; draw up and keep the cadastral map of the geographical area registration and land registration cards; keep all agreements related to the proprietary right transfer, the certificate of succession and other acts related to the right to land and other real estate. A registrar may record both the fixed and approximate borders. The fixation of borders shall be made only by a registrar on the basis of an agreement with the bordering parties and on the entry of the cadastral work data performed under established procedure. All other borders shall be approximate. A registrar shall have an indication of whether the border is fixed or approximate.

The initial registration of land and other real estate shall take place upon drawing up of a registry card in compliance with this Law and all the normative acts which determine the rights and liabilities associated with the property. The registration on the basis of establishing rights to the real estate objects means the conduct of the land cadastre works within the limits of a certain territory in order that the property, the real estate borders and rights to it be registered and documented. In case of violation of any articles of the law, the registrar has the right to fine the violators.

The law of Georgia on reimbursement for the agricultural use of non-agricultural lands and compensation of damage (1997) sets the rules for reimbursement of a substitute land cultivation costs and the payment of damages in case of allocation of agricultural land for non-agricultural purposes. For the purpose of conservation of agricultural lands and promotion of agricultural production, the law envisages reimbursement of costs to the State for substitute land cultivation. Moreover, the law envisages reimbursement of the costs for violation of ecological balance as a result of non-agricultural use of agricultural lands. All these costs shall be reimbursed by a private or legal person, to whom the lands were allotted.

Chapter 5 of the Civil Code of Georgia (article 581-591) defines a legal basis for leasing relations, while **chapter 6 (article 592-606)** sets the principles for leasing of agricultural lands. In particular, these chapters specify the land leasing procedures, as well as the types and conditions of leasing and the rights of the parties.

The decree on the rules of leasing the state-owned agricultural lands ratified by ordinance 446 of the President of Georgia from 2 August 1998 was developed in accordance with the Civil Code of Georgia. It defines the rules for leasing the state-owned agricultural lands, as well as the leasing objects and parties (subjects), and the competences of the state bodies.

Following are the agricultural lands subjected to leasing: lands of agricultural use, the lands belonging to the water and forest funds, which are used or meant for agricultural purposes; gardens and cottage lots; non-agricultural lands used for industrial, transport, communication and other purposes, which are used or can be used for agricultural purposes; rural, district or urban lots, the use of which is permitted; real estate and stock connected with the use of land under leasing conditions.

A leaseholder and a contractor are the subjects of agricultural leasing. A person authorized by the State – a local government body - is a leaseholder, while physical or legal persons, who are leasing lands, are contractors.

The law on declaring the non-agricultural lands owned by physical or legal persons as a private property (1998) creates a legal ground for declaring the non-agricultural lands owned by physical or legal persons to be a private property. In particular, the law defines the rules and other conditions for transfer of non-agricultural lands to private property, as well as for property registration.

The law regards non-agricultural lands owned by private enterprises or physical and legal persons. It does not regard the non-agricultural lands owned by the state agencies or legal persons of public law, as well as the lands meant for special use, such as the lands allotted for transportation and telecommunication means, ports, hydro technical constructions, as well as the areas where historical-cultural and natural monuments are located. It is prohibited to privatize those non-agricultural lands allotted for temporary use, which after demand of the local government bodies need to be brought back to the primary position.

The law of Georgia on management of the state-owned non-agricultural lands (1998) regulates the issues of management of the state-owned non-agricultural lands and defines the competences of relevant bodies. Moreover, it establishes the rules for the transfer of state-owned lands to private ownership, fixes the normative price of state-owned lands, and defines the rules for paying land taxes and distributing incomes.

The law of Georgia on the state fees necessary for registration of plots and the related real estate (1999) defines the types, rates and rules of payment of the state fees necessary for registration of plots and the related real estate.

3.3.2.2. Analysis of implementation of the legislation

Adoption of new laws on land has definitely promoted the liberalization of land legislation and the creation of land market, as well as the relevant institutional structures. However, the current legislation fails to prove effective: market establishment is passing very slowly and it is almost impossible to avoid land fragmentation, irrational use and degradation in this process. This is basically caused by imperfect land legislation, weak institutional potential of governing bodies, lack of interdepartmental coordination, absence of financial resources, low demand for land, lack of fresh information about land resources and land-related issues, as well as low ecological awareness of the population, especially of the farmers.

Among the deficiencies of the legislation we should note a great number of authorized bodies, non-distribution of powers among them, general character of the laws and lack of details and mechanisms for implementation of their provisions, as well as neglecting the coordination of activities among various agencies.

In 1996, pursuant to Order 160 of the President of Georgia, the State Commission for Land Use and Protection was set up to develop and implement the uniform state policy for land usage rules, land reform, land protection and efficient use. The principal functions of the Commission are the following: "Review of the issues related to the settlement of personal holdings relationships, rational use of land and the creation of conditions for increasing its productivity, land cadastre, land registration, land monitoring, land arrangement, land administration from the state land fund, land allocation, land use and protection, land use matters in the relationships among legal entities as well as taking appropriate decisions. Another task of the Commission is "approval of perspective borders of the cities, regional centers, resorts, townships and villages; consideration and approval of the issues related to allocation of land plots for state and public needs."

It should be noted that six years ago the establishment of the State Commission for Land Use and Protection could have been justified by the fact that by that time the legislation related to land protection, land use and management regulation was not yet comprehensive. Local self-government and government bodies as well as the State Land Management Department were only in the process of their establishment. Today this Commission actually duplicates the functions assigned to the aforementioned governmental bodies, as well as those of local self-government and government bodies.

Source: National Assessment Report for Sustainable Development, RIO+10, 2002

One of the most important factors that hampers the land market establishment is low demand for land. This is basically caused by the poverty reigning in the country. For example, the poverty is the main reason for migration of the rural population to the towns. Hence, the demand for agricultural lands falls down. Moreover, the farmers cannot afford to buy greater land plots and cultivate them. Scarce marketing outlets also hamper the development of land market and hinder the consolidation of private agricultural lands. On average, 0,9 ha of privatized lands comes to one community. Although the land legislation contains particular conditions and incentives for rational use of land resources and preventing land fragmentation, such as a restriction on transfer of agricultural lands to private ownership, when the remained plot is less than 5 ha, prohibition on leasing in case of land fragmentation, giving preference enlargement of fragmented plots, in reality there exist no incentives for enlargement and rational use of land (reduction of land tax or its abolition, granting of soft loans, etc.).

One of the reasons that hampers leasing of lands or their transfer to private ownership is low productivity of lands, damaged irrigation or drainage systems, desertification, secondary swamping, salination, erosion, etc.

Due to market scarcity, price formation fails to reflect real cost of a land that is also caused by lack of information about peculiarities of land resources. Land credit-insurance systems, as well as the services for auditor assessment of real estate and land resources are not well developed.

Lack of exact and full information about land resources and land-related relations hampers the rational distribution and use of land resources, as well as the establishment of competitive and free land market. It should be noted that in Georgia the distribution and transfer of land into private ownership as carried out under the land reform, did not occur on the basis of new data

and accurate mapping. Land use maps produced during Soviet times, containing accidental or deliberate errors, have been adopted unchanged as a basis for acts of acceptance and drawings attached were used as a basis for the privatization of agricultural land. In experts' opinion, the agricultural land fund of Georgia, compared with the currently recorded one, may grow considerably as a result of clarifying these errors¹¹. Although, with the help of international donors, the country has accumulated huge information within the frames of the ongoing land registration and cadastre projects, this information is not perfect, since the cadastre works do not cover entire Georgia. These measures are passing very slowly due to difficult procedures. Moreover, the current land cadastre envisages only the registration of the ownership rights to land plots and their use, and does not imply the cadastre of land peculiarities (types of lands, level of fertility, etc.). This hampers normal price formation on land.

3.3.3. Responsibility for violation of land legislation

The responsibility for violation of land legislation is defined by the Code of Administrative Offences and the Criminal Code of Georgia. Moreover, the environmental legislation¹² envisages the compensation of damage caused to human health and the environment, including land resources. The rules and procedures for calculating and compensating this damage are regulated by separate provisions¹³.

The Code of Administrative Offences of Georgia (according to 1997 position)

Chapter VII defines the administrative offences in the field of environmental protection and use of natural resources, including land resources. In particular, articles 51-55 specify the amount of administrative fines for various offences. Violators will be fined for the following offences: non-observance of the land protection rules, inexpedient utilization of lands, removal of fertile layer of soil, land pollution, failure to return temporarily occupied land on time and to fulfill the duty of bringing it to the usable condition, violation of the project on land tenure and land protection without proper permission, illegal occupation of a land or/and its utilization without the right of land tenure, conveyance of incorrect information on land funds, condition and utilization of lands, etc. The amount of fines for this or that offences fluctuates within GEL 2000. These fines are imposed on the violators for removal of fertile layer of soil, construction of objects having deleterious effect on soil and illegal occupation of a land or/and its utilization without the right of land tenure. Moreover, the code defines responsibility for violation of other environmental laws, which are more or less connected with land resources. For example, it imposes fines on violation of forest utilization rules, etc.

¹¹ Source: National Assessment Report for Sustainable Development, the Ministry of the Environmental Protection, 2002

¹² The law on environmental protection, the law on compensating the damage caused by harmful substances.

¹³ Orders of the Ministry of the Environmental Protection:

- a) On the methods of calculating the damage caused to the State by pollution of soil with harmful substances;
- b) On the methods of calculating the damage caused to the State by radiation influence;
- c) On the methods of calculating the damage caused to the State by pollution of plant layer with harmful substances;
- d) On the methods of calculating the damage caused to the State by pollution of ecosystems and landscapes with harmful substances;
- e) On ratification of the provision on calculating the damage caused to the environment by use of mineral resources and degradation of soils and lands.

The Criminal Code of Georgia

The Criminal Code of Georgia determines the grounds for criminal liability, actions, which are criminal, and establishes appropriate punishment or other measures under criminal law. Book 10 of the Criminal Code of Georgia is devoted to the rules for the protection of environment and use of natural resources. It awards punishments (a penalty, deprivation of liberty for a definite period, with or without the deprivation of the right to hold any position or conduct any activity) for various violations of the rules for the protection of environment and natural resources. Article 297 is completely devoted to the issues of land resource management, protection, transfer to private ownership and use. It defines the activities, which are considered as a criminal offence and awards punishment for these offences. In particular, any activities which cause land degradation, pollution or erosion and promote aggravation of human health are considered to be criminal offences. Maximal punishment envisages five-year imprisonment. Moreover, while defining punishment for violation of land legislation, the code imposes punishment on illegal wood cutting (article 303), damage or destruction of forests or plants (article 304), violation of the regime of protected areas (article 305) that caused a significant damage. The activities belonging to category I without environmental permits are also considered to be criminal offences.

Thus, the relevant legislation defines the liabilities for violations in the field of management, protection and use of land resources. Its efficiency depends on perfection of the laws and bylaws, as well as on the efficiency of the law enforcement system. The relevant legislation acting in Georgia obviously needs perfection and accomplishment. First of all, it is necessary to bring the code of administrative offences and the criminal code in conformity with the legislation on land management, protection and use. In particular, the codes should define the responsibility for all those activities, which are considered to be violations by the legislation on land management, protection and use. Then, it should be specified, whether the punishments defined by the administrative offences and criminal codes encourage eradication of violations¹⁴, also whether a level of punishment is real and adequate. The administrative code does not differentiate the private and corporate responsibility, and respectively the fine rates. The criminal code imposes punishment only on unintended offences, while does not envisage any punishment for willful offences (i.e. ecological diversion). Hence, all these deficiencies need to be eradicated.

Besides the perfection of the legislation on legal responsibility, the legislation on regulation (provisions, which should define the rules and procedures for environmental impact assessment and compensation of damage), as well as control and supervision (bylaws, which should define the rules, frequency and procedures for conducting inspection, as well as the competences of state agencies and the criteria for distribution of these competences) are to be enforced.

Along with imperfect legislation, the law implementation is hampered by weakness of the law enforcement system, that is mainly conditioned by absence of the legislation on control and supervision, inadequate institutional framework (the ecological inspection does not exist at all and several bodies perform the control and supervision functions), lack of financial and material-technical resources, highly skilled staff, as well as by corruption reigning in the country.

¹⁴ We can suppose without any study, that even a maximal fine rate does not encourage eradication of violations.

3.3.4. Economic incentives

Payers of the tax on land are physical and legal persons who are owners or users of land plots. According to chapter 6 of the Tax Code of Georgia, as well as the instruction approved by order 263/4.11.99 of the Chairman of the Tax Department “On calculation of land tax and the rule of payment”, any users or owners of land plots are taxed. Both agricultural and non-agricultural lands are taxable. The land tax amount does not depend on the economic activity results of taxpayers, and is determined in the form of a fixed annual tax per land area unit. The land tax is differentiated according to the quality and location of land. The tax on a land plot occupied with building and structures, which is owned or used by several physical or legal person is paid for each building in proportion to the area being under ownership or joint ownership of each person. The basis for determining the tax is a document certifying the ownership or usage of the land area.

Base rates for the tax on agricultural land use are calculated per hectare and are differentiated according to land quality (good, medium, poor – in case of arable lands), category (natural or cultivated – in case of haylands and pastures) and administrative units. The tax on use of agricultural land is calculated by multiplying the tax rate by the area (in hectares) of the plot of land. Specific rates for specific plots of land considering for the land quality and location may be increased or reduced by 20 percent without changing of the total amount of the tax per administrative unit. The procedure for determining the tax rates for a concrete land plot is established by the representatives of local self-government bodies on the submission of the appropriate services of the State Land Management Department.

Base rates of the tax for use of non-agricultural land are determined per square meter of land in the amount of 0,24 Lari per annum. The tax on use of non-agricultural land is calculated by multiplication of the annual base land rate by the territorial coefficient and land square. Differentiation of the land tax territorial coefficient is made in accordance with the location and areas of land plots. Determination of area boundaries and differentiation of the land tax territorial coefficient is made on the basis of social-economic estimation of the area with respect of the building scheme of the settlement or indices of other urban construction documents which are to be approved by local administration on the submission of appropriate bodies of the State Land Management Department.

The registration of taxpayers and charging of tax amounts is fulfilled annually by a tax inspector. For the purposes of tax payers' registration and establishing of tax amounts, the local authorities of the State Land Management Department by March 1 of the accounting year shall submit to the tax agencies lists of tax payers, indicating the tax rate and the area of land they own.

According to article 158 of the Tax Code and the instruction “On calculation of land tax and the rule of payment”, the following categories of lands are exempted from taxes: a portion of the state-owned land allocated to a budget organization except the lands used for entrepreneurial activity; lands which are allocated for functioning of scientific-research, educational institutions, experimental breeding stations, and experimental farm plots used for scientific and educational purposes financed from the budget; land areas of organizations for protection of nature and historical monuments occupied with constructions recognized by the State as monuments of history, culture, and architecture, unless they are used for entrepreneurial activity; public-use lands (botanical and dendrological gardens, natural parks, public gardens, zoos, squares, alleys, preserves), city reservoirs and their aquatoria; the lands used for transport and underground communications; except used for entrepreneurial activity; hydro meteorological centers and plots of land used for the functioning of stations and equipment for monitoring pollution, degraded lands, agricultural lands in high mountain regions, etc.

The established tax exemptions do not apply to the cases when the exempted physical or legal person leases the plot of land or the buildings and constructions located on the land he owns or uses, to another physical or legal person.

If any tax amount is not paid by the due date, according to article 252 of the Tax Code, a tax payer is obliged to pay 0,2% of the overdue amount for each overdue day.

It is difficult to argue whether the land tax reflects a real cost of land and whether it promotes rational use of lands. Nobody has evaluated the efficiency of the current economic incentive so far. Proceeding from the current tax legislation, it is absolutely unclear what are the key objectives of this economic incentive: rational use of lands, funding of measures on land management system and protection of land resources, land market regulation, etc. In reality, the land tax simply serves to replenish the budget.

Nowadays, it is very difficult to assess the social-economic and ecological state of lands. There are no modern cadastre data over land peculiarities, including land quality, which is one of the key criteria for establishing a land tax normative. The current land tax normative is outdated and is not based on the modern cadastre data. It significantly hampers imposing of a real tax on land. Moreover, a low level of tax collection is an important problem as well. This is basically caused by insolvency of farmers and ineffective work of tax services. Tax revenues are completely transferred to the state budget and are subsequently distributed among various social-economic fields. The Special Fund aimed to finance the projects on regulation of land market, rational use and protection of lands has not been created yet.

On the background of particular democratic changes in the country, liberalization of tax legislation is anticipated to promote small and medium business. Hence, in order to promote agricultural development, owners or users of agricultural lands (below 20 ha) will be exempted from annual taxes. Their debts accumulated for past years will be annulled as well.

3.3.5. Conclusions

Analysis of the legislation related to combating desertification and land degradation, as well as the economic incentives acting in the field of management of land resourced has showed that:

- The current land legislation of Georgia basically envisages regulation of the issues on management, protection and use of land resources. It barely reflects the issues on combating desertification;
- Current laws are general and their provisions need to be itemized;
- It is necessary to adopt bylaws, such as normative acts on management, protection and use of haylands and pastures, forests formerly belonging to collective farms, their resources, etc.;
- Although the land legislation envisages particular requirements for rational and effective use of lands and for avoiding degradation of land resources, no incentives (such as tax reduction or exemption, material incentives, etc.) have been introduced so far;
- The current legislation related to management, protection and use of lands creates a very difficult institutional structure with a great deal of agencies and obscure criteria for distribution of powers among them;
- The current legislation promotes creation of preconditions for overshadowing, copying and ineffective implementing of functions by the state agencies;
- The powers between central and local agencies are not properly distributed as well;

- The provisions on cadastre and monitoring of land resources and their fertility are not defined, the competences of various bodies and the criteria for distributing these competences are not defined as well;
- The legislation does not envisage the interdepartmental coordination, accountability, public participation in decision making, etc.;
- Legislation related to the liabilities on violations and compensation for damage is rather imperfect;
- Implementation of laws is ineffective, that is conditioned by absence or lack of particular financial, political and administrative mechanisms, scarce financial and technical resources, lack of quantitative and qualitative data over land resources, reigning corruption and low public awareness;
- Current land taxes aim to replenish the budget; the revenues from land taxes are not earmarked to manage and protect land resources. Since no social-economic and ecological assessment of land resources has occurred in the country for past decade due to lack of finances, base tax rates are fixed under old cadastre data, which fail to reflect a real picture.

3.4. Mutual links and processes

During the Soviet period planning and management of the environment and natural resources traditionally occurred spontaneously, taking into account only the sectoral interests. The natural environment was not perceived as a uniform system. The principles of sustainable development were unknown and the necessity for mutual integration of environmental, social and economic aspects was not conceived. Lack of coordination and cooperation among various departments hampered the implementation of measures on intersectoral integration. Moreover, decision-making occurred by centralized rule without public participation in this process.

After the disintegration of the Soviet Union, new independent states, including Georgia, have launched the construction of the political-economic systems. The principle of sustainable development and complex management of resources, and accordingly the necessity for interdepartmental cooperation and mutual integration of environmental, social and economic aspects were recognized in this process.

Currently Georgia implements a number of transitional reforms. The state decentralization is gradually taking place and the legal-institutional basis for public participation in decision-making process is being created. Under the current legislation, all interested agencies have the right to participate in elaboration of legislative and political documents. Various coordination mechanisms are being established for the purpose of interdepartmental cooperation and intersectoral integration.

In order to provide interdepartmental coordination in the process of combating desertification/land degradation, the State Permanent Commission was set up in Georgia in 1999 to provide the implementation of the UN Convention to Combat Desertification in the country. The Commission is composed of the representatives from various departments and scientific organizations. The Scientific-Advisory Council has been set up under the Commission.

However, for the present the activity of the mentioned coordinating organ is not effective; it fails to provide the participation of the interested parties at a proper level and to create a mechanism of co-ownership of departments.

Generally, the majority of the departments, participating of the State Commission, does not show interest in the commission's activities. Several departments do not make any remarks regarding

the documents under discussion. This occurs because the departments have more important sectoral priorities or think that due to lack of financial resources their decisions will not be implemented and the activity of the commission is absolutely formal. Moreover, lack of material incentives prevents the commission members from active involvement in the commission's activities.

The representatives of the governmental commission and the scientific council have basically narrow-departmental interests and find it difficult to make integrated decisions. Therefore, while discussing this or that document, the members of the council/commission try to push forward the interests of their own department or sector, instead of complex discussing of the issue.

The activity of the commission or the council is not transparent and public - a level of accountability of the commission/council members to their organizations is low and very often the ordinary employees know nothing about the work of the commission. Groups of technical experts do not work at the departments; neither any mechanism of their participation in the governmental commission has been developed so far. Hence, branch experts, who can really contribute to elaboration of strategic documents, are actually left outside the ongoing processes.

The coordinating organ is not properly composed of the representatives of local governments of those regions, which face the desertification/land degradation problems. At the same time, they do not participate in scheduling national priorities or elaborating political documents in any other form.

Public participation in the commission and the scientific council is not provided at all. The coordinating organ does not include a unit (for example, public advisors council) composed of public representatives.

A long-term program or strategy on raising public awareness in terms of combating desertification/land degradation does not exist at all. Hence, information campaigns have not a regular character and are conducted only within the frames of the internationally supported projects. These campaigns are basically meant for narrow groups (for example, state officials, scientific and academic circles, NGOs, mass media) and do not aim at raising the awareness and education of local population.

At a national level the cooperation among the governmental institutions is weak outside the coordinating organ as well. However, it is more systematic among the governmental organizations compared with the academic institutions. According to the current legislation, the governmental institutions are obliged to agree over bylaws and normative documents and to develop joint strategies on common issues. Hence, they have to cooperate on a regular basis. Still, systematic exchange of information and data is a serious problem due to absence of relevant legal obligations. Moreover, they have not enough funding to work on joint projects. Neither the scientific grants are enough to promote this process. Previously scientific conferences were often held, where knowledge and experience was exchanged among various departments. Now, such measures are held rarely. Hence, interlinks among scientific institutions are very weak. Moreover, the scientific institutions have to attract extrabudgetary funding through participating in grant programs and tenders. Hence, very often they consider the institutions with analogous profiles to be opponents instead of partners.

Unlike the state sector, the cooperation is more intensive in the non-governmental sector. The non-governmental organizations have good links with each other. They often implement joint projects, hold conferences, meetings and consultations. NGOs often form a coalition or create various networks. However, the participation of the non-governmental sector in the struggle

against desertification/land degradation is still very weak. It is weakly mobilized in this direction.

Compared with the national level, due to lack of coordinating mechanisms and low public awareness at a local level, the cooperation among the interested parties and public participation in decision-making process is very weak. The local non-governmental organizations have not enough experience and funding to promote this process. The capacities of mass media are very limited due to insufficient power supplies to the regions and insolvency of the local population to buy newspapers. Public interest in desertification issues is insignificant due to their unawareness and presence of more important social-economic priorities. Farmers have scarce knowledge in sustainable and ecologically safe methods of land use. Neither the farmers' advisory service is developed at a proper level. Rising of public awareness is possible through conducting public awareness campaigns, as well as through implementation of experimental projects, which aim at improving the agricultural practice and increasing the land productivity.

It is worth noting that recently particular steps were taken towards mobilization of the local population, involvement of interested parties in the process of decision-making and creation of mechanisms for integrated management of natural resources. For example, in order to maintain the internal melioration networks, water consumer associations are being established with the support of the World Bank; the initiative groups were set up within the Alazani and Khrami River Basins through the support of the USAID; the Horizonti Foundation has greatly contributed to creation of a coalition of non-governmental organizations and local communities interested in desertification issues in arid and semi-arid regions of Kakheti.

The bilateral and regional interstate cooperation in the field of combating desertification is insignificant. It is limited with periodic meetings and consultations. There is no stable mechanism (for example, a coordinating organ) to jointly settle the problem. Neither the regional strategy nor the action plan on combating desertification has been developed so far, although it has been put on the country's agenda. The experience of regional cooperation accumulated in other fields is very important in this regard.

3.5. Resources at a systemic level

3.5.1. Financial resources

Internal funding. Funding of the environmental field from the state budget is rather scarce. For past 6 years the environmental expenditures of the state budget have not exceeded 0.3% of the total budgetary expenditures. Under the conditions of current budgetary backlog, the State pays primary attention to other priority social-economic spheres and the funds are basically directed to these fields.

The revenues from environmental taxes, fines and compensations for environmental damage are transferred to the state budget and distributed among the priority fields. For example, in 2001 over GEL 19.3 million was transferred to the local budgets due to the taxes on environmental pollution and natural resource use. However, these funds were basically spent on granting salaries to the employees of the budgetary organizations and pensioners.

Because of strict mobilization of funds to the central budget, the extrabudgetary state ecological fund has not been established yet. This is not anticipated in the near future as well, if we take into account the priorities set by the country, as well as the recommendations of the International Monetary Fund. The Special Fund, which should receive revenues from land taxes and

subsequently transfer these funds to the development of land market and rehabilitation of land resources, has not been established yet.

Presently the private sector of Georgia enjoys no incentives to fund the global environmental measures. Neither the banking sector is involved in funding the projects on environmental protection and sustainable use of natural resources. And, finally, the alternative mechanisms of funding, such as local community funds, have not been developed at all.

Currently there are no reliable, systematized data over the total environmental expenditures of the state and private sectors. The Soviet-old statistical system for the environmental expenditure accounting failed to prove effective under the market economy conditions; so, the issue of introduction of new methodology for accounting was put on the agenda. With the support of the Organization for Economic Development and Cooperation (OECD), in 2001 the State Department for Statistics of Georgia elaborated new methodology for the environmental expenditure accounting in conformity with the European Union Statistical System (Eurostat), which demonstrates the environmental expenditures in the state and private sectors in 2001. According to the statistical survey conducted under the new methodology, the environmental expenditures of the state and private sectors in 2001 was one percent against GDP, including only 0,5% - on protection of land resources¹⁵, 3% - on researches and introduction of technological innovations. The greatest share of environmental expenses (78%) came to mobilization of drinking water, its cleaning and supplying to the population¹⁶. It is worth noting, that only 5.2% of environmental expenditures comes to the state sector, while the remained part comes to the private sector and households.

The level of state funding directed to the measures on combating desertification/land degradation can be estimated through analyzing the funding allocated on the ongoing state programs. For example, the State Program on Protection of Soils against Erosion (1999-2005) is underway. The project costs GEL 28,481 million¹⁷. During 1999-2002 GEL 359 201 Lari has been spent under the program. This sum is 21,3 times less than envisaged by the program (7656800 Lari) and 1,4 times less than ratified by the annual plan (506228). In 2003, instead of the planned 3401000 Lari, the budget allocated only 600000 Lari, that is a minimal sum for implementing urgent measures on severely eroded areas. Similarly, during 2000-2002 GEL 208640 Lari has been spent under the program on improvement of low-productive, acid soils (chemical melioration measures). This sum is 5 times less than envisaged by the program (1068500 Lari) and 1,6 times less than ratified by the annual plan (336000).

Hence, the above-described analysis confirms that internal financial resources of the country are not enough to implement real measures. Moreover, rational distribution of funds is a serious problem as well. Under conditions of absence of coordinated criteria for setting national priorities, the limited state finances are distributed among various agencies and sectors ineffectively.

¹⁵ However, this parameter does not completely show how much was spent on combating desertification/land degradation.

¹⁶ Environmental expenses in Georgia in 2001; Statistical Research Report; The State Department for Statistics, Tbilisi, 2003.

¹⁷ Source: The State Program on Soil Protection and Raising of its Fertility, the Ministry of the Environmental Protection, Tbilisi, 2002.

External Funding. External funding of measures on desertification/land degradation is insignificant compared with the foreign expenses on conservation of biodiversity and climate change. For example, since 1992 external funding of biodiversity conservation measures totaled USD 31,03¹⁸. The international assistance in combating land degradation/desertification is insignificant and is only limited with funding the projects on enabling activities through the Secretariat of the Convention to Combat Desertification. Total amount does not exceed USD 50 000. However, the GEF-funded project on conservation of arid and semi-arid ecosystems (USD 750000) can also be considered as an investment in the field of desertification and land degradation due to its closeness to the mentioned field.

Besides the above-mentioned capacity building measures, a number of infrastructure programs/projects are underway in various sectors of Georgia through the support of international donors. These projects significantly promote the settlement of the desertification/land degradation problem. Among them there are IDA-funded Irrigation and Drainage Consumer Associations Development Project (USD 35 million), the World Bank-funded Forest Sector Development Project (USD 15 million), GEF-funded Protected Areas Development Project (USD 11,8 million), etc. (see detailed information about international support in subchapter 5.1.).

3.5.2. Human resources

Desertification is a complex problem. It regards many fields and sectors. Mobilization of necessary human resources and highly skilled specialists (in the fields of agriculture, environmental protection, economy, exact sciences) is needed to settle the problem.

Georgia has relevant human resources, available at the governmental bodies, scientific institutions and non-governmental organizations. For example, the country has highly skilled geographers, agriculturists, agronomists, climatologists, hydrologists, ameliorators, etc. The presence of these highly skilled specialists is necessary to research the desertification/land degradation issues and plan the measures on combating this problem. They have huge experience in relevant fields. However, due to the current economic crisis and absence of funds in the state sector, most of these specialists are moving to the private and non-governmental sectors, while the qualification of the remained staff falls down due to minimized practical activities, lack of motivation and incentives, unavailability of modern information and scientific technologies, etc. Neither the ongoing donor programs use this staff at a proper level, since the donors and international organizations basically apply to foreign technical potential for expert works. However, they use the local staff only as a support personnel. They prefer to employ low-skilled staff with a good command of the foreign language, than to hire highly skilled experts, who have no command of the language.

Attraction of skilled human resources to the governmental organizations is impossible. Due to low salaries, the staff have no incentives to deepen their knowledge and raise qualification. It significantly hampers professional growth of young experts. On the background of general economic crisis in the country, the quality of education has significantly decreased as well. Current educational programs need to be revised, since they fail to meet modern requirements. If the situation does not change for better, the country may completely lose the existing scientific-expert potential within the next 5-10 years.

¹⁸ The GEF funding for various measures (including technical aid) has already totaled USD 13 million.

Although, Georgia has not lost its high scientific-technical potential yet, the country obviously lacks experts in the fields of management of financial, information and human resources, management of environmental and natural resources, strategic planning, environmental economy, geoinformation and remote sensing, environmental modeling, etc. These disciplines are weakly introduced at the higher educational institutions of Georgia. There are some experts in these fields who acquired education abroad. However, their number is very small and they basically work at international organizations, private and non-governmental sectors.

In terms of human resources, the situation is extremely grave in the regions. The existing technical and scientific potential is basically concentrated in the capital city, while the regions suffer lack of highly skilled staff, to say nothing about the grave financial state, lack of material-technical base and isolation from the center and the rest of the world (due to poor communications).

Hence, Georgia has a technical and scientific potential, which is practically unused nowadays. It is basically concentrated in the capital and several large cities. The mentioned potential was established during the Soviet period under conditions of central planning. Thus, the experts, who passed through the Soviet school, have a good technical knowledge and great experience, but fail to adapt to market conditions and lack the experience in public relations, as well as in financial, human and information resource management. Moreover, they have scarce information and knowledge about leading technologies and know-how.

3.5.3. Information resources

Revealing the scales and tendencies of the desertification/land degradation process, effective planning of measures on combating this problem and estimating the efficiency of the implemented measures need a wide spectrum of information/data, which is also necessary for national accountability (environmental and statistical reports, etc.). Along with international information requirements, the countries should also meet the international commitments of accountability. In particular, the Parties to the UN Convention to Combat Desertification are committed to prepare periodic reports on the status of implementation of the Convention. These reports should include real facts and data.

We should have information and data on the reasons of desertification/land degradation, as well as the parameters of the desertification process. For example, we should provide data on land ownership and use, upper fertile layers of soil, soil types, agricultural production, climate (temperature, precipitation, hydrology), topography, settlements, population density, road infrastructure, etc. At the same time, it is very important to provide information on land areas threatened by desertification/land degradation, degraded lands (including polluted areas), amount of water resources and tendencies of their reduction, biodiversity and its change tendencies. And finally, in order to assess the measures implemented by the country to combat desertification, we should know what kind of structural (physical measures: combating erosions, soil melioration, etc.) and non-structural (legislative, institutional, educational, etc) measures are being implemented and how much is allocated to fund these measures.

Generally, the country lacks modern environmental information. There are no systems for collection of information and for statistical reports. Neither the system for controlling the accuracy and quality of data works in the country. Hence, the data can not be considered reliable. Monitoring of the environment and natural resources cadastre is a very serious problem, which is connected with great financial and technical resources.

As for collection of information related to desertification, hydro and agro meteorological observation has significantly decreased. Many stations and observatories have been abolished or temporarily closed, including those in most vulnerable regions of Kakheti in eastern Georgia, where only low-representative agro-meteorological stations are in operation currently. Frequency of observations and number of parameters under observation has been reduced as well. Uniform arrays of hydro and agro-meteorological data exist in Georgia (until 1990). The omitted series of data can be restored through using the methods of mathematical statistics. Under conditions of significant reduction of systematic observations and lack of finances, the usage of such methods is very important. The Institute of Hydrometeorology is actively working in this direction. The operative and statistical methods of data restoration have already been developed there.

Monitoring of soil fertility, land cadastre and renewal of soil maps has not been conducted during past decade. There are no modern data on background pollution in soils and polluted areas. Monitoring and/or cadastre of water resources, forests and biodiversity is impossible as well. For example, forest cadastre, which is conducted once in 10 years, has not been conducted on over 1 million ha due to absence of funds.

However, the country has the most perfect and exact data with drawings and cartographic materials on quantitative parameters of lands, which were accumulated within the framework of the projects on land registration and cadastre funded by the donors. The relevant data exist by individual land plots, administrative regions and districts. They are computerized and correspond the geoinformation systems. Currently land cadastre does not envisage registration of qualitative parameters of soil.

Lack of the uniform system of environmental information is a serious problem today. The environmental information, including the information related to desertification, is spread among various departments (the Ministry of the Environment, the Ministry of Agriculture, the State Department for Statistics, etc.) without being exchanged on a regular basis. This information may be withdrawn at the special request. The State Department for Statistics is the only department, which regularly receives social-economic and environmental information, including on land resources, from various agencies. It has developed general statistical indicators and relies upon these indicators while preparing annual statistical reports. However, the information obtained by the Department reflects only sectoral statistics. The environmental database, including the metadata base on desertification and general parameters, does not exist so far. According to the current legislation, the Environmental Monitoring Center of the Ministry of Environment is responsible for elaboration of environmental indicators and creation of environmental database. However, the Center fails to implement these measures.

The non-governmental sector has accumulated huge information through the environmental programs ongoing with the donor support. Those organizations, which implement the mentioned programs, keep computerized databases. They possess various thematic geoinformation systems. However, this information is often unavailable for wide strata of consumers and governmental organizations, and if available, they are not widely used in a decision-making process.

In order to create the desertification metadata base, it is necessary to define the information needs, to elaborate general indicators and to assess existing information resources. Subsequently, it is necessary to concentrate and systematize the existing information and to create the computer base in conformity with the geoinformation systems.

4.0. Capacities at institutional and individual levels

4.1. Institutional arrangement

The institutional potential of the organizations involved in the implementation of the UN Convention to Combat Desertification was assessed within the framework of the project. In particular, the capacities of governmental organizations, scientific-research and educational institutions, non-governmental and private sectors were studied through collection of information, interviewing the representatives of relevant agencies, holding joint meetings and answering special questionnaires. The interested parties were selected on a base of early researches and reports (National Action Plan on Combating Desertification, national reports, etc.). The potential of the institutions was assessed according to the adequacy of their mandate, efficiency and transparency of their activities, provision of financial, staff and information resources, the state of material-technical base, mutual cooperation and other criteria. Due to limited terms, it was impossible to study the capacities of all interested parties and reveal their needs. It was also impossible to go regions and study the situation there. Therefore, the regions were basically analyzed on a base of documentary materials. Moreover, it was especially difficult to systematize the information received from various organizations.

The report gives detailed information about the capacities of focal points, however contains only general information regarding those institutions, which are not directly connected with the issue.

4.1.1. Interdepartmental coordinating mechanisms

The Permanent State Commission (PSC) on the Implementation of the UN Convention to Combat Desertification - In 1999 the Ministry of Environment formulated draft proposal for the establishment of the National Coordinating Body. After the consultations with relevant agencies, the President of Georgia issued Decree 282 (15.07.2001) *On the Establishment of the Permanent State Commission on the Implementation of the United Nations Convention to Combat Desertification (PSC)*. The Minister of the Environment chairs the Commission. Moreover, the Ministry has a 4-member representation in the Commission, including a Deputy Minister and a technical expert as well. The commission consists of the representatives of relevant governmental (the Ministries of Agriculture, Economy, Foreign Affairs, Refugees and Accommodation, etc.) and academic institutions. The commission also includes a representative of one of the territorial entities threatened by desertification.

The main objective of the Commission is to coordinate and supervise the activities for the implementation of the UNCCD provisions in Georgia. In particular, its main functions are:

- Coordination of the activities for the implementation of the UNCCD provisions by relevant organizations;
- Establishment of international cooperation for combating desertification.

The establishment of the Permanent State Commission was an important measure for creating the government's inner coordinating mechanisms and for involving the interested parties in the process. The commission plays a key role in the process of preparation and implementation of strategic documents and decisions.

Scientific Advisory Board (SAB) was created under the aegis of PSC. SAB is composed of the representatives of scientific-research and educational institutions. SAB aims at developing action programs and plans, coordinating the activities of non-governmental and governmental organizations and giving recommendations to the State Commission in selection of actions and approaches. Proceeding from its objectives, the Board is cooperating with all the interested parties, gives recommendations to the State Commission in making decisions over combating desertification and liquidation of drought consequences. It develops and submits to the Commission a long-term integrated strategy aimed at increasing land productivity, protection and sustainable use of water and land resources.

The Board has actively participated in elaboration of the National Action Plan on Combating Desertification.

Hence, the national interdepartmental coordinating mechanism for implementation of the UN Convention exists in Georgia. Still, it is very difficult to discuss its efficiency, which is defined by adequacy of the structure and the mandate of this mechanism, by productivity and efficiency of activities, by the quality of the work done, by the level of accountability and other criteria.

First of all, we should analyse how representative the State Commission and the Advisory Board are and how correctly these structures are composed. As for the Commission, it is not properly represented at a departmental level. It does not include the representatives of the hydrometeorological and statistical departments – the focal points responsible for collection, analysing and forecasting the data, as well as the employees of the Interior Ministry's Emergency Situations Service, responsible for reaction and liquidation of the consequences of natural calamities, including droughts, floods, landslides, etc. Moreover, it would be desirable if the Commission included the representatives of the Department for Land Resources, Wastes and Chemical Substances of the Ministry of the Environmental Protection, as well as the employees of the Department for Land Melioration and Water Economies of the Ministry of Agriculture and Food. The situation is also unsatisfactory in terms of participation of territorial bodies. Only the Kvemo Kartli regional governmental body is participating in the Commission's activities, while the desertification problems are very acute in several regions of Kakheti. Desertification tendencies are also observed in Southern Georgia (the regions of Akhaltsikhe, Adigeni and Aspindza). The national focal point of the Convention tried to draw attention of the representatives of the territorial bodies. Unfortunately, only the Kvemo Kartli administration expressed willingness to join the process. Just this has encouraged the participation of the Kvemo Kartli regional governmental body in the State Commission's activities. Currently, only Kvemo Kartli is participating with the Commission actively, it provides operative information and promotes qualitative fulfilment of tasks. It is obvious, that close contacts should be established with the territorial subdivisions of the relevant bodies in Kakheti and Samtskhe-Javakheti, as well as with local government and self-government bodies, to hold important information-educational work in these regions. It is also possible to establish analogous interdepartmental coordinating mechanisms at local levels.

As for the Scientific-Advisory Board, it basically consists of academic society, while number of experts from non-governmental and other civil or private sectors is very small. However, the name of the Board confirms that it is both scientific and advisory body. Technical experts working at the governmental organizations are not involved in the work of either the Scientific-Advisory Board or the State Commission. The latter is basically composed of top officials. Thus, this circle is completely dropped out of the mentioned processes. As a result of incomplete representation of the Board, the National Action Plan on Combating Desertification includes a great deal of scientific-research measures and lacks infrastructure and legislative-institutional measures. Hence, it would be more expedient to transform the Scientific-Advisory Board into the

Board of Advisers, which should equally involve the representatives of governmental, non-governmental and scientific-research organizations. One of the key deficiencies of the Board is that it is composed of the institutions working at a national level, while the regions are not represented at all. The principle of equal representation is neglected as well. For example, the Board includes many representatives of the Institute of Geography. And finally, the Board is too large and it is rather doubtful, that a 26-member body be operative and mobile under conditions of weak communications with its members.

In terms of the mandate of interdepartmental coordinating structures, the mandate of the State Commission is logical and clear, while the powers of the Scientific-Advisory Board are inadequate. The Board's functions should not include coordination of the interdepartmental and non-governmental organizations. It should prepare a scientific basis of the State Commission's decisions and documents, as well as analyse the developed documents and give relevant recommendations to the Commission. The interdepartmental coordination is one of the functions of the Commission. Moreover, one more issue remains unclear: whether the Scientific Board should participate in making strategic documents and plans or simply conduct the analysis of the Commission-developed documents. The experience of the Scientific-Advisory Boards working in Georgia and abroad shows that the Scientific-Advisory Boards are basically involved in advisory-expert activities. While the Scientific-Advisory Board, which was created under the aegis of PSC, is authorized to develop the state strategies as well.

Hence, the functions of the State Commission and the Scientific-Advisory Board are not distributed (see detailed analysis of the functions of the coordinating body in chapter 4.2.).

The efficiency of the activities of the coordinating body can be assessed under various criteria, such as a level of coordination among its members, efficient decision-making, index of activity, etc. It turns out that a level of coordination is very low both inside the coordinating structures and outside them. Lack of relevant communications, especially with the members of the Scientific Board, hampers the relations and operative settlement of issues. The principles of mutual agreement and coordination of multilateral interests are not used in the work of the coordination mechanisms.

The members of the commission do not show great interest in the work of the Commission. However, the members of the Scientific Board are more enthusiastic. This is explained by various factors: the desertification problem is not considered a priority for many agencies, the members of the Commission often merge their activities with other official duties¹⁹. This significantly reduces the efficiency of their work in this particular direction. Lack of incentives also hampers enthusiasm and motivation among the members of the Commission and Scientific-Advisory Council.

¹⁹ Since currently the governmental organizations are more busy compared with the scientific institutions, which practically do not conduct any scientific-research works, the scientists have more time to work at the Board compared with the state officials.

4.1.2. Governmental institutions

The Ministry of the Environmental Protection and Natural Resources - The Ministry of the Environmental Protection is responsible for implementing coordination measures on meeting the guidelines of the UN Conventions to Combat Desertification. The Ministry coordinates the implementation of the Convention guidelines through a national focal point, who performs this duty along with the duties of the Chief of the Department for Environmental Policy. The focal point is responsible for establishing constant, bilateral contacts between the Convention's structures and the relevant governmental organizations, exchanging and disseminating information about the measures on implementation of the Convention. Currently there exists no legal document to define the duties of the focal point. However, there is a draft instruction, according to which a national focal point is responsible for exchanging information about the international and national measures ongoing within the frames of the Convention, for creating the coordination mechanisms, making up a list of persons who will establish contacts with the public authorities and non-governmental organizations and regular renewal of this list, constant monitoring of implementation of the Convention guidelines, periodical accountability to the Secretariat of the Convention and the Ministry of the Environmental Protection, creation of a database on the programs and projects ongoing under the aegis of relevant international agreements, accountability to the Ministry of the Environmental Protection regarding the meetings held within the frames of the agreement.

There are a number of factors, which hamper the Ministry to coordinate the implementation of the UN Convention. First of all, there is no coordinating unit with clearly defined structure, mandate, staff and material-technical base. Presently only one person – the national focal point - works in this direction, he settles both organizational and technical issues. It should be noted that the national focal point also performs other important duties, that decreases the efficiency of his work in this particular direction. Therefore, in case of absence of the Convention unit, it is necessary to set up a Permanent Group of the Convention, composed of at least three persons – national focal point, secretary (assistant of the national focal point) and technical expert (geographer, ameliorator, agro-ecologist, agriculturist, etc.), with clearly distributed coordination, organizational and technical functions. If the Convention Unit is set up with clearly defined structure and mandate, its own budget and permanent staff, then we could speak about expansion of the staff, which, along with the national focal point, secretary and technical expert, will be composed of other experts in the fields of database and geoinformation systems, environmental policy and law, public relations, etc.

Material-technical provision of the national focal point is unsatisfactory. He has no individual place, means of telecommunication and computer. Therefore, he uses the computers of the Policy Department. Moreover, the national focal point has no capacities to create a modern database in conformity with the geoinformation systems on desertification/land degradation. The existing data are kept on paper or in Word format. It is rather difficult to obtain information on desertification/land degradation from other departments and scientific organizations. Unfortunately, there is no legal base for systematic provision of the Ministry with data. Neither the uniform environmental information system exists so far. The Ministry has not its own information source.

A level of coordination and cooperation between the national focal point and other interested parties is unsatisfactory both inside the Ministry and outside its limits. This cooperation is basically limited by relations with the members of the State Commission on Desertification and the Advisory Board. As for the non-governmental sector, only NACRES cooperates with the national focal point closely. No relevant contacts have been established with the territorial bodies of the Ministry, as well as local government and self-government bodies.

And finally, the information about the activities of the national focal point and the measures on implementation of the UN Convention in Georgia is not available for interested organizations and population. Neither the national focal point, nor the Ministry's press office work in this direction constantly. Information campaigns have a periodic character and are conducted only when the donor-funded projects require it.

Several structural subdivisions and territorial bodies of the Ministry of the Environmental Protection perform particular functions in terms of combating desertification/land degradation.

The key functions of the Department for Land Resources are: implementation of measures on rational use and protection of lands, combating soil erosion, restoration of land fertility, as well as implementation of state control in accordance with the requirements of the legislation on purposeful use and protection of lands, creation of the uniform data bank on land resources. The employees of the Department rarely participate in the national or international seminars and workshops.

The Department is cooperating with almost all interested agencies within its competence.

The Department for Land Resources is definitely involved in the processes ongoing within the framework of the UN Convention to Combat Desertification. The employees of the Department have participated in discussion of the National Action Plan on combating desertification. The Department is one of the sources of information for the national focal point. Still, the level of the Department's participation in the processes ongoing within the framework of the UN Convention is unsatisfactory. It is not represented in the Permanent State Commission and lacks information about the ongoing or planned measures.

The Department is basically funded from the state budget and the allocated funds are mainly spent on the salaries of the employees. The purpose-oriented state programs are not available for the Department.

The material-technical base of the Department is very poor. It lacks necessary office equipment and goods, computers and means of telecommunication. Telephones are basically disconnected due to severe indebtedness.

The Department has information about land fund, land appropriation, land use, eroded land areas and salinated and swamped territories. These data cover the period from 1996 up to present. The Department has overwhelming information about land fund, land use and land allocation, however has scarce information about polluted areas, since it has no finances to conduct inventory. Moreover, the system of monitoring the soil quality does not exist in the country at all. Therefore, there are no modern data over soil pollution. Various departments (the Land Management Department of the Justice Ministry, the regional departments of the Ministry, etc.) are the basic sources for submitting information. The Land Management Department of the Justice Ministry systematically provides information over land use and land allocation. While, the participation of the Ministry of Agriculture in this process is poor. It is very difficult to obtain information from regions. Practically, no information is available from the Department for Environmental Monitoring and Statistics. Just this Department is entrusted to create the environmental monitoring and information bank.

The Department has no computerized database and the collected information is stored in paper files. This information is provided to the Ministry's subdivisions or other interested persons only at the request of the latter.

The key task of *the Department for Waste and Chemical Substance Management* is to realize the state policy on management of waste and chemical substances.

The key task of *the Department for Water Resource Management* is to realize the state policy on protection of water resources.

Regional departments – the regional and municipal departments of the Ministry, which are formed under the principle of administrative-territorial division, conduct management and protection (including inspection) of the environment and natural resources on the spot. In regard to land resources, they are responsible for collection of primary data on land degradation (pollution, erosion), amount of waste and chemical substances, as well as for controlling the enforcement of the laws on use and protection of natural resources, soil protection, protection of forests and protected areas, waste and chemical substance management, etc. They are accountable to the Department for Environmental Management and Supervision and the sectoral departments, including the Department for Land Resources.

The institutional potential of the territorial bodies is very weak, however differs by regions (see detailed information in the Report on Assessment of the Environmental Monitoring and Control System, volume II). They lack financial, material-technical and information resources, as well as highly skilled staff.

The regions practically do not participate in elaboration and planning of the national environmental policy. They have scarce information regarding the national measures ongoing within the frames of international projects and conventions, including the national measures under the UN Convention to Combat Desertification. They are not involved in these processes.

Other departments of the Ministry, including those for strategic planning, economic policy, environmental permits and licensing, environmental monitoring and statistics, perform more general environmental functions.

The key task of the Department for Strategic Planning is preparation of the draft legislative acts and bylaws.

The key task of the Department for Economic Policy is elaboration of economic mechanisms and normatives in the field of environmental protection and use of natural resources.

The key tasks of the Environmental Permits and Licensing Service are: organization of the state ecological expertise; granting of licenses/permits, approval of limits.

The key task of the Department for Environmental Monitoring and Statistics is organization and development of the uniform state environmental monitoring system. The Department has an information center and a complex laboratory, which serves the capital city Tbilisi and entire eastern Georgia. The Department's capacities are extremely limited. It has no environmental observatory and the environmental information base. Scarce information possessed by the Department is non-systematized and non-computerized. Other departments and regional services represent the source of information.

The subordinate body of the Ministry of the Environmental Protection - the State Forestry Department is responsible for elaboration and implementation of the state strategy in the field of rehabilitation of forestlands and use of forest resources. In particular, the mentioned department is responsible for planning, organizing and controlling the measures on management of forests of the State Forest Fund (provision with seeds, reproduction of forests, reforestation, inventory, conservation and restoration of forests, etc.).

The Department is basically funded from the state budget, however the allocated funds are mainly spent on the salaries of the employees.

The data over the state of the Forest Fund, resource value and timber extraction volume are not enough and reliable. The data over forest records and forest management plans are extremely outdated. They have not been renewed for past several years.

All the three branch boards of the Department, especially the Reforestation Board, perform important functions in terms of combating desertification/land degradation.

The Reforestation Board is responsible for restoration of damaged forest areas. In particular, it organizes the implementation of reforestation measures in the State Forest Fund, makes annual plans of reforestation, reviews the work done, analyses the amount of areas subjected to reforestation and the state of the reforested territories.

The employees of the Department are familiar with the UN Convention to Combat Desertification and its requirements, as well as with the National Action Plan on Desertification. However, they are not directly involved in the activities of the Permanent State Commission on the Implementation of the UN Convention.

The General Inspection for Conservation of Forests is responsible for planning forest conservation, organizing relevant measures, collecting statistical data on forest conservation issues and supervising the implementation of the forest legislation. Since the foresters do not enter the General Inspection, their functions are often overshadowed by those of the Inspection. The project has already been elaborated, according to which local foresters will be subordinated to the General Inspection.

The Forest Inventory and Forest Use Department is responsible for organized planning of forest use, regulation of forest use, organization and coordination of state inventory of forests subordinated to the Department.

The subordinate body of the Ministry of the Environmental Protection – the Department for Protected Areas - the Department manages the protected areas of Georgia, controls observance of relevant standards on protected areas, implements planning, maintaining and rehabilitating measures and organizes monitoring and scientific researches, as well as registers protected areas.

The Department is not directly involved in the struggle against desertification and does not work over this issue exactly. However, the Department's role in the struggle against desertification is very important, since it is responsible for conservation of natural resources within the protected areas, as well as for provision of the ecological shield for the protected areas located near the regions affected by desertification.

The Department is involved in the processes ongoing within the framework of the UN Convention. In particular, the Deputy Chairman of the Department is a member of the interdepartmental state commission and participates in its meetings and discussions. The

Department has also participated in the discussion of the National Action Plan on Desertification and has even prepared the remarks regarding the document. It is worth noting that the ordinary employees of the Department have scarce information regarding the activities of the Commission.

The subordinate body of the Ministry of the Environmental Protection – the Department for Hydrometeorology is responsible for regular collection of data on hydro meteorological condition and background state of the environment. It has hydro and agro-meteorological networks, as well as environment observation systems throughout Georgia. In terms of combating desertification/land degradation, the Department's activity is very important, since it collects hydrological, agro-meteorological and environmental data, including the data on soil pollution, analyses and publishes these data, also makes short, medium and long-term synoptical, hydrological and agro-meteorological forecasts, researches and studies natural calamities, such as floods, landslides, droughts, etc.

The Department has hydro meteorological and agrometeorological posts and stations in the regions of Kakheti, Shida Kartli and Kvemo Kartli. These regions are most vulnerable to desertification.

Collection of hydro meteorological and agrometeorological data has significantly decreased for the present. Many stations and posts have been closed up.

Out of 3 agrometeorological stations and 2 posts located in the Kakheti region, only the Sagarejo and Dedoplistskaro stations are operating today. However, these stations are less representative for agrometeorological monitoring.

Short, medium and long-term (one-month) synoptical forecasts are made on a basis of the meteorological data. While making short-term forecasts, a hydrometer basically relies on the weather forecasts received through a satellite station. Weather forecasts are published in a form of small circulation bulletins. The bulletins are sent to the interested bodies (the Ministry of Transport, the Ministry of Fuel and Energy, the Ministry of Environmental Protection, etc.). Moreover, the agrometeorological bulletins are also being prepared per decade of each month, which are also sent to the interested bodies. Unfortunately, it is impossible to prepare and publish annual hydrological reviews.

The Department's computer database is not generalized for other agencies. The data collected within the frames of the current monitoring scheme are charge free. They can be withdrawn at the special request. However, those data, which need additional works, are paid and the Department has developed a relevant price-list.

As for the data on environmental pollution, they have been gathered since the seventies, while the implementation of the environmental monitoring under the perfect program has started since the eighties. The data on atmospheric air, surface waters and soil pollution have been gathered. Until 1990 regular observations were conducted. The contents of heavy metals were annually measured in the soils of industrial centers (Tbilisi, Rustavi, Caspi and Zestaponi), while the contents of pesticides (DDT, DDE, etc.) were examined in agricultural lands before and after using agro-chemicals in soil.

The data archive on environmental condition (until 1990) is submitted in a form of annual reports. However, this archive is not computerized. With the support of USAID/DAI, a computerized data archive on water resources has been created. It can be expanded by adding the data on soil and air.

The Department for Hydrometeorology is not represented in the Permanent State Commission. However, the representatives of the Department are periodically invited to the sessions of the Commission and the Advisory Board. The documents elaborated by the Commission are also submitted to the Department for consideration.

The subordinate body of the Ministry of the Environmental Protection- the Department for Geology is responsible for regular monitoring of underground waters and geodynamic processes. The subordinate body of the Department - the Center for Researching Natural Calamities *Stikia* researches natural geological processes on the entire territory of Georgia for already 30 years and schedules the measures on their management. The Center is responsible for researching, forecasting, monitoring and management of dangerous geological processes in the country.

The Ministry of Agriculture and Food of Georgia is responsible for elaboration and implementation of agrarian policy.

The Ministry is involved in the implementation of the UN Convention's guidelines. The Deputy Minister is a member of the Permanent State Commission on Implementation of the UN Convention to Combat Desertification. The representatives of the Ministry regularly participate in the Commission's sessions, where they exchange information and opinions, also elaborate the strategic documents. However, it should be noted that not all the key sectoral units of the Ministry are involved in these processes; those who remain outside the ongoing processes do not receive relevant information regarding the sessions and the activities of the Commission. The Ministry obtains information about the Convention from the Ministry of the Environmental Protection, the global computer network, non-governmental organizations, as well as through international meetings and conferences. The implementation of the Convention's guidelines is envisaged by the Ministry's plan of action. The activities planned by the Ministry are agreed with the Ministry of the Environmental Protection, as well as with other interested agencies.

The Ministry periodically implements the national programs ratified by presidential decrees. For example, under the guidance of the Agrochemical and Soil Fertility Service, the Ministry should implement the state program for 2001-2007 years: The Types and the Cost of Primary Measures on Protection of Soils against Erosion. However, the state budget has not allocated any funds for this program. In 1991 the Ministry was implementing the National Program on Restoration of Windbreaks and Eroded Soils. In 2000 the program was being implemented on a tender basis. In 2001 only one half of the scheduled sum was received from the budget. In 2002 the program activities were suspended.

The Ministry incorporates two subdivisions, which are of vital importance in terms of combating desertification/land degradation: The Department of Agricultural Service and the Department of Melioration and Water Economy.

The Department of Agricultural Service is responsible for methodological and practical service of agricultural production. The Department includes the Agroecology Board, the Agrochemical and Soil Fertility, as well as Plant Protection Services.

The main function of the Agroecology Board is to elaborate agroecological policy in the country, to study ecologically safe agro-technologies and promote their putting into practice.

The Plant Protection Service is responsible for elaborating the state policy on struggle against pests, the state supervision, accounting and control of effective and safe use of plant protection substances.

The Agrochemical and Soil Fertility Service is responsible for development and implementation of the state policy on conservation of soils and improvement of their fertility.

The material-technical base of the Service is very scarce. The Service is financed from the state budget. However, these funds are enough only for the salaries, which are significantly below the living wage. The Service has no special funds. The state budget does not envisage any expenses on business trips or other needs.

The Service possesses the soil and agrochemical data on agricultural lands (soil types, level of fertility, eroded lands, salinated and swamped areas, etc.) from 1965 up to present. Soil maps have been made on their basis. Unfortunately, the perfect data are available only until 1990.

The Service is insufficiently involved in the processes related to the implementation of the UN Convention to Combat Desertification. It does not participate in the sessions of either the State Commission or the Advisory Board.

The Department of Melioration and Water Economy is responsible for state management, as well as exploitation and maintenance of the state-owned amelioration systems. It is also responsible for recultivation-melioration of the salinated soils (70000 ha). Previously the Department was implementing the measures on combating floods and mudflows. Currently these functions do not enter the competence of the Department.

The Department is financed from the state budget. However, these funds are enough only for the salaries, which are extremely low. The Department has a special budget, which is replenished with revenues from tariffs on operating and maintaining the systems. These funds are subsequently used for exploitation and repair of these systems. The budget does not finance capital repair and rehabilitation of systems. Revenues from water tariffs are primarily directed to the central budget and then allocated to the Department. Generally, 3,47% of capital assets should be spent on exploitation and repair of the systems. However, in reality only 17% of this sum is allocated, which is enough only for minimal exploitation of the systems.

The hydro melioration field faces a great deal of problems: the melioration fund has halved during past years, as the system was robbed. It has not been repaired for years. The internal networks are especially damaged. The mechanical irrigation systems are disabled due to high capacity and expensive electric power. Noteworthy that the mechanical systems amounted to 30% of the entire system. The melioration systems do not operate in the areas especially vulnerable to desertification. The Mtkvari River Basin is not regulated well. It is impossible to irrigate lands and pastures. Water accounting system is to be adjusted. The state of internal networks is especially grave, since water management and regulation is extremely complicated there. These systems have been transferred to the Melioration Associations, which are insolvent. It is impossible to equip the internal networks with expensive water meters. Therefore, inaccurate methods of water accounting are used. Wholesale taxes are symbolic, but even these taxes are paid partially due to insolvency of farmers, old mentality and weakness of the water management-regulation system.

As for the collection of hydro melioration and cadastre data, a hydro-geological-melioration expedition performs this function. It keeps the hydro-geological-melioration data up to 1995-96 years.

The key tasks of *the Land Management Department of the Justice Ministry* are:

- Participation in the development of the state policy on land management and its implementation; elaboration-implementation of the relevant target programs;
- Organization and implementation of the measures on land reform, land allocation, transfer to private ownership, change of its primary purpose, land cadastre and registration, land arrangement, land monitoring and assessment;
- Participation in elaboration of legislative and other normative acts on land management issues;
- Control and supervision over the law observance.

The Department is financed from the state budget. However, these funds are enough only for the salaries. Funding of the target programs of the Department were suspended in 2001. Thus, the works over inventory of agricultural lands were suspended as well.

The Department has a vast database on land resources. The information has been concentrated in the public register. The database includes the aggregate data on land fund, land use, land allocation and land ownership, as well as separate data by city councils, regions and administrative districts. Primary registration of lands is conducted at the zonal register offices and includes the data on registration of lands and related real estate, cadastre maps of registration of geographic zones, land registration cards, as well as legal, geographic and other data necessary for registration. Afterwards, these data are concentrated in the central register, which is located at the head office. While the modern data (for past decade) on quantitative parameters of land are more or less perfect, the data on qualitative and economic parameters of land are insufficient, since the State is incapable to fund the measures on soil fertility inventory and cadastre. The current land cadastre works ongoing with the support of international and donor organizations include only the registration of land quantitative parameters. The latest complex cadastre works were conducted in Georgia in the eighties and envisaged the collection of data on quantitative, qualitative and economic assessment of lands. Since 1994 the Department, along with the international and donor organizations (GTZ, WB/IFAD, USAID, UNDP, KFW, SIDA), has been conducting cadastre and registration activities, that envisages the implementation of land reform in Georgia, land market development, land (real estate) registration, establishment of the public register, elaboration of the key trends of the state policy on land management and strengthening of management potential. The assessment of qualitative and economic parameters of land resources is planned in the near future. KFW is already implementing the preliminary measures, as well as the pilot projects on qualitative assessment of lands in the regions of Lagodekhi, Vani and Tskaltubo.

The current land cadastre data are computerized in conformity with the geo-information systems.

After handling and aggregation of the primary data, the Department issues annual bulletins. It regularly submits data to the State Department for Statistics and the Ministry of Agriculture and Food. In case of necessity, the data are delivered to the Ministry of Environmental Protection and various scientific-research institutes.

Recently the Department was equipped with computers, office, telecommunication and information means with international support. However, this equipment was not distributed among the boards on an equal basis. In particular, the boards for organization of cadastre works and for international relations are well equipped. The Department has access to the Internet and electronic mail.

The participation of the Land Management Department in the national processes related to the UN Convention to Combat Desertification is limited only by the participation of the First Deputy

Chairman of the Department in the sessions of the Permanent State Commission. Other employees of the Department are not familiar with these issues.

The State Department for Statistics is responsible for elaboration and implementation of the national policy, collection, handling and analysis of the statistical data on social-economic sectors, publication of the national statistical information. The Department has a vast database regarding each social-economic sector, including the fields of agriculture, environmental protection and nature use. As for the land resources, the Department possesses data on land fund and land use, as well as on productivity of agricultural lands. The majority of these data is systematized and computerized. The aggregate data are published in a form of annual statistical reports. Sector statistical reports are also published periodically.

The State Department for Geology is responsible for regular monitoring of underground waters and geodynamic processes. The subordinate body of the Department - the Center for Researching Natural Calamities *Stikia* researches natural geological processes on the entire territory of Georgia for already 30 years and schedules the measures on their management. The Center is responsible for researching, forecasting, monitoring and management of dangerous geological processes in the country.

In regard with land resources ***the Ministry of Health Care*** is responsible for elaboration and ratification of the land quality standards and for controlling the meeting of these standards through the regional laboratories of the State Service for Sanitary Supervision. In particular, the bacteriological and chemical analysis of soil is conducted at the laboratories.

The Department for Emergency Situations of the Interior Ministry is responsible for planning measures against natural calamities, including floods, landslides, mudflows, droughts and conducting the liquidation and rescue operations. With the support of UNDP, the Department implemented the project, which aimed at capacity building and creation of geo-information systems.

4.1.3. Scientific-Research and Educational Institutions

The Institute of Hydrometeorology of the Academy of Sciences of Georgia

Almost all the departments and research trends of the Institute of Hydrometeorology are related directly or indirectly to the issues of desertification and land degradation. The Institute conducts the researches of hydro-agro-meteorological trends, elaborates the short, medium and long-term forecasts and conducts research and modeling of the environmental condition, including soil pollution. Particularly the key trends of the Institute are: meteorological, hydrological and agro-meteorological researches, elaboration of forecasting methods; studying and forecasting the natural hydro meteorological calamities (floods, mudflows, snowslides, hailstorm, etc.); definition of climatic, agro-climatic and renewable energy resources; elaboration of the methods for assessment of climate change and its effects on the economic sectors; analysis of influence of natural and anthropogenic factors on the nature and climate; elaboration of recommendations on mitigative measures; research of the environmental condition (atmosphere, soil, water) and the pollution level, assessment of its effects and forecasting; creation of the scientific principles for monitoring the clouds and precipitation; development and introduction of the methods for regulation of hydro meteorological processes.

The Institute has close contacts with various departments (the Department for Hydrometeorology, the Ministry of Agriculture, the Ministry of Environment, GIOC, etc.),

international (WMO, UNDP, GEF, TACIS, USAID, etc.) and non-governmental (WWF) organizations, as well as scientific-research institutions and private sector (BP).

In terms of combating desertification/land degradation, the activities of the Institute are rather important in the direction of elaboration of weather and natural calamities forecasting methods, studying and modeling the agro-meteorological resources, as well as in the direction of melioration hydrology. For example, the General Agrometeorological Laboratory studies the agrometeorological resources, the links between weather, soil and productivity of land, conducts agroclimatic regioning of agricultural crops. The Laboratory for Agrometeorological Modeling conducts fertility forecasting and develops mathematical agrometeorological methods. The Laboratory for Melioration Hydrology traditionally studies the hydro and agrometeorological regimes of meliorated lands, as well as the water, thermal and salt balances. The scientific-experimental base of the water-balance expedition was operating in the Signagi region, on the territory of the Kvemo Alazani irrigation system. The meliorated lands were kept under observation there.

One of the key trends of the Institute is to research climatic conditions of landscape formation and transformation, as well as to develop the landscapes climatology branch. In this direction, the Climatology Department is elaborating a grant theme of the Academy of Sciences of Georgia "Climatic Conditions of Desertification of Natural Landscapes in Eastern Georgia", as a result of which the climatic conditions of landscape formation and the climatic criteria of their transformation have been revealed.

The Institute has a vast base of hydrometeorological and agrometeorological data. The meteorological data cover the period from 1905 to 1995 years. The Institute has made various hydrometeorological maps (weather maps, hydrological maps, mudflow maps, etc.). Presently the Institute finds it rather difficult to obtain basic modern data. The hydro and agrometeorological observation network is disrupted. The Department of Hydrometeorology, which is responsible for operation of the network, fails to handle the data due to absence of funds. The Institute of Hydrometeorology itself lacks funds to conduct research expeditions. Therefore, it basically uses the methods of modeling, relying upon old data.

The work over geoinformation cartography has been launched at the Institute. The medium and large-scale electronic maps of climate elements are being elaborated.

The material-technical provision of the Institute is weak. The Institute of Hydrometeorology is basically financed from the state budget, however the allocated sum is enough only for salaries. Moreover, the Institute is participating in the grant programs of the Academy of Sciences, within the framework of which new computers are purchased from time to time. Moreover, the Institute executes private orders of various organizations. For example, it participates in preparation of the environmental impact assessments.

The Institute has highly skilled staff in the fields of mathematics, physics and natural history. However, attraction of new staff is a serious problem.

The Institute of Hydrometeorology is involved in the national processes related to the implementation of the UN Convention to Combat Desertification. In 2001 the Institute held a national conference, dedicated to the problems of drought and the measures on combating.

The Vakhushti Bagrationi Institute of Geography of the Academy of Sciences of Georgia is responsible for conducting complex scientific researches in the field of geography. Its basic trends are: to research physical, economic and social geography of high mountain areas, as well as rational use of natural resources, sustainable development of economy and population. Particularly, the Institute conducts the researching, mapping and forecasting of natural calamities (landslides, mudflows, erosion, floods, etc.), as well as elaborates the mitigative measures; it assesses the climatic and hydrological resources; researches the anthropogenic transformation of landscapes; develops the methods of remote sensing for environmental monitoring; creates the geoinformation and expert systems for environmental impact assessment and allocation of vulnerable areas; makes geographic and thematic maps, including the electronic ones.

Desertification is one of the key trends of the Institute. It researches desertification on a complex basis, as well as defines the natural factors and other aspects (hydrology, climatology, geomorphology, social and economic environment, etc.) that trigger desertification.

The Laboratory of Mathematical Modeling conducts the survey: “A method for assessment of desertification process in mountain regions on the background of modern climate warming”. The research aims to create a method, which will promote the quantitative assessment of expected desertification relying upon the hydrometeorological data.

In 2001 the Scientific-Advisory Council was set up at the Institute, which functioned within the frames of the Permanent State Commission on the Implementation of the UN Convention to Combat Desertification. A laboratory for researching desertification has been set up at the Institute.

The Institute for Geography is financed from the state budget, however these funds are enough only for salaries. No expenses are envisaged on conducting the field-stationary researches. Hence, realization of complex research works is impossible for the present. Along with the state funding, the Institute participates in the grant programs of the Academy of Sciences.

The material-technical base of the Institute is very poor. However, compared with other scientific institutions, the situation is much better here. The Institute is connected to the information network of the Academy of Sciences and uses free Internet. It has developed the digital versions of 1:500000 and more detailed 1:200000 scale maps. The Institute has also elaborated the geoinformation systems of the Aragvi basin and Kvemo Kartli water resources.

The Institute of Geography is actively involved in the national processes related to the implementation of the UN Convention to Combat Desertification. In particular, its eight employees are members of the Scientific-Advisory Council on the Implementation of the Convention. They have actively participated in implementation of the national action plan on combating desertification. Within the frames of the program the Institute has developed a detailed project proposal on a theme: “Water Resources Assessment in Eastern Georgia on the Background of Desertification Processes”.

The Department for Atmospheric Physics, Atmospheric Ozone and Physics of Aerosols of *the Institute of Geophysics* conducts researches related to climate changes under various projects. The research is basically directed to studying the dynamics of atmospheric phenomenon (hailstorm, cloudiness, mistiness, precipitation, wind) regarding aerosols and global processes. Till 1991 the Department was receiving data from the Department of Hydrometeorology, however since 1991 the cooperation has been suspended, since the services are paid and the reliability of data not guaranteed. The Department still manages to conduct mobile measurements within the frames of various international projects. The links with relevant

institutions of Russia have gradually been restored and improved. The Institute published monographs on modern climate changes and land-surface temperature fields in Georgia. A monograph *Modern Climate Change in Georgia* is ready for publishing; it cannot be published due to absence of funds. Lack of staff is a serious problem as well. The majority of staff is aged and actually incapable. The Department has modern communication means, which were transferred under the NAT program. The Department basically works over three themes: hailstorm change, atmospheric electricity (influence of climate change on atmospheric electricity and human health), and land-surface ozone change. GEL 10,000 is spent on these three themes annually.

The Scientific-Research Institute of Environmental Protection, which forms a part of the Ministry of the Environmental Protection, conducts scientific-research and practical works in the field of environmental protection. It prepares annual national reports on environmental protection, participates in elaboration of ecological normative-methodological documents and technical standards. One of the key trends of the Institute is to research the ecological condition of industrial enterprises and other polluters. For this purpose the Institute has a complex chemical laboratory, which is old and needs rehabilitation. Currently it practically stands idle.

The key task of the Institute of Environmental Protection is to create a database on environmental condition. Similar functions are performed by the Department for Environmental Monitoring and Statistics of the Ministry of Environment and obviously the functions are overshadowed between these two bodies. Currently the Institute finds it difficult to fulfill this task, since it has no environmental observatory network and due to absence of funds it fails to conduct mobile measurements. Moreover, the data received from various departments are inaccurate.

The Institute's database contains the data on environmental components, including land resources and soil, as well as qualitative and quantitative parameters, which are necessary for national environmental reports.

The Department for Land Resources and Waste is functioning at the Institute of Environmental Protection. Its supreme goal is to study land resources and the quality of soil pollution, as well as to elaborate the recommendations in order to improve the situation. The Department practically does not conduct scientific-research works and prepares only a part of the national report on land resources and waste. The Department is not involved in the national processes related to the implementation of the UN Convention to Combat Desertification.

The Institute is financed from the state budget. It also receives particular incomes from paid services (information, education, scientific, technical). The information accumulated within the frames of national reports is charge free, however, the data, which need additional work, are paid.

The Institute has experienced and highly skilled staff in technical and natural history fields. However, due to absence of information sources, they lack information about modern achievements in the field of protection of the environment and natural resources. Most employees are above 40. Staff renewal does not take place. The system of attestation of employees does not work any more. Trainings are held very seldom, only in case if international funding is provided.

The material-technical base of the Institute is old and very poor.

The participation of the Institute in the current national processes related to the UN Convention to Combat Desertification is limited only with membership of the Deputy Director in the Scientific-Advisory Council. Simultaneously, the Deputy Director is a Scientific Secretary of the Council. Unfortunately, other employees have no information about the measures on implementation of the UN Convention in Georgia. The Institute has not participated in the discussion of the final version of the National Action Plan on Combating Desertification.

The Department of Soil Science of the State Agrarian University of Georgia – The key task of the Department of Soil Science of the State Agrarian University of Georgia is to research desertification and land degradation problems in Georgia. The University owns database in a form of scientific reports, articles and monographs, which are kept at the department and the library.

Noteworthy, that there is no coordination with other organizations. Regular information exchange does not take place either.

The Agrarian University has implemented several projects and themes regarding land resources. It has actively participated in making a 1:500000 scale soil map.

The University has a highly skilled scientific potential. However, professional growth is impossible due to absence of funds. The technical capacities of the University are very poor. They have not enough computers. Lack of funds is a very serious problem as well.

The Faculty of Geography of the Tbilisi State University consists of the departments for hydrology and soil science, meteorology, climatology and oceanology, geomorphology and landscape science. The mentioned scientific disciplines are studied at these department and the relevant scientific researches are conducted.

Until 1990 these departments conducted systematic researches, including field works and stationary observations. Presently, due to absence of funds the researches are non-systematic. Stationary and fields works have practically been suspended.

The Department for Meteorology, Climatology and Oceanology basically works over the problems of droughts and desertification. The Head of the Department is a member of the Scientific-Advisory Council. He has participated in elaboration of the national program on combating desertification. The employees of the Department have also participated in preparation of the first national message on climate change. In particular, the Department was involved in assessment of the vulnerability of the Black Sea coastal area, as well as in revealing the adaptation measures. The material-technical base of the departments is very poor.

The Scientific-Research Institute of Soil Science, Agrochemistry and Melioration of the Georgian Academy of Agricultural Sciences – the key task of the Institute is to elaborate measures on forecasting soil erosion, protecting soil against erosion and improving its fertility. It also works over raising the productivity of salinated lands and elaborating agromelioration measures to further use the lands under agricultural crops. Special attention is paid to the issues of biological activity of soils, research of their physical-chemical features and their regulation.

The Institute has implemented following measures: the scientists have made a 1:200000 scale soil map. Large-scale researches (1:10000) were conducted in 19 administrative districts of eastern Georgia, on a basis of which 1:50000 scale soil maps were made for the regions.

Agroecological regioning of the intensive agricultural area of Kartli-Kakheti and the Central Kavkasioni was conducted. The structure of soil, its peculiarities and regime parameters were studied.

Soil-erosion regioning was conducted in 42 administrative districts of Georgia. The margins, intensity, quality and agro-industrial characteristics of eroded soils were researched. As a result, the organizational, agrotechnical and hydrotechnical measures on soil protection against erosion were recommended.

The research materials were submitted to *Saksakhmitsproecti* to elaborate the perspective plans on agricultural development of administrative districts and to implement the measures on combating erosion, as well as to *Sakkalakmshenproecti* – to elaborate the schemes of planning the economic regions of eastern Georgia.

The Institute is financed by the state budget. In order to provide a high level of research works, all the departments and laboratories of the Institute are equipped with modern apparatus. Currently the Institute is implementing ten state-funded programs.

The Kanchaveli Scientific-Research Institute for Plant Protection of the Georgian Academy of Agricultural Sciences

The Institute conducts scientific researches in the field of insects and plant diseases and develops effective biological, chemical and agrotechnical methods for struggle against them. The Institute's activity is basically directed to agricultural crops.

Currently only a small group of scientists is working at the Institute. This group is involved in the implementation of projects supported by the government or international organizations.

The Institute for Plant Protection has close links with various scientific or educational institutions both inside and outside the country.

The Institute for Plant Protection has implemented several projects with the support of foreign partners.

The Institute is not involved in the national processes related to the implementation of the UN Convention to Combat Desertification. It is not familiar with the activities of the Scientific-Advisory Council either.

The Gulisashvili Institute for Mountain Forestry of the Georgian Academy of Sciences. The Institutes conducts fundamental, experimental and applied researches. The basic trends of its research activities are: bioecology and ecology of forests; social and ecological functions of forests; scientific principles of rehabilitation of forests; biology and ecology of pests and integrated control system; sustainable use of forest resources.

The material-technical base of the Institute is very poor and old. The Institute has no computers and other modern apparatus, as well as telecommunication and information means.

The Institute is funded from the state budget. However, these funds are enough only for salaries. The budget does not envisage the expenses on researches and business trips. Moreover, the Institute periodically receives small grants from the Academy of Sciences.

The Institute has accumulated particular information in a form of scientific-research works and monographs.

The participation of the Institute in the current national processes related to the UN Convention to Combat Desertification is limited only with membership of the Director in the Scientific-Advisory Council. Unfortunately, other employees have no information about the measures on implementation of the UN Convention in Georgia. The Institute has no target group to study the desertification issues and to participate in the processes on combating desertification.

The Scientific-Research Institute for Agrarian Radiology and Ecology of the Georgian Academy of Agricultural Sciences has been conducting scientific researches about pollution of soils with radio nuclides and heavy metals since 1979. It has also been working over agroecological issues since 1991. It elaborates the issues on influence of agricultural systems on the environment, including soil fertility and their quality parameters. It also studies the issues of various environmental impacts.

The Scientific-Research Institute of Land Arrangement of Georgia (Sakmitsproeqti) is subordinated to the Land Management Department of the Justice Ministry. It enjoys the status of a legal entity of public law.

The supreme goal of the Institute is to project land arrangement, to participate in cadastre works and elaborate the schemes of measures on combating erosion. Within past years the Institute worked over projecting internal land arrangement, conducted land cadastre, elaborated general schemes of measures on combating erosions, as well as the schemes of development of separate river basins. The Institute has highly skilled agro-engineers, agro-ameliorators, economists and other employees. Most of them have 20 years working experience. However, the Institute suffers the lack of young staff.

The Institute is an autonomous self-financed organization. Currently, it practically receives no external funding. The material-technical base of the Institute is very old and poor. It has no computers and other modern apparatus.

Until now Sakmitsproeqti was not involved in the land registration and cadastre activities financed by donors. However, recently it has concluded a contract with KFW. The activities envisage making of digital orthophoto soil drawings. Moreover, the qualitative assessment of soils is being conducted in three experimental regions of Lagodekhi, Tskaltubo and Vani. The employees of the Institute are expected to be involved in field works.

The Institute is not involved in the national processes related to the implementation of the UN Convention to Combat Desertification. It is not familiar with the activities in this regard either.

The Institute of Water Management and Engineering Ecology of the Georgian Academy of Sciences (Saktskalekologia) has achieved significant success. In particular:

- The recommendations on ensuring security from natural and technogenic disasters were developed;
- Coast-protective and river-bed control structures were studied and anti-flood structures and measures for specific items designed;
- Erosion processes were predicted and debris-flow phenomena studied;
- Erosion control (water and wind) and debris-flow control structures were studied and new resource-saving structures developed;
- A theory of safety of hydromelioration buildings was reviewed;
- A new method of melioration was elaborated for heavy soils of eastern Georgia; etc.

Systematic researches were conducted at the Alazani experimental-melioration station of the Institute. The main objective of the researches was melioration and reclamation of salinated soils of Georgia. On a base of the researches conducted at the experimental base of the station (112 ha), a complete circle of melioration and reclamation of salinated, alkali and alkali-sulphate soils was developed, approbated and put into practice²⁰.

Currently the Institute faces a great deal of problems. Its material-technical base is very poor. Salaries are very low; no funds are allocated on business trips. The Institute lacks computers and other modern apparatus. Attraction of young staff is a serious problem as well. Most employees are above 50.

On the background of financial problems, no laboratory and fields works are conducted at all. Only regime observations on the drainage-collector systems are being conducted at the experimental stations and plots.

The Department of Food Production and Botany of the Georgian Zooveterinary University – the key trend of the Department is to improve winter pastures in the semi-desert and dry field areas, to elaborate effective measures on combating wind erosion, to conserve and develop biodiversity and raise its productivity.

The Scientific-Research Institute of Agriculture of the Georgian Academy of Agricultural Sciences – its activities are directed towards use of new perennial and annual grass species, including more drought resistant and salinity tolerant species. They are successfully used as a key component of a complex of measures against desertification/land degradation.

The Institute of Botany of the Georgian Academy of Sciences²¹ was founded in 1933. The key trends of its activities are: research of Georgia's plant diversity; research of the problems of the ecology of high-mountain vegetation; development of scientific principles and practical recommendations for the protection and use of Georgia's plant resources; ex situ conservation of the Caucasus/Georgia's endangered species; bioremediation of soils polluted with oil and oil-products.

Currently the Institute of Botany is conducting donor-funded scientific researches and environmental works. It studies the vulnerability of Georgia's ecosystems against global climate change, creates a long-term system of monitoring over high mountain biodiversity and elaborates measures on conservation of several endangered plant species.

Although the Institute of Botany is a state-owned organization, due to effective management and good technical potential, as well as close international contacts, it managed to gain 15 conservation and research grants from international organizations (CRD, the U.S. Geographic Society, the Botanical Gardens of Missouri and New-York, Gloria-Europe, etc.) within past 5 years. Only through a 5-year grant, the Institute receives USD 60 000 per annum. Those

²⁰ Source: Modern problems of water management and engineering ecology, a festschrift dedicated to 70-year anniversary of the Institute's foundation, the Georgian Academy of Sciences, the Institute of Water Management and Engineering Ecology, Tbilisi, 1999.

²¹ Source: A management plan on conservation of arid and semi-arid ecosystems of Georgia, technical summary, UNDP/GEF-NACRES, Tbilisi, 2001; Review and analysis of the situation in conservation and sustainable use of biodiversity in Georgia, thematic review, project, Measures on strengthening Georgia's capacity building for global environmental protection, GEF/UNDP, Tbilisi, 2003; climate change, thematic report, project, Measures on strengthening Georgia's capacity building for global environmental protection, GEF/UNDP, Tbilisi, September, 2003.

departments, which participate in the programs, are well equipped with computers and modern telecommunication means. The Institute has good software as well.

The Institute possesses important data on plant layer. In 1937 the Institute set up a Shiraki experimental base, where arid and semi-arid plants, particularly their seasonal development and root systems were researched within years. These researches aimed at maximal reclamation of existing haylands and pastures. However, since the early nineties, due to the financial crisis, the experimental bases have suspended operations. Currently, the researches are being conducted only under particular projects and programs.

The Institute of Zoology of the Georgian Academy of Sciences²² - The basic trends of its scientific-research activities are: study of the diversity of wild fauna species; study of animal ecology; study of animal ethology; zoogeographic researches.

Since the forties up to 1990 the Institute was researching the system of Caucasian mammals and conducting faunistic researches. However in the nineties these researches were significantly reduced due to absence of funds. Still, the research in caryology is still conducted from time to time.

The material-technical base of the Institute is very poor. It suffers lack of computers and other modern apparatus.

4.1.4. Non-governmental organizations, private sector

Only a small part of non-governmental organizations are involved in the activities directed to combating desertification/land degradation. Most of NGOs are concerned specifically with domestic environmental problems, including biodiversity conservation and development of environmental legislation. However, because of proximity of desertification and biodiversity issues, some NGOs have to work over specifying links between the desertification and biodiversity issues to settle common problems.

In order to settle various social-economic issues, several NGOs are working over strengthening and mobilizing the local communities, including those in the desertification-affected regions.

Recently particular activities were launched regarding mobilization of local non-governmental organizations and construction of institutional potential for the purpose of combating desertification. In particular, a coalition of national and local non-governmental organizations has been established in several regions of Kakheti facing desertification. The cooperation among NGOs from Georgia, Armenia, and Azerbaijan has become very intensive for past years. A regional network of interested organizations throughout the Caucasus is expected to be created.

Compared with the non-governmental sector, the situation is much grave in the private sector. Environmental service market is weakly developed in the country. This is basically caused by small demand for this type of activity, weak national advisory potential, low competitive ability of local private advisory firms compared with foreign ones and presence of unfavourable taxation system for the development of private sector in the country. Only several private

²² Source: A management plan on conservation of arid and semi-arid ecosystems of Georgia, technical summary, UNDP/GEF-NACRES, Tbilisi, 2001; Review and analysis of the situation in conservation and sustainable use of biodiversity in Georgia, thematic review, project, Measures on strengthening Georgia's capacity building for global environmental protection, GEF/UNDP, Tbilisi, 2003.

companies work effectively in Georgia. Their activities are basically related to environmental service of large infrastructure projects on transit of energy carriers through the South Caucasus.

And finally, there are several non-governmental and private organizations in Georgia, which aim at introducing geoinformation systems and creating modern database. These organizations possess modern information technologies, which can be used in creation of national environmental information systems.

The Noah's Ark Center for the Recovery of Endangered Species (NACRES) was founded in 1989. The key trends of its activities are as follows: monitoring of endangered species of fauna highly vulnerable to extinction; creation of a gene pool reservation for endangered species; restocking of species through promotion of natural processes and reintroduction of objects, which grew up in captivity; conservation of ecosystems; etc.

The Center is actively involved in the activities related to combating desertification. In 2003 the Center was accredited as a national focal point of the UN Convention to Combat Desertification. It also became a member of the Scientific-Advisory Council.

In 2003 the Ministry of Environment through the cooperation with NACRES elaborated the National Action Plan on Combating Desertification.

Taking into account the guidelines of the Convention on Biodiversity Conservation, NACRES has implemented the region project "Conservation of Arid and Semi-arid Ecosystems in Transcaucasus". The Global Environment Facility (GEF) financed the project. The target region involved the southeastern part of Georgia and its bordering regions in Armenia and Azerbaijan. The project aimed to conserve arid and semi-arid ecosystems facing degradation through provision of sustainable management of natural resources (1999-2002).

As a result of the conducted researches NACRES created a database on arid and semi-arid ecosystems, flora and fauna, ecological parameters, social-economic parameters and institutional arrangement. The mentioned information is systematized and computerized.

Georgian Center for the Conservation of Wildlife (GCCW) was founded in 1994 to promote the environmental activities in Georgia. The key objective of its activities is to establish sustainable policy and management principles for conservation of nature and use of natural resources in Georgia.

GCCW does not directly work over the desertification issues; however it is involved in improvement of endangered ecosystems of Georgia and promotion of the establishment of the state system on information management of biodiversity. Special attention is paid to wetlands, mountain and semi-arid ecosystems. Moreover, the Center pays great attention to raising of environmental awareness of the society. It prepares and disseminates educational literature, works with mass media, supplies teachers with modern literature on biodiversity conservation, etc. The activities are conducted both at national and local levels.

In order to achieve the conservation objectives, the Center conducts field works, creates computerized database on biodiversity and geoinformation systems, suggests legislative initiatives, etc.

World Wildlife Fund (WWF) Caucasus Office was founded in 1990, as a WWF office in Georgia, initially, and since 1998 – as a Caucasus Office. The key trends of its activities are as follows: development of protected areas, ecological-educational activities and promotion of sustainable development projects.

Since 1991 the World Wildlife Fund Caucasus Office has been implementing wide-scale ecological-educational programs. WWF Tbilisi Office has greatly contributed to elaboration of a concept on protected areas in Georgia and actively participated in establishment of the Borjomi-Kharagauli National Park - the first protected area in the Caucasus, which corresponds to the international standards (since 1992). Since 1992 the World Wildlife Fund has invested over 4,2 million US dollars in Georgia, including USD 2,5 million – in creation of the above-mentioned Park. The organization has conducted detailed research of the biodiversity conservation investment portfolio for the entire Caucasus. It possesses detailed information about hotspots of Georgia's biodiversity.

Biological Farming Association Elkana was founded in 1993. Since 1996 it has been a member of International Federation of Organic Agriculture Movement (IFOAM). The key trends of its activities are: promotion of sustainable development of agriculture; development of socially and economically sustainable biological peasants' farms; promotion of Georgian villages' participation in decision-making process.

Elkana has implemented a GEF-funded project *Conservation and Sustainable Use of Georgia's Agrobiodiversity*, which started in 2002 and ended in March 2003. The project aimed at creating a model of agrobiodiversity conservation in natural and cultivated ecosystems.

Elkana has set up experimental bases of organic agriculture, where endangered crops are cultivated.

Georgian Agroecological Society (GAS) – was founded as a non-governmental, research-educational center in 1991 by the scientists and students working over agro-ecological issues. Since 1994 GAS is a member of IFOAM.

The key tasks of the Society are: protection of agricultural lands against land degradation, promotion of their rational use, study of eco-farms, their propaganda and introduction, introduction of ecologically safe agricultural practice, arrangement of experimental biofarms mostly in agricultural regions, conservation of agrobiodiversity, sustainable use of natural resources in agro-industrial sector, elaboration of measures on mitigation of impact of dangerous ecological phenomena, training of farmers, ecological education.

Up to present the Society has implemented or is implementing the following projects and measures: a concept on ecological safety of agro-industrial field has been developed; the key requirements of ecologically safe agriculture were defined; a bio-farming experimental base has been created on approximately 7 ha; methods for assessment and forecasting soil erosions were elaborated; a system of monitoring zoo-anthropotic diseases across the Baku-Tbilisi-Ceyhan oil pipeline and Baku-Tbilisi-Erzurum gas pipeline was elaborated; farmers and agricultural scientists regularly receive modern information.

Scientific-Research Firm Gama was founded in 1991. It conducts a complex of activities in the field of research and use of mineral resources, as well as in environmental field. The firm includes 4 structural units. It has the Laboratory, the Certification Department, the Technological Service and the Information and Advisory Department.

Association Dzelqva was founded in 1999. It is involved in active environmental work. Along with the Azerbaijani non-governmental organization *Chevra*, the Association has researched the ecological condition on the Georgian-Azerbaijani border line; it successfully led the coalition project regarding the creation of the Aragvi River Sustainable development Model; an international forest was planted on 2 ha near a village of Patardzeuli in eastern Georgia on the initiative of the Association and with the support of the German Society of Dendrologists.

The Georgian Society of Agriculturists was founded in 1950. It basically works in the field of researching soil ecology. In 2001 the members of the Society elaborated and published 1:500000 scale soil maps, which were recognized at an international level. In 2002 the authors of the map received the Georgian state award.

The Coalition for Improving the State of the Kakheti Population was established in 2003 with the financial support of the Horizonti Foundation, as an institutional mechanism for introducing the project on conservation of arid and semi-arid ecosystems. The key tasks of the Coalition are: growth of transparency and democratization of the processes related to use of natural resources and nature; elaboration and introduction of means on combating pasture erosion; optimization of sheep breeding; implementation of measures on raising environmental awareness; initiation of the biodiversity monitoring in the region.

The above-mentioned measures are oriented to the local population (farmers, agriculturists), as well as to target groups from the local and central authorities.

The Coalition unites various national and local organizations: the Caucasian Scientific-Research Center for Animals' Behavior, the Georgian Open Humanitarian Institute for Healthcare, Economy and Insurance, the Union for Ecogenetic Safety *Galgi*, local community *Signagelebi*, local community *Alvani 2000*, and the Center for Analytical Development, Social and Ecological Expertise.

The Coalition implements a number of measures. Particularly, it has implemented agrotechnical measures on the pilot areas in Karistskali (300 ha) and the Iveri Plateau (300 ha). The Coalition plans to create experimental farms and to assess the condition of plant layer and windbreaks, as well as to conduct phyto-engineering measures, to calculate the profit and loss of the owners of the experimental farms. The establishment of new economic relations and the conduct of educational campaigns are also envisaged.

International organization Economil was founded in 1999. Its activities are directed towards protecting soils and generally land against natural anthropogenic processes.

GRID-Tbilisi is the 16th node of the UNEP/GRID network. It is non-profitable environmental NGO and its staff includes professional geographers, cartographers, and information scientists. GRID-Tbilisi was established in 1998 as a result of the agreement between the United Nations Environment Programme (UNEP) and the Georgian Ministry of Environment.

The main objective of the Center is to disseminate environmental information using modern information technologies such as geographic information systems (GIS), remote sensing, and the Internet.

Main purposes of GRID-Tbilisi are to help strengthen decision-making process in Georgia through the UNEP/GRID system, in putting environmental information into practical use, and to serve as a working example of how non-profit organization with government support can make such a contribution.

GRID-Tbilisi provides timely and reliable geo-referenced information and access to a unique, Geographical Information System (GIS) service, for addressing environmental issues at regional, national and sub-national levels, in order to bridge the gap between scientific understanding of global environmental processes and sound management of the environment.

The Advisory Center for Geographic Information Systems and Remote Sensing “Geographic” is a private advisory company, which promotes the introduction and use of modern technologies of spatial information management. The Center was founded in 1998.

The key trends of the Center’s activities are: collection and handling of spatial information; implementation of topogeodesic and cadastre activities; implementation of photogrammetric works, making orthophotos, dissemination of geographic information and remote sensing programs (ESRI and ERDAS production), teaching and certification, elaboration of special geoinformation programs, creation of sectoral geoinformation systems, elaboration of expert and management systems, production of cartographic goods, survey and analysis of environmental condition, geomonitoring, promotion of introduction of information technologies.

Among the particular activities conducted by “Geographic” there are: creation of the Mtkvari-Araksi basin geoinformation system on a 1:200000-scale and 1:500000-scale geographic database; digital topographic maps: vectorization of various scale maps and creation of digital geographic database, creation of digital elevation model (DEM) of relief, restoration of medium-scale topomaps and aero and space pictures; creation of a medium-scale geovirtual model of the Baku-Tbilisi-Ceyhan oil pipeline, which comes in conformity with natural, economic and social data and gives possibility for spatial imitation of any process; digital aero-orthophotos created with the help of aero photos; orthophotos created on a base of space photos; geovirtual models created on a base of 1:10000-, 1:50000-, 1:500000-, 1:1000000 scale digital models.

Moreover, “Geographic” conducts academic and special trainings in the field of geographic information and remote sensing. The Center conducts primary, higher and special courses of lectures. Teaching is free for the students of the Tbilisi State University. The Center is cooperating with the educational center “The Earth”.

“Geographic” possesses the following information: topographic data – various scale georeferenced topographic raster maps (relief, hydrography, settlements, roads, railways, plant layer, protected areas, borders); administrative data at rural, city council and urban levels; thematic vector base maps (engineering-geological, soil, plant layer, orography, agro-botany, climate); satellite images; orthophotos with various scales and accuracy; demographic database.

The Association GeoImage is a non-governmental, non-commercial organization, which was founded in 2000 by a group of geographers. Its activities are directed towards creation of geographic information systems, as well as a database on pastures and natural resources; environmental impact assessment and monitoring.

The Association has developed various scale geographic information principles of Georgia and its separate regions, for example, an electronic version of a 1:500000 scale map, as well as the geographic information systems of the Aragvi River water resources and the Kvemo Kartli region. The Internet versions of these systems are available as well.

4.2. Problems at an institutional level

Duties and functions of the institutions – The analysis of institutional arrangement in the field of combating desertification/land degradation showed, that very often the functions of governmental institutions involved in these issues are obscure and overshadowed among various departments. First of all, this regards the coordinating body on the implementation of the UN Convention – the Permanent State Commission and the Scientific-Advisory Board. The objectives and tasks of these two structural units are almost similar. In particular, one of the key tasks of the Commission is to elaborate action mechanisms for coordination of international and national actions. One of the key tasks of the Scientific-Advisory Council also is to participate in developing action plans (that, in our opinion, is the same mechanism of action). It is not specified how the Board is participating in these processes. Another task of the Commission is to elaborate integrated strategies. The Scientific-Advisory Board performs this function as well. Generally, proceeding from the regulations of the Commission and the Board, it is unclear how the strategic documents are developed: whether they are developed by the Board in a form of recommendations and then submitted to the Commission for consideration and elaboration of a final version or the Commission develops the strategies and plans and then transfers them to the Board for conducting scientific-technical expertise. It would be more correct and logical, if the Commission with the participation of the Policy Department of the Ministry of Environment elaborated action plans and strategic documents, while the Board assessed technical and economic feasibility of these documents. Hence, the distribution of the functions of the Commission and the Board is extremely necessary.

As a result of comparison of the regulations of the above-mentioned bodies and analyzing their internal structures, it was revealed that the functions of various departments and their structural units are often overshadowed in the fields of environmental control, monitoring and natural resources accounting. For example, the environmental monitoring functions are overshadowed among the internal departmental units of the Ministry of the Environment (the Environmental Monitoring Center, Sectoral Departments, the Institute of Environmental Protection and regional boards), as well as between the Ministry of Environment and the Hydrometeorology Department. Soil fertility monitoring functions are not clearly distributed between the Land Management Department and the Ministry of Agriculture. Neither the control and supervision functions are distributed among several departments (the Ministry of Environment, the Ecological Police, the Service for Protected Areas, the Ministry of Agriculture, the State Land Management Department).

One more serious problem is non-detailed description of functions of various departments. Very often, the laws and bylaws, including the regulations of various departments, define the functions only by general phrases, such as “participation in policy elaboration”, “organization of monitoring”, and “organization of measures on land resource protection”. It is not defined, what exactly is meant under these functions. It is not also specified what are the duties and functions of various departments.

Moreover, one more serious problem is the compatibility of functions by one department or its structural unit that can cause conflict of interests; for example, simultaneous performing of regulating (licensing) and law enforcement functions or protection-regulation of natural resources and their exploitation (in case of the Forestry Department).

Management system, strategic planning/management, quality management, monitoring and assessment – Low efficiency of management system and incapacity of strategic planning and management is a serious institutional problem today. The Georgian governmental institutions are built under the principle of unilateral governance²³. The structure and distribution of functions of the public authorities are based on a pyramid hierarchy, while the horizontal links are less developed. In order to solve any issue in this system, it is necessary to inform higher echelons, to accept their consent and coordinate the activities. This significantly hampers the efficiency of the decision-making process. Due to weakness of strategic planning and management potential, the agencies often draw attention to operative measures at the expense of neglecting long-term political objectives (the agencies often do not have long-term objectives at all) and time is basically devoted to mechanical-routine works, instead of analytical one²⁴. On the background of fulfillment of daily bureaucratic tasks, little time and resources are left for fulfillment of annual planned works to achieve more long-term objectives. Since, the operative tasks should be fulfilled in a short time, basically the heads and deputies of departments or several highly skilled experts are entrusted to fulfill this job. Hence, the highly skilled employees have little time to fulfill analytical and expert works.

Generally, the system of organizational planning is weak and irrational at the public institutions. The availability of resources is not taken into account while planning. The plans often do not define the goals and terms of implementation of measures, as well as the procedures of their monitoring, the criteria for assessment of outcomes and the parameters of their success. Although each agency contains a unit, which controls the quality of fulfillment of the planned work, there do not exist clear criteria for assessment of the work done and the work is basically assessed under quantitative instead of qualitative parameters.

Human resources management – Generally, human resources management is ineffective at the governmental organizations. Lack of staff and their equal distribution among various agencies is a serious problem as well. Very often the central body is overstaffed. Since the country pursues the policy of constant staff reduction, actually it is impossible to add necessary staff and new employees are hired only at the expense of dismissal of old ones. Therefore, very often the functions are not effectively distributed among the employees. One employee is responsible for a great deal of functions that makes his work ineffective. In this regard, the situation is extremely difficult in territorial bodies, for example, in the regional departments of the Ministry of Environment, where one employee has to perform a great deal of various functions.

Financial security and management - Almost all the governmental organizations of Georgia suffer the lack of financial resources. They are basically financed from the state budget, however the allocated funds are enough only for salaries. An average salary at the governmental organization is much below a living wage. The operating budgets of organizations do not envisage any expenses on business trips, field works (soil fertility, forest cadastre, etc.) and rehabilitation of the material-technical base. A real level of funding significantly falls behind the approved parameters.

We can discuss the problems of funding the governmental organizations and their budget after the example of the Ministry of Environment. For example, in 2003 the Ministry's budget was approved at GEL 810,7 thousand. It was distributed as follows: salaries – 345,5 thousand Lari (43%), assignments 0 138,0 thousand Lari (17%), expenses on business trips – 11,0 thousand Lari (1%); funding of state target programs – 215,0 thousand Lari (27%); other goods and

²³ The Law of Georgia on the Structure, Authority and Rules of Operation of the Government of Georgia, ar,6, p,4.

²⁴ We can bring an example of the Policy Department of the Ministry of Environment, which is practically separated from the activities related to policy formulation and national priorities scheduling, and basically performs a role of an international protocol.

services – 101,2 thousand Lari (18%). In 2001 the budget amounted to 295,7 thousand Lari. As a result of sequestration, the mentioned sum was reduced to 90 thousand Lari, i.e. the budget was fulfilled by 63,1% against specified budget and 19,2% against approved budget. The budget for 2002 amounted to 200 thousand Lari and the Ministry received 171,1 thousand Lari or 86% of the approved budget.

The governmental organizations are also funded through state target programs (in case of governmental organizations) and academic grants (in case of scientific institutions). These sums are directed to settlement of particular problems. Noteworthy, that due to annual sequestration, target programs receive much less funds than envisaged, while the really allocated sum is less than annual funding. Funds are allocated on programs quarterly with observance of the rules elaborated by the Finance Ministry, that hampers implementation of planned urgent works.

The governmental organizations cannot earmark their funds at their own discretion, since they are obliged to observe the specifications of the approved state budget.

Besides the budgetary funds, the governmental organizations receive special funds as well. For example, 30% of fines for environmental damage may be transferred to the special account of the Ministry of Environment. This account may also be replenished through the funds paid by investors for state ecological expertise and environmental permits. However, these incomes are very low and unstable. The departments have no right to earmark these funds at their own discretion. They can use them only for the purposes defined by the law. The Ministry's special funds are used only for material incentives of regional services and payment of compensations to hired experts in the process of state expertise.

One of the key source of funding of the governmental organizations is a donor program, however these funds are directed to implementation of particular programs and projects. Very often, donor interests do not coincide with the primary requirements of the country or the branch, and less-priority projects are financed.

The non-governmental sector is basically funded through grant programs, advisory service and donations. Although, the non-governmental organizations have no guaranteed, constant incomes, still they manage to gain financing through constant fundraising, effective financial management and good communications, especially with donor organizations.

Availability, Dissemination and Management of Information – According to the Georgian legislation and the Orhus Convention, public information is available in the country. Each private or legal entity can obtain necessary information from the public authorities at special request. Most organizations have set up information and public relations departments, which are directly responsible for exchange and dissemination of information. There are no complicated administrative procedures to obtain information. Only separate bureaucrats can create particular obstacles.

Organizations obtain information from various local organizations and foreign correspondence, in a form of publications. Moreover, modern information technologies, such as the Internet, are gradually being introduced. However, the Internet is not available for wide strata. The availability of Internet is limited at the organizations as well, due to absence of intranets and insolvency to pay for the Internet services.

The information obtained by the organizations is classified into the types, and then it is divided in a centralized way and often lost in various offices. Some departments and scientific institutions have libraries and archives, where information is more or less systematized.

However, collection, classification and systematization of information is a serious problem as well. The electronic systems of databases, libraries and catalogues are not introduced so far.

Dissemination of information inside the organization is a serious problem as well. The issues of accountability of employees are not settled so far. It especially regards the dissemination of information about donor programs. The easiest way to obtain information inside the organization is private contacts.

Material-technical base – The material-technical base of the governmental institutions is poor and old, however the level of equipment differs among them. Those organizations, which have to deal with donor programs, are in the better condition. Still, the equipment and apparatus are not equally distributed inside the organizations and are basically concentrated in the structural units participating in the programs.

Transport, computers and laboratory equipment is a serious problem. The problem of telephone service is more or less settled. However, this problem is very acute in the regions, where mobile telephones are the only means for establishing contacts.

The non-governmental and private organizations, which have implemented several international projects, have a very good material-technical base with modern office, computer and communication equipment.

Compared with the governmental organizations and the non-governmental sector, the situation is extremely grave at the scientific-research and educational institutions. Just these institutions need modern technologies and apparatus. Some institutions (for example, the Institute for Mountain Forestry, Sakmitsproeqti) have no computers and modern office equipment at all, while others have very old and outdated equipment. The state budget and the academic grants are not enough for renewing the material-technical base, while donor programs do not work with scientific organizations. The state of the institutions often depends on private contacts of directors and economic skills. This can be confirmed after the example of the Institutes of Botany and Hydrometeorology.

4.3. Problems at an individual level (staff problems)

Most employees of the governmental organizations and academic institutions, who have sufficient standing and are involved in the issues of combating desertification, have enough education, qualification and experience in the relevant fields. However, this cannot be said about the young staff, due to low level of general education, low demand for technical and natural sciences and absence of system for selection of staff on a competition base. Although, the Soviet-old staff has enough knowledge and experience in relevant fields, they lack experience in strategic planning, management of financial, human and information resources and find it rather difficult to adapt to market conditions. While these skills are more developed among the youth.

Old staff basically does not have a good command of foreign language and find it difficult to use computers and modern information technologies. Therefore, they cannot obtain information about the world achievements and know-how, thus lagging behind the ongoing processes.

Age structure – Only one group is not dominating in the age structure of governmental organizations. However, age groups are not equally distributed inside the organization. Young staff is concentrated in those subdivisions, which are more open for international society, which are implementing donor programs or are more perspective in terms of international financing.

Basically young staff is working in the non-governmental sector. However, attraction of experienced technical staff is a serious problem here.

Aged staff is a great problem for the scientific-research and higher educational institutions. Average age of employees is 50 or above. It is very difficult to attract young staff due to low salaries and reduction of general interest in science.

Staff selection - the governmental organizations and scientific institutions have not elaborated qualification requirements (education, standing, experience, use of communication and information technologies, personal features: communicability, enthusiastic, etc.) to hire new staff or promote employees.

The governmental organizations do not usually make any vacancy announcements. Staff is often hired through personal contacts and patronage. The international projects always make vacancy announcements, however preference is given to the candidate recommended by a recipient agency. Previously, while selecting a candidate for international projects, special importance was drawn to good command of the foreign language. Now, on the background of growth of number of highly skilled specialists in foreign languages, more attention is attached to qualification and professional skills.

As for selection of national focal points for international environmental agreements, including the UN Convention to Combat Desertification, the candidate's experience in international relations, good knowledge of national politics, communicability, good command of foreign language and management skills are of crucial importance. Candidates are selected under the mentioned criteria.

Staff training/retraining – The country lacks permanent or long-term staff training/upgrading programs, especially in the field of environmental protection. Although some scientific-research and educational centers or associations are authorized, due to lack of funds they fail to work in this direction. For example, the Institute of Environmental Protection is authorized to train scientific staff, as well as to raise qualification of state officials and specialists. In particular, in 1997-98 years the Institute held the upgrading courses for the specialists of the environmental field. One of the issues was related to land degradation and soil pollution. Unfortunately, since 1999 such courses have never been held due to financial problems.

Basically donor programs are involved in training environmentalists. However, they implement only short-term measures of staff training, through holding seminars, short-term courses and educational tours. Only two or three programs have provided the creation of the permanent education centers; for example, with the support of the Swedish Agency for International Development, the Land Management Experts Training Center has been set up.

There are special upgrading courses abroad. For example, with the support of the German Government, the employees of the Ministry of Environment undergo 6-month and one-year educational courses, which aim at training the staff in environmental management. However, generally environmental management is taught during this course, instead of paying special attention to land resource management. Moreover, only two persons can undergo training per year. With the financial support of the governments of England, the U.S. and Israel, several persons are selected on a competition basis and sent to these countries to undergo training, including in the environmental field as well.

Punishment-encouragement mechanisms – Generally, the governmental organizations do not have any formal mechanisms of staff encouragement (pecuniary recompense, pensions, privileges, diplomas, prestigious business trips, etc.). Besides, due to a number of cultural and procedural difficulties, no official mechanisms of staff punishment are practically available (such as, a letter of reprimand, cutting of wages or dismissal). However, particular informal mechanisms of encouragement or punishment do work. Among the encouragement mechanisms, we can mark giving of more complicated tasks to the best employees, their sending to international business trips, etc. While the punishment methods envisage neglecting the employees, creation of information vacuum around them, etc. Due to absence of requirements and criteria for using punishment/encouragement mechanisms, the impartiality and legality is not practically observed in this process.

Noteworthy, that those methods of punishment, which are used in more developed countries, may not correspond with Georgia's reality. The wages at state-owned organizations are so low, that the employees practically work on a volunteer base. So, the attitude towards the volunteers should be more liberal.

Motivation - General motivation of the state employees is low due to small wages and absence of material encouragement. The motivation of the employees involved in governmental commissions, scientific-advisory councils or task force is also low due to absence of material compensation. However, the motivation among these employees differs by age-social groups and other factors.

Among the state employees, the interested motives are extremely low. Other factors are more dominant, such as stability, social status, social privileges, upgrading, education-experience, accessibility to international arena, contacts (possibility to find additional job), skill-inertia, self-realization, etc. The young staff are more interested in raising qualification, and gaining foothold on international arena, while more aged staff seek for stability at their working places, preservation of social status and self-realization.

Detailed analysis of staff management was conducted after the example of the Ministry of Environment within the frames of the project on building the Ministry's capacities. In particular, the following groups were distinguished by motivation:

- High-rank officials – salaries within the margins of the poverty line; they are maintained by relatives or are forced to seek for additional income (translations, paid expertise, consultations, etc.). The key motive: promotion.
- Persons engaged in the projects – salaries above the poverty line, that is an important motivation.
- Ordinary employees – salaries much below the poverty line. They are maintained by relatives and seek for additional incomes. The key motive of their working at the Ministry – willingness for self-realization.

Source: Assessment of the structure and work of the Georgian Ministry of Environmental Protection, critical analysis, the program on institutional building of the Ministry, UNDP, the Government of Netherlands, Tbilisi, 2002.

The dominant motivation of the employees of the scientific-research institutions is their devotion to the sector, as well as the means of self-realization, skill and inertia.

Accountability - As mentioned above, the current public management model of Georgia is bureaucratic and vertically built. Accordingly, lower echelons are accountable to higher echelons. The issues of accountability of higher echelons and their subordinates are not defined and settled so far.

Personal and professional contacts, communications, team work – the employees of the governmental organizations and academic institutions have personal and professional contacts with their colleagues at other departments and institutions. However, these links are not developed at a relevant level. Presently complex issues are solved on a narrow-departmental basis (see detailed discussion of the issue in chapter 4.3.). The links and communications inside the departments and institutions are not satisfactory in terms of exchange of information and working in thematic groups. Sectoral departments are acting independently. They neglect team activities at all.

Before the disintegration of the Soviet Union, the governmental organizations and academic institutions had close personal and professional links with their colleagues in Russia and other post-Soviet republics. These contacts, as well as exchange of experience, were constant. However, the contacts with capitalist countries were rather limited. After the disintegration of the Soviet Union, official links with the rest of the world were broken up. Currently, the official links with foreign countries are gradually being restored and expanded, on the background of introduction of modern information and communication technologies, such as fax, Internet, electronic mail, etc. The links with foreign countries are weaker in the scientific sector compared with the governmental and non-governmental sectors.

5.0. Measures on capacity building in the field of combating desertification and land degradation

5.1. International support

For past years, with the support of international donors and financial organizations, various measures were financed in the field of environmental protection, including management and protection of land resources. Among the most active donor organizations acting in the country there are UNDP, GEF, WB, UNEP, USAID, EU/TACIS, KfW, etc. A number of local or regional foundations, such as the Eurasia Foundation, REC-Caucasus, and the Open Society – Georgia Foundation also finance and coordinate particular measures.

The international assistance rendered directly to the measures on combating desertification/land degradation is insignificant and drags behind the assistance rendered to other environmental fields or issues (such as conservation of biodiversity and water resources). This assistance is limited by supporting the enabling activities financed by the Secretariat of the UN Convention to Combat Desertification. The total volume of this assistance does not exceed USD 50 000. While the share of the Global Environment Facility (GEF) is greatest in funding the measures on biodiversity conservation and climate change, its share is insignificant in combating desertification and land degradation. Noteworthy, that within past years this field is named among the priorities of the GEF. Hence, Georgia should enjoy this circumstance, especially when we have to deal with common issues of land degradation, biodiversity conservation and climate change.

Among the enabling activities financed within the frames of the UN Convention to Combat Desertification, we should outline the elaboration of the National Action Plan on Combating Desertification, as well as the measures on strengthening organizational capacities of the national

focal point and preparation of two national reports. The campaign designated to raise public awareness was financed as well. The mentioned campaign envisaged:

- Publishing a series of articles in central and local newspapers;
- Shooting a documentary film on desertification and its broadcasting on local and central television;
- Dissemination of brochures in over 20 settlements of the affected regions.

Moreover, with the support of UNDP/UNSO, in 1999 a national focal point created a network of governmental, non-governmental and research organizations in order to exchange information and experience.

It is worth noting that all the above-mentioned measures aimed at capacity building at a national level. Practically no measures have been implemented to strengthen the affected regions and to involve the local population in meeting the Convention guidelines. Neither the neighbor countries have strengthened their capacities in the direction of joint settlement of the problem and boosting the transboundary cooperation.

Generally, the capacities were built only for a short-term purpose. No sustainable potential was created, since the issues of preservation or further growth of existing potential were not taken into account.

The capacities in the field of combating desertification/land degradation need to be built in many directions. For example, it is very difficult to set long-term objectives on combating desertification/land degradation and to develop relevant long-term integrated strategies. The National Action Plan on Combating Desertification, which has been developed with the support of the UNCCD Secretariat, is a five-year program. Moreover, the potential of implementation of the existing plans and strategies is extremely weak due to the unadjusted state funding and management system.

It is still very problematic to exchange information among various organizations or get fresh information about land resources. The network of organizations created on initiative of the national focal point, practically has no functions due to absence of financial resources, lack of communications with the connected organizations and lack of interest from the member organizations. Five years after creating the network, information needs to be renewed and the network to be expanded, a strategy for the network's development is to be elaborated and the resources necessary for its functioning need to be revealed. The network expansion is also possible by involvement of other Caucasian countries in it.

Another important problem is low public awareness. Short-term information campaigns, which are conducted within particular projects, are ineffective. It is necessary to develop a long-term strategy of education oriented to raising the awareness of farmers and agriculturists. Along with various information campaigns, this strategy will include the experimental and demonstrative projects. Local non-governmental organizations and local communities, as well as TV and radio companies should conduct the information campaigns. It is necessary to elaborate the relevant institutional and financial mechanisms of the strategy, as well as to attract necessary funds. Moreover, the educational environmental information does exist in the foreign language; simply this information needs to be translated and disseminated among the population.

Absence of uniform renewable database and general indicators is still a problem. Just therefore, the national reports to be further submitted to the UNCCD Secretariat do not contain quantitative parameters, with the help of which it would be possible to speak about the achieved progress and the existing tendencies.

Besides the UNCCD-funded measures, various donors are implementing a number of investment, technical aid, educational or demonstrative projects, which do not regard the field of combating desertification/land degradation directly, however finally serve the strengthening of the institutions involved in combating desertification or the eradication of the factors causing desertification and their negative effects. These measures are being implemented at regional, national and local levels.

Besides the above-mentioned capacity building measures, a number of infrastructure programs/projects are underway in various sectors of Georgia through the support of international donors. Among them there are IDA-funded ***Irrigation and Drainage Consumer Associations Development Project***, which aims at rehabilitating the irrigation and drainage infrastructure throughout Georgia, as well as at preparing the ground for establishment of melioration associations. The first phase of the project will last for 5 years. Its total cost is USD 32,5 million. The project will help improve the condition of meliorated lands, increase food production, overcome poverty among the rural population, mobilize farmers, develop private property and introduce paid water use. However, there are certain risks that may hamper the project realization. The primary risk is connected with neglecting the commitments undertaken by the government, particularly, neglecting its role in project funding. Moreover, taking into account the current economic situation in the country, it is unclear whether the farmers will manage to develop proprietors' skills, to maintain their systems effectively and become solvent.

The IDA/GEF-funded ***Agricultural Research, Extension and Training Project (ARET)*** is one more large-scale agricultural project, which aims at demonstrating, teaching and spreading the results of agricultural researches and ecologically safe technologies among the farmers. Its total cost is USD 12,4 million, a term of duration – 2000-2005 years. The project covers entire Georgia. It gives a possibility to introduce and spread scientific-technical achievements and leading, ecologically safe technologies on greater territories and farms. The project has significantly promoted the intensification of agricultural production, growth of agricultural goods and stability of farmers' incomes on the environment, including land resources, on the background of reduction of environmental impact. The development of other activities in rural regions (such as processing, trade, agrotourism, etc.), will foster additional employment of the population, increase their incomes and promote the optimization of the agricultural research system, as well as establish cooperation between the scientific workers and farmers around particular tasks.

Since 1997 the Georgian government has been implementing the WB-funded ***multi-component project on agricultural development***. The supreme goal of the project is to promote the economic development of rural regions through promoting the food processing enterprises, granting credits to rural enterprises, establishing and developing farmer credit unions, and assisting local entrepreneurs to gain access to foreign markets. One more project component envisages conducting of land cadastre on the experimental territories in the regions of Mtskheta and Gardabani in order to introduce the land cadastre and land registration system.

Since 2001 the government of Georgia has been implementing the IFAD-funded ***Mountain and High Mountain Regions Agricultural Development Program***. The program aims at raising standard of living of the population in mountain regions through increasing their incomes, as well as at providing the protection of natural resources and environment in these regions. The project duration is 2001-2007 years. Its cost is SDR 6 100 000 and USD 400 000. The supreme goal of the project is to involve local population in revealing the needs of their regions, to set and implement the priorities, to establish credit unions, to develop cattle breeding, to produce food and improve pastures, to process cattle products and introduce sustainable and profitable

agricultural practice in order to grant loans to be further invested in other activities, to restore irrigation systems, to improve social infrastructure, and finally to conduct environmental experiments in the settlements with direct participation of local population (reforestation, control erosion and melioration on public and private lands).

One more important regional project has been implemented by CARE-International in the Caucasus within 2001-2002 – ***The Project on Rural Economic Revival in Azerbaijan, Georgia and Armenia***. In Georgia the project was implemented in southern Georgia (Akhaltsikhe, Aspindza and Adigeni). It aimed at improving the social-economic state of the local population, through raising their technical knowledge, providing farmers with household goods and improving processing technologies.

Besides the implemented or ongoing relatively long-term agricultural projects, the measures on humanitarian aid were also financed in Georgia with the purpose of improving the social-economic state of the drought-affected population in 2001-2002 years. Although these measures were oriented to rendering single aid to the drought-affected population, and envisaged only short-term objectives of liquidation of the drought consequences, they definitely served the capacity building of the local population, through raising their readiness for natural calamities, their mobilization, cooperation of public organizations, activation of women's work and rehabilitation of agriculture.

The land reform, registration and cadastre measures ongoing in Georgia with the support GTZ, WB, USAID, UNDP and KfW are very important for development and rational use of land market. These measures aim at promoting land reform, conducting land registration and cadastre and strengthening the land management potential. Land registration and cadastre projects are connected with particular risks. In particular, the abundance of donors and their autonomous activities (use of various methods, technologies and staff) threaten with establishing incompatible cadastre and registration systems in Georgia, which will contain the information of different amount, accuracy and parameters. In order to avoid this risk, the Coordinating Council of Donors was set up at the State Land Management Department.

The Project on Building the Capacities of the Ministry of Environment and Natural Resources was the largest project implemented in the environmental field within past years. The project, which was supported by UNDP and the Dutch Government, lasted within 1999-2002 years. Its total cost was USD 600 000. The project aimed to strengthen the management and economic potential of the Ministry, as well as to support the Ministry's activities in coordinating the elaboration of national reports on sustainable development by various governmental and non-governmental organizations. The project envisaged both improving the Ministry's material-technical base and strengthening its potential in terms of performing several key functions of management (interdepartmental coordination, policy elaboration, environmental monitoring, information management, law enforcement, elaboration of normative base, etc.).

It is worth noting that the project was implemented by own forces of the Ministry. A share of international experts was very small. This enabled the employees to raise their knowledge and gain more experience. Noteworthy, that huge attention was paid to effective outcomes, instead of simple teaching and passing of knowledge. Through implementation of these measures, the Ministry's experts gained practical experience and knowledge.

Due to lack of finances and time constraints, the project failed to orient to long-term objectives and create a sustainable potential. It would be better if the follow-up activities were emphasized and the mechanisms of preservation or further increase of the Ministry's potential were defined.

Within past years Georgia is implementing various projects in the field of management and protection of natural resources. These projects are very important in terms of combating desertification or land degradation.

Out of the projects implemented in the field of biodiversity conservation, we should mark *the program on conservation of arid and semi-arid ecosystems in Georgia*. The program was implemented by NACRES with the support of UNDP/GEF in 1999-2002. The program aimed at conservation of the most vulnerable arid and semi-arid ecosystems through sustainable use of natural resources: 1) Definition of alternative methods of land use in order to promote conservation of ecosystems and species; 2) Effective management of transboundary ecosystems with active participation of local land users; 3) Raising environmental awareness of the population and exchange of information.

Within the frames of the project, the detailed researches of arid and semi-arid ecosystems, including the social-economic and legal-institutional aspects, were conducted; a wide database was created; a management plan of arid and semi-arid ecosystems was developed on a base of the researches; public awareness, particularly that of local communities and non-governmental organizations, was raised; transboundary cooperation in researching arid and semi-arid ecosystems was strengthened.

The implementation of pilot projects is also worth noting. In particular, several hunting economies were established and the provision on biodiversity monitoring was developed. Moreover, the establishment of a coalition of several local and national non-governmental organizations working over various aspects of desertification was encouraged.

With the support of the Global Environment Facility (GEF), the Project on Development of Protected Areas in Georgia is being implemented. The aim of the project is to elaborate management plans for three protected areas in eastern Georgia (Lagodekhi, Vashlovani and Tusheti), to develop infrastructure necessary for their effective management and to strengthen the State Department for Reserves and Hunting Areas in terms of improving skills for protected areas management.

The project is very important in terms of combating desertification/land degradation, since the selected protected areas are located adjacent to the regions most vulnerable to desertification and perform a role of the so-called ecological shield. Their establishment, creation of relevant infrastructure and management potential will promote the effective conservation of the mentioned areas and hamper the spread of desertification/land degradation processes on wider territories. Moreover, the project envisages strengthening of the planning and management skills of the Protected Areas Service. This will improve the vision of the Service in terms of protected areas development and enable it to use multi-component criteria, including the criterion on combating desertification, while establishing the protected areas.

With the support of the US Agency for International Development (USAID), the country has been implementing the South Caucasus Water Resources Management Project since 2000. It aims at improving water resources management in the Mtkvari-Araksi basin under the principles of river basins and resources integrated management. The project budget is USD 4 million.

The South Caucasus Water Resources Management Project is very important in terms of combating desertification/land degradation since it has fostered the improvement of the national

potential²⁵ of collection, handling, analysis, publication and exchange of hydrometeorological data. It has also promoted the development of the water resources integrated planning in the Mtkvari River affluent basins, which are vulnerable to desertification, and boosted the rapprochement of neighbor nations.

Since the South Caucasus project pursued frugal goals, particularly, demonstration of water resources integrated management and initiation of regional cooperation, it is necessary to prolong them and set long-term sustainable measures. Particular work should be done in the direction of setting up river basin councils, implementing integrated plans and establishing regional cooperation. Special attention should be paid not only to management of water resources, but also to complex management of natural resources within the boundaries of river basins. It is necessary to coordinate the mentioned plans with other plans on environmental protection and natural resources management at local and national levels.

A multi-component *project on the Forestry Development* is also very important in terms of combating desertification/land degradation. The project aims to assist Georgia in getting maximal economic and ecological profit from the forests on a base of the sustainable development principles. The project will last within 2002-2008 years. It was funded through the WB credit worth USD 15.7 million granted to the Government of Georgia.

In terms of combating desertification/land degradation, the component of rehabilitation of degraded forests is of crucial importance. This measure is planned to be implemented in 8 regions around Tbilisi (Bolnisi, Dusheti, Dmanisi, Caspi, Marneuli, Mtskheta, Sagarejo and Samgori), including the capital city itself. The issue of soil erosion is very acute in all these regions. 3100 ha of eroded lands will be afforested, while 5600 ha of degraded forests will be rehabilitated. Four years after the launch of the project this parameter will reach 2100 ha of afforested areas per year. Moreover, the improvement of seed production and processing is envisaged as well.

Besides important investment measures on combating desertification/land degradation, the project envisages the technical aid components as well, such as perfection and accomplishment of a legislative-normative base, elaboration of a long-term strategy on forestry development, development of plans on land use and integrated management of forests, forest inventory through using modern methods and technologies, creation of computerized information systems, optimization of the forest department structure, its technical equipment, staff training-retraining program, etc. All these measures will finally promote conservation and sustainable use of forests.

The project sustainability and risk minimization will be ensured on the background of political-economic stability and economic growth in Georgia, as well as in case of the will and capacity of the Georgian government to support the project and solve the necessary strategic issues. Probably, we will come across particular opposition by officials in the process of restructuring the Forestry Department.

²⁵ Particularly, two hydrological posts were restored on the Mashavera River and one hydrological post on the Alazani River, as well the hydrometeorological stations in Telavi and Bolnisi. Moreover, the central water quality laboratory was equipped with express-analysis apparatus

5.2. Experience gained from implementation of measures on capacity development

Within past years Georgia has gained particular experience in the field of combating desertification/land degradation or adjacent fields through implementing various donor-funded projects. Noteworthy that the quality of success of the implemented measures greatly depends on the potential existing at institutional and individual levels.

It is difficult to judge how the international support has influenced the national capacities on combating desertification, since this issue has not been studied seriously. Our assessment is based on the results of various programs and projects, as well as on the information given in the regional report on capacity assessment for eastern Europe and Central Asia²⁶. As a result of the analysis, we came to the following conclusions:

- The success of any program/project and the sustainability of the potential created within its frames significantly depends on the political and social-economic stability in the country, as well as on the efficiency of the existing political-economic environment. Frequent reshuffles of the government and governmental structures, political conflicts, economic crisis and other factors make the situation unpredictable, hamper any initiatives and weaken the country's potential to solve the strategic issues. These factors also cause the outflow of highly skilled staff and the loss of the existing potential;
- The success of the projects significantly depends on political support of the country and meeting of commitments undertaken by the government. Noteworthy that the in-kind contribution of the government to the international projects, often provides weaker obligation, than a financial mechanism of co-financing. However, under conditions of budgetary backlog, the country fails to assume and fulfill this obligation. Therefore, joint efforts should be directed towards development of Georgia's financial capacities.
- Capacity building should be realized equally at systemic, organizational and staff levels, instead of being strictly oriented to "the center". The capacity building should also take place in the regions, especially in those vulnerable to desertification.
- The capacity development measures are basically implemented in Georgia within the frames of short-term (1-2 year) projects. This period is not enough for creating sustainable potential. Moreover, very often the projects are not followed by consequent steps and the created potential is lost. And finally, as a result of focusing on separate projects, we may lose sight of the existing priorities, since the projects are implemented inconsequently (without taking into account the existing strategies or action plans). Creation of a sustainable potential needs more time and activities at a systemic level, for example, development of institutional and individual capacities with the purpose of strategic planning, management, project identification, preparation and implementation, in order to create the capacities for independent management of these processes.

Apparently, capacity development through implementation of projects will remain a leading approach in the near future, since the project implementation promotes achievement of particular goals in a small time. Moreover, it is easy to administer and control separate projects. However, we should try to provide program fulfillment of projects, in accordance with the existing strategies, state programs, plans or defined priorities.

- In order to achieve successful implementation of measures, it is necessary to involve the interested parties in the process and to develop their capacities, so that to provide independent implementation of measures upon the completion of the project/program.

²⁶ GEF-UNDP Strategic Partnership, Capacity Development Initiative, Country Capacity Needs and Priorities, Regional Report for Eastern Europe and Central Asia, 2000.

The participation of the private sector in combating desertification/land degradation is especially weak. So, particular efforts should be directed to making this sector more active.

- It is necessary to improve coordination between various projects and donors, in order to avoid repetitions and provide efficient and effective use of resources. It is especially necessary to strengthen cooperation with the projects and programs ongoing within the frames of the Framework Conventions on Biodiversity and Climate Change in order to reduce costs and achieve synergistic effect. Therefore, managers and donors of separate projects should try to make their activities transparent, raise a level of communication and accountability and involve the interested parties in the ongoing processes;
- Balanced use of international experience and local knowledge is necessary as well. On the one hand, the country needs to introduce know-how and modern technologies in a number of fields and sectors. On the other, in any case it is necessary to have a good knowledge of local conditions. Therefore, both foreign and local experts should be used effectively to implement international projects and programs. It should be noted that local human resources are much cheaper than foreign. Moreover, Georgia has a high intellectual, scientific and technical potential, which is to be used as well. Bad command of foreign languages and lack of knowledge in modern information technologies hamper the participation of local experts in international projects. Moreover, they lack management skills as well. So, this barrier is to be removed as well.
- Bilateral donors and international organizations for development often lack information about the peculiarities of the country. Moreover, they have very centralized and harsh administrative structures and difficult procedures, that makes their activities inflexible, less effective and non-adaptable to local conditions. The majority of donors sets strict administrative requirements for the projects/organizations and puts them within particular margins, that often hampers the course of the projects.
- Lack of project implementation indicators and monitoring procedures complicates the assessment of results and developed capacities. Therefore, while preparing each project we should develop the project assessment indicators, as well as the quality control and supervision procedures.
- Each attempt of capacity building is doomed for failure in the state sector without raising the salaries and changing the staff management system. Otherwise, highly skilled staff will move to the private sector and simply leave the country.
- School and higher educational programs also need to be revised. It is necessary to introduce environmental disciplines, such as environmental management and policy, environmental economy, environmental law, etc. Moreover, permanent programs on staff training should be implemented in the environmental field.
- Public awareness raising campaigns should not have an episodic character. They should be realized systematically. A long-term strategy/program on raising environmental awareness should be developed.
- Absence/lack of modern reliable data on land degradation hampers strategic planning and decision making. Therefore, it is necessary to set up monitoring services and create a uniform information system – database, which will be available for various consumers.
- Regional and international cooperation around the land degradation issues is very weak. Particular efforts should be directed towards strengthening the regional network, development of regional strategies and creation of coordinating mechanisms.

6.0. Key priorities and recommendations

While analyzing the capacities of implementation of the Convention to Combat Desertification at systemic, institutional and individual levels, we came to a conclusion that Georgia has a particular potential in this regard, which in some cases needs growth, in some cases – effective use or distribution among various sectors or institutions. However, regarding a number of issues the capacities do not exist at all and it is necessary to create them. The existing potential is basically concentrated in the center and practically is not developed in the regions.

The conducted analysis helped us define the following key priorities and give recommendations:

Systemic Level

Political framework

- Priority should be given to the environmental protection, including desertification/land degradation, since land conservation is of vital importance and its ignorance may lead to irreversible, negative consequences;
- The criteria for assessment of priorities should be defined. Up to present the priorities were selected subjectively. This regards almost all the ecological problems existing in the country. This problem is to be settled as soon as possible .
- The issue of financing the measures on combating desertification/land degradation should be settled as well. Without this issue, the problem will never be settled.
- The issues of land degradation and desertification should be granted a real status. It will become possible only after the above-mentioned problems are settled;
- The feasibility study should be conducted permanently to avoid possible mistakes;
- Various organizations should perfect their planning. This should provide effective cooperation among them. This is a very serious problem, which needs to be settled as well.
- It is very important to achieve the social-economic development of desertification issues and their integration into sectoral strategies. This is conditioned by the fact that each ecological problem, including desertification and land degradation one, should be controlled by social-economic effects;
- Participation of sectoral government and population in state planning is necessary. This means that two things are necessary – political will and population’s active interest and participation;
- Criteria for availability of resources should become more perfect. Ignorance of this problem led to uncontrolled exploitation of resources and their destruction;
- A potential for preparation of long-term plans and strategies should be strengthened. Such potential really exists, simply it needs effective management on a base of modern realities;
- It is desirable to provide the potential of planning and implementation of plans in the regions. This is directly connected with the fulfillment of the above-mentioned conditions.

Legislative-regulation framework and economic incentives

- It is necessary to perfect legislation in terms of regulation of land degradation and desertification issues. This is a very important problem and it should be adopted as a separate legislative document. Practice shows that dispersing of issues in various legislative documents is less effective;
- Acting laws and their provisions should be itemized, since they are less effective in the current form;
- Normative documents should be developed and enforced as soon as possible.
- It is necessary to elaborate and perfect the legislative-normative base in the field of legal responsibility, compensation of damage, control and supervision, regulation of land resources monitoring, etc.
- It is necessary to develop legal, financial and institutional mechanisms for implementation of laws. Otherwise, the laws will become inactive;
- The hierarchical institutional structure and distribution of powers should be perfected;
- Law enforcement should be strengthened. Otherwise, the legislative-regulation framework will remain formal and less effective;
- It is necessary to regulate taxes on land resources management and protection, as well as to perfect normative base.

Financial, human and information resources

The following measures are to be implemented:

- To finance the measures on combating desertification/land degradation in the state, private and public sectors, to increase the level of financing through effective distribution and management;
- To attract international donors to finance the measures on combating desertification/land degradation, as well as to search for alternative sources of financing (financing by the private sector, banking credits, public funds). This is of vital importance, since the current economic situation in the country excludes attraction of own finances in the near future;
- To set up target environmental and land funds to finance the measures on combating desertification/land degradation;
- To increase knowledge and managerial skills of professional staff; to restore the Institute for Training and Retraining;
- To provide the preparation of a base for use of scientific-technical potential, staff reshuffling, training of highly skilled staff;
- To create scientific-technical and management potential at a local level;
- To develop capacities on monitoring land and land resources, to create a uniform database.

Interlinks and processes

- To strengthen coordination and cooperation in the field of combating desertification/land degradation. This is a necessary condition for effective use of existing potential;
- To provide active participation of local government and self-government bodies, as well as the population, in the policy definition, planning and management processes;
- To provide raising of environmental awareness regarding the elaboration and implementation of long-term programs;
- To provide bilateral and regional cooperation in the field of combating desertification/land degradation;
- To create sustainable institutional mechanisms (such as a coordinating body) in order to solve the issues over combating desertification/land degradation;
- To develop regional strategy on combating desertification/land degradation and to create coordinating mechanisms (such as joint commissions).

Organizational level

- To adjust the competences of the organizations involved in combating desertification/land degradation, to assign their liabilities and functions. This problem is directly connected with establishing cooperation and coordination among the organizations;
- To eradicate bureaucracy and low efficiency of the management system;
- To strengthen strategic planning skills;
- To provide rational planning of activities taking into account the availability of resources and priority of tasks;
- To assess future tasks in accordance with quantitative and qualitative parameters;
- To provide staff distribution on a base of real requirements;
- To provide free earmarking and distribution of financial resources as a result of revision of particular restrictions defined by official rules and procedures;
- To concentrate, classify and systematize information through introducing electronic databases, libraries and catalogues;
- To provide dissemination of information among the organizations;
- To strengthen material-technical base, especially in the regions and at the scientific-academic institutions.

Individual level

- To renew staff, especially in the scientific sector;
- To provide staff recruitment through competition and under staff selection criteria;
- To perfect the punishment-encouragement mechanisms;
- To develop permanent programs on staff training/retraining;
- To raise general motivation of the work of government employees;
- To introduce accountability at top-down and horizontal levels;
- To strengthen personal and professional contacts;
- To introduce teamwork practice.

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