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# **NATURAL DISASTER RISK MANAGEMENT AND DISASTER INDUCED MIGRATION IN GEORGIA**

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Organization for Security and  
Co-operation in Europe  
**Mission to Georgia**

Researched by Green Alternative

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Research conducted by: Nana Gogitidze, Mamuka Ivaniashvili, Manana Simonishvili

Contributed by: Kety Gujaraidze, Nino Davitaia, Tamar Gaprindashvili, Maia Moseshvili and Vajha Khachidze

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# **Natural Disaster Risk Management and Disaster Induced Migration in Georgia**

**November, 2008**

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## Introduction

### ***The aim and the scope of the research***

Purpose of present research is consideration of national potential of management of natural disaster risks and migration induced by them. Namely, the survey considers policy of management of natural disaster risks and those institutional and financial challenges, which hinder efficient management of natural disaster risks in Georgia. The report also covers policy of management of migration induced by the above referred natural disasters and political, institutional, legal and financial aspects related to it.

The research was conducted on the basis of analysis of political, legal and institutional framework of management of natural disasters and geological and hydro-meteorological aspects related to it. The survey does not cover issues related to management of biological disasters. As to the analysis of financial aspects of management of natural disaster risks and migration induced by them, activities implemented in given direction do not claim to be full-fledged and adequate analysis of the situation, as it has been extremely difficult to obtain specific data, necessary for conducting of such analysis. Thus, the authors of the survey did not have access to all annual reports of relevant agencies. In the annual budgets, as well as budget implementation reports was not provided data on losses, caused by natural disasters during the year. Funding for prevention of natural disasters and measures, or targeted towards mitigation of such damage, as well as funding for activities, targeted towards improvement of social status of victims of military activities and accompanying ethnical cleansing (IDPs and refugees) and so called "ecomigrants" is not delimited clearly. Quite often it is not possible on the basis of budgetary data to trace funding for subordinated structures of certain ministries, which are responsible for prevention and response to natural disasters. Consequently, the survey was conducted only on the basis of the data, which was available for the purpose of this study.

### ***The methodology***

Within the framework of the survey was identified and analyzed regulatory framework, defining policy of management of natural disaster risks and migration induced by them. We also obtained relevant information from the National Agency under the Ministry of Environmental Protection and Natural Resources, the Department of Climate Change of the same Ministry and the Department of Emergency Management of the Ministry of Interior. We have analyzed the state budget data and reports for the period of 2004-2007, as well as available reports of the Ministry of Refugees, IDPs and Resettlement, the Ministry of Environmental Protection and Natural Resources, the Ministry of Economy, the Ministry of Finances, the Ministry of Health and Labor and Social Protection on measures, implemented in the period of 2004-2007. We have also considered a whole range of documents, including reports of international organizations and documents, elaborated in cooperation with experts, pertaining to the sphere of natural disasters and migration induced by them (so called ecomigration).

Apart from desk research field visits were also conducted to those regions of Georgia (Kvemo Kartli and Kakheti), where population affected by natural disasters, taking place during the last two decades has resettled. Consequently, the part of the research, dedicated to issues of migration is partially based on information, obtained through interviewing of the above referred migrants.

### ***The structure of the report***

The first chapter of the report provides overview of the concept of disaster risk management and interpretation of terminology, used throughout of the report. The second chapter of the report dwells upon the trends and patterns of natural disasters in Georgia. Chapter 3 provides analysis of current policy of natural disaster risk management, chapter 4 covers institutional system and chapter 5 contains analysis and description of current legislative framework. Chapter 6 is dedicated to analysis of financial aspects of natural disaster risk management, while chapter 7 provides brief overview of experience of international cooperation in the sphere of natural disaster risk management. Chapter 8 covers policy of management of migration, caused by natural disasters and consideration of political, institutional, financial and social-economic aspects of migration. The last chapter of the report contains conclusions and recommendations.

## **1. Disaster Risk Management Concept**

The world has witnessed an alarming increase in the frequency and severity of disasters: 240 million people, on average, were affected by natural disasters world-wide each year between 2000 and 2005. During each of these six years, these disasters claimed an average of 80,000 lives and caused damage of an estimated USD 80 billion. Disaster losses are rising throughout the world due to a number of factors that include:<sup>1</sup>

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<sup>1</sup> Baas, S., Selvaraju, R., De Pryck J., Battista F., 2008, *Disaster Risk Management System Analysis*; Environment, Climate Change and Bioneregy Division, Food and Agriculture Organization of the United Nations (FAO), Rome, January 2008

- more frequent extreme weather events associated with increasing climate variability and change;
- agricultural production systems that increase risk (e.g. unsustainable pasture/livestock or bio-fuel production on land that was formerly and more appropriately covered in forest);
- population growth combined with demographic change and movements leading, for instance, to unplanned urbanization, growing demand for food, industrial goods and services; and
- increasing pressure on (and over-exploitation of) natural resources.

The recent studies show that development and disaster is closely interlinked. Developing countries and poor people are more vulnerable to the effects of natural hazards and suffer the greatest losses in terms of lives and livelihoods. Disasters may setback social investments aiming to ameliorate poverty and hunger, provide access to education, health services, safe housing, drinking water and sanitation, or to protect the environment as well as the economic investments that provide employment and income. The economic losses resulted from disasters may even exceed the annual gross domestic product. Research shows that poor people are more likely to occupy dangerous locations, such as flood plains, river banks, steep slopes, and reclaimed land. Poor communities are also forced to use inadequate materials for infrastructure and housing, which further add to their vulnerability. Social factors that may enhance vulnerability include aspects related to education, health, social security and human rights and war.<sup>2</sup>

While better emergency response systems will save lives and properties, many of these losses can be avoided – or reduced – if appropriate policies and programmes are instituted to address the root causes and set in place mitigation, preparedness and response mechanisms that are effectively integrated into overall development planning. These issues were called into public scrutiny and exhaustively debated during the World Conference on Disaster Reduction (WCDR) in Kobe, Hyogo, Japan (2005). Governments, UN agencies and Civil Society Organizations present in Kobe insisted on the need to move from theory to concrete action in disaster risk reduction. Strongly endorsing the Conference’s recommendations, the UN General Assembly Resolution (March 2005) on “International Cooperation on Humanitarian Assistance in the Field of Natural Disasters, from Relief to Development” called upon all States to implement the Hyogo Framework for Action (HFA), and requested the international community to continue assisting developing countries in their efforts to adopt appropriate measures to mitigate the effects of natural disasters, and to integrate disaster risk reduction (DRR) strategies into development planning. This represents a paradigm shift from a heavy preoccupation with reactive emergency relief (which nonetheless remains important) to pro-active DRR before a hazard can turn into a disaster.<sup>3</sup>

The “Hyogo Declaration/Framework for action” sets the following priorities:

- Ensure that disaster risk is a national and local priority with a strong institutional basis for implementation.
- Identify, assess and monitor disaster risks and early warning.
- Use knowledge, innovation and education to build culture of safety and resilience at all levels.
- Reduce the underlying risk factors.
- Strengthen disaster preparedness for effective response at all levels.

The second of the three strategic goals of the HFA is “the development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards”. In order to build institutions that are better prepared for, resilient to and able to cope with hazards, it is useful to enrich the concept and practice of disaster risk reduction (DRR) used in the HFA which focuses on pre-disaster stages (prevention, mitigation and preparedness) by placing them within the broader concept and practice of disaster risk management (DRM) which combines (through a management perspective) prevention, mitigation and preparedness with response. Below definition of those two concepts is presented:<sup>4</sup>

**Disaster Risk Reduction (DRR)** refers to the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.

**Disaster Risk Management (DRM)** includes but goes beyond DRR by adding a management perspective that combines prevention, mitigation and preparedness with response. The term Disaster Risk Management (DRM) is used when referring to legal, institutional and policy frameworks and administrative mechanisms and procedures related to the management of both risk (*ex ante*) and disasters (*ex post*).

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<sup>2</sup> Sorensen, J., Vedeld, T, Huag., M., 2006, *Natural Hazards and Disasters: Drawing on the International Experiences from Disaster Reduction in Developing Countries*; Norwegian Institute for Urban and Regional Research (NIBR), January 2006

<sup>3</sup> Baas, S., et al., 2008

<sup>4</sup> International Strategy for Disaster Reduction, ISDR, <http://www.unisdr.org/>

### Elements of Disaster Risk Management (DRM) framework

#### Pre-disaster

**Ongoing development activities** – Ongoing DRM aspects in development programmes

**Risk assessment** – Diagnostic process to identify the risks that a community faces

**Prevention** - Activities to avoid the adverse impact of hazards

**Mitigation** – Structural/non-structural measures undertaken to limit the adverse impact

**Preparedness** - Activities and measures taken in advance to ensure effective response

**Early warning** - Provision of timely and effective information to avoid or reduce risk

#### Disaster response

**Evacuation** - temporary mass departure of people and property from threatened locations

**Saving people and livelihoods** – Protection of people and livelihoods during emergency

**Immediate assistance** – Provision of assistance during or immediately after disaster

**Assessing damage and loss** – Information about impact on assets and loss to production

#### Post-disaster

**Ongoing assistance** – Continued assistance until a certain level of recovery

**Recovery** - Actions taken after a disaster with a view to restoring infrastructure and services

**Reconstruction** - Actions taken after a disaster to ensure resettlement/relocation

**Economic & social recovery** – Measures taken to normalise the economy and societal living

**Ongoing development activities** – Continued actions of development programmes

**Risk assessment** - Diagnostic process to identify new risks that communities may again face

*Source: Disaster Risk Management System Analysis, 2008*

In the box below some of the definitions from ISDR Terminology, relevant to this research, are presented.

#### Basic Definitions

**Hazard:** A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

**Natural hazards:** Natural processes or phenomena occurring in the biosphere that may constitute a damaging event. Natural hazards can be classified according to their geological (earthquake, tsunamis, volcanic activity), hydro-meteorological (floods, tropical storms, drought) or biological (epidemic diseases) origin. Hazards can be induced by human processes (climate change, fire, mining of non-renewable resources, environmental degradation, and technological hazards.) Hazardous events can vary in magnitude or intensity, frequency, duration, area of extent, speed of onset, spatial dispersion and temporal spacing. Hazards can be single, sequential or combined in their origin and effects.

**Disaster:** A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources. A disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.

**Risk:** The probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions.

**Vulnerability:** The conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards.

## 2. Natural Disaster Trends in Georgia

The territory of Georgia is located on the border of subtropical and temperate climate zones and belongs to the climatic zone of the Mediterranean Sea, although the typical characteristics of this zone are substantially modified by local mountainous relief and the climate of Georgia is characterized by great diversity. Out of 14 climatic zones on the territory of Georgia are represented 11 climatic zones, which is provided by merging of local climate-formative factors and wide-scale circulatory processes.<sup>5</sup>

Due to complicated mountainous relief and climatic peculiarities Georgia belongs to one of the most complicated regions from the point of the scale of development of hazardous natural disaster processes, temporal recurrence and the scope of negative impact on population and engineering-technical facilities.

<sup>5</sup> Framework Convention on Climate Change, 2007 Results of the Second National Communication, Tbilisi, 2008

## 2.1 Geologic disasters<sup>6</sup>

To strong impact of natural geological disasters (causing catastrophic results) are periodically subject thousands of settled areas, agricultural lands, roads, gas and oil pipelines, towers of medium-voltage power transmission lines, hydro-technical and amelioration facilities, mountain tourism and recreation facilities and etc. Within the high risk zone of natural disasters are located almost all landscape-geographical zones – starting from the Black Sea region, ending with high-mountainous-nival zone, where geological situation is extremely complicated and reaches critical point. Negative socio-economic, demographic and ecological impact, caused by mudflows, landslide-gravitational and erosive occurrences, flooding, washing-off of the sea and water reservoir banks, avalanches, glacial slides and etc, are affecting almost all spheres of human activities.

Situation is especially grave in mountainous regions, where in conditions of extremely activated natural disasters it becomes necessary to resettle population from their historical place of residence and resettle it to other regions. This causes desertion of large number of villages and abandoning of agricultural lands. The fact, that causes serious concern is accompanying death toll. Only in the period from 1987 up to present over 600 persons died due to natural disasters, while during last 35 years number of victims is more than 1000. In the same period around 31341 households had to abandon their places of residence and resettle.<sup>7</sup> Even on the background of activation of natural disasters overall economic losses amount to tenth of millions of dollars, while in the event of extreme development of natural occurrences losses exceed hundreds of millions of dollars. Thus, in 1967-1978 in Western Georgia only as a result of active landslide processes around 30 thousand hectares of agricultural land was damaged and withdrawn from the usable fund. Around 10 thousand houses were demolished or damaged, 5000 households were resettled and losses amounted to 500 million USD. As a result of natural disasters occurring in the period of 1987-1989, which practically encompassed all territory of Georgia, losses exceeded 1 billion USD, while as a result of earthquakes, landslide-gravitational and mudflow occurrences of 1991-1992, losses exceeded 10 million USD. According to the master plan of measures for mitigation of erosion, elaborated for the period of 1981-2000, the cost of measures for mitigation of geological disasters was around 1.300 billion USD.

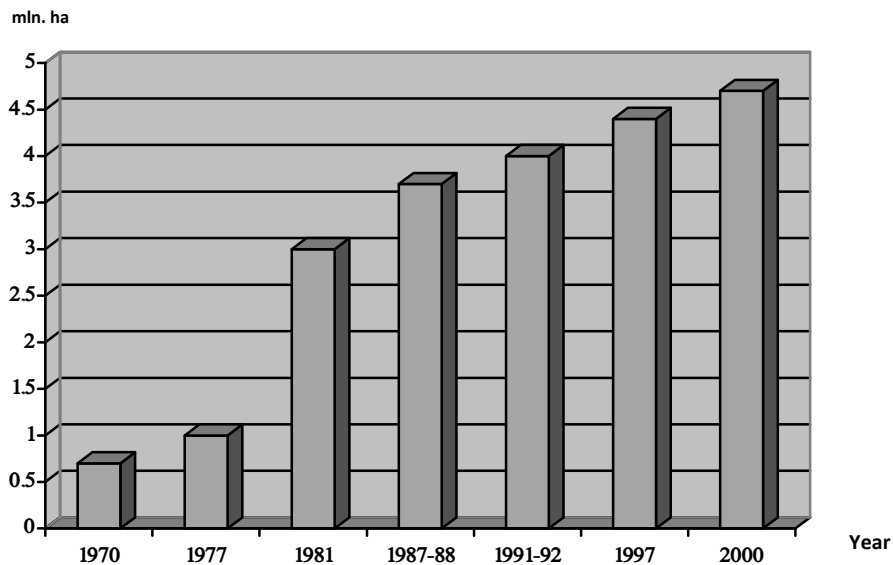
- In 1967-1978 losses, caused by geological disasters exceeded 2 billion USD, 150 persons died;
- In 1987-1990 losses, caused by geological disasters in Racha-Lechkumi exceeded 20 million USD.
- In 1975-76 as a result of landslide in Abkhazia coastline around 900 residential houses and 30 administrative buildings were demolished, 5400 hectares of agricultural land became unusable and losses amounted to 300 million USD.
- In 1981-2000 damage caused by natural disasters in Adjara exceeded 150 million USD.
- In 2004-2005 losses, caused by geological disasters exceeded 354.5 million GEL, around 3000 landslides were activated and mudflows caused damage to around 1560 water supply systems.

*Source: National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources*

<sup>6</sup> Information provided in this sub-chapter is greatly based on the baseline study “Natural disasters in Georgia and management problems” by Emil Tsereteli prepared for the second National Environmental Action Plan. Available in Georgian at: <http://www.garemo.itdc.ge/page.php?id=777>

<sup>7</sup> Annual report of the Ministry of Refugees and Settlement of Georgia, 2006

Diagram 1. Territory of Georgia affected by natural disasters and within the risk zone of natural hazards



Source: Emil Tsereteli, "Natural disasters in Georgia and management problems, baseline study for the second National Environmental Action Plan.

If prior to the last decade of the 20th century the extreme activation of natural disasters in Georgia was more or less characterized by certain cyclic recurrence and taking depending on geological-climatic conditions of certain locations was on average recurring 3-5 times in every 8-11 years, starting from the 90s activation exceeding the average background status is occurring every year, while intervals of extreme occurrences have reduced tangibly. As a result in the negative impact zone are included new territories, settled areas, agricultural lands and engineering-technical facilities. Recently the level of activeness of geological disasters is exceeding the baseline level, which is occurring on almost yearly basis, but extreme reactivation of natural disasters started in the beginning of XXI century. In this period were registered around 52 thousand landslides, 2700 mudflows, several thousand avalanches, 1000 locations of erosive wash-out of river banks with total length of 1500 km and intensive wash-off of coastline at 180 km. Although it should be stated, that in percentage values the areas, prone to risks are much wider and represent almost 70% of the territory of Georgia and around 3000 settled areas are within the high risk zone.

Especially extreme reactivation of natural disasters started in 2004-2005. Within the high risk zone of geological disasters were finding themselves around 1035 settlements, different types of deformities and damage were caused to 3070 residential houses, around 3000 houses were under geo-monitoring observation. Around 2674 hectares of lands of agricultural designation were flooded and damaged by landslide, 400 kilometers of roads and Transcaucasus highway needed urgent rehabilitation, several sections of Baku-Supsa and Baku-Tbilisi-Ceyhan pipelines were endangered.

Serious ecological problems are characteristic to Tbilisi geological environment. The earthquake of 2002 caused extreme increase of stress field of slopes and landslide activation. Recent developments and reactivation of geological disasters, as well as serious engineering-dynamic problems, occurring in stationary regime of geological environment, has provided for the following:

1. Activation of earthquakes of high intensiveness (1998 – Spitaki, 1991- Racha-Imereti, 1992 – Pasaauri-Barisakho, 2002 – Tbilisi), which continue to be present up to now. according to seismological forecast seismic activities are not going to subside in the Caucasus in the nearest future. It is noteworthy, that due to the above referred earthquakes around 30 000 landslide-gravitational sites were activated or formed anew.
2. On the background of global climatic changes and reactivation of negative meteorological occurrences provoke geological processes and anomalous increase of their frequency.
3. Large-scale environmental impact, caused by human activity and violation of balance.

Critical stress risk is further increased by the fact, that different types of processes are taking rise and expanding on, more or less same territories, due to which forecasting of separate events and planning of mitigation measures becomes rather complicated. At the same time it is quite frequent, that certain geological process or cluster of processes are formed on unsettled mountainous territories, but by their destructive energy they are having negative impact on remote settled

areas and engineering facilities and quite often their impact expands to the lowlands as well. We have numerous statistical data on the territories of Tergi, Aragvi, Ksani, Enguri, Tskhenistkali and Rioni river basins, confirming the above mentioned. Under the permanent risk of landslides is population of Kakheti, residing on at the foot of the Caucasus Mountains, and especially population of town Kvareli, as well as agricultural lands and population, residing at the foot of Tsivgombori ridge. The risk of landslides is especially high, as they are accompanied not only by negative impact, but are characterized by extremely large scope, as they affect almost all intensively settled agricultural regions of the country.

Among many other negative factor, accompanying these processed must be mentioned damage, caused to agricultural lands, which makes vast areas unusable, causes demolition of settled areas and facilities, the need fro resettlement of population, damage to gas and oil pipelined and other engineering facilities. 70% of registered landslides are located within the zone of economic-engineering activities and they have caused different categories of damage to around 1,5 million hectares of land. Within the landslide risk zone are located around 2000 settled areas with over 200 000 of population. As Table 1 reflects, the level of activity of landslides and mudflows has increased recently and they present serious risk to population of the country, agricultural lands, facilities of strategic designation (first of all transit routes) and landscapes, which on the whole has serious negative impact on development of the economy of the country.

Table 1. Tentative amount of damage, caused by landslides and mudflows during 1995-2006 to the urban areas of Georgia, registered in the process of regional monitoring<sup>8</sup>

Years	Landslides			Mudflows			Total Damage (mln. GEL)
	Number of events	Approxim. direct damage (mln. GEL)	Number of deaths	Number of events	Approxim. direct damage (mln. GEL)	Number of deaths	
1995	666	132	6	693	96	12	228
1996	404	80.3	3	198	27	5	107.3
1997	510	102	2	318	44	7	146
1998	333	67	5	147	20	6	87
1999	56	12	1	27	4.5	-	16.5
2000	65	13	1	23	3	-	16
2001	75	15	-	26	4	-	19
2002	69	13.8	1	23	2.5	2	17.8
2003	71	14.5	3	28	4	-	17
2004	736	147	4	192	28	2	151
2005	480	96	-	68	9	4	124
2006	316	70.5	1	73	40	-	79.5
2008			10			5	

Table 2. Landslides and mudflows occurring during 1980-94 in urban areas of Georgia registered in the process of regional monitoring<sup>9</sup>

Years	Landslides	Mudflows
1980-1986	2012	1803
1987-1988	2653	998
1989-1991	2655	756
1992-1994	1049	282

Psychological discomfort, caused to the population is also substantial and it reduces attractiveness of these territories from socio-economic point of view. The population is striving to resettle to safer areas, which creates additional vector of vacation of mountainous territories, complicates and reduces the prospect of even development of the country, as major part of pastures are located in the zones, disposed to natural disasters.

<sup>8</sup> Information provided by National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

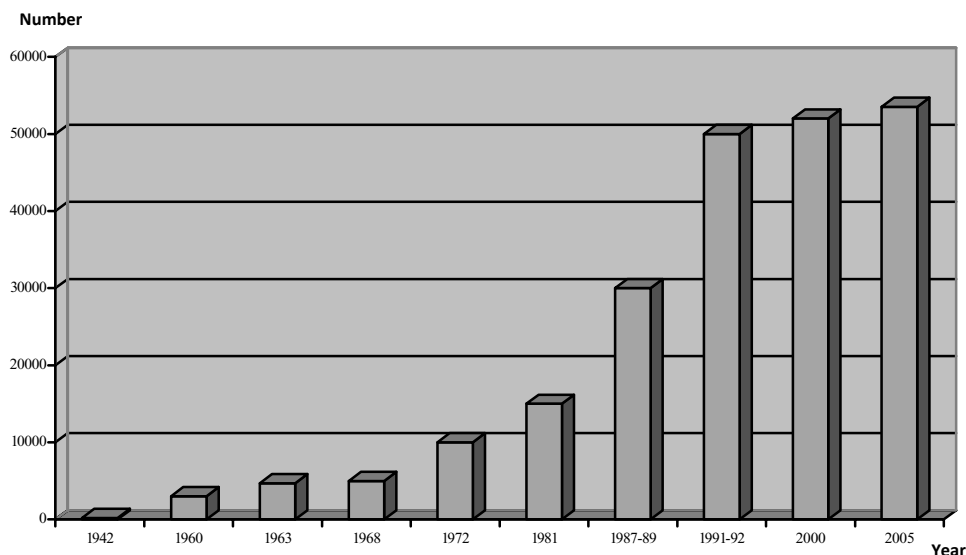
<sup>9</sup> Information provided by National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

### Landslide-gravitational processes

in Georgia landslide-gravitational processes and characteristic to almost all landscape-geomorphologic zones, starting from the Black Sea coastal zone, ending with alpine high mountainous zone, which are from geological standpoint belonging to totally heterogeneous Lithological and strategic units, which differ from each other not only by conditions of formation and genesis, but by dynamics and composition as well. This causes presence in Georgia of almost all types of landslides, known in the engineering geodynamics. On larger scale the size of certain processes are varying from tenth of square meters to hundreds of hectares. Landslide processes in Mountainous Adjara, Racha-Lechkumi, Mountainous Racha, Abkhazia coastal zone, Guria, Imereti highlands, Lentekhi district and Adjara-Trialeti are characterized by huge volume of damage and high potential of development.

As of 2006 on the territory of Georgia have been registered around 53 thousand landslide gravitational bodies, total area of which (including high risk areas) is exceeding 1,5 million hectares (See diagram No2). Around 70% of registered landslide-gravitational occurrences are located in urban areas, close to agricultural territories and engineering facilities (especially road infrastructure). Landslide processes have caused damage to around 25% of large water reservoirs and 30% of roads and highways. Within the risk area are located around 2000 settled areas. It is noteworthy, that during 35 years around 90% of population, out of 50 thousand, is resettled due to landslide processes. Damage, caused to the economy of country by landslide-gravitational processes over the average baseline level (so called "stress background") is around hundreds of millions of USD, including: damage caused to agricultural sector – 45-50 million USD. It is noteworthy, that in recent period activity over the average baseline stress level is occurring almost every year.

Diagram 2. Landslide-gravitational events mapped on the territory of Georgia



Source: Emil Tsereteli, "Natural disasters in Georgia and management problems, baseline study for the second National Environmental Action Plan.

### Mudflows

By the end of the 20th century have been registered around 2800 mudflows in the river-basins. Almost 2.0 million hectares of the total territory of the country were under risk of mudflows. It represents high risk to major part of population of mountainous regions, especially population, residing within the areas, adjacent to small river basins. These processes represent hazard to railways (around 300 km) and roads (1.500 km). They damage irrigation facilities and agricultural lands. Landslides create hazard for towns and settled areas in Tbilisi, Telavi, Kvareli, Laghodekhi, Sagarejo, Borjomi, Lentekhi, Oni, Tsageri, Mestia, Akhaltsikhe, Adigheni, Mtskheta and hundreds of villages.

Annual damage, caused to the economy of the country is around 100-200 million USD. In the period of extreme activation of mudflows, which is on average 1-3,3-5 with interval of 8-11 years, damage amounts to hundred millions of dollars. Thus, for example due to mudflow of 1997 in Telavi gorge caused damage to infrastructure of Telavi in the amount of 30 million USD. In 1982-98 mudflows in mountainous Adjara caused damage of over 500 million USD, while in the upper part of the river basin of Tskhenistklai – over 100 million USD. Throughout 1987-91 damage caused by mudflows in the period of their extreme development exceeds billion USD.

During last two centuries in the river basins, characterized by mudflows were registered around 800 extreme occurrences; catastrophic results, caused by them were: in river basin of Tergi – 77 cases; river basin of Aragvi – 38 cases, river basin of

Enguri – 65; river basin of Tskhenistklai – 40, river basin of Rioni – 120, river basin of Adjaristskali – 22. upper part of Mtkvari – 90. During last 10 years in the gorge of river Duruji as a result of mudflows died 150 persons and huge damage was caused to population and economy of Kvareli. Over 210 persons died as a result of mudflows of river basins of Tskhenistklai and Rioni starting from 1921 and presently, while transformed mudflows in the river basin of Adjaristskali have caused death of 130 persons. In 1944 mudflows in river basin of Zhoekvara caused death of 15 persons; in 1976 transformed mudflow on Gori-Tskhinvali highway have caused death of 8 workers, doing repairs on the road. In the river basin of Aragvi starting from 1897 and presently mudflows have caused death of 160 persons; especially severe mudflow in Pasanauri-Meleti section in 1987 has demolished major part of the village and caused death of 6 persons.

In Georgia mudflows are different by their intensiveness and recurrence and they are characteristic to all geological formations and geomorphologic zones – starting from foothill areas ending with high mountainous areas. Especially large scale are mudflows formed in the Caucasus and Adjara-Trialeti high mountainous zones, including glacial mudflows formed in the glaciers. The mechanism of their formation and their dynamics is the least researched and there are a lot of aspects that need to be studied. Methodology of research needs to be refined too. No less economic damage is caused by mudflows, formed in the highlands, where major part of population is residing. The mudflows are transformed on annual basis and in some years they are recurrent mudflows, although it is easier to mitigate mudflows of such type and counter measures are not related to large expenditures. It is noteworthy, that starting from 1960s in certain periods was registered quantitative increase of the river basins, characterized by mudflow-transformation processes.

### ***Negative geological impact of surface water***

Within the geographic area, impacted by surface waters are around 1,700 hectares of land. In conditions of limited usable land resources of the country reclamation of new lands and expansion of arable lands is practically impossible without huge capital investments. Annual losses, caused by scouring is around 120 million USD, out of which damage caused to agricultural facilities and lands is around 40-60 million USD. Apart from the above mentioned scouring is one of the main causes of coastline (basic) landslides.

As a result of washing-off of river banks and soil erosion in 1957-78 the agricultural land fund has lost around 200 thousand hectares. According to the master plan of measures, targeted towards mitigation of erosion for the period of 1981-2000, eroded lands amounted to 95,4 thousand hectares, out of which heavily eroded lands were – 20,8 thousand hectares and averagely eroded – 74,4 thousand hectares. As of today this indicators have increased substantially due to so called “speeded anthropogenic” erosive processes. This is causing severe abrasion of arable lands, located on the slopes of high inclination and the soil-formative layers are practically stripped, while their biogenic regeneration takes long time and needs implementation of relevant measures. To the regions, especially damaged by erosion belong mountainous Adjara (87%), Svaneti, Dusheti, Kazbeghi and Lechkumi. As a result of erosion on annual basis is washed off around 150-200 tons per 1 hectare. In the period of showers this indicator increases up to 300-500 tons and on average on annual basis is demolished the soil cover on around 1000 hectares. This indicator in Eastern Georgia reaches around 100-130 tons.

On the slopes of high inclination “speeded baseline” erosion is taking place at unprecedented quick pace on the slopes, where logging is implemented actively, especially in sub-alpine zone. Which quite often causes complete degradation of given zone, reducing the upper border of forest by 300-800 meters. The land fund has reduced substantially as a result of erosive washing-out of river banks at the foothills and plains, due to which tens and hundreds of hectares of highly fertile lands are degrading on annual basis and in the event of flooding this figures increase dramatically. It is assumed, that the annual coefficient of losing of arable lands is around 150 hectares.

### ***Abrasion of sea coast***

Abrasion of sea coasts is occurring actively on around perimeter of 315 kilometers. Periodically recreational lands are damaged and on majority of places it is accompanied by formation of landslides, which causes serious damage to the economy of the country. Only during winter storms of 1967, 1971 and 1978 losses amounted to 17 million USD.

Abrasion of sea coasts reached extremely concerning scale starting from the 60s of the previous century. Total length of degraded coasts in 1961 amounted to 155 kilometers, in 1971 – 183km, in 1981 – 220 km. Consequently, in 1961-1971 coastal for protection and fortification measures was spent 45 million USD, while in 1972-1981 – 80 million USD. Despite this the rate of abrasion of the coasts has not reduced and the highest intensiveness of abrasion was registered in Gagra, Akhali Atoni, Ochamchire, Anaklia, Kobuleti, Chakvi and Adlia sections, where the total damaged area exceeded 1400 hectares.

The catastrophic rate of devastation of the coastline was relatively slowed down as a result of implementation in practice of new method of integrated management of the coastal zone, elaborated by the Academy of Science of Georgia. Through utilization of the above referred method in 1982-1990s the length of washed away shores has reduced by 8 km,

and the total area of new beaches amounted to 150 hectares. Although, starting from 1992 such “artificial” nutrition of the coastline was interrupted due to which the abrasion of newly stabilized shores started anew, while taking into consideration of new political-economic order of Georgia, the Black Sea region found itself under high ecological stress.

At the estuary of river Rioni starting from 1920 and presently the sea has “snatched away” the coastline at the width of 3.5 kilometers, major part of which was occupied by hippodrome, residential houses and agricultural lands.<sup>10</sup> The process of washing away of the coastline is occurring quite actively in the estuary of river Chorokhi, where around 70% of the territory is occupied by Batumi and Adlia airport. In the 80s of the 20th century the coastline moved back by almost 200 meters, while during 1998-2006 the sea has moved forward by another 50 meters. In 1970-2006 the speed of advance of the sea was from 2-3 meters up to 8-10 meters per year. In 2005-2007 the sea has “snatched away” the road to Adlia and presented direct risk to the landing strip of the airport.<sup>11</sup>

In 1970-2006 as a result of abrasion of land-plots and houses at the estuary of river Chorokhi the material damage caused was around 4,0-4,5 million USD and due to compulsory migration during that period population of Adlia has reduced from 1814 to 1680. The process of migration is ongoing presently too.<sup>12</sup>

### **Earthquakes**

The territory of Georgia, which represents part of Caucasus seismogenic region, belongs to one of the most complicated geodynamic regions due to the force and accompanying negative impacts of earthquakes. Given region is characterized by wide variety of seismic activity. Volcanic mountains of Javakheti and the southern slopes of the Caucasus are characterized by high activity of earthquakes. Seismic potential of active structures here is defined by maximum energetical potential of earthquakes ( $M_{max}=7$ ) and their intensiveness reaches 8-9 points, although in Georgia we do not come across more or less aseismic blocks. We have historic data, as well as modern data, confirming the above stated. Thus, among registered earthquakes are: earthquake in Mtogvi (1088 – 8 points) Samtskhe (1283) Alaverdi (1530 and 1742, correspondingly 7-8 points and 8-9 points), Akhalkalaki (1899 – 8-9 points), Kartli (1920 – 8-9 points), Tabatskuri (1940 - 8 points), Martvili 9 1957 – 8 points), Guria (1959 – 7-8 points), Madatavi ( 1959 – 7-8 points), Chkalt'a (1963 – 9 points), Dmanisi (1978 – 9 points), Paravani (1986 – 7-8 points), Racha-Imereti (1991 – 9 points), Pasaunauri-Barisakho (1992 – 7 points), Tbilisi (2002 – 7 points).

Alarming conclusions of researchers should be mentioned here; according to scientists, there is high probability of recurrence of strong earthquakes in the Caucasus, which should be taken into consideration in the process of evaluation of potential for sustainable development of the Caucasus, as negative impact of earthquakes is related not only to demolition and damage to engineering infrastructure, but the provocation of surface geological activities and stimulation of some other negative processes as well. As clear illustration may serve Racha-Imereti and Pasaunauri-Barisakho earthquakes of 1991-92, which caused around 20 thousand landslides and rock-slides, which had negative impact on around 1500 settlements. Around 332 thousand hectares of land became unusable for residential or other purposes, 100 persons died, village Khaiseti (Sachkhere district) and village Chordi (Oni district) was buried under landslide and rock slide, landslide damaged village Zhaashkvi and Bajikhevi in Oni district. It is noteworthy, that activation of landslide-gravitational processes happens not only in the epicenter of earthquakes, but so called transitory earthquakes, occurring beyond the pleistocene areas. As clear illustration may serve earthquakes of Spitaki and Kobuleti of 1988.

### **2.2 Hydro-meteorological events<sup>13</sup>**

On the background of global climate change during last 30-40 years substantial increase of hydro-meteorological disasters can be observed. It is noteworthy, that surveys, conducted within the framework of UN Climate Change Framework Convention have confirmed the fact of climate changes in Georgia. Namely, in Eastern Georgia was registered warming by 0.5°C and in Western Georgia – cooling by 0.3°C, which is especially pronounced in winter seasons. Also, annual precipitation has undergone changes. On the plains precipitation has increased by 15%, while on the Eastern slopes of the Great Caucasus their amount reduced by 20%.<sup>14</sup>

Taking into consideration results of the grant program “Processing of meteorological monitoring data base and establishment of specificity of climatic indicators for the purpose of evaluation of conditions of urbanization of mountainous regions and investments climate”, funded by the National Scientific-research Fund of Georgia (see Table 3) and on the basis of data of meteorological stations for the last 15 years we can conclude, that from 1994 the warming has

<sup>10</sup> Framework Convention on Climate Change, 2007 Results of the Second National Communication, Tbilisi, 2008

<sup>11</sup> Framework Convention on Climate Change, 2007 Results of the Second National Communication, Tbilisi, 2008

<sup>12</sup> Framework Convention on Climate Change, 2007 Results of the Second National Communication, Tbilisi, 2008

<sup>13</sup> Information provided by National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

<sup>14</sup> Caucasus Environmental Outlook, GEO 2002

started, which is expressed in deviations from the average norms towards the positive temperatures. This was especially pronounced in 2006. Average indicator of arming for Georgia is 0.5°C .

Table 3. Deviation of average annual atmospheric temperature from the norm

Station	Norm	Year													
		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Goderdzi pass	2.4	-1.0	0.3	0.4	0.6	-0.2	1.4	0.8	0.2	0.4	0.8	0.3	0.6	0.6	2.4
Bakhmaro	4.0	-	-	-	-	-	-	1.3	1.1	1.5	0.8	0.6	1.0	0.7	1.3
Tsalka	5.9	-1.0	0.2	1.2	0.2	0.3	1.2	0.8	0.6	1.0	0.5	0.3	0.3	0.6	1.1
Abastumani	6.4	-0.8	0.6	0.7	0.4	0.2	1.6	1.0	0.4	1.4	0.5	0.3	0.5	0.5	-
Mount. Sabueti	6.3	-0.8	0.7	1.3	0.8	0.4*	1.4	1.3	0.8	1.4	1.1	0.5	0.5	0.6	-
Khulo	10.4	-1.2	0.5	0.4	0.6	-0.5	0.6	0.8	0.2	1.0	0.7	0.1	0.4	0.3	0.3
Ambrolauri	11.2	-0.9*	0.4	0.4	0.7	-0.5*	1.0	0.7	-	-	0.1	0.4	1.4*	0.7	2.1
Sachkhere	11.7	-	-	0.1	-0.5	-1.4*	1.0	0.8	-0.9	1.0	0.5	0.6	0.5	0.7	0.6
Kvareli	12.5	-1.9*	0.2	1.8	0.6	0.0	2.4*	3.1	-	-	0.5	0.3	1.0	0.9	1.2

\* denotes unreliable data

Source: Programme on creation of meteorological monitoring database for the assessment of urbanization and investment opportunities in the mountainous regions of Georgia

Complicated orography of Georgia causes further aggravation of hydro-meteorological disasters. Damage, caused by such disasters exceeds 2 billion GEL in the period of 1995-2006 and they caused death of 40 persons.<sup>15</sup>

### Floods

Flooding is registered throughout whole territory of Georgia. Atmospheric precipitation and melting of the snow cover has major impact on hydrology. Rivers, which are flowing from mountainous regions characterized by high precipitation, are replenishing water from the melted snow and they are flowing at high velocity. Large number of rivers take their rise from the Caucasus Ridge, which has large number of glaciers and deep snow cover. The period of intensive flooding for such rivers lasts around 6 months. The level of water increases especially in spring and summer, when snow starts melting. As a rule such rivers have one peak of high water. At the same time those rivers, which take their rise from the foothills of the Caucasus, are characterized by two peaks of high water, which is caused by melting of snow cover and showers.<sup>16</sup>

Catastrophic flooding previously was happening in every 8-10 years, while recently these events occur every 5-6 years. During last 10 years losses, caused by these occurrences exceeded 300 million GEL; 12 persons died.<sup>17</sup>

During last 30 years, namely in April 1978, May 1982 and January 1987 in Western Georgia occurred several huge flooding. Starting from 2004 almost every year occur floods in Western and Eastern Georgia. All these floods cause substantial material damage and sometimes death of population. Thus, in 1987 floods damaged the territory of 200 square kilometers, seriously damaged around 3200 buildings and demolished 2600 buildings. Losses amounted to 300 million USD.<sup>18</sup>

Downstream of Rioni are located around 40 densely populated settlements and villages. In 1987 and 1997 floods caused dike breach in several places and caused serious damage to population, several persons died. One tributary of Rioni

<sup>15</sup> Information provided by National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

<sup>16</sup> Caucasus Environmental Outlook, GEO 2002

<sup>17</sup> Information provided by National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

<sup>18</sup> Caucasus Environmental Outlook, GEO 2002

joined Paliastomi lake and caused increase of the level of the lake to such mark, that town of Poti was under serious risk of demolition. Around 35-40% of agricultural lands, located downstream of Rioni are under permanent risk of flooding and washing away, due to which population (5-7 thousand persons) has to find some other places for residence and subsistence. Due to ice and sand silts in the river-bed of Rioni and reduction of its carrying capacity town Samtredia is under risk of flooding, which is especially severe in summer seasons, as major part of the town is flooded and substantial damage is caused to it.<sup>19</sup>

In the coastal zone of Georgia as a result of rising of the sea level Poti, one of the major ports of Georgia and TRASECA corridor is facing certain risks. The North of Poti lies adjacent to river Rioni, one of the tributaries of which crosses the town, from the west to east it is bordering to the Black Sea and Paliastomi Lake. All the water bodies are above the level of the town and in case of flooding and storms, or especially so, when all these events happen simultaneously, the town can face huge material damage and human losses.

Sensitivity of Sukhumi coastline towards similar occurrences is extremely high too, as the city is located on the sinking terrace which is going down into water at velocity of 0,2 m-century. The beach is washed out intensively and according to assumptions, it should have reduced from 19190 up to now by 20-30%. The population of Sukhumi is feeling discomfort due to danger to their lives and property because of rising water as a result of storms and waves. The situation is further aggravated by destruction of the coastline infrastructure, especially communications and sewerage network. Such breakages are more severe and lengthy with strong storms. In recent years the frequency of storms has increases. Thus, if in 1950-1960 their number was around 3-5 per year, presently their number increased to 5-7. If in the nearest future these processes continue at the same frequency, special measures need to be taken urgently for protection of population, residing on the coastline.<sup>20</sup>

### **Avalanches**

Avalanches are extremely frequent in mountainous regions of Georgia. Avalanches represent risk to population, enterprises, roads and other communication infrastructure. The period of risk of avalanches lasts from 6 to 8 months and during such periods settled areas are practically cut off from the remaining part of Georgia. In the period of heavy snow avalanches become of catastrophic scale and cause serious damage and losses, including death of population. Frequency of avalanches especially increases from January to March and they happen in practically all mountainous regions.<sup>21</sup>

More than 50% of the territory of Georgia is within the avalanche risk zone, which represents serious risk for different communication facilities and around 100 settled areas. During last 10 years losses caused by avalanches exceeded 40 million GEL, 15 persons died. In the total there are around 5 thousand locations of high risk of avalanches, out of which 1100 are representing risk to roads, highways, settled areas and other communications.<sup>22</sup>

The period of 1986-1987 was characterized by extremely high intensiveness of avalanches, which was caused by large amount of precipitation and high snow cover. The winter was unusually warm too. Anti-cyclone, formed in the Eastern Europe caused movement of warm cyclones of the Mediterranean Sea towards Western Caucasus, which caused heavy snowfalls in mountainous regions. Avalanches, resulting from heavy snow damaged Zemo Svaneti and caused high death toll. As a result of intensive melting of snow water rose substantially in the rivers Rioni, Tskhenistklai, Khobi and etc, which in spring was followed by landslides. In the summer all the above mentioned was followed by large scale silting. Losses, caused by all the above occurrences have amounted to 300 million USD, large number of people died, 20 000 had to resettle, hundreds of buildings and road network was demolished or seriously damaged.<sup>23</sup>

The highest coefficient of probability of avalanches (0,7-0,8) is in the western and central sections of the Caucasus and Adjara mountains. Especially high activity of avalanches was registered starting from 1970 and massive avalanches occurred in 1970-1971, 1975-1976, 1986-1987, 1992, 1996-1997, 2004-2005 years due to strong snowfalls. Namely, in February 1991 on Kobi-Kazbeghi highway section 15 avalanches occurred, in 1996 there were 149 avalanches, in 1997 – 120 avalanches, in 1996 in Adjara high mountains there were 40 avalanches, in Svaneti – 105. Svaneti, Adjara, Tusheti, Kazbegi, Dusheti and Akhmeta population is especially damaged as a result of avalanches. The losses, caused by avalanches in the above referred periods exceeded by 750 million USD, 176 persons died.<sup>24</sup>

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<sup>19</sup> Framework Convention on Climate Change, 2007 Results of the Second National Communication, Tbilisi, 2008

<sup>20</sup> Framework Convention on Climate Change, 2007 Results of the Second National Communication, Tbilisi, 2008

<sup>21</sup> Caucasus Environmental Outlook, GEO 2002

<sup>22</sup> Information provided by National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

<sup>23</sup> Caucasus Environmental Outlook, GEO 2002

<sup>24</sup> Information provided by National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

### **Drought**

Droughts are characteristic to practically whole territory of the country. Kakheti, Shida Kartli, Kvemo Kartli and Zemo Imereti regions suffer from droughts especially seriously. If previously strong droughts would happen every 15-20 years, recently it happens in 6-7 years. In 1995-2006 damage caused only to agricultural sector exceeded 400 million GEL.<sup>25</sup>

From the point of humidity Georgia is contrasting region. In the Central and minor Caucasus and Kolkheti valley annual precipitation exceeds 1 000mm. In other regions precipitation is lower and on average amounts to 300-450 mm. That is why the problem of desertification, which is preconditioned by draught, is of current importance for Georgia, especially for eastern regions. Vivid example of the above is especially droughty summers of 1998-2000, which caused serious damage to Georgian economy. In the event of continuation of global warming the process of desertification may affect arid and semi-arid landscapes of plains and upland regions of Eastern Georgia, as well as sub-alpine and alpine zones.<sup>26</sup>

As a result of extremely frequent droughts in some of the regions of Eastern Georgia (Kvemo Kartli, Dedoplistskaro) are observed preconditions of desertification. In 2001 was planned state program on mitigation of negative impact caused by global warming, one of the main objectives of which was to restrict processes of desertification, although due to lack of funding the program has not been implemented.

On the basis of data from Dedoplistskaro (territory of which is characterized by small amount of precipitation and high temperatures) meteorological station it becomes clear, that in 1952-2006 frequency of droughts has doubled. If in 1952-1965 drought was happening every 2 years, in 1998-2007 frequency increased to one draught per year. Also, if during first two decades (1952-1975) its average length was 45 days, in last two decades (1986-2007) the average length of droughts is 62 days. The length of draughts has especially grown in the last decade and it is 72 days presently. This is indicative of the fact that in certain regions processes of desertification have started and are developing.<sup>27</sup>

### **Strong and lengthy hurricanes<sup>28</sup>**

Strong and lengthy hurricanes are characteristic to all territory of the country. Their frequency and intensiveness is especially high in the Eastern Georgia and Imereti regions. The recurrence of such hurricanes has doubled and they occur in every 4-5 years. Hurricanes cause serious damage to agricultural sector. In the last decade the losses caused by hurricanes amount to 100 million GEL; 10 persons died.

### **Hail<sup>29</sup>**

Hail is characteristic to all territory of the country. Its intensiveness and frequency is especially high in Eastern Georgia. On annual basis there are 5 to 15 occurrences. From 0.7% to 8.0% of agricultural lands are damaged. Especially intensive in this regard were hails of 1983, 1987, 1993 and 1997. During last decade the losses caused by hail amount to 130 million GEL.

Table 4. The decadal trends in frequency of natural disasters in Georgia.

Natural disaster	Decades					Total
	1961-1970	1971-1980	1981-1990	1991-2000	2001-2007	
Floods	17	17	14	40	81	169
Drought	3	5	1	6	4	19
Hurricanes	4	11	12	17	21	65
Avalanches	22	26	25	57	58	188
Hail	24	44	50	75	79	272
Deaths	7	82	89	13	30	221

Source: National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

<sup>25</sup> Information provided by National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

<sup>26</sup> Caucasus Environmental Outlook, GEO 2002

<sup>27</sup> Working Group for Second National Communication to Climate Change Convention, *Dedoplistskaro, Impact of Climate Change on Dedoplistskaro District*, Tbilisi, 2008

<sup>28</sup> Information provided by National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

<sup>29</sup> Information provided by National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

### 2.3 Anthropogenic impact

One of the main factors causing natural disasters is unsound activities of human beings, such as unsystematic development of lands, without prior evaluation of possible outcomes, construction and reconstruction of new transport infrastructure, logging of forests and etc. Surveys confirm that quite frequently people occupy territories prone to landslides, mudflows, flood plains, construction is implemented within restricted zone. Often ecomigrants are relocated to new territories without conducting relevant geological assessments. According to opinion of some of experts it was possible to avert tragedy, caused by flooding in April of 2005 in Gumati, Tsageri, Lajanuri and Jinvali reservoirs through restriction of settlement of population on the territories under the risk of flooding. Population of village Goleti (Tetrtskaro district), which was resettled from Svaneti in 1998, would not have to resettle from the village ten years later, if geodynamic risks were studied from the very beginning.

It is noteworthy to state that Presidential Decree No171 of May 2, 2000 on "Regulation of disposal of state-owned lands of non-agricultural designation", which provided for conducting of engineering-geoecological surveys of non-agricultural lands and preparation of conclusions, was actually abolished by Resolution No233 of the Prime Minister, adopted in October 21, 2007.

Especially high stress due to incorrect activities of human beings was caused to mountainous regions, which provoked irreversible disintegration of the whole geosystem of environment and caused geo-ecological cataclysms. In the whole range of regions (Adjara, Lentekhi, Lechkumi, Imereti, Mtiuleti, Apkhazia and black sea regions) the coefficient of technological stress reached 0,7- 0,9 and presently requires imposition of special regime of usage of natural resources. For example:

As a result of natural and technological stress in the Capital of Georgia situation is extremely alarming. There are more than 60 landslide areas (territory some of which exceeds 100 hectares, while the volume is 18-20 million m<sup>3</sup>), 52 landslide gorges and 21 kilometers of gravitational rock-slide areas are registered on territory of Tbilisi.<sup>30</sup>

Residents of Chiatura are under extremely negative impact of extraction of ore. As a result of environmental degradation from ore extraction hundreds of houses were damaged or demolished, pastures and arable lands degraded, cattle died, etc. Material losses of population amounted to 2.4 million USD (Resolution No123 of March 7, 2007 and No175 of April 5, 2007).<sup>31</sup>

On the territory of Dedoplistskaro district due to local physico-geographical conditions main natural disaster is drought and strong winds, which have serious impact on natural ecosystems and economy. Droughts are caused by limited precipitation and high temperatures, while strong winds are caused by lack of forests. As a result of outdated technologies of cultivation of land, lack of usage of fertilizers, ignoring of the need of rotation of crops, strengthening of erosion processes and etc. the soil is in catastrophic state. As a result of comparison of results of the survey of 1983 and 2006 it was established, that composition of humus in the surface layer of the black earth of Shiraki has reduced from 8,5% to 3.0%. on the basis of the same surveys it is established, that due to strong winds quite frequently the soil looses on annual basis tenth of tons of fertile upper layers of soil per hectare, together with which is depleted 15-20 tons of humus, nitrogen, phosphorus and etc. Losses, incurred as a result of wind induced erosion amount to tenth of millions of GEL. Out of arable lands on annual basis is lost nutritional elements, the value of which is equivalent to 1 million USD. Strengthening of wind induced erosion is caused by destruction of shelterbelts. Increase of frequency of strong winds (climate change) as a result of cutting of shelterbelts (anthropogenic impact) promotes to strengthening of erosive processes, which in its turn creates the risk of desertification.<sup>32</sup>

In Dedoplistskaro district degradation of soil is the most intensive on winter pastures, which occupy 52% of the total area of the district. During last 10-15 years pastures of Dedoplistskaro district are under much higher stress, due to which spreading of weeds and erosion, caused by grazing has become extremely severe. Presently in winter period on this pastures are wintering around 50 000 sheep, which is by 2-3 times higher, than average stress. According to latest data given process is characteristic to 80% of pastures of Dedoplistskaro district.

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<sup>30</sup> Emil Tsereteli, Head, Department on Geological Hazards and Management of National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources

<sup>31</sup> Green Alternative, Article 42 of Constitution, *Aggressive State Property Privatization Policy or "Georgian-style Privatization"*, May 2007, available at: <http://www.greenalt.org/webmill/data/file/publications/Privatizeba-Eng4.pdf>

<sup>32</sup> Working Group for Second National Communication to Climate Change Convention, *Dedoplistskaro, Impact of Climate Change on Dedoplistskaro District*, Tbilisi, 2008

## 2.4 Damage caused by natural disasters in 2005-2008<sup>33</sup>

According to the data of the Emergency Management Department of the Ministry of Interior, damages caused by the natural disasters of 2005-2007 and first half of 2008 is as follows in the table below:

Table 5. Damage caused by natural disasters in 2005-2008 (first half)

Damage	2005	2006	2007	2008
Buildings/Facilities	534	250	119	23
• Demolished	10	–	2	–
• Damaged	524	250	117	23
Land (ha)	382	3 545	163	–
• Agricultural	150	–	–	–
• Forest	–	–	123	–
Bridge			–	–
• Damaged	32	–	–	–
• Demolished		–	–	–
Road (km)	1675	80	–	–
Dam (m)	600	–	–	–
Fire				
• Forest (ha)	–	755	–	69
• Grass (ha)	–	3 018	–	–
• Crops (ha)	1,0	58	–	70,2
Earthquake	–	–	–	–

As to the number of dead or injured as a result of natural disasters, in this regard 2006 was especially heavy, as number of dead was 16, while injured – 12. For comparison, in 2005 number of dead or injured was 5-5 (including one child); in 2007 and first half of 2008 number of dead or injured reduced in comparison to 2006 and was : in 2007 – 3 dead and 2 injured; in 2008 – 5 dead and 4 injured.

## 3. Natural Disaster Risk Management Policy in Georgia

Policy and practice in natural disaster risk management in Georgia is not comprehensive, sustainable, dynamic and uniform. Current policy, reflected in the principles of legislative framework allows for regulation of relations at the time of the natural disaster and in the short-term period, immediately after the natural disaster occurs. As to adoption of integrated approach towards natural disaster risk management, a lot needs to be yet done in this direction. Additional legislative framework needs to be developed and the current one needs to be refined.

Function of management of natural disasters (in the process of natural disasters and in the short term period after its completion) is mainly transferred to the Department of Emergency Management of the Ministry of Interior, its structural units in Abkhazia and Adjara Autonomous Republics and divisions of management of emergency situations of the local bodies of self-governance. At the same time the functions of monitoring, forecasting and prevention are also disseminated between the Ministry of Environment, different legal entities of the public law in subordination of the Ministry, other state entities and commission of different levels and status. Management in the sphere of natural disasters is organized on the basis of the following system: President, Parliament (local administration in case of regions and districts), government (in regions and districts the local administration), ministries, legal entities of the public law in subordination of the ministries (on regional level relevant services of municipality and local administration).

Below is provided the list of competencies of those organizations, which participate (or should participate) in elaboration of the policy of management of risks of natural disasters.

<sup>33</sup> Information provided by Emergency Management Department of the Ministry of Interior

Main directions of policy of fighting with natural disasters and management of related risks are defined by the President of Georgia as the head of the state. Given principle of management of the state (along with other relevant principles) is provided by the Constitution of Georgia. The President appoints the Prime Minister, approves of the candidates for the Minister's posts. In the event of ecological catastrophes, when the Ministries have no opportunity of implementation of their routine authority and functions, the President announces emergency situation on the whole territory of the country or its part.

Authority of the Parliament in regard to defining of policy of management of natural disasters is the following: it defines main directions of fighting with natural disasters, controls activities of the government and ministries, implemented in regard to management of the risk of natural disasters. Accountability of the Parliament in front of the public is provided by the principle of the mechanism of elections, although the President has the constitutional right to dissolve the Parliament in the event of circumstances, provided by the law.

In the relations of management the principle of accountability of ministers is duly enforced. Minister independently arrives to decision on the issues, within his competence. Ministers are accountable to the Prime Minister, President and the Parliamentary Committee. The same is true in regard to accountability of the government in front of the President.

As to local self-governance, by law it is delimited from the executive power and in implementation of their functions the most important principle is transparency and not accountability to other subjects or the principle of participation. Although, the law provides for the principle of participation of different subject in activities of the local self-governance.

The legislation of Georgia in general contains the principle of subsidiarity in delimitation of competencies, although this principle is not fully implemented in practice yet. The issue of subordination and levels of accountability, as well as the issue of participation is not properly regulated by legislation. The Law on Environmental Protection, as the main law in given area, defines criteria for delimitation of authority of state organs and competencies of autonomous republics and local authorities in the sphere of environmental management. These are: 1. sources of funding of activities; 2. resources; 3. scope of negative impact on environment and 4. level of subordination of protected areas.

On the basis of the above criteria, or more specifically, 2 and 3 criteria the concept of resources of state and local importance was defined in regulatory acts, covering issues related to specific natural resources. According to the law on Environmental Protection after introduction of given concept should have developed regulatory acts, defining competency of autonomous republics and local governments in regard to resources of local importance and regulations for implementation of relevant activities. Despite delegation of authority to autonomous republics and local bodies of governance, the initiative of management in reality belongs to the center of executive power, i.e. its territorial organs. This is promoted by the fact, that in practice resources of local and state importance have not been clearly delimited yet. By law Local bodies of governance and self-governance are vested with certain authority of elaboration of local policy in the sphere of environmental management, but these norms are of extremely general and declaratory character. As a result of institutional changes, implemented in the Ministry of Environment lately the function of environmental management is mainly executed on the central level of the Ministry and less so on the local level. As a result the local bodies are trying to implement local policy decisions within the limits of their authority, which in some instances do not coincide with the policy and decisions, reached at the central level. Although such instances are not so frequent, especially in the last several years. Due to the above stated problems activities of the central and local level structures are not so transparent, decisions are reached in uncoordinated manner, participation is limited and more often are implemented decisions and policy of the central level and not of the local self-governances.

### **3.1 Natural disaster risk management policy**

The natural disaster risk management policy is not fully comprehensive and still needs further consideration and elaboration. The weak system of crisis management does not efficiently cope with prevention of the risk of natural and technological hazards, as well as rehabilitation and implementation of counter measures in the period, after occurrence of such events. If the risk of such events is going to increase further, it will be more urgent to implement preparatory activities in advance and work with population, as well as focus on improvement of efficiency and coordination between public structures.

Judging by to the law on "Protection of the territory of the country and the population in the event of emergency situations natural and technological character" the issue of elaboration and adoption of the legislative acts in the sphere of management of the risk of natural disasters is well regulated. Further analysis of the issue reveals, that this is not so. Although prior to adoption of the law on "Protection of the territory of the country and the population in the event of emergency situations of natural and technological character" was adopted the law on "Emergency Situations" and several other local laws, but provisions of these laws substantially differ from each other. They propose different approaches

towards regulation of given issues, which is rather indicative of the legal vacuum in the sphere of natural disaster risk management policy, than only drawbacks, characteristic to this policy.

During last years there were several attempts of elaboration of policy and strategy of natural disaster risk management. This was expressed in elaboration of several normative acts. Namely, for the purpose of promotion of elaboration of strategy was adopted presidential Decree No66 on “Counter measures of development of disastrous natural geological processes on the territory of Georgia and protection of underground hydrosphere and lands”, dated by January 28 of 1997. According to the decree the Ministry of Economy was responsible for annual update of the indicative plan of social and economic development of Georgia for the period of 1996-2000 and adoption of relevant state programs in given area. The State Department of Geology was assigned to submit to the Parliament of Georgia on annual basis information on the ongoing geological processes their character and short and long-term forecasts of development of these processes, as well as proposals on funding of counter measures; it was also responsible to revise the Master Plan (for the period of 1981-2000) on counter measures for management of natural disasters in coordination with other stakeholders taking into consideration ecological status of relevant areas and on the basis of the above measures and activities elaborate Master Plan for the years 2001-2020, as well as long-term forecasts for natural disasters. Such Master Plan has not been elaborated for the period of 2001-2020.

Second attempt of elaboration of policy was Decree No779 of the President of Georgia on “Promotion of implementation of UN program on management of emergency situations”, dated by October 31, 1998. The program was envisaging elaboration of national program on management of emergency situations, improvement of efficiency of current system of management and attaining of positive impact. The Department of Emergency Management of the Ministry of Interior was responsible for coordination over implementation of the program and involvement of relevant ministries and public and non-governmental organizations into the process of implementation.

To the elaboration of the policy and strategy of management of natural disasters is also pertaining Decree No471 of the President of Georgia, dated by August 22, 2006. The Commission, responsible for elaboration of the document on mitigation of risks of natural disasters was assigned to elaborate the risk assessment document for the purpose of improvement of the system and promotion of planning of relevant activities. Such document was elaborated. Namely, on the basis of the law of Georgia on “planning of Defense Measures” was adopted presidential Decree No542, dated by September 24, 2007 on “Adoption of the risk assessment document for the period of 2007-2009”. This document represents adapted public version of the risk assessment and provides detailed identification of internal and external forces, trends and risk factors, which may have impact on security of the country. As Georgia is located within the zone of risks of seismic and hydro-geological occurrences, this increases its insecurity in regard to such disasters. The document placed special focus on such natural disasters, as earthquakes, floods, avalanches, landslides, mudflows and forest fires. The document separately covers ecological, technological, and epidemiological risks by regions and districts of Georgia. There are certain doubts in regard to reliability and completeness of the list of internal or external factors, trends and risk-factors, elaborated by the Commission, as it is surprising how did the commission manage from august 22 of 2007 till September 24, 2007, i.e. within one month from adoption of the Decree, to solve the issues, which the state could not cope with for years. The same doubts arise in regard to the listing of sensitive regions of Georgia. The content of the last section of the Decree is quite interesting, which states, that “if the risks of this character shall increase, there shall be need of further improvement of efficiency and coordination of activities of public structures and implementation of preparatory activities in this regard”. Unfortunately the Decree does not expand on preparatory activities and specific measures to be conducted within population, as well as measures focused for improvement of efficiency and coordination of activities of public structures, which should be conducted these measures and within what deadlines. The Decree does not promote to clarification of the executing agencies, as well as prospects of execution of the relevant measures.

Elaboration of policy and strategy for of management of risks of natural disasters is largely dependant on existence of relevant political vision, plan or concept. This is first of all task of the legislative branch of the power, as for elaboration of state policy and strategy should be developed relevant legal framework. In this regard it is interesting to dwell upon “The concept of National Security of Georgia” (approved by resolution No 1895 of the Parliament of Georgia”. This is important document for development of concept and policy for natural disaster risk management. The concept focuses attention on “elaboration of environmental security policy of Georgia, which is focused on implementation of such measures for safeguarding of population and environment, which shall promote to reduction of excessive usage of natural resources and mitigate environmental pollution, as a result of which the men-induced impact and the impact of natural disasters shall be reduced.” Special attention is dedicated to such large-scale industrial emergencies and natural disasters, as flooding, landslides, avalanches and earthquakes. Conducting of campaigns targeted towards increase of public awareness is also stated among priority tasks, as this shall promote to aversion of crisis and better operation of the post-crisis management system.

It should be stated, that implementation of the national concept for security may be undermined, as the uniform state information policy is not available, infrastructure necessary for implementation of such policy is weak, while state administration is based on unreliable and insufficient data. Taking into consideration conceptual character of the above referred document main issues of national security are covered in general terms and there is no action plan for causing of positive impact on environment.

Despite separate efforts of non-governmental organizations activities towards elaboration of the policy and strategy for natural disaster risk management, at least on behalf of the state, were not taking place. For the last several years in the plan of activities of the executive and legislative bodies elaboration of draft laws in given sphere has not been envisaged. As we are aware these activities are not included into the law-making plans for current year too.

Overall analysis of approaches of the state towards elaboration of policy and strategy for natural disaster risk management reveals that efforts are more focused towards accession of some international covenants, than formation of national mechanisms of natural disaster risk management, development of relevant policy and strategy and its further refining and implementation. International agreements provide for cooperation between countries in the events of natural disasters. The overall picture of accession of Georgia to different international agreements is the following:

1. Agreement concluded between the Government of Georgia and the Government of Armenia in May 3, 1997 on cooperation in the sphere of prevention of natural disasters and technological disasters and their elimination" (ratified by Resolution No 1243 of the Parliament of Georgia of February 18, 1998).
2. Agreement concluded between the Government of Georgia and the Government of Armenia in May 19, 1997 on "Cooperation in the sphere of protection of environment and natural resources".
3. Agreement concluded between the Government of Georgia and Kazakh Republic on "cooperation between the Government of Georgia and the Government of Kazakhstan in the sphere of prevention of natural disasters and elimination of their impact" (ratified by Resolution No 1652 of the Parliament of Georgia of October 15, 1998).
4. Additional protocol on cooperation between the black Sea Economic Cooperation Organization member states in the sphere of immediate response measures and assistance in the event of natural and technological disasters" (ratified by Resolution No2759 of the Parliament of Georgia of March 17, 2006).
5. Resolution No657 of the President of Georgia of December 30, 2003 on" Cooperation between the member countries of GUAM in the sphere of prevention of natural disasters and elimination of their impact", concluded in Yalta in July 4, 2003.

As we have stated, numerous issues need to be dealt with in regard to development of policy and strategy in the sphere of natural disaster risk management, some of which are of legal, as well as of political character.

### ***3.2 Natural disaster risk management and land management policy***

Policy of sustainable land management and spatial planning can represent major contribution into prevention and mitigation of impact of natural disasters. Present chapter deals with the policy and system of land management of Georgia and the following chapter deals with current state of spatial planning.

Implementation of sustainable policy of land management has become more complicated in the recent years, as not only the sustainable policy and general policy and state principles of land management have been modified on numerous occasions, but the number of subjects, participating in the land management, as well as their status has been changed substantially too. There is no relevant legislation in the sphere of land management. Consequently, elaboration of policy is not the function of one public entity, but is distributed among several subjects.

The former State Department of land Management has been abolished as a result of governmental reorganization of 2004. 9 regional offices of the State Department were closed too. Functions of the land management, soil protection and land-usage, as well as state control over land usage was delegated to the Ministry of Environmental Protection and Natural Resources, whereas functions of land registration and maintenance of the State Register were assigned to the Ministry of Justice. Within the Ministry of Environmental Protection and Natural Resources was created a land management service, while in 2007 it was also abolished and the function was assigned to the Legal Department as one of the directions. In July 2008 it was re-established as service division. It is clear, that changes of this character do not promote to elaboration of not only to sustainable policy, but general policy as well and hinder development of the sphere.

Among the land management functions of the Ministry the purpose of promotion of implementation of sustainable land management is related the function of participation in implementation of management and targeted usage of natural

resources. Participation in implementation of the policy means, that the policy should exist, although we should specify here, that the service has the function of implementation of policy and elaboration of policy.

In so called transformation period prior to adoption of regulatory framework in the sphere of land management, the function of elaboration of recommendations related to the issues of land management belonged to the State Commission on land usage and protection under the Ministry of Environmental Protection and Natural Resources (chaired by the Minister), which was assigned with the function of the supreme state organ. Commission was established on the basis of Presidential Decree No160, dated by February 6, 1996. Regulations, adopted by the same Decree define competencies of the Commission in the sphere of land management. Namely, according to article 2 of the Regulations main objective and function of the Commission is preparation of recommendations for elaboration and implementation of policy of land reforms, land protection and targeted usage of land resources, as well as elaboration of proposals and recommendations on disposal of land from the state fund, parceling, land use and land protection. As final output of activities of the Commission is only recommendations, it is clear, that implementation of sustainable or non-sustainable policy of land management is not within authority of the Commission. Recommendations, elaborated by the Commission are submitted for consideration to the Government of Georgia. In the event of their approval they are submitted to: (a) The President of Georgia for adoption of final decision, or (b) are submitted to authorized body for implementation.

The main subject, who on the basis of proposed recommendations should arrive to final decisions in regard to elaboration and implementation of land management policy is the President. Thus, the whole responsibility lies with the President, as he is responsible for approval of the policy by issuance of a relevant normative act. As to the other subject, i.e. the "authorized body", it can not be considered as responsible for implementation of land management policy, as this body receives recommendations for their implementation. If we look at the issue from given angle, we can conclude, that the Commission is vested with certain authority of elaboration of land management policy, as recommendations elaborated by the Commission are approved as a result of consideration by the government, are submitted to "authorized body" for implementation. i.e. recommendations sent to the "authorized body" for the purpose of implementation are execution of expressed political will.

Taking into consideration all the above mentioned, competencies of the Government in regard to sustainable land management are quite interesting. It participates in elaboration of the policy either through approval, or rejection of recommendations, proposed by the Commission. No provision dwells upon what happens, if the government does not agree with the proposal of the Commission. We should assume that such state of affairs (mechanism of generation of policy) shall change at least after adoption of relevant laws in the sphere of land management.

As in land management implementation of sustainable or unsustainable policy is reached through different methods, among them is elaboration of targeted programs of land use and land protection, consequently the land management service of the Ministry of Environmental Protection and Natural Resources should also be considered as subject, responsible for elaboration of policy, as this responsibility of the land management service is clearly defined in Regulations.

In the process of evaluation of status of affairs on the systemic level it was identified, that there are following impediments in the sphere of implementation of sustainable land management: as a result of analysis of general strategy for social and economic development of the country, strategies for development of sectors, programs, action plans and decisions, reached at different level it was established, that by becoming signatory to different international conventions and agreements the country at one sight is declaring sustainable development as its chief priority, while in practice implementation policy is totally different. Taking into consideration real picture of social and economic development of the country (which is far from desirable), sustainable development of land management and generally environmental protection can not be declared as priority as yet. In this regard the largest obstacle is low level of social and economic development of the country. Difficulties in establishing of political dialogue between different public structures is another serious impediment, especially so, that for the purpose of implementation of sustainable land management policy it is necessary at initial state to start political dialogue between different public entities and stakeholders, while at the following stage ensure maintaining of such dialogue. It should also be stated, that the dialogue should be stable and dynamic. Another hindering factor is frequent changes of the high ranking state officials. Frequent changes of leadership cause the feeling of instability of current processes and activities, which as a rule has negative impact on implementation of all directions, including promotion of sustainable land management policy.

At current stage main reasons for problems in sustainable land management is fragmentary and general character of tasks, needs and approaches. First of all this is obvious from the activities of the legislative organ and its structures (different Sectoral parliamentary committees). Legislative initiative of these structures is defined by law and it is natural, that successful and comprehensive activities of the executive power in the sphere of sustainable land management largely

depends on activities of the legislative branch of the power. In this regard experience of EU in the sphere of natural disaster risk management yet needs to be analyzed and transferred into the legal framework of Georgia in harmonious manner. Solving of this issue would largely promote to elimination of the vacuum in the legislation related to natural disaster risk management.

Elaboration of general strategy, as well as sustainable land management policy is responsibility of the Ministry of Environmental Protection and Natural Resources, which it should implement in coordination with "all relevant stakeholders and state structures". In 1996 on the basis of Presidential Decree No763 was established a State Commission on Sustainable Development. According to the Decree the Commission was established "in accordance with UN decision of 1992, reached at Rio de Janeiro on promotion of environmental development and for the purpose of elaboration of strategy of sustainable development. The Commission is chaired by the President. The deputy chairman of the Commission shall be the Minister of Protection of Environment and Natural Resources. Coordination of activities of the commission shall be responsibility of the Ministry of Environmental Protection and Natural Resources. The Ministry was also assigned to establish Scientific-research Council and an independent working group, responsible for elaboration of strategy of sustainable development. The working group was responsible to submit to the Ministry of Environmental Protection and Natural Resources report on its activities on monthly basis, while the report should have been submitted to the State Commission on Sustainable Development on quarterly basis.

The passed period reveals that the commission was not efficient. Neither the commission, nor the working group worked effectively on the strategy. As one of the reasons may be lack of unified concept on future priority directions of development of the country, weak cooperation between stakeholders, narrow circle of state entities and stakeholders, entered into composition of the Commission, frequent changes of the high ranking officials, unavailability of methodological framework for elaboration of strategy and etc. The commission had limited funding for implementation of relevant activities too. Despite formal declarations, the government did not have real political will, time or resources to dedicate to seeking solutions for the problems that would bring benefit in long-term future and was instead focused on daily socio-economic or political challenges. Establishment of the State Commission on Sustainable Development can be assessed as expression of the political will of the state and response to ongoing processes in the world (in the 90s).

It can be stated, that by establishment of the State Commission on Sustainable Development. And inclusion into the law on Environmental Protection provisions on the need of elaboration of strategy of sustainable development the state has expressed its will to join international processes of sustainable development. Although again due to financial, management and planning problems, as well as due to the fact, that for the society, as well as for the government real priority was seeking solutions to daily problems, was more burning issue than long term planning. The state could not support the idea of sustainable development with systemic measures and relevant activities.

Despite the fact, that for the purpose of ensuring sustainable usage of land resources in the environmental protection action plan is included the list of initial measures, the document defining national strategy or policy in the sphere of land usage has not been elaborated. Thus, the environmental protection action plan envisages development of the national plan on soil protection, which should define those natural and men-made factors, which cause degradation. The plan should include preventive measures and investments plan.

To the issues of sustainable land management policy is directly related presidential Decree No477, adopted in November 24, 2001, which approves of the state program on "Maintaining and development of hydro-meteorological and environmental pollution monitoring in Georgia", paragraph 16 of which provides for implementation of monitoring over desertification and droughts, including research of recurrence of droughts, development of automated monitoring systems, practical implementation of monitoring and forecasting. In August 2001 in the former State Department of Hydrometeorology was established scientific-research organization – center of drought monitoring. It was within the department of operational forecasts and was not independent sub-structure of the Department. These centers were established upon initiative of World Meteorological Organization and were mostly based in those countries of CIS, where during last years were occurring severe droughts.

The center had following functions: development of draught monitoring system throughout Georgia, archiving, processing and analysis of information, obtained from agro-meteorological network and establishment of the system of early warning system. This was budgetary organization and practically its activities were focused on operational collection and processing of data (atmospheric temperature, precipitation, humidity of soil, plant parameters and etc) from 7-8 agro-meteorological stations (used to be 60). The data was stored in paper format, processed manually and results of decade analysis were published in agro-meteorological bulletin, which was provided to the Ministry of Agriculture, the State Chancellery, and the State Minister. The center was mainly implementing scientific research in the sphere of

establishment of prospects of draughts and its monitoring. Presently similar center or agency has not been established yet.

### **3.3 Natural disaster risk management and policy in spatial planning and construction**

Taking into consideration that earthquake in Georgia is one of the biggest natural hazards, in prevention of disasters and early warning especially important is spatial planning and implementation of sound policy in safe construction.

Certain scientific-research institutions are working on earthquake issues and seismological aspects, but the data from the research is not reflected in the construction standards and regulations. As a result, legislative framework, regulating and specifying construction standards is inadequate. The same can be said in regard to monitoring. While in scientific circles there is sufficient information on the high risk zones, this information has not been taken into consideration in the policy of natural disaster risk management.

From the point of natural disaster risk management, in the sphere of management of resettlement (urbanization) and safe construction is quite non-homogeneous situation from legal (regulatory-functional) standpoint. The sphere of urbanization and construction (especially safe construction) is one of the most complicated, incomplete and controversial. Till 2004 conflicting normative acts were adopted and law-making activities were chaotic and rather focused on daily needs, rather than ruled by strategy. The policy, taking into consideration the natural disaster risk management aspects in the sphere of urbanization is mainly reflected in construction norms and regulations, but they are formulated as standard rules of construction safety and do not contain any specifics related to natural disasters (such as flooding, specific safety rules for seismically most active regions). Resolution No36 of the Minister of Urbanization and Construction, adopted in August 9, 2002 on "Approval of engineering-technical measures, construction standards, emergency situations and civil defense". This document is mostly focused on defense related issues and does not sufficiently regulate the issue of safe construction for the purpose of prevention of negative impact of natural disasters. It is interesting to state, that term "natural disasters", referred to in article 2 has interesting interpretation – "the source of emergency situation".

Main function of administrative and local organs in regard to management of resettlement and implementation of sound policy in the sphere of safe construction is mainly issuance of construction permits. Thus, in accordance with the organic law on Local self-governance, one of authorities of self-governance is provision of construction permits and supervision of construction within the territory under its jurisdiction. The law does not envisage any requirements towards these organs in regard to implementation of control. Activities, which require obtaining of construction permits, are regulated by sectoral legislation and are rather viewed as technological risks, consequently, the risks of natural disasters are not duly considered.

Current situation in the sphere of spatial planning and safe construction is that ecological expertise is focused on examination of projects and is not envisaging elaboration of specific construction standards and regulations, especially from the point of spatial planning and safe construction. Consequently, when ecological expertise of construction is being conducted, the project is studied and standards of the risks of natural disasters or mitigation measures are not applied.

There is no systemic approach in given sphere yet. It is urgent to elaborate adequate construction standards and their enforcement.

### **3.4 Natural disaster risk management, environmental management and management of natural resources**

Environmental conditions can aggravate or make results of natural disaster more catastrophic. Thus, reduction of the forest cover or different practices in forest or agricultural management can cause further deterioration of situation and aggravation of negative impact of natural disasters, cause landslides, flooding, pollution of underground or surface waters and etc. On the other hand natural disasters also affect the environment in direct manner, such as destruction of infrastructure (e.g. sewerage system). Disposal of waste, accumulated as a result of natural disasters (like demolished houses) frequently represents a serious challenge too. Due to the above mentioned it is important to ensure integration of environmental aspects into all stages of the natural disaster risk management cycle (prevention, readiness, assessment, mitigation, response, rehabilitation, reconstruction and planning of development). Current system of environmental management and management of natural resources is described briefly below, also if this system is integrated into natural disaster risk management.

There are numerous drawbacks in the system of management of natural resources and environmental protection. As a rule, the following are listed: overlapping of functions of different state structures, vague delimitation of responsibilities and gaps in regulation of certain issues (when it is difficult to establish as to who is responsible for implementation of certain function), weak collaboration and communication, consideration of the elements of risks of natural disaster risk management in the system of management of natural resources and environmental protection, lack of qualified human

resources, unavailability of adequate planning and management, constraints with financial and technical resources and etc. Starting from 2004 the system of management of environmental protection in the same manner as the whole structure of state management has undergone changes mainly in three directions:

1. The so-called “adjacent” state agencies joined the Ministry of Environmental Protection and Natural Resources (for example, State Forestry Department, State Department of Protected Areas, State Department of Geology, a part of State Department of Land Management, etc.);
2. Various units subordinated to the MEPNR and newly joint agencies were either abolished or reorganized, or new units have been formed;
3. The Ministry’s territorial units were aggregated and deprived of certain decision-making rights in environmental protection and management of natural resources.

Apart from structural changes within the system during lasts several years the Ministers themselves were changed quite often. Consequently, with appointment of each new minister the structural or personnel changes were taking place. Part of highly qualified and experienced staff of the Ministry has either left upon their own decision for different reasons and presently the deficit of qualified staff is extremely obvious. Major part of them went to non-governmental or private sector. The principle of selection of civil servants in public sector along with the skills and qualification of candidates is also based on personal trust towards them. This is especially true in regard to the heads of structural units of the Ministry.

Reforms in the state, as well as in the sphere of management of natural resources and environmental protection were conducted in accordance with the main directions, selected by the Government, which was focused on improvement of investments climate and increase of budgetary proceeds. Leadership of the Ministry as well as public officials has their own views and perceptions in regard to reforms, which was reflected in changes in the instruments of management. Thus, the mechanisms of setting of limits to emissions of pollutants into air have been modified, taxes for emissions of pollutants into air and their disposal into water has been abolished, as well as taxes for use of natural resources (later on this tax was reintroduced under the name of fee for use of natural resources.

Implementation of sustainable policy in the sphere of environmental management and natural resources first of all is promoted by sound planning, which is product of observations, collected as a result of monitoring. Monitoring is of crucial importance for evaluation of trends of usage of natural resources and current practices. Maintaining of monitoring and analysis of obtained information is important from the point of implementation of sustainable policy in the sphere of environmental management and usage of natural resources, elaboration of strategy and plans, and adoption of relevant decisions. Results of monitoring allow for planning and implementation of urgent measures for environmental management and usage of natural resources, reduction or minimization of the risks of natural disasters, mitigation of negative impact to the environment caused by them and etc. Availability of reliable information on natural resources is important for maintaining of inventory and preparation of national reports.

Current legislation on environmental monitoring assigns responsibility for such monitoring to different public institutions (such as the Ministry of Environmental Protection and Natural Resources, the Ministry of Agriculture and etc). Collection of reliable and useful data for promotion of implementation of sustainable policy in the sphere of environmental management today is extremely complicated. The reasons are the following:

1. Lack of qualified staff in the public institutions, which would be able to maintain observation and form analytical system elaborate relevant legislative framework and implement observations.
2. The institutions are not sufficiently equipped with necessary technical and financial resources.
3. Failure of efficient usage of capacities of scientific-research institutions.
4. Unavailability of methodology of observations, due to which there are huge discrepancies in statistical information. Due to this information on current status of different environmental components is not collected regularly or systemically by state, scientific or non-governmental organizations.

Efforts of certain non-governmental and scientific organizations focused on collection of information for development of unified database for environmental management and natural resources are not sufficient or systematic. Consequently, environmental information is limited and not available for stakeholders and interested parties.

Main drawbacks in environmental and natural resources management are the following:

1. Planning and coordination, organization of implementation of decisions, monitoring audit and control in the executive branch is still weak and integration of elements and principles of natural disaster risk management is not adequate.

2. Responsibilities are not delegated in rational manner between different levels of the government. Major part of the time and budget of public officials is spent on seeking solutions to daily challenges and not on strategic, priority and prospective management and adoption of relevant decisions.
3. Cooperation of the executive power with civil sector is of extremely unsystematic character. Sometimes political decisions and activities are not explained to public or justified. The system of involvement of public into decision making process and consideration of the feedback of public opinion is not in place.
4. Cooperation of state organizations in the sphere of environmental management, sharing of information, coordination of activities and involvement in decision making is not of systemic character.

Relations between the central and local governments from the financial point of view in regard to the sphere of environmental management and natural resources are not clear and delegation of authority between these levels is vague. Authority of local bodies of governance and self-governance is quite limited. Professionalism of staff of public institutions needs to be improved. Skills of management, planning, strategic vision of challenges and needs are not available in staff of public structures. Qualification standards, functions and responsibilities of civil servants have not been developed yet. Major part of staff has no relevant experience.

### **3.5. Overview of international environmental conventions relevant to natural disaster risk management**

Reduction of the risk of natural disasters and implementation of relevant steps by law-makers and politicians is promoted by implementation of several international conventions, including Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (hereinafter referred to as the Aarhus convention), Convention to Combat Desertification and Convention on Biological Diversity. Below is provided overview of current status of implementation of requirements of these conventions by Georgia.

Aarhus convention, Convention to Combat Desertification and Convention on Biodiversity have the status of international agreements by legislation of Georgia. Namely, Aarhus convention has entered into force by February 11, 2000 Resolution of the Parliament. Convention to Combat Desertification has entered into force by Resolution of the Parliament, adopted in June 23, 1999, Convention on Biodiversity has entered into force by Resolution of the Parliament, adopted in April 21, 1994.

According to the law on International Agreements the above referred conventions are agreements, concluded by the Government of Georgia with foreign states or international organizations, which are regulated by international law, notwithstanding the fact, whether such agreement is represented by one or several related documents and their specific names. These agreements are inseparable part of legislation of Georgia. As they are not in conflict with the Constitution of Georgia, they have superseding legal authority over internal normative acts. Aarhus convention, Convention to Combat Desertification and Convention on Biodiversity have been published in official printed media and do not require adoption of special internal normative act (i.e. additional laws or resolutions of the Parliament or the Government) and they are legally in force in Georgia.

**(a) Aarhus Convention:** The convention was not transposed into national legislation by separate normative act. Principles of Aarhus Convention (accessibility of environmental information, public participation in decision making and access to judiciary) are included into the General Administrative Code, system of issuance of environmental impacts assessment permits, conducting of EIA and ecological expertise and in unified manner, which also dwell upon the principles of consideration of issues by administrative bodies (including natural disaster risk management) and decision making, as well as public participation in decision making and increasing of public awareness.

It is natural, that the Law on Environmental Impact Permit should not be in conflict with provisions of the convention. Despite this, legislation regulating issuance of environmental impact permit is based on General Administrative Code and provides for some procedures and deadlines, which are in conflict with requirements of Aarhus Convention. For example, participation of public in the sphere of environmental management and natural disaster risk management, as provided by Aarhus Convention is not enforced in practice. There is certain discrepancy in interpretation of "environmental information" in Georgian law and Aarhus Convention, although there is some interpretation of terms in compliance with convention and types of information, pertaining to environmental aspects, which cannot be considered as confidential.

One more aspect is that legislative amendments have made substantial modifications into the rules and procedures of issuance of permits and licenses, and the list of activities, subject to environmental impact assessment procedures has been reduced substantially. The deadline for issuance of environmental permits has been reduced substantially too (from 3 months to 20 days).

The requirements of Aarhus convention are met by article 14 of the Law on Environmental Protection, adopted in December 10, 1996, which provided for preparation of the national report on state of environment and ensuring its publicity. According to the law for the purpose of informing of the public the Ministry of Environmental Protection and Natural Resources should on annual basis prepare the national report on state of environment and submit it to the President<sup>34</sup>. Publication of the national report is mandatory requirement of the law for the purpose of promotion of its availability to public. The report should contain information on the qualitative status of the environment, impact on the national economy, state management of environment, forecasts and recommendations in regard to measures to be implemented in future. Up to now such national reports have not been published yet (it was not disseminated neither in printed form, nor through internet), although it is clear, that the main objective of elaboration of such reports is informing of public. According to the law normative acts, as well as other documents, adopted by normative acts, should be published in official printed organ. In official printed organ were published only presidential decrees on approval of the national report, but not the report itself. Due to weak control over implementation of requirements of the law in regard to environmental protection and drawbacks in the system of monitoring, information provided in the reports gives rise to numerous questions, especially in regard to qualitative data and evaluation of the impact on the economy. It should also be stated, that scientific-research institute of the environmental protection, which was responsible for coordination of the process and elaboration of the national report, as a result of governmental reorganization today is not functioning neither under the Ministry, nor other structures. The function of preparation of the national reports presently belongs to one of the structural units of the ministry.

Provision of information to public and its participation in elaboration of normative acts and strategic documents is provided by the Aarhus Convention, as well as legislation of Georgia, although the Parliament of Georgia, the organs of the executive power and local bodies of governance and self-governance can not fully implement these requirements of the law. As a rule as main reason for failure to implement these requirements is stated lack of financial resources.

The issue of availability of environmental information is also regulated by the Presidential Decree No389, adopted in June 25, 1996, which dwells upon the rules of preparation and publication of the national report as well as issues to be covered by the report. Thus, article 27 (meteorological characteristics of the year, natural disasters, etc.) defines data to be included in the report as well as information on such aspects, as natural hydro-meteorological disasters, extreme weather conditions, natural disasters, damage caused by them and mitigation measures.

The issue of accessibility of normative or strategic documents of environmental sphere is also regulated by legislation, regulating the sphere of elaboration, adoption and publication of normative acts, according to which law, international agreements, acts adopted by the President of Georgia, the government, the executive power and local bodies of governance should be published in official printed media.

The legislation defines certain obligations (Regulations of the Parliament of Georgia, the General Administrative Code) in regard to ensuring accessibility of normative acts, including environmental draft laws and etc. As to programs defining policy in different spheres, the mandatory requirement of publication of normative acts is applicable to them too. Despite this quite often instead of publication of these documents normative acts, approving them are published and the documents remain inaccessible for public. Generally, Georgian legislation does not provide rules for elaboration, consideration, adoption and publication of strategic documents, as well as their status, which remains serious drawback of the system of planning.

Georgian legislation defines responsibility for provision of information to public and relevant state organs on occurred or expected natural and technological disasters and other ecological disasters, but places responsibility of provision of information to the citizens. The legislation also provides for responsibility of the President of declaration of emergency situation in the event of ecological disasters, epidemics and epizootic. Response to adopted decrees and dissemination of information is implemented depending on actual state of affairs. Requirements in regard to the need of availability of action plan are of general character too. I.e. in the event of emergency situation activities should be planned in advance on the state, as well as enterprise level. Such general character of provisions does not promote to their implementation.

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<sup>34</sup> At the end of 2007 amendments were entered into the law on Environmental Protection, according to which national report on environmental impact should be prepared not on annual basis but once in every three years.

Participation of non-governmental organizations in elaboration of strategies and plans in the sphere of natural disaster risk management, consideration of possible negative impact of large projects on environment, increasing of public awareness in environmental sphere, planning and implementation of conservation measures and development of legislation is quite weak.

**(b) Convention to Combat Desertification:** Convention to Combat Desertification represents an international legal act and is directly enforced in Georgia. Transposition of the Convention into national legislation is voluntary and not mandatory (introduction of more stringent regulations, than in Convention). For transposition of the Convention into national legislation separate normative act has not been elaborated (the same is true in regard to Aarhus Convention and Biodiversity Convention).

Legal framework for combating desertification and land management is one of the weakest in Georgia. Special regulatory framework has not been elaborated yet. Inadequate legislative framework creates problems in the process of implementation, although it should be stated, that problems are not only related to drawbacks in the legislation, but are also caused by weakness of state organs and low level of accountability to public.

Legislation, regulating land management, protection and land-usage is of fragmentary and incomplete character. Issues related to fighting with desertification are not adequately covered by legislation. There is the need of adoption of a whole range of normative acts in regard to desertification, usage and protection of pastures, former collective farm forests and their resources, protected areas and etc.

Despite the fact, that land related legislation provides for rational and effective usage of lands and requirements focused on aversion of degradation of land resources, relevant mechanisms of incentives are not in place (such as reduction of land taxes or exemption from such taxes, material incentives and etc). For the purposes of fighting with desertification such measures, as preparation of cadastre of fertility of lands are not implemented yet and monitoring regulations have not been elaborated.

Criteria for delimitation of competencies between central and local organs, responsible for given sphere, as well as competencies are vague, which represents serious problem in execution of laws. Issues of inter-agency coordination and exchange are not clearly defined too. Provisions on responsibility for violations, compensation of damages, control and supervision need to be refined. Lack of relevant administrative and political mechanism, financial constraints and lack of technical resources, unavailability of qualitative and quantitative data on land resources, low awareness of population are the main reasons for inefficient implementation of requirements of Convention to Combat Desertification.

Land taxes are presently channeled for replenishment of the state budget and up to now channeling of proceeds for management and protection of lands and implementation of requirements of desertification convention has not been possible up to now. In recent period due to lack of financial resources social-economic and ecological evaluation of land resources has not been conducted. Basic normatives of land taxes are defined on the basis of old cadastre data, which do not reflect the real picture. Planned and focused efforts towards fighting with desertification are not undertaken as yet.

The mechanism of coordination of efforts of implementation of desertification Convention, as well as functions and competencies of the permanent Commission implementing the Convention and the scientific-consultative Council under the Commission are quite vague too. Purposes and tasks of these two structural units of the coordinating body are basically identical and not clearly delimited. Elaboration of integrated strategies is within the responsibility of the Commission and the Council as well. On the basis of the Regulations of the Commission and the Council it is extremely difficult to establish as to how the strategic documents are elaborated.

Functions of monitoring of fertility of soil are not clearly delimited between the Ministry of Environmental Protection and Natural Resources and the Ministry of Agriculture. Functions of control and supervision are also not delimited clearly between the internal units of Ministry of Environmental Protection and Natural Resources and the Ministry of Agriculture. In the laws and normative acts, as well as Regulations of the structures functions are defined in extremely general manner and it is not explained as to what is implied under certain functions or what are the rights and responsibilities if the structural units in regard to implementation of these functions.

In April 2, 2003 was published presidential Decree No112 on "Approval of the national program in fighting against desertification". The program is rather compendium of statistical data and scientific postulates, rather than effective guidelines for implementation.

In September 2003 the Ministry has elaborated an extensive document, namely a thematic report on “Desertification/land degradation – identification and strengthening of capacities of Georgia in regard to contributing to global efforts for environmental protection. Global problem of desertification and land degradation”. This report provides detailed consideration of capacities, available on systemic level, plans for measures of prevention and fighting against desertification and land degradation and integration of these measures into general social and economic development and Sectoral strategies and programs. The program contains analysis of economic mechanisms, processes and relations existing on systemic level, financial, human and informational resources, and capacities available on institutional and individual levels, inter-agency coordination mechanisms and covers different aspects, which should be taken into consideration in the national program on fighting against desertification and land degradation. The program has certain drawbacks as well. Namely, it does not consider specific measures, adoption of which should be conducted in each specific case, as a lot of aspects need to be researched yet. We can identify two directions of measures, proposed in the action plan – monitoring over processes and plan for elaboration of adaptation measures.

**(c) Convention on Biological Diversity:** Convention on Biological Diversity has been transposed into national legislation with certain drawbacks. In Georgia presently have been elaborated and adopted a whole range of laws, which regulate protection of biodiversity and sustainable development on national level. To protection of biodiversity and sustainable development are directly related the following laws: the Law on environmental Protection (1995), the Law on Harmful organisms and plant protection (1994), the Law on the System of Protected Areas (1996), the Law on the State Ecological Expertise (1996), the Law on the Wild Life (1996), the Forest Code (1999) and the Law of Georgia on the Red List and the Red Book (2003).

At the same time there is whole range of requirements of the Convention on Biodiversity, which are not regulated by Georgian legislation at all. There are no legislative or regulatory acts on such issues, provided by the Convention as: (1) Availability of genetic resources and fair and equal distribution of benefits from usage of genetic resources; (2) Maintenance and protection of traditional knowledge and experience in the sphere of usage of biodiversity; (3) Regulation and control over introduction of new species.

In certain cases provisions of the above mentioned laws are in conflict. Quite often different laws assign authority over protection of biodiversity and management of biodiversity to different entities or such responsibility is not clearly defined or delimited. Procedure of coordination and participation of public in decision on establishment of protected areas, elaboration of management plans and their approval need to be refined.

It is noteworthy, that even in the events of best planning of the system of protected areas a lot of important species are left beyond the borders of the protected areas, as the law of Georgia on the System of Protected Areas ensures protection of species and natural habitats only within protected areas. This problem is especially acute in case of endemic plant species and endangered species.

### **3.6 Application of environmental instruments for natural disaster risk reduction**

One of the main instruments of reduction of the risk of natural disasters is use of such instruments of decision-making at different levels of the process, as environmental action plan, environmental impact assessment, strategic environmental assessment, integrated water resources management, integrated management of the coastal zone. Below brief overview of current situation in regard to application of the above mechanisms in Georgia is provided.

#### **(a) National Environmental Action Plan**

First national environmental action plan was elaborated in Georgia in 1996 and approved in May of 2000 by presidential Decree No191. Coordination over the process of elaboration of the program in participation of different public agencies, scientific organizations, non-governmental organizations, foreign and Georgian experts was the function of the Ministry of Environmental Protection and Natural Resources, while financial and methodological assistance was provided by the World Bank.

The process of elaboration of the national environmental action plan was important effort towards identification of the state priorities in the environmental sphere. The plan defines priority environmental problems, which represent hazard to the health of population and biodiversity, as well as hinder economic development of the country. The program contains listing of medium-term and long-term objectives in the sphere of management of protection of environment and sustainable usage of natural resources, institutional development and measures to be implemented for attaining of these goals for the next 5 years.

The national environmental action plan focuses on such local problems, as management of water resources, pollution of atmosphere, management of solid waste and disposal of hazardous chemical substances and mineral resources. Along

with local environmental problems the national program focuses on global environmental problems as well, which are retaining of biodiversity, climate change, reduction of ozone layer, land degradation. The national program on environmental protection does not dwell on management of risks of natural disasters.

It should be stated, that measures for mitigating global environmental problems, provided for in the first national environmental action plan were supposed to be funded from international sources. The plan does not contain many measures to be funded from the national budget or directed towards attraction of private investments, as well as measures related to management of risks of natural disasters. In reality among the measures provided by the plan are implemented or have been implemented only those projects, which were funded from international sources (mainly Global Environmental Protection Fund). Despite certain drawbacks it should be stated, that elaboration of the first national environmental action plan was a step forward in the sphere of development of the practice of environmental planning and traditions, as this was first serious effort focused on systemic prioritization of environmental measures.

Elaboration of the second action plan for the period of 2008-2012 has started in 2006 and was completed in 2007, although the plan has not been approved up to now for different reasons. Elaboration of the plan was formally managed by the Ministry of Environmental Protection and Natural Resources and it was funded by the UNDP. Despite the fact, that the document has not been approved up to now and its future is not clear, it should be stated, that along with other important priority directions (pollution of surface water, atmospheric air, waste, degradation of biodiversity, degradation of forests) the action plan contains measures focused on intensification of measures towards mitigation of risks related to natural disasters.

#### ***(b) Environmental Impact Assessment and Strategic Environmental Assessment***

Environmental Impact Assessment (EIA) system currently existing in Georgia is effective neither in terms of providing public with the information and ensuring public participation, nor in terms of helping decision-makers to take informed decisions on the activities that have adverse environmental effects, to say nothing of post decision-making monitoring and control. The Georgian EIA legislation does not comply with the requirements of Aarhus convention, as well as to the relevant EU directives.<sup>35</sup> The areas of particular concern include:

- Applicability of EIA – EIA is applicable to private projects/activities listed in article 4 of the recently adopted Law on Permit for Impact on the Environment. Public (state-owned) projects are exempt from EIA, while the majority of the activities listed in the abovementioned article can in principle be implemented only by the public institutions. Furthermore, The Law on State Support to Investments makes possible for any person to start implementation of activity without conducting EIA and obtaining permit on condition that he/she will fulfill these obligations in the future.
- Type of activities subject to EIA/Screening – article 4 of the law gives exhaustive list of activities subject to EIA; the list does not include such activities/projects as for instance, mining, nuclear power stations, agricultural and food industries, wood, paper, leather and textile industries, certain types of infrastructural projects. There is little screening of projects subject to the EIA process, putting an excessive burden on the Ministry of Environmental Protection and Natural Resources (authority responsible for reviewing EIA reports (state ecological expertise) and granting the permit for impact on the environment) and the developers of small and medium size projects which have no significant environmental impacts. The list of activities subject to EIA (article 4 of the law) does not comply with Annex I of the Council Directive 85/337/EEC and Annex I of Aarhus Convention.
- Scoping – scoping stage is absent in the legislation; That is why the EIA reports submitted for receiving the ministerial consent are of extremely low quality.
- Public participation – The Ministry is neither obliged nor entitled to ensure public participation in the decision-making on granting the permit for impact on the environment. Instead the project developers are obliged to inform and consult public on the draft EIA report, i.e. before application to the ministry. Ministry is also not obliged to inform public on the decisions on granting the permits. As Netherlands Commission on Environmental Impact Assessment noted in its advisory report of 2006, commission is not aware of any country in which the project developer is responsible for organizing the public hearing and for considering of the comments made by the public as well as for informing the public what has been done with their comments. Commission underlines that usually these are responsibilities of the competent authorities.

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<sup>35</sup> Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment; Council Directive 97/11/EC of 3 March 1997 amending Directive 85/337/EEC of June 1985 on the assessment of the effects of certain public and private projects on the environment; Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC

There are no legal bases for Strategic Environmental Assessment (SEA) in Georgia; however there were certain efforts made to introduce this instrument (Ministry of Environmental Protection and Natural Resources established SEA task force at the ministry. The task force elaborated draft regulation on SEA). It shall be noted that interest to this instrument has reduced gradually, as for last years any assessment tools, especially those involving public participation in the decision-making are increasingly seen as unnecessarily prolonging administrative procedures and therefore hindering investments in the country.

Despite differing attitudes towards this instrument, there are still examples of its application in Georgia. On the initiative of the Ministry of Energy of Georgia and with the assistance of World Bank, SEA of country's energy sector was conducted in order to identify the possible consequences of including construction of Khudoni Hydropower Station into energy generation extension plan. The draft law on waste was also subject to SEA, however due to different reasons the law is still not adopted. It is also planned to undertake SEA (with the support of European Bank for Reconstruction and Development) during identification of Aragvi river hydro-energetic potential.

### ***(c) Integrated Water Resources Management<sup>36</sup>***

Of the policy-setting documents in the field of water, attention should be drawn to the two main documents, none of which are officially approved as of yet. The first is the draft concept of integrated water management<sup>37</sup>, which according to official sources has already been mulled over and approved at a governmental session<sup>38</sup>. The other document is the draft concept of water resource management policy of Georgia, prepared by the Ministry of Environment Protection and Natural Resources.

Both of these documents underline the necessity of implementation of basin management of water resources. Also, the first document places particular emphasis on the importance of effective use and economic profit of water resources. A river is presented as a "single physical and economic object." Crucial importance for the formation of a river basin unit falls on a geographic principle that "a basin should be physically united" and an economic principle that "a basin should be economically sustainable."

The project of the Ministry of Environment Protection and Natural Resources aims to create a 25-year model of improved and effective management of water resources which must ensure: preservation of ecologic values and functions of waters of Georgia; preservation and improvement of quantitative and qualitative indicators of water; access to safe clean water; protection from and prevention of floods and droughts; preservation of hydrological mode. The project mentions ineffectiveness of the current administrative model of water resources management. In particular, the project states that with the existing administrative model it is impossible to plan effective use of water resources within the confines of river basin with consideration of the interests of water users and preservation and protection of ecosystems. Accordingly, the priority direction of the water resource management policy presented in the project is to implement basin management of water resources and to strengthen appropriate legal and institutional foundations.

Even though Georgia actively supports the necessity of making the national legislation compatible with the EU law and the necessity of implementing integrated methods of water resources management in Georgia, in many cases the existing legal basis or planned amendment are only of superficial character and do not guarantee real implementation of the EU water policy and of the principles of sustainable water management in general.

Like almost in the whole region of the Eastern Europe, the Caucasus, and Central Asia, Georgia too does not yet have the institutions necessary to implement integrated management of water resources. In the same vain, integrated management of water resources so far does not represent a foundation for national policy. A 2006 report of the Ministry of Environment Protection and Natural Resources, however, mentions "ensuring the transition to basin management system of water resources" as a priority direction. The necessity to implement basin management system is also actively discussed in the water concepts prepared by the government of Georgia and the Ministry, and in the Draft Law on Water. It should also be noted here that when the matter refers to the system of basin management of water resources one should take into account the fact that basin management is only a part of integrated management of water resources, or more precisely, an instrument to implement integrated management and this is not fully understood by the decision-makers, unfortunately.

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<sup>36</sup> Tamar Gugushvili, 2007, Management and Protection and Water Resources in Georgia, Green Alternative, 2007

<sup>37</sup> The document was not officially disseminated or made accessible to the public in some other ways. The opinions expressed here draw on an unofficially obtained presentation document of the draft concept, presented at a session of the government of Georgia

<sup>38</sup> Information on main activities of the Office of State Minister for Reform Coordination Issues for the year 2006, available at [http://www.government.gov.ge/full\\_text.php?nid=1980](http://www.government.gov.ge/full_text.php?nid=1980)

#### ***(d) Integrated coastal zone management (ICZM<sup>39</sup>)***

Georgia is a signatory of the Convention on Protection of the Black Sea from Pollution (Bucharest Convention). In 1993 Georgia has also signed Odessa Declaration on protection of the environment of the Black Sea from pollution, which provided for integrated management of the coastal zone. This was the launching of the concept of integrated coastal zone management, which was initiated within the framework of the Black Sea Environmental Program – BSEP.

In 1999 implementation of a five-year program on integrated coastal zone management was commenced with the support of the World Bank and the Global Environmental Facility. Within the framework of the project were elaborated several documents pertaining to development of the integrated management of the coastal zone. Namely, was elaborated draft law on integrated management of the coastal zone, which is aimed at promotion of sustainable development of the coastal zone and conservation through introduction of the mechanisms of integrated management of the coastal zone within jurisdiction of Georgia. This implies introduction of coordinated approach towards legal responsibilities, assigned to different public structures within the revised system of regional and strategic planning. The draft law is also aimed at protection of the natural and cultural environment and natural resources of the coastal zone through regulation of activities, related to development of the coastal zone.

In 2006 were published guidelines on integrated management of the coastal zone. The document defines tasks and principles related to integrated management of the coastal zone, considers regulation of challenges of the coastal zone, aims at promotion of balanced development of different sectors of economy, development of infrastructure, elaboration of forecasts in regard to erosion processes, reduction of the risks of flooding, organization of disposal of solid waste and other issues.

Among the documents, developed by the working group of the integrated management of the coastal zone project, it is noteworthy to mention draft of Strategy of Integrated management of the coastal zone, presented to public for its consideration.

In the end it should be stated, that despite substantial work and efforts of the team of the Integrated management of the coastal zone project, undertaken during last 10 years, the above referred draft law on Integrated management of the coastal zone, as well as strategy for management of the coastal zone and sea resources, or socio-economic development plan has not been adopted yet.

#### ***3.7 Natural disaster risk assessment***

In Georgia numerous reasons are disposed towards natural disasters, especially such as flooding and landslides. State data on social-economic state of population, natural disasters which occurred in the past, potential impact on territories is extremely weak and unreliable. Certain exclusion is the presidential Decree No542, adopted in September 24, 2007 on “Approval of the document for risk assessment for the period of 2007-2009”. This document represents adapted version of the risk assessment and provides detailed identification of those risk factors, which may have impact on security of the country, including natural disasters. The document focuses on such natural disasters, as flooding, avalanches, earthquakes, landslides, mudflows and forest fires. We have already analyzed drawbacks of this document above and we shall not reiterate some points in this section.

As to detailed analysis of sensitivities, its implementation has not been planned. There are several surveys such as “Natural disasters in Georgia and management problems and assessment of geological natural disasters in Georgia”, author Emil Tsereteli. This work is quite extensive and is covering such issues, as assessment of geological disasters, the level of damage caused by agricultural and urbanization processes by regions, specificity of virtual geological processes, earthquakes, abrasion of sea shores, landslide-gravitational processes, mudflows, avalanches causes of geological disasters, activities related to natural disasters, interim plans related to natural disasters, but it still remains an individual unofficial survey. A report on the state level has not been elaborated as yet, unless we take into consideration as information the Presidential decree mentioned above.<sup>40</sup>

State program on “Maintaining measures on monitoring of hydrometeorology and background pollution of environment, adopted by Presidential Decree No477 dated by November 24, 2001 is related to the issues of risk assessment and detailed analysis of sensitivity in regions of Georgia, disposed towards natural disasters. Although the program does not contain detailed analysis of sensitivity in regions of Georgia, disposed towards natural disasters, but serves the purpose of collection and systematization of information on background pollution. The program aims at restoration of activities,

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<sup>39</sup> See Integrated Coastal Zone Management in Georgia at: [www.iczm.ge](http://www.iczm.ge)

<sup>40</sup> Institute of Geophysics is currently implementing project which entails assessment of risks of twelve most dangerous natural disasters in each district of Georgia

related to monitoring of hydrometeorology and background pollution of environment, strengthening of material-technical basis, introduction of new technologies, development of infrastructure in compliance with modern requirements, collection, processing and updating of information. For the purpose of achieving of the above mentioned implementation of following activities is planned: equipment of observation points with automated meteorological stations, conducting of hydro-meteorological and agro-meteorological observations, development of modern communication system, development of satellite information system and etc.

Out of all the above mentioned to the natural disaster risk management and sensitivity is pertaining monitoring over desertification and drought, studying of periodicity of occurrence of droughts in Georgia, development of automated system of monitoring, monitoring over droughts and elaboration of forecasts.

#### **4. Natural disaster risk management – institutional framework**

In given section of the report is provided overview of those state structures, which participate in natural disaster risk management and possess authority and responsibility, relevant for the purposes of present survey.

Institutional framework of natural disaster risk management in Georgia is of quite complicated structure. According to legislation at different stages of the cycle of natural disaster risk management are participating different structures of the executive branch, as well as individual and legal entities. Namely, the President, governmental structures, local bodies of governance, individual and legal entities, commissions set up at different levels, legal entities of the public law and etc. It should be stressed, that the above mentioned subjects participate only at certain stages of the cycle. Basically no structure participates in the whole cycle of the natural disaster risk management, including prevention and elimination of the damage. The Department of Emergency Management of the Ministry of Interior in this regard is the only exclusion, although legislative framework is still quite vague and sometimes it seems, that other subjects also participate at all stages of natural disaster risk management (such as local bodies of governance, the Ministry of Environment and etc), although more in-depth analysis reveals, that this is not so.

##### **4.1 Subjects participating in the natural disaster risk management**

Main structure of institutional framework, related to natural disaster risk management, which was identified on the basis of analysis of legislative acts, is the following:

- (a) According to the law of Georgia on Water Resources:
  - 1. Private legal person – license-holder for usage of natural resources
  - 2. The Ministry of Environmental Protection and Natural Resources, other ministries and public entities;
  - 3. Regional and city commissions
  - 4. Departmental commissions
  - 5. Commissions of autonomous republics
  - 6. Special state commission
  - 7. Special permanent commissions
  - 8. Representatives of the president and/or commandant, other temporary organs.
  
- (b) According to the law of Georgia on Emergency Situations:
  - 9. The National Security Council
  
- (c) According to the law of Georgia on Protection of the territory and population from natural and technological disasters and emergency situations:
  - 10. Subjects of the unified system (The Ministry of Interior, local bodies of governance and self-governance of autonomous republics
  - 11. Special divisions of the executive power
  - 12. State commission on management of emergency situations
  - 13. Temporary commissions of local bodies of governance and self-governance

Subjects, participating in the institutional structure of the natural disaster risk management have the following functions and authority:

- **The Ministry of Environmental Protection and Natural Resources**

The Ministry of Environmental Protection and Natural Resources participates in the natural disaster risk management on the basis of several normative acts. Thus, in accordance with the law of Georgia on “Regulation and engineering protection

of coasts and banks of sea, water bodies and rivers of Georgia” the Ministry approves of the borders of coasts to be protected by engineering measures. According to article 39 of the law on Environmental Protection the Ministry approves of the measures targeted towards prevention of technological emergencies and natural disasters and action plans, to be implemented by legal persons. According to article 32 of the same law the Ministry is responsible for elaboration of standards on stress to environment and quotas for usage of different types of natural resources for central, regional, as well as local levels.

In article 10, paragraph (u) of the Law on Water is stated, that within competencies of the supreme state bodies, responsible for regulation of water resources is provision of funding of restoration and rehabilitation works of water resources of state importance. Although the law does not indicate directly, but the Ministry belongs to such supreme state bodies. This general provision implies, that the Ministry participates in elaboration of measures for water protection (article 14) and is responsible for provision of assistance in survival of sea species in the event of extreme situations occurring due to natural disasters or other reasons (article 17).

The same principle is provided by the Law on the Wildlife, article 10 (competencies of the supreme state bodies of Georgia in the sphere of protection of wildlife), paragraph (i) of which states, that restoration of the natural habitat of wildlife, damaged as a result of ecological disasters is within responsibility of the supreme state bodies of Georgia. The Ministry also approves of the Regulations on “Creation of the reserve for preservation of gene pool of species, endangered as a result of natural disasters within the framework of measures, targeted towards elimination of negative impact of natural disasters within the territories of state reserves and natural parks”.

According to article 25 of the Law on Water the Ministry approves of the measures to be implemented by water users for the purpose of prevention of negative impact of water and elimination measures, or provides direct instructions on implementation of such measures. Article 27 (fighting against flooding and the system of management of elimination measures) of the same law provides, that for the purpose of fighting against flooding and the system of management of elimination measures under the Ministry is established an inter-agency commission, into composition of which shall be entered representatives of local bodies of governance and the officials of the Ministry.

In emergency situations (natural disasters) the Ministry of State Inspection of Technical Supervision in cooperation with the Ministry shall arrive to decisions on termination, suspension or restriction of water usage rights (article 45. basis for termination or suspension of water usage rights).

According to article 47 of the law the Ministry is responsible for management of water usage and protection, which is implemented through registration, monitoring, licensing, control and supervision. Forecasts on flooding, landslide and mudflow (article 80) are elaborated on the basis of monitoring, implemented by the Ministry. I.e. the Ministry is responsible for elaboration of forecasts. The Ministry also controls prevention of hazardous impact of water and elimination measures (article 85 of the law).

According to laws on Permits for environmental impact and Ecological Expertise the Ministry is responsible for conducting of environmental impact assessment within the framework of issuance of permits, organization of ecological expertise and approval of the conclusion of such expertise.

In accordance with article 10 of the Forest Code restoration of forests, damaged by natural disasters, epidemics and other reasons is also within functions of the supreme executive organs of the government, i.e. the Ministry.

In accordance with article 14 of the law on “Protection of territories and population from natural and technological disasters” in the event of emergency situations for the purpose of promotion of active functioning of the unified system the Ministry establishes special division of management of emergency situation. Although, this responsibility is in conflict with rules and procedures, established by other laws, which we shall consider in other section of the report.

The same collision is in paragraph 5 of the article, according to which the Ministry, as a subject of the unified system implements its activities on the basis of relevant legal acts, National Response Plan approved by the President and the Civil Defense Plan.

- **National Environmental Protection Agency under the Ministry of Environmental Protection and Natural Resources**

The Agency is established under the status of the legal entity of the public law and its activities are mainly focused on regulation of banks and coasts and their engineering protection. Control over activities of the Agency is responsibility of the Ministry of Environmental Protection and Natural Resources. The law on Regulation and engineering protection of coast and banks of sea, water bodies and rivers of Georgia” regulates sustainability of the zones of engineering protection

and establishes state control and responsibility over activities, causing erosion and abrasion processes. According to article 5 of the law function of the National Agency of Environmental Protection is elaboration of the zones and borders of engineering protection.

The Master Plan for engineering protection of the coastline defines preventive measures for protection of coasts. The agency implements monitoring for the purpose of elaboration of plans for elimination of negative impact of erosion and accumulation processes and implementation of measures on protection of coasts. Another main function of the agency is development of the data base within the zones of engineering protection and implementation of monitoring.

Thus, from the point of participation in natural disaster risk management functions of the National Agency of Environmental Protection are mainly focused on elaboration of borders of zones of engineering protection, development of the data base and implementation of monitoring.

- **The Emergency Management Department of the Ministry of Interior**

Regulations of the Emergency Management Department are adopted by resolution No9 of the Minister of Interior, dated by January 6, 2006 on "Adoption of Regulations of the Emergency Management Department of the Ministry of Interior. Main functions of the Department in regard to participation in natural disaster risk management are defined in the law of Georgia on Protection of the territory and population from emergency situations caused by natural and technological disasters. According to the law in the event, when it shall not be possible to liquidate emergency situation with resources and capacities of the government of different levels, local self-government and legal persons, in elimination measures shall take part organs of a unified system, provided by article 13 of the same law, one of the main stakeholders of which is the Emergency Management Department of the Ministry of Interior, including its structural units in Abkhazia and Adjara autonomous republics.

According to article 7 of the law the Emergency Management Department (including its structural units in Abkhazia and Adjara autonomous republics) define the borders of emergency situation on the basis of classification of emergency situations.

Activities of the department are mainly focused on response to emergency situations at the time of occurrence, as well as in the period after their completion. This is provided by the law. Another dimension of participation of the Department in the cycle of management of natural disasters is participation in elaboration of national response plan and civil defense plans to be approved by the President of Georgia. Although, from the point of participation in natural disaster risk management, given functions of the Department are different from functions, provided by other laws.

By Resolution No683 of the President of Georgia on "Transfer of mountain-rescue militarized divisions previously subordinated to the State Inspection of Technical Supervision into subordination of the Emergency Management Department and civil defense", adopted in October 21, 1996 starting from the year 1996 into subordination of the Department was included mountain-rescue militarized divisions previously subordinated to the State Inspection of Technical Supervision. The Resolution also defined, that "the Department should take into consideration, that activities of the mountain-rescue militarized divisions are regulated by the law on the Mineral resources and Regulations of the State Inspection of Technical Supervision and its structure", adopted by Resolution No477 of the President of Georgia, dated by July 22, 1996.

One of the main competencies of the Department is "Establishment of the experts-consultative council for the purpose of aversion of emergency situations caused by natural and technological disasters and mitigation and elimination of their results".

It is also noteworthy, that in the structure of the department there are divisions of forecasts and analysis.

Within the competencies of the department of the forecasts and analysis is the following:

- Organization of forecasting of emergency situations and advance monitoring in cooperation with stakeholders and relevant organizations;
- Cooperation with scientific-research institutions for the purpose of preparation of forecasts of natural and technological disasters.
- Elaborate and submit to the head of the Department national response plans for emergency situations and civil defense plans.
- Elaborate and submit to the head of the Department action plans.

Within competencies of the division of the crisis management is the following:

- Organization and implementation of the management processes in the event of emergency situation.
- Notification of representatives of the Ministry and organization of activities for crisis management.
- Receiving, processing and maintenance of permanent monitoring over information on pre-crisis events.
- Elaboration of information technologies and development of information data bank for ensuring management of a crisis.
- For the purpose of assessment of critical situation elaboration of special methodology on the basis of computer modeling and data base, linked to geographical coordinates in accordance with international requirements.

Thus, in the institutional structure of the natural disaster risk management the Department has one of the most important roles.

- **Local bodies of self-governance**

The role of local bodies of governance in natural disaster risk management is defined by numerous normative acts. In some normative acts the organs of local self-governance are referred to directly, while in some of them they are referred to as “the relevant organs”. We shall not provide here comments in regard to such reference (the relevant organs), as it is identical in cases of listing of all responsibilities (such as participation in funding of activities, planning of elimination measures and etc), although we shall dwell upon each similar provision in the part of analysis of legislative framework.

Local bodies of self-governance implement measures of elimination of results of emergency situations through subdivisions of management emergency situations, with their own capacities and resources. These subdivisions are viewed as organs, representing part of unified system, referred to in article 13 of the law on Protection of the territory of the country and population from emergency situations caused by natural and technological disasters”.

Article 7 of the law states, that the borders of the zone of emergency situation among other relevant organizations are also defined by local bodies of self-governance on the basis of classification of emergency situations. Relevant zones and regimes are defined by legal acts of the heads of sub-divisions of management of emergency situations.

The law on Regulation and engineering protection of sea. Water reservoir and river bans provides that local bodies of self-governance and National Agency for Environmental Protection coordinate between each other borders of the zones of engineering protection. The local bodies of self-governance also participate in elaboration of measures for protection of water resources and funding of these activities as well, if such water resources are of local importance. According to article 25 of the law local bodies of self-governance jointly with the Ministry approve of measures, proposed by water-users for the purpose of mitigation and aversion of hazardous impact of water resources and elimination measures, or provide direct instructions on implementation of such measures.

From the point of participation of local bodies of self-governance in management of emergency situations is relevant the service of emergency situation under the municipality of Tbilisi. Regulations and competencies of the service are defined by Resolution No11 of December 26, 2006 of Tbilisi Mayor. Activities of the service are defined on the basis of the law on Protection of the territory of the country and population from emergency situations caused by natural and technological disasters and to a certain extent Regulations reiterate principles of activities of the Department of Emergency Management of the Ministry of Interior. Differences in competencies are mainly provided by differences in funding capacities. It is clear, that the Department has more functions in this regard, than the service. Apart from this the Regulations of the State Commission on management of emergency situations defines, that temporary commissions on management of emergency situations are created by local bodies of self-governance on the territories under their jurisdiction.

Current legislation grants to the local bodies of governance and self-governance the right of elaboration and implementation of socio-economic development programs. The laws of environmental sphere, such as the law on Protection of Environment, Protection of Atmospheric Air, Water Resources, the law on Wildlife, the Forest Code grants to the local bodies of governance and self-governance the right of elaboration and implementation of local programs on environmental protection, measures for management of environment and natural resources and etc. Among activities of the local bodies of governance and self-governance should also be natural disaster risk reduction management too, although on local level planning of such measures, as well as development of socio-economic programs is not happening. Up to now no administrative territorial unit or local bodies of governance and self-governance have not elaborated not only measures on natural disaster risk reduction management, but even environmental management programs (the only exclusion is Kutaisi). This can be ascribed to the fact, that on local level in comparison to the central level political demand and capacities for development of programs, adoption of systemic approach and strategic planning are not sufficient.

- **Commissions**

In the institutional framework of the natural disaster risk reduction management are envisaged numerous commissions. Only on the basis of the law on Water Resources in the country should be established district and city commissions on fighting against flooding, commissions of autonomous republics, special state commission and special permanent commissions. Article 27, paragraph "b" of the law on Protection of the territory of the country and population from emergency situations caused by natural and technological disasters also provides for establishment of the Special commission on management of emergency situations. Regulations of the commission are approved by Resolution No69 of the Government of Georgia of March 21, 2008.

According to Regulations the commission is a central coordinating organ, which coordinates activities of all public structures and subordinated entities targeted towards mitigation and elimination of impact of emergency situations. Local bodies of governance and self-governance establish temporary commissions on management of emergency situations within the territory of their jurisdiction. Commissions elaborate measures for prevention and reduction of negative impact of emergency situations, natural disasters, epidemics, pandemics, epizootics and etc and coordinate implementation of measures.

From the point of participation of management of emergency situations is interesting following function of the commission: it organizes research of problems, related to emergency situations and promotes elaboration of organizational and legal, as well as technical and economic concepts of reduction of damages, caused by emergency situations and natural disasters. Chairman of the Commission is the Prime Minister of Georgia, while members of the commission are the high ranking officials of the executive power (ministers), members of the Security Council and deputy ministers.

In regard to commissions and generally institutional framework of natural disaster risk reduction management it should be stated, that up to now the Commission of elimination of damages, caused by floods, landslides and mudflows is still functional. It was established by Resolution No129 of the Prime Minister of September 25, 2004. The Resolution defines, that for the purpose of protection and rehabilitation of towns and settled areas, arable lands, amelioration systems, transport and communication facilities damaged by natural disasters, floods, landslides and mudflows in the event of such need to the commission should be invited representatives of local bodies of governance and self-governance, as well as specialists and experts from relevant agencies.

In the Resolution is also stated, that the Ministry of Economic Development of Georgia and relevant entities of the Ministry of Environmental Protection and Natural Resources till January 1, 2005 should jointly elaborate and submit to the Government of Georgia for approval short-term, medium-term and long-term program on protection of the country from natural disasters, which has not been implemented.

- **The Staff of the State Minister of Georgia on Regional Management**

The Staff of the State Minister of Georgia on Regional Management also participates in the institutional framework of natural disaster risk management. The unit is established by Resolution No19 of the Government of Georgia, adopted in February 8, 2008 on "Establishment of the Staff of the State Minister of Georgia on Regional Management. The unit is responsible for assessment and analysis of emergency situations, implements measures focused on elimination of impact of natural disasters, prepares drafts of resolutions, also elaborates assessment and analysis of emergency situations in specific sectors of economy and prepares drafts of resolutions of the government of Georgia.

#### ***4.2 Legal problems of authorities responsible for the management***

The practice, established in recent years reveals, that activities of the authorities in the sphere of natural disaster risk management (including regulatory activities) are mainly focused on implementation of short-term measures just before the disaster occurs, in the period of natural disasters and immediately after them and not oriented towards adoption of integrated approaches towards natural disaster risk management.

It can be stated, that authority between the central and local levels is distributed on the basis of provisions of two laws: the law on Water Resources and the law on Protection of the territory of the country and population from emergency situations caused by natural and technological disasters. The law on Water Resources provides for establishment of different commission on the level of the President, executive government, autonomous republics and local bodies of governance and self-governance in regard to natural disaster risk management. The same approaches are reflected in the law on Protection of the territory of the country and population from emergency situations caused by natural and technological disasters, according to which on the level of autonomous republics and local bodies of governance and self-governance are established different divisions, responsible for mitigation of negative impact of emergency situations. .

The law on Water Resources provides for establishment of permanent special commissions, district and city commissions, Sectoral commissions and legal entities (such as water-users).

Despite the above mentioned there is whole range of problems in the sphere of coordination of activities, delimitation of competencies and communication. (a) The concepts of natural disaster, ecological disaster and natural elements are intermingles; (b) there is not clear definition of natural disaster, while in regulation of these events participate at least 10 state institutions.

Functions of governmental agencies on internal, as well as inter-agency level are vague and overlapping (caused by unsystematic and dubbed regulation). Rights and responsibilities of environmental control, monitoring and registration of natural resources are overlapping. Thus, the functions of monitoring are assigned to several structural units of the Ministry of Environment (National Agency on Environmental Protection, sectoral divisions of the Ministry, regional departments, inspections, staff of the State Minister on the regional management and etc), as well as other state structures. Quite often in laws and normative acts, including Regulations of state structures pertaining to natural disaster risk management functions are defined in quite declaratory and general manner and it is not specified, as to what is implied under these functions. It is also not clear what are the limits of authority of the above referred state structures even in implementation of these declaratory functions. Apart from the above mentioned another problem is implementation of some functions by the same entities, which may cause conflict of interests in the sphere of natural disaster risk management. For example, in the event of protection of natural resources implementation of the function of issuance of permits (including environmental impact permit) and inspection and investigation functions by the same entity. Conflicts are created in such events to, when the staff of the State Minister on Regional Management and the Department of Emergency Management have almost the same functions of supervision over regions. There are numerous examples of such conflicting situations in the legislation.

Main factor, hindering risk management related to geophysical events is overlapping of functions on natural disaster risk management between different state entities (ministries, departments, state commissions, and local bodies of governance and self-governance, different services and inspections) or lack of adequate regulatory basis for their proper functioning. The issue of management of risks related to hydrometeorological occurrences is even more complicated. The need of adoption of the normative and regulatory acts in the sphere of natural disaster risk management, as well as entering of relevant amendments into current legislation has been urgent issue for a long while already; This need is preconditioned by the following: The fact, that responsibilities are of abstract character, competencies are not clearly delimited and there is overlapping of functions, creates numerous problems from institutional point of view. Mechanisms of implementation are not available, or inadequate, coordination between activities of different entities is not efficient. The legislative framework creates extremely complicated hierarchical structure and provides for existence of large number of structures, competencies are delimited on the basis of extremely vague criteria. Functions are delegated in such manner, that communication and coordination of activities of different structures is not efficient or non-existent.

- Current legislation promotes to overlapping of functions between different state structures, especially in the sphere of execution of laws, monitoring and supervision.
- In separate directions of regulation of the sphere of natural disasters and ecomigrants there is legal vacuum and some of functions are not assigned to any state structures, or due to declaratory and general character of provisions, it is difficult to establish as to which function belongs to which state structure.
- In the event of delegation of competencies between the central government and local self-governances functions are not clearly delimited.
- In the sphere of natural disaster risk management responsibilities, subordination, accountability is either not clearly defined, or not covered by relevant laws. Best illustration of this is current distribution of functions between the Ministry of Environmental Protection and Natural Resources, the Department of Emergency Management and Staff of the State Minister on regional management.
- The issue of participation of public and provision of information in regard to natural disaster risk management is not adequately covered by the law and the only exclusion is procedures for issuance of environmental permits. It is noteworthy, that even existing regulations are not in compliance with fundamental principles of the Aarhus Convention.
- Legislation regulating migration caused by natural disasters, which defines rules of provision of compensations, defines responsibilities and the principles of control and supervision is not elaborated; in practice defining amounts of compensation is dependant on availability of funds or reasons, backed by political populism.

Inefficiency of natural disaster risk management is caused by legislative, financial, political and administrative mechanisms, as well as lack of resources, weakness of the system of control and supervision, lack of qualitative data on natural disaster risk management and low awareness of population.

Proceeds from the tax revenues (including taxes and fees imposed for usage of natural resources) and the state budget are not channeled towards implementation of environmental measures, natural disaster risk management and ecomigration activities. There is no such state fund, where at least part of resources, generated through taxes and fees imposed for usage of natural resources would be accumulated and reinvested into environmental measures and natural disaster risk management activities. The principle of spending of budgetary resources is defined not in accordance with some legislative and mandatory principles (like protected budgetary items), but according to current political needs.

## **5. Legal framework for natural disaster risk management**

In given part of the survey is provided analysis of the current legislative framework on natural disaster risk management and whether it ensures promotion of risk management activities, as well as main factors, hindering its elaboration and effective implementation.

### **5.1 Overview of legislative framework of natural disaster risk management**

Current legislative framework despite liberal amendments made to it in the recent years still remains quite vague in numerous regards. At the same time there is a whole range of issues, which urgently need to be regulated. In this regard one of the main acute problems is the need of development of the legal basis for natural disaster risk management, which requires relevant financial and technical and organizational resources. At the same time it should be taken into consideration that without systemic instruments of observation and evaluation effective implementation of natural disaster risk management activities is practically inconceivable.

Currently in Georgia is enforced not only national legislation, but international legal acts as well. Some of them are quite outdated and need to be abolished. For example, Resolution No334 of May 31, 1994 of the Cabinet of Ministers of Georgia on "Cooperation in the sphere of prevention and elimination of damages, caused by natural disasters and technological emergency situations, research of earthquakes and forecasting of seismic risks accession of Georgia to agreements, concluded with the member countries of the Independent Commonwealth" has not been denounced yet despite the fact, that Georgia has made official statement on withdrawal from CIS.

One of the main preconditions of implementation of natural disaster risk management along with existence of relevant state policy is existence of adequate legal framework, after which resources for implementation need to be allocated.

Consequently, the scope of the survey needs to be identified very clearly from the very beginning. Namely we have to study three issues (except for interpretation of ecomigrants, to which we shall return later): (1) Legal definition of natural disasters; (2) legal definition of natural disaster risk management and (3) what is risk management and whether Georgian legislation contains provisions on obligations of the state to manage such risks, provides for existence of institutional mechanisms, i.e. whether the principles of risk management are defined.

In the legal framework of natural disaster risk management in the same manner as legal basis for activities of entities, involved in the natural disaster risk management are represented some laws, adopted by the Parliament, as well as governmental resolutions, ministers Decrees, plans, adopted by Presidential Decrees, regulations and etc. The concept of natural disasters is referred to in the law on Environmental Protection, but its definition is provided neither in the law nor in any legal act. Logically there should exist legal definition of the natural disasters, taking into consideration such aspects, as the scope of the disaster, its duration, gravity of its results, geographical scope and etc. Unfortunately the law does not provide such definition. The law on "Protection of the territory and population from emergency situation of natural and technological character" attempted at provision of such definition although it did not cover such aspects, as the scope of the disaster, its duration, gravity of its results, geographical scope and etc. Moreover, the law assigns to such natural disasters the status of "emergency situations" and does not provide their interpretation as natural phenomena.

As to the issue of natural disaster risk man, it is not regulated by the law on Environmental Protection on any other legal act.

#### **1. The Law of Georgia on Environmental Protection**

In the law along with the term "natural disaster" is used the term "ecological disaster". The law of Georgia on Environmental Protection is the main law of the environmental sphere, which regulates relationships in given area and provided norms, principles and terminology. It is logical, that the law should also contain provisions on of natural disaster

risk management and as minimum, at least definition of natural disasters and main principles of management. Given issue is not comprehensively regulated by the law. Provisions of the law, related to ecological disasters and announcement of certain territories as zones of ecological disasters need further expansion in relevant laws and normative acts. There are no separate laws or provisions, clearly regulating of natural disaster risk management, or if there are some provisions, they have not been adopted yet.

Article 7, paragraph “d” of the law states: *“The citizen is responsible to: d) in the event of obtaining of information on expected or occurred natural disasters and technological emergency situations or other ecological disasters notify about it relevant state body or make public statement”*. According to the law apart from natural and technological disasters there are other ecological disasters, although it does not specify which. The law also does not provide definition or interpretation of emergencies, so called natural emergencies, or ecological disasters. It is also interesting, that responsibility of making information on disasters public is assigned to the citizens and not the state structures.

On the basis of article 39 we can say, that citizens and legal entities in comparison with state organs are in discriminated position, as legal entities have to develop plans and implement operational and systemic measures for prevention and mitigation of results of natural disasters and technological emergencies, as well as action plans, which should be coordinated with the relevant state organs. In the event of natural disasters they should notify relevant state organs in a timely manner.

Here we should pay attention to several issues: (1) why such responsibility is vested only on economic agents and not the authorities, which is more logical and important; (2) what is the difference between operational and systemic measures for prevention and mitigation of results of natural disasters and technological emergencies; and (3) what is the legal regime for implementation of these requirements, referred to in paragraph “e” of the same article. These issues unfortunately have been left open.

Article 17 of the law states that the ecological insurance is being provided in Georgia, including mandatory ecological insurance for ecologically hazardous activities, legal regime of which is provided in Georgian legislation. Such legislation has not been elaborated.

It is a well known fact that such natural disasters, as landslide, mudflow, desertification, soil erosion, erosion of coasts, forest fires and etc, despite their natural character quite often can be caused by incorrect large scale or sometimes even small scale activities of people. The only way of prevention of incorrect intrusion is regulation of stress on environment, which is attained through elaboration of stress standards. Unfortunately this legislation has not been elaborated too. On the basis of amendments, entered to the law on Environmental Protection in December 14, 2007 from January 1, 2008 the state has undertaken to elaborate environmental stress standards within 5 years. Consequently, when these norms are going to be adopted is not known yet.

Chapter 11 of the law (emergency ecological situation) is completely dedicated to regulation of ecological disasters. It is true, this chapter does not contain term “natural disaster”, but contextually the used term is the closest in comparison to terms used in other normative acts (dangerous natural phenomena, natural catastrophe, natural emergency, etc). Article 42 (emergency situation in the events of ecological catastrophes) establishes that: (1) in the event of ecological catastrophes on all territory of Georgia or its part is announced emergency situation; (2) on the territory, where emergency situation has been announced shall be established the zone of special ecological state or ecological disaster zone.

Articles 43 and 44 contain definition of both zones, namely: territory, where as a result of certain activities or natural disaster the environment has deteriorated and human health, plant cover, wildlife is endangered, is announced as the zone of special ecological state. Territory, where due to certain activities, emergencies, natural disasters or catastrophes ecological balance has been undermined and human health is endangered, is announced as the zone of ecological disaster. The President of Georgia announces certain territories as zones of special ecological state or ecological disaster and cancels such zones. The regime of both zones should be defined by legislation of Georgia. Such legislation has not been elaborated.

We should also focus our attention on the fact, that article 44 differentiates catastrophes and natural disasters. Although as the law does not contain definition of these terms, it becomes impossible to differentiate as to what has occurred, catastrophe, natural disaster (or natural disaster, which caused catastrophe). This is extremely important issue, as such unsystematic use of terms causes confusion not only in lawyers, but in those civil servants, who have to adhere to this article and use its concepts in practice.

According to the logic of the provision, all these activities are focused on the short-term period immediately after the natural disaster occurred, i.e. disasters, which should start, finish and then emergency situation should be announced (landslide, mudflow, earthquake). The situation is more complicated, if events are happening at lengthy period of time and impact large space, i.e. desertification, soil erosion, erosion of coasts. In such cases it is difficult to establish as at what stage emergency situation or ecological catastrophe should be announced and what is the relevant regime.

Legal aspects related to medium term and long term management of the territories after occurrence of disasters are not regulated at all. This means, that ecological, economic and social aspects are left without regulation too.

Article 39, paragraph "a" of the law states, that economic agents are responsible for the following: develop plans and implement operational and systemic measures for prevention and mitigation of results of natural disasters and technological emergencies, as well as action plans, which should be coordinated with the relevant state organs. Given provision can not be enforced, as it can not be implemented by any economic agent. It can not be implemented even theoretically for the following reason: if we study articles 42, 43 and 44 more carefully, we shall see that concepts of natural disasters, natural hazards and ecological catastrophes are mixed up. Following issues are not clear:

- a. What is natural disaster (concept, scope, parameters, duration, affected area, caused material damage).
- b. What should be the indicator of deterioration of the state of environment or the level of risk, to consider, that calamity has occurred.
- c. What is ecological disaster and how to differentiate emergencies, natural disasters, calamities and ecological disasters from each other?
- d. Circumstances, referred to in articles 43 and 44 in regard to announcement of the state of ecological emergency and ecological disaster zone are similar and who shall define as to which circumstances have occurred.
- e. What zone is established (announced), if this events were accompanied by death of population (it is noteworthy, that articles 42-44 provide only for the risk to health and life and not cases of death of population, which are absolutely different concepts especially from legal point of view). To the risk to health and life is subject major part of population of Georgia. This is preconditioned by the fact, that there are no legal regimes elaborated in regard to events, referred to in articles 43-44. The content of these articles puts the economic agents at disadvantageous position, as the state bodies, responsible for supervision and control can always dispute lawfulness of their activities in this regard, while the economic agents can not implement requirements set forth in the law for objective reasons.

## **2. The Law of Georgia on Water**

This law is one of the main laws in given context, as such catastrophic events, as floods, landslides, mudflows, erosion of soil and erosion of coasts is related to water. The law does not provide definition or interpretation of what is the natural disaster, related to water (flooding). The law talks only of the negative factors and describes external features (destruction and devastation) and provided gradation dependant on the gravity of the natural disaster.

Article 10, paragraph "u" states, that within the competencies of the supreme bodies, responsible for regulation of relations in the sphere of water resources are responsible for provision of funding for restoration and rehabilitation of water facilities, especially water facilities of state importance, damaged as a result of natural disaster. It does not specify, as to which organs are implied here, what are their competencies in situations, when as a result of water related natural disasters is damaged property of population or other persons, their health or life may be endangered, or even worse, when there is death occurring as a result of natural disaster.

Articles 11 and 12 which dwell on authority and responsibility of the autonomous organs and local bodies of governance and self-governance are based on absolutely same approach with the only difference that these articles talk about funding of water facilities depending on their status. Namely, within the competencies of relevant state bodies autonomous republics is funding of restoration and rehabilitation of state and local water facilities. In case of local bodies of governance and self-governance, the approach adopted is the same. Unfortunately the law on Local bodies of governance and self-governance also fails to provide regulation of competencies of local bodies of governance and self-governance when water related natural disasters is damaged property of population or other persons, their health or life may be endangered, or even worse, when there is death occurring as a result of natural disaster. As we see from the point of view of natural disaster risk management provisions of the law are not clarifying anything.

Plans for protection of water are provided in article 14, according to which planning implies elaboration and integration of plans for water protection measures: (a) into the indicative plans of economic and social development of Georgia, autonomous republics and administrative –territorial units. (b) Plans for land management of administrative –territorial units; (c) drafts of resettlement and development plans (d) infrastructure projects; (f) Sectoral development and

urbanization plans (g) forest management plans (h) plans for protection and usage of forest, land, mineral and other natural resources on the territory of Georgia.

In the same article is stated, that in the process of planning and implementation of water protection measures should be elaborated reliable forecasts and assessment on environmental impact of activities and measures should be implemented for ensuring security of the environment and population. I.e. this obligation should be fulfilled by those, responsible for planning (state structures), as well as implementing agencies (private and public entities). We should focus our attention on the fact that the article does not differentiate between forecasts and assessment (i.e. establishment of risk) and provides in general terms for implementation of measures for ensuring security of the environment and population, i.e. implementation of plans. Due to such general character of the provision a) forecasting-assessment and b) competencies of the supreme state bodies, structures of autonomous republics and local bodies of governance are not specified. I.e. is created such legal situation, when everybody is responsible for everything and nobody implements anything.

As it is not specified in any other regulatory act, as to what can be considered as reliable forecasts of EIA, and measures related to environmental protection and protection of population are not stated clearly, all the above mentioned is just the principle of delegation of functions, which can not be implemented.

In paragraph "g" of article 17 is stated, that *"for the purpose of ensuring protection of the Black sea wildlife within jurisdiction of Georgia (fish, non-vertebrates and sea mammals) as well as other natural resources, the state shall ensure assistance and promotion of survival of the wildlife in extreme situations, caused by natural disasters or other reasons"*. It needs to be defined as to what is implied under natural disasters in the sea, what disaster is implied, should we imply, that it is disaster caused by technological activities (e.g. oil spill of a tanker), or the article implies small scale occurrences (e.g. in Supsa a minor spill caused by leakage on the pipeline. It is not interpreted what is implied under the word "extreme". As the article is of extremely general character, the state has discretionary authority to establish, that natural disaster has occurred in the sea or it is extreme situation, caused by other reasons.

Chapter IV of the law is dedicated to prevention of negative impact of water and elimination of negative impact. Article 25 establishes, as to what kind of negative impact can be caused by water.

1. *Natural and legal persons which implement water usage and protection, are responsible to implement measures of prevention and elimination of negative impact of water in coordination with the Ministry, local bodies of governance and self-governance or act upon their instructions in given regard.*
2. *Under the negative impact of water is implied:*
  - a) *floods*
  - b) *Demolition of coasts, protective facilities and dikes*
  - c) *Salination and swamping of lands*
  - d) *Water-caused erosion of soil, landslides, mudflows and other hazardous events*

Present article establishes that in regard to aversion of such events and implementation of elimination measures all responsibility lies on natural and legal persons (license-holders). Firstly, for implementation of these measures substantial funding is necessary, which can not be allocated by the local authorities and event central budget, to leave alone motivation of the license-holder to spend all his resources on these large-scale measures. There is no definition as to what kind of license-holder is responsible (even on the basis of co-funding principle) to plan and implement these measures. For example, license-holder for survey of underground water is a water user, i.e. license-holder and it is difficult to conceive, that he is able to provide such funding and implement measures for prevention and elimination of negative impact of water. Such principles of funding of activities are in conflict with article 28 (funding of activities related to floods), as obligation here is replaced by voluntary contribution. Namely, the article states: measures related to forecasting and elimination of damages caused by floods are funded by the state budget of Georgia, budgets of autonomous republics and other territorial units, as well as contribution from natural and legal persons.

According to article 25 measures of prevention and elimination of negative impact of water can be implemented in two cases: (1) in coordination with the Ministry and local bodies of governance and self-governance (i.e. if the latter and the license-holder are expressing willingness to do so), (2) or by instruction of such organs. It means, that if the license-holder has not received such instructions, or he has no desire to do so, negative impact of water can occur (including large-scale emergencies), as to who should implement what activities, these issues remain unregulated.

Article 26 specifies the scope and impact of floods and describes only characteristics of only one natural disaster- floods.

**Article 26. Types of floods and their results**

1. *Negative impact of floods may be:*
  - a) *Deformation and destruction of the river basins and abrasion of banks and plains;*
  - b) *Destruction, damage and collapse of dikes, protective walls and hydro technical facilities (water collectors, dams and etc).*
  - c) *Flooding, washing off and damaging of settled areas, arable lands, forest missives, bridges, highways, railways and industrial or economic facilities, when technical maintenance conditions of these facilities are infringed.*
2. *According to the volume and level of run-off water are differentiated following types of floods:*
  - a) *Spring and fall flowage;*
  - b) *Rain and flashing high waters*
  - c) *Mudflows.*
3. *Forecasted flooding conditionally can be divided into three categories according to its force and hazard:*
  - a) *Hazardous occurrence*
  - b) *Especially hazardous occurrence*
  - c) *Natural disasters*
4. **Hazardous occurrence** *is characterized by annual or recurring water runoffs, which cause rising of the level of water and minor abrasion of the river-bed, as a result of which normal operation of local facilities may be interrupted (temporary flooding of cultivated lands, damage roads, communication and power-transmission lines, city utilities and transport and etc).*
5. **Especially hazardous occurrence** *are characterized by high water and mudflows, which causes partial flooding or flooding of cities, settled areas, railways, highways, large industrial facilities, major part of agricultural lands, which can result in :*
  - a) *Interruption of power supply and communication for more than 6 hours;*
  - b) *Interruption or ceasing of power and water supply to large cities and industrial facilities, as well as city transport for more than 24 hours;*
  - c) *Partial demolition or damage to residential areas, administrative and industrial facilities and constructions.*
6. **Natural disasters** *are characterized by especially hazardous and recurring run-offs and mudflows, which cause flooding and massive demolition or damage of major part of agricultural lands, residential areas,, industrial facilities and etc, as well as the need of **resettlement of population from the risk zone or affected zone.***
7. *Notification of expected hazards is implemented in accordance with the gravity of the disasters.*

It is clear from the above referred, that article 25 unites under flooding other types of negative impact (flooding, high water, destruction of protective walls and buildings, landslides, mudflows, and etc). The results, or in other words occurrences are not interpreted and assigned to relevant categories (according to each event what would be *Hazardous occurrence, especially hazardous occurrence or natural disaster*).

Given article covers two important aspects: (1) it provides types of flooding and interpretation of natural disaster (2) by provision "resettlement of population from the risk zone" the law indirectly refers to the resettlement caused by natural disaster (ecomigration) for the first time.

As the law regulates legal aspects of water-related issue son the mainland, underground, continental shelf, territorial waters and special economic zone, it is logical, that it should also be regulating negative occurrences on the Black Sea, but this article talks only of river banks. It does not dwell on specificity of sea shores and similar problems, caused by their washing off. The sea related issues are left absolutely unregulated. In given context it is interesting to consider the law on "Regulation and engineering protection of sea-shores, water bodies and river banks, dated by October 27, 2000.

As has been stated above, according to article 25 funding of prevention and elimination measures of such events, as floods, high water, destruction of banks, dams and etc, is responsibility of license-holding natural and legal persons. It is not quite clear these measures are conducted on the basis of instructions of the Ministry and local authorities or in coordination with them. On this background article 27 provides even more different regulation and management becomes responsibility of the commissions too:

**Article 27. The system of management of fighting against flooding and elimination of its results**

1. For the purpose of organization of implementation of measures targeted at fighting against flooding and elimination of its results are established **special state permanent commission**, in composition of officials of state structures and local bodies of governance (no license-holders are mentioned any more).

2. Instructions of the above mentioned commissions are mandatory for all natural and legal persons.

3. The commissions are established:

a) Under the President – **special state commission on fighting against floods**

b) Under the Council of Minister of Autonomous Republics – **commissions of Autonomous Republics on fighting against floods**

c) Under the local bodies of governance – **district and city commissions on fighting against floods**

d) Under the state structures – **Departmental commissions on fighting against floods**

Distribution of functions is the following: in the event of hazardous occurrences measures on fighting against floods and elimination are managed by district and city commissions. In the events of especially hazardous occurrences - commissions of Autonomous Republics, district and city commissions, which coordinate activities of departmental commissions. These commissions provide to the special state permanent commission information on the status of implementation of activities. The special state permanent commission is responsible for managing and coordinating activities of other commissions in emergency situations.

Regulations on „Organization and elimination of activities for fighting with floods and elimination of damages“ which regulate such issues, as preventive measures, elimination of negative impact, restriction of activities, define authority of commissions, staffing, rules of functioning and etc, which is approved by resolution of the President of Georgia.

From the provision it seems, that competencies of the commission, designated to fight with natural disasters should be provided in the above mentioned Regulations, approved by resolution of the President of Georgia.

**Article 29. Ecological emergency state and ecological disaster zone**

1. Emergency state is announced on those territories, where the state of environment has deteriorated, or ecological balance has been undermined and the health and life of people, plant cover, wildlife is endangered and situation is assessed as ecological disaster.

2. On the territory, where emergency state is announced is established the zone of ecological emergency or ecological disaster.

3. The status of the zone of ecological emergency or ecological disaster is granted to and revoked by the President of Georgia.

4. The regime of the zone of ecological emergency or ecological disaster is defined by legislation of Georgia.

In article 29 are transferred articles 42-44 of the law on Environmental Protection and they are interpreted taking into consideration specificity” of the law on Water Resources. Consequently, we have same comments in regard to given article, as to articles 42-44 of the law on Environmental Protection. Apart from this the following is also noteworthy: from the point of legal technique transfer of articles 42-44 of the law on Environmental Protection is correct approach, but this is a „partial measure“, as it is not clear how are three occurrences, described in the law on Water Resources, namely hazardous, especially hazardous occurrences and natural disasters are fitting into the concept of ecological emergency or ecological disaster.

In the event of natural disaster restrictions for water users are established by article 40. Namely, it is established, that in the event of natural disasters rights of water users may be limited for the purpose of protection of health of population and interests of other water users. The same is provided by article 45 (basis for suspension or termination of water user rights). According to paragraph 3, sub-paragraph „d“ of the article water usage shall be limited, suspended or interrupted in the event of natural disasters. This decision is reached by the Ministry or the State technical supervision inspection in coordination with the ministry. Costs of conservation or elimination of an enterprise are covered by the state. Given regulation can be attributed rather to the sphere of economic analysis than the legal one, but here is another legal aspect involved: It is not clear as to why the state should cover costs of conservation or elimination of any enterprise due to force majeure, when in accordance with international civil law principles as a rule this is the risk of the economic agent himself, or the insurance companies.

Article 74 of the law regulates state management of usage of water resources and protection, and it states, that for the purpose of implementation of uniform state policy in the sphere of water protection and water usage, shall be enforced uniform state system of management one of the objectives of which is prevention of negative impact of water and elimination of such impact. Such management is implemented by the Ministry through registration, monitoring, licensing, control and supervision. Here we should also focus our attention on amendments made to the sphere of licensing. Namely, according to the law on Licenses and Permits the license for water usage is deleted from the list of types of licenses. According to article 24 there are permits for water extraction and water discharge, but not licenses. It means that this is considered as activity and not as usage of resources. Replacement of the license for water extraction and water discharge by a permit, caused changes in the relevant procedures, which touched upon the environmental impact permits, as well as EIA and ecological expertise.

State monitoring implies unified system of regular observation and analysis of information on quantitative and qualitative parameters of water resources, one of the purposes of which is forecasting of floods, landslides, mudflows and etc (article 80). Monitoring represents unified system, implementation and regulation of which is provided by law. Monitoring is responsibility of the Ministry of Environment within the limits of its competence and it is also responsible for forecasting of floods, landslides, mudflows and etc.

According to article 85 the Ministry also controls and regulates implementation of measures of prevention and elimination of such events, as floods, high water, destruction of banks, dams and etc, which is within the responsibility of license-holding natural and legal persons. According to given article the Ministry is responsible not only for monitoring, targeted at forecasting, but control over implementation of damage elimination measures. Events, happening in practice reveal, that for the purpose of implementation of measures of forecasting, prevention and elimination of such events, as floods, high water, destruction of banks, dams and etc a lot more measures need to be implemented and this process needs to be improved. Also it is very difficult to find such precedents, when unified system of forecasting has helped us to avert negative impact. Despite existence of long-term forecasts, such negative impact can not be averted as there is no early warning system which would work at least 24 hours ahead.

### **3. The Law of Georgia on Ambient Air Protection**

Only two articles of the law – 7 and 45 reflect upon the natural disasters but still in extremely general manner without provision of any specifications. Article 7 (responsibilities of natural and legal persons in protection of atmospheric air), paragraph 1, sub-paragraph „b“ states, that in the event of obtaining of information on expected or occurred technological emergency or other ecological disasters, natural and legal persons should notify on it competent state bodies or make this information accessible to public. Article 45 (planning of measures for protection of atmospheric air by local bodies of self-governance) is stated, that executive organs, municipalities and councils) are authorized to elaborate and submit to the council for approval plans of elimination of negative impact of disasters, caused by anthropogenic activities to atmospheric air. Rules of elaboration, approval and implementation of such plans are defined by legislation of Georgia. The law does not define which laws are meant in this case.

### **4. The Law of Georgia on Soil Protection**

Article 3 of the law (means and measures of protection of soil) establishes that for the purpose of protection of soil from natural disasters (floods, high water, mudflows, avalanches, landslides) soil protection measures should be included into the state programs. The law does not define as to which programs it is referring to, or who and how should participate in their elaboration and implementation.

### **5. The Law of Georgia on Protected Areas**

The law does not use the term „natural disaster“ at all. Instead it uses „natural calamity“. In article 20 (activities on protected areas), paragraph 6, sub-paragraph „e“ states that within the protected areas is controlled the risk of „natural calamities and catastrophes“, but is not specified how and through what mechanisms. The law also does not specify difference between natural calamities and catastrophes even within the territory of protected areas. In paragraph 7 of the same article is stated, that „protected area is regulated by temporary regulation (normative acts) in the period of elimination of impact of natural calamities and catastrophes“. Who adopts such normative acts, what status do they have – is also not specified.

### **6. The Law of Georgia on Environmental Protection Service**

In the law only one article dwells on natural disasters. According to article 20, paragraph „f“ „the object of regulation, i.e. the legal entity is responsible for timely notification of the agency in case of natural disasters or technological emergencies“. The law does not provide any other regulation in regard to natural disasters. The same provision is in the Law on **State Environmental Control**.

## **7. The Law of Georgia on Permit for Impact on Environment**

Environmental impact permit represent document to be provided in regard to economic activities. On one had it serves protection of environment from natural disasters or human activities, but it is noteworthy, that natural disasters of certain types can be in cause-effect relationship with some economic activities, causing natural disasters. Consequently, one of the effective mechanisms of prevention of natural disasters is implementation of requirements the present law and the law on Ecological expertise. The law is also important from the point of defining participation of public and provision of information, establishment of legal basis for EIA, issuance of environmental permits, conducting of ecological expertise, and etc.

After Aarhus convention in the national legislation this law is one of the most important from the point of ensuring involvement of public in decision making process and guarantying access to information and publicity of given aspects. Interesting trend of law-making activities in recent years is the fact that proposed amendments provide for adherence to basic principles of the convention in lesser extent. It shall not be exaggeration if we state, that as a result of such amendments participation of public in decision making is fictional. It would suffice to provide several illustrations for this. Ensuring of participation of public as an interested party on the basis of administrative application represents not obligation, but authority of the administrative organ. Prior to administrative procedure organization of public hearing is responsibility of economic agents and not of the state organ. Thus, participation of public in considerations, organized by an economic agent can not be viewed as participation in decision-making process, as such hearings are not the process of a state body, but one of the prior procedures of decision-making. This problem was voiced by „Green alternative“was back in November 2006 in its survey on „Environmental management in Georgia and the role of EU in its strengthening“.

In article 2 of the law is directly declared, that the state is responsible for protection from irreversible qualitative changes of the environment. Procedures for issuance of environmental permits contain listing of activities, subject to ecological expertise (activities, which may have substantial impact on environment and health of people), among which some activities are directly related to possibility of provoking of natural disasters. Namely, is established, that mineral extraction is subject to mandatory EIA, but construction and processing of inert substances is not subject to ecological expertise. This causes certain concerns, as such permits are issued mainly on plains, banks of water bodies and close vicinity of banks of shores. If we take into consideration, that the purpose of the law is protection from irreversible qualitative changes of the environment, it remains unclear as to what is the logic, substantiating exemption of extraction and processing of inert substances from EIA, especially so, because such activities are directly linked to degradation of coasts, river beds and etc. This is related to such hydrometeorological, geodesic and land-related natural disasters, as floods, landslides, mudflows, desertification, soil erosion and etc. Each of them depending on their scope may turn into natural disaster and cause long term negative impact, which in its turn may cause serious natural disasters (desertification, erosion and erosion of coasts).

Along with the above provided examples we should also pay attention to the fact, that on the basis of legislative amendments, entered during the last years conducting of EIA and obtaining of environmental permit is not compulsory in regard to mineral extraction, i.e. in the process of implementation of the activities, which may be one of the strongest factors provoking natural disasters. It is also noteworthy, that according to article 5 of the same law all those activities, for which environmental permit is not compulsory, need to meet with technical standards, while such standards have not been elaborated up to now.

Activities, which may directly provoke natural disasters and environmental permit is compulsory, are the following:

- Construction of gas and oil trunk pipelines;
- Placement of oil and oil products, reservoirs of liquid and natural gas, terminals, where capacity of one of the reservoirs is over 1000 cubic meters or their total capacity is exceeding 1000 cubic meters.
- Construction of highways and railways of international and intra-state importance, bridges, tunnels, as well as construction of engineering protective walls and facilities at the roadside and along the railways.
- Construction of a water reservoir (exceeding 10 000 cubic meters)
- Construction of dams, wharfs, piers, moles and dikes.

All the above listed activities are directly linked to the risk of provoking of natural disasters, such as landslide, mudflow, desertification, soil erosion and coastal erosion.

In those administrative centers, where implementation of activities is planned, EIA should be made public and any representative of society has the right to be present at its consideration. The implementer is responsible within 45 days form publication of information on planned activity receive from representatives of public and consider written comments and opinions.

The protocol on proceedings of public consideration of EIA should contain detailed information on comments and recommendations, provided at public hearings. It is important, that the implementer should take into consideration comments and opinions, provided by public in written form and reflect them in the final version of the EIA. The law also establishes, that in the event, when the implementer is not taking into consideration provided comments and recommendations, he should provide to the authors justification of his decisions in written form. This justification along with comments and proposals, which have not been taken into consideration, should be submitted by the implementer to the Ministry, with attached protocol on public consideration of EIA. It means, that in practice comments and opinions provided by public may stay ignored and the Ministry may issue permit even in such case. The law does not state so directly, but the public can apply to court and require revocation of decision of the Ministry.

Article 9 states, that the Ministry shall arrive to decision on issuance of permit on the basis of procedure of simple administrative consideration, provided by Chapter VI of the General Administrative Code of Georgia and the law on Licenses and Permits, within the period of 20 days after registration of application. We would like to specify, that given approach is in direct conflict with rules provided by Aarhus Convention. There is conflict not only from the point of deadlines, but also from the point of public involvement in decision making process. Namely, in the General Administrative Code of Georgia is provided directly, that in the process of arriving to decision on issuance of permits (i.e. preparation of individual legal-administrative act) the administrative organ can apply to procedure of simple administrative consideration, while the law does not provide for public involvement in the process of simple administrative consideration. Consequently, the public should apply to such administrative organ stating, that it represents an interested party and is willing to take part in administrative consideration.

The stage of administrative consideration is not transparent for the public for the following reasons:

- (a) Administrative consideration process does not provide for public involvement;
- (b) Even if public applies to administrative organ with request for participation, it has to substantiate as to why it is an interested party; namely, it should prove, that decision related to granting of permit may have direct impact on its lawful interests (which in practice is quite difficult to do).
- (c) As administrative organ is executing simple administrative consideration without public involvement, position of the administrative organ on comments, provided by public and the procedures of adoption of final decision remain unknown.

According to article 24 from the date of entering of the law into force, i.e. January 1, 2008 following legal acts were revoked: Resolution No 154 of the Government of Georgia, adopted in September 1, 2005 on „Approval of Regulations on rules and procedures of issuance of environmental permits“; Decree No59 of the Minister of Environment on „Regulations on assessment of environmental impact“, adopted in May 16, 2002; Decree of the Minister No139 on „Approval of instructions on pipeline projects“; Decree No130 of the Minister on „Approval of regulations of the Special Council of Environmental Impact of the Ministry of Environmental Protection and Natural Resources“, adopted in June 15, 2005. In accordance with article 23 of the law for the purpose of elimination of these impediments till January 1, 2008 should have been elaborated and published following normative acts of the Minister: Environmental technical standards; Regulations on assessment of environmental impact, Regulations of the Special Council of Environmental Impact of the Ministry of Environmental Protection and Natural Resources. Out of the above mentioned has been adopted only Regulation of the Special Council of Environmental Impact of the Ministry of Environmental Protection and Natural Resources. Despite this up to now the Ministry has not suspended or restricted the procedure of issuance of environmental impact permits.

### **8. The law of Georgia on Wildlife**

Issues related to regulation of natural disasters are provided in the II chapter of the law. It also provides for delimitation of competencies in the sphere of protection of wildlife. Article 10, paragraph „I“ states, that the supreme state organs of the sphere of protection of wildlife are responsible for restoration of the natural habitats, damaged by natural disasters or other emergencies.

„Restoration“ is a wide concept and it may imply numerous measures, starting from planning (like forest restoration plans) and ending with transfer of the reinstated territory to the relevant subject, entitled for management on the basis of drawing of an act of handover or some similar document. The law does not state, as to who is implementing reinstatement and on what basis, what are the mechanisms, how they are funded, what is the extent of participation of other state structures, than the Ministry, what are the principles of funding or administration of subsidies.

The law contains other provisions related to functions of the state too. This is responsibility for elaboration and publication of Regulations. In paragraph 3 of article 19 (protection of wildlife in protected areas) is stated, that in the strict zones of protection of the state reserves, national parks and natural monuments establishment of the gene pool of reserves of endangered species or catching of animals for veterinary reasons in regard with damage elimination activities

in cases of natural disasters and catastrophes is regulated by relevant Regulations, elaborated by the Service of protected areas and approved by the Ministry. These Regulations have not been elaborated up to now. The law does not provide any other regulations on the natural disaster risk management.

### **9. The Forest Code of Georgia**

In the context of regulation of natural disasters the law contains several provisions. Namely, article 11 of the law (competencies of the executive power of Georgia in the sphere of forest management) within the competencies of the executive power of Georgia is restoration of forests, damaged by natural disasters, ecological catastrophes, epidemics or other reasons; functions of the organs of autonomous republics and local self-governances is participation in implementation of emergency measures in the event of natural disasters.

Article 44, paragraph (g) states, that one of the forest management measures is implementation of special preventive measures in regard to natural disasters; what are these special preventive measures, is not specified. Competencies of the organs of executive power in restoration of forests, damaged by natural disasters, as well as forms of participation of relevant organs of autonomous republics and local self-governances in implementation of emergency measures in the event of natural disasters, is not specified in the law.

### **10. The Law of Georgia on Protection of the Territory and Population from Natural and Technological Emergency Situations**

This is one of the main laws, which regulates natural disaster risk management in more detail. The law regulates emergency situations, created as a result of natural disasters. Response is viewed as part of the risk management cycle. The law uses such terms as „natural disaster“, natural calamity“, „natural phenomena“, „emergency“ and etc, which as an end result makes the law difficult to understand.

There is also another law on State of Emergency, which has been adopted prior to this law, which complicates the situation even further, as regulation and terminology is dubbed. It is interesting, that the law on State of Emergency does not contain definition of emergency situation, territory of emergency situation, as well as principles of actions, provided by the law on Protection of the territory and population from natural and technological emergency situations.

The law provides legal basis for both situations – natural and anthropogenic reasons of disasters. **Emergency situation** has the following meaning: situation established on a certain territory as a result of natural disaster, fire, catastrophe, where the state of environment has deteriorated, or ecological balance has been undermined and the health and life of people, plant cover, wildlife is endangered and the environment is damaged. The zone of emergency situation is a territory or an area of water, where the emergency situation has occurred. The risk of emergency situation is probability or frequency of occurrence of emergency situation, which is defined by relevant indicators of risk (is quite close to definition of the natural disaster risk).

Definition of prevention is interesting too – complex of legal, organizational, economic, engineering-technical, sanitary-hygienic, sanitary-epidemiological and other measures, implemented for the purpose of organization of monitoring over environment and hazardous industry facilities, as well as forecasting of emergency situations or in the event of its occurrence, for the purpose of mitigation of caused damage (this interpretation is also quite close to definition of prevention of the natural disasters).

According to the law the process of announcement of emergency situation is regulated by the law on Emergency situations, while in the event of declaring of war – the law on Warfare.

This provision rises certain issues: if announcement of emergency situation is regulated by the law on Emergency situations, while in the event of declaring of war – the law on Warfare, then when is applicable the law on Protection of the territory and population from natural and technological emergency situations? It seems, that such provision assigns to the law under consideration more superior status, that the laws on Emergency situations and the law on Warfare, even though these latter laws have constitutional basis under them, while present law does not.

It is noteworthy, that the law is mainly focused on organization of measures after the natural disaster has taken place and less oriented towards preventive measures and natural disaster risk management. Given conclusion is confirmed by the following: article 4 of the law states, that one of the purposes of the law is prevention of occurrence and spread of natural disasters, although according to definition of „emergency situation“ the law extends to on-going or occurred natural disasters (i.e. elimination of results). Consequently, it becomes clear, that there is certain conflict between definition and the objective. In practice it means, that definition of emergency situation, provided in the law in the part of prevention of occurrence and spread of natural disasters, is partially of declaratory character. As to the Regulations of the Emergency

Management Department, the issue is regulated differently. According to article 9 of the Regulations, within competencies of the Department is „Establishment of the Special Consultative Council for the purpose of prevention of emergency situations of natural and technological character, mitigation of their results and elimination on the basis of elaboration of comprehensive measures and targeted programs“.

According to article 5 of the law on the territories, where there is the actual risk of emergency situations in the process of planning and implementation of measures for protection of territory and population should be taken into consideration economic, environmental and other aspects. The law does not define as to when the situation should be assessed as „actual danger“.

According to the law elimination of impact of emergency situations is responsibility of central and local authorities, as well as legal entities. In the event, when it shall not be possible to liquidate emergency situation with resources and capacities of the government of different levels, local self-government and legal persons, in elimination measures shall take part organs of a unified system. Logically, this provision should be followed by interpretation of the unified system, referred above, but article 6 does not contain definition of such system, but talks of its objectives. The concept of the unified system is provided in article 13, regarding which we shall talk a little later.

Article 8, paragraph 4 states, that the authorized person should provide information in timely manner. It is not clear what the deadline is, or what is considered as delayed provision of information. It is also not specified, as whose authority is to evaluate whether information was submitted with delays.

As we have already stated above in the event of natural disasters different laws envisage enacting of different institutes. Thus, according to the law on Water Resources for the purpose of fighting against flooding are established **Special Permanent Commissions** into composition of which are entered representatives of state structures and local bodies of governance. *The commissions are established:*

a) *Under the President – **special state commission on fighting against floods***

b) *Under the Council of Minister of Autonomous Republics – **commissions of Autonomous Republics on fighting against floods***

c) *Under the local bodies of governance – **district and city commissions on fighting against floods***

d) *Under the state structures – **Departmental commissions on fighting against floods***

Article 5 of the law on the State of Emergency names another organ, responsible for prevention and elimination of results of natural disasters (The National Security Council). Article 10 states, that for the purpose of coordination of activities of stakeholders, involved in elimination of results of natural disasters on the basis of presidential Decree can be created temporary organs on the territories, impacted by emergency situation and upon recommendation of the National Security Council shall be appointed plenipotentiary representative of the president or commandant.

According to the law on Protection of the territory and population from natural and technological emergency situations President has different or even additional functions. Namely, he also approves of the National response Plan and Civil Defense plans.

According to article 13 of the law under the unified system are meant the Department of Emergency Management of the Ministry of Interior, its structural divisions in Abkhazia and Adjara Autonomous Republics, local bodies of governance and emergency situation management divisions under them.

Situation is even more complicated in case of establishment of commissions. Article 11 of the law under consideration provides, that the Government of Georgia establishes Special Commission on Management of Emergency Situations (one more commission), which is coordinator of the unified system. Regulations of the Commission are approved by Resolution No69 of March 21, 2008. According to Regulations the Commission coordinates activities of all executive organs or local authorities in regard to management of emergency situations. (According to Regulations local bodies of governance establish temporary commissions of management of emergency situations on the territory within their competence). The law does not specify the organizational and legal links between the State Commission on Management of Emergency Situations and temporary commissions of management of emergency situations of the local bodies of governance and the above referred Special Commission on Management of Emergency Situations, or commission of Autonomous Republics, district and city commissions and sectoral commissions on the level of Ministries. In other words, issues of subordination, interaction and accountability of these commissions remain unregulated. Also, subordination, interaction and accountability of these commissions to the National Security Council, as well as plenipotentiary representative of the President or commandant and Staff of the State Minister on Regional Management are not clarified.

Article 7 of the law states, that the relevant authorized body on the basis of classification of emergency situation defines borders of the zone of emergency situation. Here we would also like to remind you, that according to the law on Environmental protection in the event of natural disaster on the whole territory of Georgia or its part is announced emergency situation. On the affected territory is announced the zone of ecological disaster or emergency ecological state. Regimes of these zones are defined by legislation. As we see here is intermingling of such concepts, as: 1. the borders and zones of emergency situations; 2. the zone of emergency ecological state and 3. The zone of ecological disaster. The subjects, authorized for establishment of the zones are not harmonized (on one hand it is President, on the other hand – the Department of Emergency Management of the Ministry of Interior (and Adjara and Abkhazia Autonomous Republics structural subdivisions) and local bodies of governance. The status of those normative acts, which establish such zones and regimes are not coordinated and harmonized too (on one hand Presidential Decree, which in the event of emergency has the power of law, and on the other hand legal acts of the subdivisions of management of emergency situations of Adjara and Abkhazia Autonomous Republics and local bodies of governance. As a result is established absolutely vague situation with dubbing of functions and overlapping of competencies. Thus, in the event of flooding it is not clear what should be announced: 1. ecological catastrophe, as a result of which the state of emergency should be declared; 2. zones of emergency situation and establishment of it borders; 3. emergency ecological zone and its regime; or 4. ecological disaster zone and its regime.

If in regard to flooding should be announced emergency situation, then in what cases is announced ecological catastrophe and resulting state of emergency? According to the law in the event of state of emergency are applied provision of the law on the State of Emergency, while in the event of war, provisions of the law on Warfare but not the law on Protection of the territory and population from natural and technological emergency situations.

According to article 14 (responsibilities of the executive structures of Georgia) in the event of emergency situation executive structures of Georgia (the government and the ministries) for promotion of active functioning of the unified system establish subdivisions of management of emergency situation.

The problem is that responsibilities of the executive structures of Georgia (the government and the ministries) are defined by another law differently. In the event of floods and ensuing emergency situation according to the law on Water Resources for the purpose of organization of measures of fighting with floods is established Special State Commission, commissions of autonomous republics and sectoral (departmental) commissions.

According to paragraph 5 of the same article executive structures of Georgia as subjects of the unified system implement their activities on the basis of relevant legal acts, National Response Plan approved by the President and Civil Defense plans. One important issue remains unclear. According to the article executive structures of Georgia are viewed as subject of the unified system, provided by article 13 of the law, while the same article specifies, that subject of the unified system are not generally executive structures of Georgia, but the Ministry of Interior and the local organs of self-governance. If we analyze the content of the article, it means that apart from the subjects of the unified system, provided by article 13 of the law (the Ministry of Interior and the local organs of self-governance) other executive structures also are involved on the basis of the National Response Plan and Civil Defense plans approved by the President.

If we try to analyze it in practice, the situation will be the following; according to article 5 of the law on „Engineering protection and regulation of sea shores, water body and river banks“the National Environmental Agency is responsible for establishment of the borders of zones of engineering protection in cooperation with stakeholders and local organs of self-governance, while the Minister of Environment approves of the proposed zones. According to article 7 (state management of the coastal zone of engineering protection) one of the purposes of state management of the coastal zone of engineering protection is prevention of natural disasters or elimination of its results. The Ministry of Environmental Protection and Natural Resources apart from measures, approved by resolution of the Minister is responding on the basis of National Response Plan and Civil Defense plans approved by the President? This means, that The Ministry of Environmental Protection and Natural Resources and the Ministry of Sport and Tourism are establishing subdivisions of management of emergency situations? This principle of regulation is difficult to comprehend.

According to article 23 of the law state expertise in the sphere of protection of territory and population from emergency situations is implemented in accordance with the rules, established by the Minister of Interior. The law does not specify what kind of expertise it is or what its outcomes may be (conclusion, certificate, recommendation, permit or other).

According to article 24 of the law“ there is declaration of safety and it is used for settlement of issues related to protection of territory and population from emergency situations and implementation is responsibility of the agencies within unified system“. As settlement of issues means organizational activities implemented in accordance with relevant

legal framework, such interpretation of the law in regard to declaration of safety is not sufficient and needs further expansion and interpretation.

**11. Resolution of the Government of Georgia on Approval of Regulations on the Rules of Defining of Classification of Emergency Situations“, adopted in March 21, 2008**

Given regulations define unified rules of establishment of the zone of emergency situation and its assessment. According to Regulations classification of emergency situations is dependant on the number of people, injured as a result of natural disaster, amount of material losses, as well as the scope of the affected area. Type of emergency situation is defined for the purpose of solution of related issues by relevant state body in coordination with the superior body, to which it is subordinated and provision of information to the Department of Emergency Management of the Ministry of Interior. (Here we would also like to remind you, that in accordance with the law on Environmental Protection competence of announcement of the zones of ecological disaster and emergency ecological zone belongs to the president of Georgia).

According to paragraph 2 of article 2 emergency situations are divided into the following categories: facility, local, territorial, national and transborder. In the process of elimination of negative impact of emergency situations the class, cluster and type of emergency situations is established on the basis of special attached codes. The Regulations provide interpretation of each of the type of emergency situations, but despite this it remains unclear as to which emergency situation can be classified as natural disaster – national and transborder? The law does not state as to who defines this.

According to article 3, paragraph 5 and 8 elimination of negative impact of national emergency situations is implemented with the national capacities of the country, while the overall management of implementation is implemented by the Ministry of Interior, while in case of transborder emergency situations the elimination of negative impact of emergency situations is implemented on the basis of governmental Decree. As we see these two provisions have substantial differences from regulation, provided by the law on Water Resources (which provides for totally different mechanisms and structures of response and management in the event of flooding of national or transborder type. Namely, these are Special State Commission, commissions of autonomous republics and departmental commissions).

The coding of emergency situations, attached to the Regulations need to be analyzed too. The matter is, that under the categories of emergency situations is provided basically every possible natural phenomenon. There are no definitions of such phenomenon and it also contains indication of such natural phenomena, the content of which may understand only specialist of some narrow sphere (e.g. sinking of soil and etc).

Some categories of natural disasters, which are followed by technological emergencies, are not defined correctly. Thus, according to this classifier hydrodynamic breakdown is breakthrough in dams (dam locks), followed by demolishing waves and catastrophic flooding. Given event is natural disaster, which causes accompanying technological disaster and not hydrodynamic disaster, as provided in the classification.

Emergency cosmic situations are collision of cosmic objects with the earth (it is not clear as to why falling of a meteorite in Tungus, Siberia should be considered as basis for announcement of emergency situation in Georgia), falling of fragments of cosmic aircrafts and etc (if it has not caused the damage of such scope, as death and demolition, then it is inevitable and normal process).

As hazardous meteorological and agro-meteorological events are provided vertical hurricanes and tornados. Vertical hurricanes are tornados. In description is also used word „large“(what is considered as large is not clear). Showers are referred to without provision of their gradation. It is not clear what is meant under lengthy showers (what is the duration), heavy snowfalls (what is the intensiveness), frost and etc.

Also, without definition or interpretation are provided such natural phenomena, as: snowstorm, frost, drought, heat waves, mist, lightning (?), avalanches, risk of forest fires, sea hydrological hazardous events, tropical cyclones, typhoons (which don't happen in tropical zone of Georgia and cyclones and typhoons are meteorological and not hydrological events), tsunami, storm, strong variance of the sea level, strong whirlpools in ports, early ice cover, ice slides, frosting of vessels and port facilities, ice drift, blocking, break-off of ice at the coasts (?), ice obstruction, sinking of vessels due to ice pressure (?) (As in Georgia is not situated at any pole, drifts and coastal ice are not occurring here).

Other events, listed without interpretation are: flooding, high water, melting of snow causing run-offs, shallowing of water, low water, early frost on rivers and reservoirs, used by vessel transportation (small boats probably are not implied here, at the same time Georgia does not have such large rivers or water bodies, which can be used by vessels), low level of underground water, high levels of underground water, natural fires, forest fires (natural fires may also occur in forest due to heat or lightning), fires of crops, peat fires, underground fires caused by minerals.

To emergency situations, caused by composition of atmospheric air and its characteristics are attributed sharp climatic changes caused by anthropogenic activities, disintegration of the ozone layer (this is the problem of global character, which has started long ago and why emergency situation has to be declared in regard to this, it is not clear).

To emergency situations, related to biosphere are attributed extinction of species and plants, sensitive to changes in the natural habitat, extermination of plant cover on large territories, sharp changes of biosphere impacting regeneration of natural resources (it is difficult as to who and how is supposed to establish this negative impact to regeneration of natural resources and how emergency situation is declared within the territory of one country).

### **12. The Law of Georgia on the State of Emergency**

The law of Georgia on the State of Emergency represents a framework law for regulation of the post period of natural disasters. This law too does not provide regulation of preventive period or its management, but the law itself is elaborated on constitutional basis and regulates period after emergencies.

According to the law emergency situation is a temporary measure, which is declared for the purpose of ensuring safety of population of Georgia in cases of ecological disasters, natural calamities and large breakdowns, when the state organs can not implement their constitutional authority as in normal conditions. Purpose of declaring of the state of emergency is quickest possible normalization of the situation and restoration of law and order.

The President declares state of emergency on the whole territory of Georgia or its part. The president warns population through media on declaring of the state of emergency the whole territory of Georgia or its part, while within 48 hours from declaration submits this decision to the Parliament for its approval. The President of Georgia issues a Decree, which has the legal power of law at such times, which is submitted to the Parliament within 48 hours. The text of the Decree is published through media within one day from its signing and shall be broadcasted at least every two hours.

According to article 3 after declaring of the state of emergency in the presidential Decree should be provided basis for reaching of such decision, term of the state of emergency and its territorial borders. The president after obtaining of approval of the Parliament can extend the term of the state of emergency or revoke it ahead of time. If the Parliament considers, that there are no preconditions for declaring of the state of emergency any more, it shall adopt decision on revocation of such state. The decision shall enter into force immediately upon its publication.

Regulations of organizational character are provided in the law starting from article 4, according to which in the state of emergency ministries are authorized to implement following activities: resettle population on temporary basis from affected regions; provide stationary and other temporary residence, establish special regime of entry and exit of population to the zone of state of emergency; in the event of necessity limit access to the zone of state of emergency; limit the right of leaving of the place of residence or other places without relevant permit; use resources of state entities, organizations and facilities for elimination of damage caused by emergency situation; for the same purpose use property and other assets of legal and natural persons on the basis of offering of corresponding compensation, which shall be granted after the emergency situation is over; Involve able to work citizens into elimination of damages, caused by emergency situation; ensure their safety; declare quarantine or implement other compulsory sanitary-epidemiological measures, declare curfew.

Article 5 of the law states the organ, responsible for coordination of activities on prevention and elimination of damage, caused by the state of emergency (The National Security Council).

Article 10 states that coordination of activities on prevention and elimination of damage, caused by the state of emergency on the basis of Presidential Decree can be established temporary organs on the impacted territory and upon nomination of the National Security Council can be appointed a commandant.

Article 13 regulates ecomigration. According to present article citizens, damaged as a result of natural disaster and in the process of implementation of activities on prevention and elimination of damage, caused by the state of emergency, the state is responsible to provide place of residence (shelter) (the Georgian word used is analogy to Russian, meaning manger for livestock, a semi-sheltered territory), remunerate caused material damage, assist in finding employment and etc. Terms and rules of provision of assistance with place of residence, compensation of damages and etc, are defined by the President but the law does not specify the legal status of such normative acts, issued by the president, name or terms of their issuance, consequently, there are numerous questions that need to be answered. Namely: what is procedure for registration of such citizens and assigning of the status of victims and which entity is responsible for this, how provision of residence is regulated, what are the criteria, what normative act approves of the methodology of calculation of material

damages. Which structure does this calculations (financial resources are budgetary resources), what is meant under other assistance, or provision of employment. The law does not provide answers to these questions.

### **13. The Law of Georgia on Regulation and Engineering Protection of Sea Shores, Water Bodies and river Banks**

As it is clear from the title the law regulates issues of engineering protection of sea shores, water bodies and river banks, although as we saw the law on Water Resources also cover certain issues of this sphere with the stipulation, that it mainly focuses on rivers, while it focuses less on water reservoirs, lakes and sea coasts. The law ensures sustainability of the zones of engineering protection and establishes state control and defines responsibilities in regard to activities, causing erosion and abrasion processes of the engineering protection zone.

According to one of the definitions, provide in the law general plan of the engineering protection zone is the document, which defines preventive measures. Maintenance of the data base within engineering protection zone and for general plan of the engineering protection, as well as implementation of monitoring is the main function of the National Agency on Environmental Protection. Monitoring is implemented for elaboration of plans for elimination of expected negative impact of erosion and accumulation processes and implementation of coast protection measures.

According to article 5 borders for the zone of engineering protection are elaborated by the National Agency for Environmental Protection in coordination with stakeholders and local authorities, which are approved by the Minister of Environmental Protection.

State management of the zone of engineering protection is regulated by article 7 of the law. According to article 7 one of the objectives of the State management of the zone of engineering protection is implementation of preventive and elimination measures of expected negative impact natural disasters. Instead of „expected negative impact natural disasters“the article should have stated „natural disasters“, as expected negative impact natural disaster may be even showers. At the same time the article does not provide any regulation in regard to natural disasters, such as flooding in case of rivers.

### **5.2 Drawbacks in law implementation**

Problems in implementation of laws of the natural disaster risk management sphere are preconditioned by different reasons. This topic is not related only to environmental sphere but is rather and intersectoral topic. First of all Georgian legislation covers issues related to natural disaster risk management in rather fragmentary manner and quite often provisions are vague, another issue is that apart from being characterized by certain drawbacks, laws quite often do not provide regulation for natural disaster risk management.

Different normative acts use such terminology, which provide incomplete or inadequate interpretation of „natural disasters“. Some of them talk of dangerous natural phenomena, natural calamity, natural disasters, ecological catastrophe, ecological disaster and etc. This creates serious barriers and challenges in the sphere of using the laws as instruments for natural disaster risk management.

Elaboration of effective laws and normative acts is impossible without participation of stakeholders and coordination of issues with them. Elaboration of laws and normative acts is usually implemented by one state structure and participation of stakeholders in these processes is inadequate. Also, public consideration of draft laws is not an adopted practice. As a rule all state entities try to expand the scope of their authority by proposed draft laws. Recently we observe such controversial trend, when in the process of elaboration of laws and normative acts state structures are coming up with such abstract, vague and declaratory norms, in case of failure of implementation of which, or inadequate implementation of responsibilities it can not be held responsible.

Due to lack of adequate resources mobilization of highly qualified staff for participation in preparation of legislative acts is not possible. Funding for publication of laws and normative acts for ensuring their wide circulation is not available, due to which laws and normative acts remain inaccessible for wide masses of population. Whole range of normative acts, which would regulate issues on natural disaster risk management have not been elaborated yet.

Incomplete legal framework creates problems from the point of its administration as well. Problems are created not only by lack of adequate legal framework, but by inadequate accountability to public.

## **6. Funding of natural disaster risk management**

On the basis of analysis of the comparison of report on execution of the budget for the year 2005-2007 with planned forecast for the budget of the year 2008 we have established the volume of allocations of budgetary resources for the

sphere of prevention of natural disasters and elimination of caused damage. It is noteworthy, that in conditions of permanent modification of the form and content of the state budget reports, as well as difficulties in obtaining of the full list of resolutions of the Government of Georgia and difficulty in delimitation of funding for measures on prevention of natural disasters and elimination of caused damage from other funds, we have managed to define tentative amounts of allocated funds and analyze appropriations of some of the state structures.

### 6.1 Funding of prevention of natural disasters allocated from the state budget in 2005 -2008

In the recent years activation of natural disasters in Georgia and caused damage, as well as human death toll has provided for the need of allocation of budgetary resources for funding of relevant activities. Taking into consideration transit function of Georgia from the point of prevention of natural disasters special attention is paid to restoration and rehabilitation of infrastructure of Georgia. In the table below is provided funding, allocated to the Road Department of the Ministry of Economic Development starting from 2005.

Table 6. Funding allocated to the Road Department of the Ministry of Economic Development for prevention of natural disasters and elimination of caused damage throughout the period of 2005-2008 (in thousand GEL)

2005			2006			2007			2008		
Total budgetary payments	Amount allocated from the budget	%	Total budgetary payments	Amount allocated from the budget	%	Total budgetary payments	Amount allocated from the budget	%	Total budgetary payments	Amount allocated from the budget	%
2618557.0	34 212.3	1,3	3822512.6	12000.0	0,4	5237131.1	6005.1	0,2	5077524.8	6500.0	0,2

Organizational code – 23 19 -report on the state budget for 2007

Organizational code – 26 11 01 02 10 – the law of Georgia on entering of amendments to the law of Georgia on the State Budget for the Year 2008” (#194)

Rehabilitation of the breakwater (protective facilities) of Poti port (the Ministry of Economic Development) and fortification of banks of rivers and Kobuleti coastline (The Ministry of Environmental Protection and Natural Resources) was also funded from the state budget.

Table 7. Funding allocated from the state budget for preventive measures for the period of 2005-2008 (in thousand GEL)

Measure	2005	2006	2007	2008
Rehabilitation of Poti sea port boom	5 091 5.0	6 888.0	8 613.9	7 200.0
	23 26 05	26 22 05	26 22 05	26 22 05
Fortification of river banks	–	5 600.0	–	1 650.0
		2611010212		38 10 03
Fortification of Kobuleti coast	–	–	2 017.5	–
			38 10 02	

Reports on the budgets for 2005-2007;

State budget of Georgia for 2008 – as of 15.07.2008.

In 2005-2008 measures for prevention of natural disasters were also funded from the reserve fund of the Government of Georgia, which was reflected in the budget of the Ministry of Environmental Protection and Natural Resources. Major part of this funding was also appropriated to the local municipalities.

Table 8. Funding allocated from the reserve fund of the Government of Georgia for preventive measures in 2005-2008 (in thousand GEL)

Measure	2005	2006	2007	2008
Rivers regulation	1 023.0		6 650.0	4460.0

1 023.0 – Resolutions of the Government of Georgia ## 178, 192, 267, 287 adopted in 2005

6 650.0 – Resolutions of the Government of Georgia ## 65, 83, 141, 228, 543 adopted in 2007

4 460.0 – Resolutions of the Government of Georgia ## 73, 330, 207, 264, 352 adopted in 2008

### 6.2 funding allocated for elimination of negative impacts of natural disasters

In the table provided below is reflected funding allocated from the state budget for elimination of damage caused by natural disasters for the period of 2005-2008. It is noteworthy, that the state budget for the year 2005 has separate item on funding for measures on elimination of damage caused by natural disasters. As to the state budget for the years 2006-2008 amount was reflected in the data from the budget of the Ministry of Resettlement of Refugees and IDPs – costs related to migration. Consequently, we can speak of only tentative amounts in the state budgets for the years 2006-2008 channeled towards elimination of damages caused by natural disasters.

Table 9. Funding, allocated from the state budget of Government of Georgia for elimination of damages caused by natural disasters for the period of 2005-2008 (in thousand GEL)

2005			2006			2007			2008		
Total budgetary payments	Amount allocated from the budget	%	Total budgetary payments	Amount allocated from the budget	%	Total budgetary payments	Amount allocated from the budget	%	Total budgetary payments	Amount allocated from the budget	%
2618557.0	35 000.0	1.4	3822512.6	1 274.7 34 06	0,1	5237131.1	1 029.9 34 06	0,1	5077524.8	1 217.5 34 06	0,1

35 million – the report of the state budget for the year 2005

Organizational code – 34 06- the law of Georgia on entering of amendments to the law of Georgia on the State Budget for the Year 2008” (#194)

Provision of funds from the reserve fund, established by the Government of Georgia and the President of Georgia is channeled towards funding of such emergency situations of state importance, as natural disasters and other emergencies. Consequently, these funds are allocated on the basis of relevant Resolution of the Government of Georgia and the President of Georgia, which should state the purpose of funding and its amount (article 13 of the Law on Budgetary System of Georgia). Despite this quite often it is difficult to make out the amount provided, as well as purpose of funding. Consequently, we have focused on those resolutions, where it was clear as to where and how much funds were allocated.

Table 10. Funding allocated from the reserve fund of the Government of Georgia for elimination of damage caused by natural disasters in 2005-2008 (in thousand GEL)

2005			2006			2007			2008		
Total amount in the fund	Amount allocated from the fund	%	Total amount in the fund	Amount allocated from the fund	%	Total amount in the fund	Amount allocated from the fund	%	Total amount in the fund	Amount allocated from the fund	%
39973.1	5000.0	12,7	36191.1	79.550	0.3	40249.6	995.412	2,5	25500.0	490.0	2,0

5 million – the report of the state budget for the year 2005

79 550 – Resolution of the Government of Georgia ## 15, 355 of 2006

995 412 – Resolution of the Government of Georgia ## 6, 123, 175, 627 of 2007

490 000 – Resolution of the Government of Georgia ## 279, 453, 471 of 2008

Table 11. Funding allocated from the reserve fund of the President of Georgia for elimination of damage caused by natural disasters in 2005-2008 (in thousand GEL)

2005			2006			2007			2008		
Total amount in the fund	Amount allocated from the fund	%	Total amount in the fund	Amount allocated from the fund	%	Total amount in the fund	Amount allocated from the fund	%	Total amount in the fund	Amount allocated from the fund	%
8893.3	14.0	0.1	31572.9	20.0	0.1	24680.8	150.0	0,6	25000	-	-

14 000 - Resolutions of the President of Georgia ## 539, 716 of 2005

20 000 - Resolution of the President of Georgia #387 of 2006

150 000 - Resolution of the President of Georgia #320 of 2007

As a rule funding provided from the state budget for elimination of damages caused by natural disasters and reflected in the budget of state structures as a rule is spent for rehabilitation of damaged infrastructure (except for funds reflected in the budget of the Ministry of Resettlement of Refugees and IDPs), while part of funding from the presidential and governmental reserve funds is spent for provision of compensations to population and part – for rehabilitation of damaged infrastructure.

It is evident from the data, that especially large volumes of work, related to rehabilitation of damaged infrastructure were implemented in 2005.<sup>41</sup> For the Road Department of the Ministry of Economy was provided 35 million GEL, which was spent on rehabilitation of 494 kilometers of roads, bridges and fortification of banks, while 5 million GEL provided from the Reserve Fund of the Government was spent for provision of compensations to population.

Also, were conducted works on rehabilitation of energy facilities, damaged as a result of natural disasters (28 power transmission towers). Within the framework of the project of Organization of irrigation and drainage users along with other measures was conducted fortification of banks of Rioni, Tskhenistklai and Aragvi and rehabilitation of main facility of irrigation system on Kvemo Alazani, although amounts spent for this project was not established.<sup>42</sup>

On especially hazardous 500 kv/h power transmission line section of Kavkasioni (Sakrusenergo) in the process of rehabilitation was used unique technology.<sup>43</sup> In 2006 with the World Bank funding within the framework of the project of Organization of irrigation and drainage users were implemented measures for prevention of flooding: fortification of banks of Kveda Biefi head facility, river Shrosha dam, in Lagodekhi district river Bjuja water collector facilities were rehabilitated, also watersupply facility of Ozurgeti District, village Shemokmedi. As a result of these works the above mentioned facilities were duly protected from flooding. Measures for prevention of flooding were also conducted in the high risk zone – river Ochkomuri of Ckorotsku district. In this case too we were not able to establish amounts, spent on prevention measures.<sup>44</sup>

In the same year were conducted bank fortification measures of Vartsikhe hydropower station and in the columbine in the area water of Lajanuri hydropower station (amount not clear).<sup>45</sup>

In 2007 within the framework of the program “Kobuleti coastline fortification measures” for compensation of materials for construction of beaches it was decided to transport excessive silt from the plains of river Kintrishi to 2400 meters of the beach. On this beach was transported around 143 090 m<sup>3</sup> inert materials as a result of which the width of the beach was expanded by 8-10 meters and the risk of demolition of 90 private houses and hotels (“Sanapiro”, Green House” and etc) was averted.<sup>46</sup>

Apart from funding provided from the state budget for the purpose of prevention and elimination of impact of natural disasters funding was also provided by such international organizations, as the World Bank, Global Fund, UN, North

<sup>41</sup> Report of the Ministry of Economic Development on activities implemented during 2005

<sup>42</sup> Report on the state budget of 2005

<sup>43</sup> Report on the state budget of 2005

<sup>44</sup> Report on the state budget of 2006

<sup>45</sup> Report on the state budget of 2006

<sup>46</sup> Report on the state budget of 2007

Atlantic Alliance, member countries of EU, Kuwait Fund, GTZ and etc. Thus, Swedish Organization for Development and Cooperation (SDC) is the main stakeholder and partner of the Government of Georgia in the sphere of emergency response.

### **6.3 Funding of state structures participating in natural disaster risk management**

Main governmental structures, directly responsible for natural disaster risk management are the National Environmental Protection Agency of the Ministry of Environmental Protection and Natural Resources, the Department of Emergency Management of the Ministry of Interior and the Department of Coordination and Management of Emergency Situations of the Ministry of Health, Labor and Social Protection.

The National Agency for Environmental Protection of the Ministry of Environmental Protection and Natural Resources is responsible for monitoring, forecasting and implementation of preventive and elimination measures in regard to hydrometeorological and geodynamic processes.

The Department of Emergency Management of the Ministry of Interior is responsible for ensuring security of population, public law and order, protection of property rights and provisions of urgent assistance to vulnerable population, affected by natural disasters, catastrophes and other emergencies.

The Department of coordination and management of emergency situations of the Ministry of Health, Labor and Social Protection is responsible for provision of medical assistance to population, affected by natural disasters, catastrophes and other emergencies.

The Ministry of Resettlement of IDPs and Refugees is responsible for regulation of migration flows, organization of resettlement of population to permanent or temporary places of residence, promotion of adaptation and integration of population and social protection.

The National Agency for Environmental Protection of the Ministry of Environmental Protection and Natural Resources around two months ago merged two structures – the Spatial Information Center and Forecasting and monitoring Center, which was formed in 2006 and its funding for the period of 2006-2008 (code 38 10 01) amounted to correspondingly 2 231.9, 6 548.7 and 2 231.0 GEL.

Funding for the Department of Emergency Management of the Ministry of Interior, according to the head of the Department, for the period of 2006-2008 was correspondingly 2.0, 1.0, 1.5 and 2.0 million GEL.<sup>47</sup>

In 2007 was adopted the law on “Protection of territory and population from natural disasters and emergency situations”, which defined authority and responsibilities of state bodies, local bodies of governance and natural and legal persons in the event of natural disasters and emergency situations. By Resolution No415 of the President of Georgia, dated by August 26, 2008 was approved the National Response Plan for emergency situations caused by natural and technological disasters and was established a Special State Commission on Management.

Resolution No73 of the Government of Georgia of March 24, 2008 on “Approval of the state program for better equipment of healthcare facilities for provision of medical assistance and services in the events of natural disasters, catastrophes, natural calamities and emergency situations” was a step ahead in the direction of improving of efficiency and promotion of better response to emergency situations. The program was funded from the state budget and 9 500.0 was allocated for its implementation.

The steps undertaken by the state in recent period indicate that the issue of prevention of natural disasters and effective response to them is becoming an urgent one. Despite this positive trends implemented measures and provided funding is not sufficient, and current reality is confirming this conclusion.

Well organized and continuous geo-monitoring surveys, which envisage observation, monitoring, control, assessment, forecasts and management - are of crucial importance for ensuring protection of population from geological disasters and increasing reliability of unhindered functioning of engineering and economic facilities, as well as averting of the risks of geo-ecological problems, caused by incorrect activities (anthropogenic factor). Such geo-monitoring surveys should be implemented not in isolated manner, i.e. in specific districts or on facility level, but they should cover the whole territory of the country and results should be submitted to the central, as well as regional and district authorities.

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<sup>47</sup> The amount of funding is rough as in the state budgets funding allocated to specific units within the ministry is not shown.

One of the major reasons of losses, caused to the population and economy of the country in regard to natural disasters is low level of preparedness of population towards such events, lack of awareness in population and relevant authorities, lack of information on expected natural disasters, their localization, and mitigation of damages or activities to be implemented.

Capital investments and relevant activities can not be implemented in regard to all currently existing or newly formed geological occurrences, especially when it comes to landslides, mudflows or avalanches. That is why it is extremely important to establish, as to what would be the scope of geological occurrences, what territories it may affect, what kind of risks the population and economy is going to be subjected to. This is extremely important to know to ensure quick response and assistance to population or have operational plan for strategic facilities and what is no less important, population should be provided with information and recommendations in regard to measures, that population and municipalities can implement with their own capacities in timely manner.

This means, that on the territory of Georgia should be conducted effective monitoring and accurate forecast have to be developed on the basis of such monitoring. At the same time it should be stated, that number of hydrological and meteorological observation stations is extremely insufficient (see table 12).

Table 12. Number of hydrological and meteorological stations starting from 1900

Year	Number of stations	Number of check-points
1900	31	44
1910	32	41
1920	36	26
1930	110	51
1940	160	49
1950	146	146
1960	134	168
1970	110	160
1980	107	172
1990	91	89
1995	77	90
2000	55	44
2002	54	56
2004	52	52
2005	37 + 6 aerop.	53
2007	13 + 2 aerop.	20
2008	13 + 2 aerop.	22

As can be seen from the table starting from 1950 there is the trend of decrease of the number of hydrological and meteorological observation stations. Presently in Georgia there are only 13 such stations and 22 observation points, which taking into consideration complicated relief of Georgia does not allow for obtaining of accurate forecasts. This is especially important in those cases, when geological processes or cluster of such processes is happening in high mountainous areas but by their destructive force are so strong, that they impact population, engineering facilities and buildings on the remote territories as well.

The same is true in regard to hydrological observation points. Presently their number is 21. For the sake of comparison: in 1914 on the territory of Georgia there were 36 hydrological observation points, while in Armenia, hydrological resources of which are 10-15% of the resources of Georgia, presently there are 160 hydrological observation points.

Funding of geological-exploratory activities has been substantially reduced too. In 2004 funding allocated form the state budget for given purposes amounted to 282 thousand GEL, while in 2007-2008 – 30 thousand GEL. Despite the fact, that functions of monitoring were also assigned to the subordinated structures of the National Agency for Environmental Protection (Hydrometeorological Department) the above funding on the background of current events can not stand any criticism.

Procedures of establishment of the scope of material damages, caused by natural disasters are not satisfactory. As a rule for evaluation of material damages are established state commissions, although normative acts, on the basis of which these commissions are established are practically inaccessible, as well as results of activities of such commissions. Quite often the amount of material damages is established on the basis of information, provided by the local bodies of governance. This is confirming the fact, that there is no systemic approach and unified methodology for evaluation of material damages.

Evaluation of the direct damage, caused by natural disasters is relatively simple – to the cost of damaged houses, lands, crops, other fixed assets is added the amount, necessary for compensation of damages which shall more or less help to establish tentative amounts. Indirect losses, caused by such occurrences are more difficult to evaluate, as numerous other factors have to be taken into consideration.

In developed countries assessment of potential damage that may be caused by natural disasters and the process of compensation is regulated by well developed system of insurance. In Georgia, where insurance system is at the stage of formation, compensation of damages is mainly conducted by the state resources, although in last several years in the agrarian sector there were attempts of ensuring of crops against natural disasters and force majeure on the basis of vouchers. Upon request of insurance companies given issue was considered by the Agrarian Committee of the Parliament of Georgia in July 5, 2008. Despite the fact, that the Ministry of Agriculture was supporting this initiative, decision has not been reached, but even the fact, that the issue was considered is a step ahead.

## **7. International cooperation in natural disaster risk management**

International community is providing assistance to the government of Georgia in establishment of a sound system in the sphere of natural disaster risk management and overcoming of critical situations. Main stakeholders in given area are UNDP, the World Bank, North-Atlantic Alliance, GTZ, France, other member states of EU and the government of USA. They take part in different projects and activities, targeted towards informing of population in regard to natural disasters, their prevention, risk reduction, timely response, elaboration of policy, legislative framework, regulatory and management structure, formation of technical basis. For the purpose of ensuring timely response, assistance and coordination of activities from international community in the event of emergency situations and natural disasters the state cooperates closely with Disaster Management Team (DMT). Disaster Management Team, subordinated to UN, is composed of several agencies, subordinated to it, international NGOs and several donor organizations. During last several years the Disaster Management Team has been provided assistance to Georgia in elimination of results of natural disasters several times (during Tbilisi earthquake of 2002, floods and landslides in Svaneti, flooding in 2005 and etc).

Among such measures is provision of urgent medical assistance to affected population, agreement on conducting of joint evaluation, drafting of statement of the Government and etc. In the process of provision of assistance (flooding of 2005) were also participating different donor countries, NATO, Response Coordination Center of NATO (EADRCC35) and Disaster Management Team, contribution of which in assisting the Ministry of Interior in mobilization of humanitarian assistance is great.

## **8. Migration caused in Georgia by natural disasters**

Georgia is a high risk country from the point of natural disasters. High risk of natural and anthropogenic disasters is on one hand one of the main reasons of social vulnerability of population and other hand, it represents major hazard for the life of population and undermines development of the country. The death toll, related to natural disasters, which had occurred during last 35 years, exceeds 600 persons. Starting from the 1980s the process of migration from mountainous regions has become more intense due to climate changes, which had major impact on the life style of population of these regions. In the last quarter of the previous century thousands of people have lost their homes due to floods, landslides, mudflows and avalanches. Quite often in some districts it is extremely difficult to find sustainable territories for resettlement of population and it needs to be removed from the places of historical settlement. Such people are resettled under the status of ecomigrants, due to which thousands of villages are deserted and lands become wasted. As we observe in practice quite often social problems of ecomigrants remain unsolved for years, their social vulnerability and psychological stress was increasing. Quite often there are conflicts between local population and resettled population.

If we judge by the current situation and lessons learned, we can say, that ecomigration as a social phenomena takes place when natural disaster occurs, or when there is no reliable information on possible hazard. This are cases, when there is no sufficient or reliable information, but due to the fact, that some of the regions are disposed to natural disasters (especially landslides and floods) and as early warning system is not in place, population prefers to leave the region upon its own incentive and move to safer areas.

Detailed information on general policy of migration, ecomigration, approaches, practice of resettlement, strategy towards adaptation of ecomigrants to new territories, programs, resettlement and ethnic tensions, caused by resettlement is provided in Medea Turashvili's and Tom Trier's work "*Resettlement of ecomigrants – solution to the problem or its creation? Ecomigration in Georgia, 1981-2006*", published in 2007. There are no other surveys or information in the sphere of policy of ecomigration, as the above stated work. Present analysis is based on this work too. In given section we dwell on problems and challenges that ecomigrants are facing in three regions. Information on two regions out of the three, namely Kvemo Kartli and Kakheti, is based on results of our field work and interviews with ecomigrants. As to Samtskhe-Javakheti, here we again rely on information of in Medea Turashvili's and Tom Trier's work.

### **8.1 Socio-economic problems of ecomigrants in Samtskhe-Javakheti, Kvemo Kartli and Kakheti**

First organized resettlement caused by natural disasters happened in the beginning of 1980s. At that time the programs of resettlement were well organized and planned. The government was providing to ecomigrants loans in the amount of 4.500 rubles per household, out of which migrant families had to repay only 45%. Along with financial assistance the state was also providing transportation of construction materials and equipment. Ecomigrants were in advantageous situation from the point of finding employment. In the Soviet period land plots to be assigned to ecomigrants were as a minimum 0.25 hectares, though in reality many households received a lot more – up to 1.25 hectares.

Starting from 1981 and presently within the state program on resettlement around 11 thousand households were resettled (around 60 thousand persons). They were resettled mainly from Adjara and Svaneti mountainous regions. In the same period large number of migrants (exact number is not established) have moved from Adjara to different regions of Georgia upon their own incentive due to high density of population and insufficient land. In the 1980s and beginning of the 1990s regions, receiving ecomigrants were: Kakheti, Imereti, Samegrelo, Shida Kartli, Guria and Samtskhe-Javakheti. Later, in the second half of the 1990s main recipient of migrants was Kvemo Kartli region.

Below we shall focus our attention on socio-economic problems of migrants in three regions - Samtskhe-Javakheti, Kvemo Kartli and Kakheti. Samtskhe-Javakheti and Kvemo Kartli are the regions, where major part of ecomigrants was resettled and where mainly representatives of ethnic minorities are residing.

#### **Samtskhe-Javakheti region**

Majority of ecomigrants, who have been moved to Samtskhe-Javakheti, have come from mountainous Adjara, namely villages of Khulo district, where they fled from landslides and floods. In 1981-1988 resettled population mainly found residence in Aspindza and Adigheni districts. These regions were attractive for migrants for two reasons: proximity to the Mountainous Adjara (despite the fact, that roads, connecting these regions are in bad condition) and due to the historical experience of resettling to these region starting from 1940s (forcible deportation of so called Turk Mesketians from these territories and settlement of population from different parts of Georgia to these territories.)

Challenges, facing population resettled to Samtskhe-Javakheti can conditionally be divided into three groups: (a) availability of housing and agricultural land-plots, title to land; (b) conflicts with different ethnic groups (c) natural conditions in the places of resettlement. Below we provide brief overview of these problems.

In 1989 within the framework of the state program was decided to resettle 477 households to Akhalkalaki district, although presently there reside only 221 households, out of which 15 bought houses with their own means, 12 still do not have housing. The rest returned to their initial place of residence or due to problems that they had in Javakheti resettled to Tsalka. Furthermore, as there was no mechanism of state control some of the ecomigrants illegally and at a low price sold their houses and left the region. As an illustration may serve situation in village Azmana of Akhalkalaki district. The village was built specially for ecomigrants. The state was planning to build 70 houses, out of which only 50 were completed, while number of ecomigrants in the village in 1970 was 70 households. By 1991 in the village were residing only 38 households, as of today there live 40 households.

It should also be mentioned in this regard, that Kostava Foundation bought for ecomigrants and other vulnerable households 258 houses in Samtskhe-Javakheti (out of which around 217 houses were in Ninotsminda district) and provided houses to ecomigrants from Adjara in Ninotsminda district.

Village Iveria, Gulsunda and Mirashkani are new villages that were developed in Aspindza district for ecomigrants. In 1994 after Turk Mesketians were deported from Samtskhe and Javakheti in this area were left only ruins of their houses. The government decided to re-establish these villages and build there houses for ecomigrants. It is noteworthy, that today Mirashkani is one of the best villages in Aspindza district with the best lands and water. In the 1980s ecomigrants, who were resettled to Aspindza and Adigheni districts were given 0.5 hectare land plots, out of which 0.15 was for dwelling and 0.35 for agricultural activities.

Example of village Spasovka is very interesting, as here continue to reside mainly ethnically Georgian families. Till 1989 major part of population here were Russian Dukhobors and around 4 Armenian households. Their houses were bought by Kostava Foundation or Parvana and Javakhkma (Armenian organizations) to assist Armenian households. Today composition of the village is the following: out of 104 households living in the village 84 are Georgians, 16 Armenian and 4 Russian. Ecomigrants, residing in Spasovka were resettled from Khulo district and they found themselves in dramatic situation. In the spring of 1990 from Khulo to Ninotsminda district started resettling 117 households. They were offered by Kostava foundation to live in the houses bought for them. In the same period Armenian in Javakheti were organizing demonstrations against resettlement of Georgian population there. Due to protests in Javakheti and expected confrontation of ethnic grounds the government decided to stop resettlement of those ecomigrants, who were already in Akhaltsikhe so that they don't continue going to Ninotsminda. As a result major part of ecomigrants returned to Khulo, but 22 families remained, who were still trying to reach the place of initial destination. In the end they went to Spasovka and resided in houses provided for them. For their protection police forces were mobilized, who stayed in the village for three years. After this wave of migrants other Georgian families came to Spasovka.

In the beginning living conditions in Spasovka were terrible. There households had to live in one house. Despite the fact, that Kostava Foundation bought several more houses in the adjacent villages, ecomigrants were afraid of leaving Spasovka as that was compact settlement of Adjarians and they did not want to move to other villages as single households. After a certain period of time some families started buying houses from Dukhobors, who were leaving for Russia.

The problem with housing is not resolved fully in the village up to now. In the 1990s some ecomigrants families came to Spasovka upon their own will and 16 households out of them still don't have houses and they live either with relatives, or old battered houses left behind by Dukhobors. It is interesting, that some of the households sold the houses that Kostava Foundation has given them. Despite the fact, that documents on these houses were kept in Kostava foundation for 25 years and selling of these houses was not allowed by law, the conditional owners of these houses managed to sell them informally. Buyers of such houses were usually other ecomigrants, who came to Spasovka later, or local Armenians, who usually came here from mountainous villages, especially from village Foka. Households, living in Spasovka, or those, who have serious problems with housing, as well as families, which have grown and want to separate and live as two households, are ready to move to villages, located in the vicinity of Spasovka, where there are still houses, owned by Kostava foundation, but they are afraid of settling in Armenian communities.

Situation is even more complicated in regard to housing of ecomigrants in village Balanta of Borjomi district. According to the state program in this village was planned to resettle 32 households and around 50 houses were supposed to be built for them. But in 1989 to Balanta came only 20 families from Khulo. By the time of their arrival were constructed only 6 houses and major part decided to live in the wooden houses that they would build with hope that construction of the houses shall complete in future. Majority of them left this village within two years, as the houses were not built and today there is remaining only 1 household of ecomigrants in the village. As the authorities of Balaneti explained, the reason why ecomigrants left, were severe climatic conditions, economic hardships and no housing. Majority of families, which left Balaneti did not return to Khulo and went to Kvemo Kartli.

As to agricultural lands, in Samtskhe-Javakheti in regard to their transfer and ownership were quite serious problems.

Ecomigrants as well as the rest of population of Samtskhe-Javakheti subsist on farming and their main revenues are generated from cattle breeding and land cultivation (mainly producing potatoes and hay). Majority of families have around 2-4 cows and some sheep. Apart from plots, where their houses are built, majority of them have 1.25 hectares of agricultural plots, which they leased in the period of land reforms in 1992-1998. Today population can take additional land into lease for 15-20 GEL per hectare (average price, as it is established according to territorial-administrative unit and quality of land). Such farming production, as milk, meat and potatoes is mainly cultivated for own consumption of households, while excess production is either sold on local markets, or in Akhaltsikhe, Kutaisi and Tbilisi.

It should be stated, that despite all persons have same legal right to obtain land plots, many ecomigrants complain, that land is not distributed fairly. Thus, residents of Spasovka say, that there are farmers in Ninotsminda district, who won around 500-800 hectares of land, while Adjara farmers don't have more than 2.5 hectares. Situation is the same in some parts of Akhalkalaki district, as there too ecomigrants state, that they are refused from provision of more land because they are Georgians, living in Armenian communities.

We should also keep in mind, that due to natural conditions and climate of Javakheti many ecomigrants refused from living there. Part of them returned to old place of residence, part went to Kvemo Kartli. A lot of ecomigrants could not stay in Gorelovka, Epremovka, Orlovka and Sameba due to climatic conditions. Temperature here reaches – 25 degrees in winter and the region is cut away for 7 months during the year.

Samtskhe-Javakheti region is characterized by conflicts on ethnic grounds. Local population was against the state policy of resettlement of Georgian in the region, where they were ethnic majority. Armenian population was organizing demonstrations against resettlement of Georgians. Mainly problems of locals and resettled population were similar and were preconditioned by social and economic hardships. Any arguments on the basis of land plots can turn into serious conflicts, which quite frequently are viewed as ethnic confrontation not only by population, but by representatives of local authorities as well. In this regard Samtskhe-Javakheti and Kvemo Kartli are extremely fertile basis for this and in the context of current social and economic conditions the risk of escalation of conflict undermines stability of the region. Given fact once again indicates to the need of elaboration of policy by the government for reduction of tension and possibility of ethnic confrontation.

### ***Kvemo Kartli and Kakheti***

On the basis of interviewing of ecomigrants in Kvemo Kartli and Kakheti were identified following problems: (a) availability of housing and agricultural land-plots, ownership right; (b) access to potable and irrigation water; (c) employment; (d) energy supply; (e) healthcare) (f) education (g) road infrastructure and transport (h) natural conditions in the places of resettlement.

#### ***(a) Availability of housing and agricultural land-plots, ownership right***

According to ambitious plans of the state it was planned to build villages for ecomigrants, which would satisfy all basic needs for housing, which in reality the state could not implement. As a result ecomigrants found themselves in extremely difficult situation. Part of them had to settle in semi-completed houses, while part of them never received any housing from the state.

Thus, in Bolnisi district, village Disveli in the beginning was planned to resettle 220 households, but as it was planned to build houses for only 80 households, major part of ecomigrants were not able to move there. In village Khatisofeli of Bolnisi district was planned to build 52 houses, but after disintegration of the Soviet Union construction was suspended. On the total were built 30 houses, out of which only 20 were completed. Houses were assigned to households on the basis of voting and consequently, first 20 houses went to the „lucky ones“. Other received only land plots. One of the ladies states during interview, that the house, where they live presently they have entered into illegally, as till now the house, that was supposed to be theirs has never been completed and it is impossible to live there (only walls and the roof has been built). The same lady stated that houses for her father and brother have not even been built and they only possess land plots, which are not good for agricultural activities. The house of the dweller of the same village Mikheil Gorjmeladze is also not suitable for residence and he, his wife and grandchild live in one room in the house of their neighbors.

The government provided to the population houses and land plots (around 1 hectare per family). According to ecomigrants only 5% of lands belong to them, the rest is in the ownership of local population that is why the ecomigrants have to lease the land from locals. The land tax for fertile plots is 100 GEL per year. They also state, that cultivation of land is extremely difficult there due to lack of agricultural technique and tractors. They largely depend on Azeri villages, who ask around 100 -200 GEL for hectare of land.

In village Tandzia, Bolnisi district was planned to build 150 houses for population of Svaneti, damaged as a result of avalanches. Instead, only 100 houses were built. As a result the government failed to provide housing to major part of this ecomigrants. Each family was provided with a land plot (2500 m<sup>2</sup>), although majority of villagers also rent around 3-4 hectares of land.

In village Chivcha of Tetrtskaro district insufficient number of houses for ecomigrants is a serious problem. Quite often in one house two or three families reside together (Thus, Sasha Gasviani's family lives in two rooms of the neighbor's house). It is noteworthy, that 120 households were moved to this village and only 90 houses were built. Each of the households received 1 hectare of land.

In village Khikhani of Marneuli district live 118 households. In some cases two families occupy one house, which is caused by their insufficient number, as 118 households are accommodated in 96 houses. In village Khikhani are around 70 vacant houses but by decision of the government here shall be settled households, affected by August events of this year. As the vacant houses were not completed, three months ago government started rehabilitation and completion works. Each household was given 2-3 hectares of land in this village, which are half kilometer away from houses and are mainly used for growing of hay.

If in the above stated villages main problem for ecomigrants was lack of housing, in other villages of Kvemo Kartli there are large number of vacant houses. Population uses abandoned houses for different purposes (for storing of hay, cattle and etc).

In village Kapanakhi of Gardabani district where was settled population of Svaneti, damaged as a result of avalanches, presently reside around 140 households. There are numerous unfinished houses in the village, which were designated for ecomigrants, but their major part could not arrive (quite often the families, who were supposed to resettle were selling cattle in Svaneti to collect money for moving). To the new settlers were given plots of 5000 m<sup>2</sup>. According to ecomigrants Azeris complained to authorities in this regard and took land over from Georgians. Part of lands for Svanetian ecomigrants was also taken over by Azeri population. That is why in village Kapanakhi part of families have only land plots for their residence (2 500 m<sup>2</sup>).

In village New Khaishi of Tetrtskaro district where 300 houses were built for ecomigrants but were not completed, today reside only 120 households (population of Svaneti, who migrated as a result of avalanches). Migrants have quite small land plots (2 500 m<sup>2</sup>).

In village Erisimedi of Sighnaghi district initially was planned to provide housing for 130 households, although today only 70 households reside there. Majority of them returned to Adjara, other went to other regions but again at their own expenses. Each household has a land plot (around 1 ha), where they mainly cultivate potato and corn. Despite the fact, that construction was not completed, the houses were anyway given to the migrants. Part of migrants completed these houses with their own means, while others built temporary wooden houses with the hopes, that the government would some day finish their houses.

In village Maradisi of Marneuli district resides population resettled from Adjara. At initial stage these migrants were supposed to be resettled to Shulaveri in the dormitory of wool production factory. Later on the government started construction of village Maradisi in the area, where previously used to be vineyards. The houses were never completed and population had to complete these houses with their own means (majority of population of village live in wooden houses even now).

Due to splitting of mountain Kapreti and several other villages (Dgevani, Matskvalta) were announces as high risk zone of landslides and the state moved population of these villages to Shulaveri in the apartment houses of wool production factory. They were promised to be given houses and land plots in village Khikhani, but houses were not completed and population had to remain in the apartments in Mareti settlement. Land plots provided to migrants were located at a long distance form the village. They were promised that on those lands the government would build houses for them. This never happened and today population has serious hardships in reaching those lands, as well as cultivation and protection of crops. According to migrants it would be good if somebody (government, NGOs or private persons) would help them in building houses on those lands. They prefer to live closer to the land that they are farming.

Out of interviewed population the most acute housing problem was in village Tsintskaro of Tetrtskaro district. There are 350 households in the village, out of which 100 are resettled from Svaneti, 100 from Adjara, several households from Abkhazia (refugees) and several Greek families. In the period of resettlement according to respondents the government did not provide to them any assistance. The government was promising to buy for them houses, but due to lack of financial resources for majority of them houses have not been bought up to now. The houses, were migrants are residing belong to Greeks. Migrants themselves started negotiations with Greeks to buy houses with their own resources.

After August events of this year the Ministry of Interior of Georgia was assigned to start construction and purchasing of houses for refugees from the conflict zone. According to migrants the Ministry of Interior is planning to buy houses from Greeks and offered to each owner around 8 thousand USD. The population is saying that for conducting of negotiations the head of local administration went to Greece. The price offered by the Ministry of Interior caused increase of prices for the houses, abandoned by Greeks due to which the migrants can not afford to buy these houses any more (thus one of the respondents has reached agreement with the owner of the house to purchase it for 4 thousand USD, but now he wants more). Major part of respondents were stating, that owners of some of the houses have already told them to vacate them (one of the households should move out in December 30, after expiration of this date the family shall be moved out forcibly). In the process of interviewing we saw announcement on one of the houses bought by the Ministry of Interior, while in this house is presently living family from Abkhazia.

Village Imera of Tsalka district several years ago was populated by Greeks. Today there are around 70 households in the village, out of which only 2 are Greek. The resettled population lives in the houses of Greeks, who have immigrated years ago and they pay around 60-80 GEL as rent on monthly basis. At the same time their right to rent these houses is not guaranteed and they don't have the feeling of ownership. They are leasing land plots form large owners for the period of one year too.

Despite the fact, that population was provided with housing and land plots, majority of them do not have documents, confirming their title to land. In practice houses and land plots remain in the state ownership. In many cases uncompleted houses were handed over to migrants with the condition that they would become owners after 25 years. This requirement was violated in many cases. There were cases, when ecomigrants were selling these houses illegally or due to climate conditions, were abandoning them and resettling again. As a result today population lives in the houses, that don't belong to them and they don't have right to dispose of them at their own discretion. This creates problems in the event of applying to credits from the banks. Also, due to no title, majority of respondents stated, that they don't have the feeling of ownership to their present place of residence.

#### ***(b) Access to potable and irrigation water***

In Kvemo Kartli and Kakheti villages, populated by ecomigrants one of the most serious problems is water supply (potable and irrigation). Out of interviewed villages problem with access to water had the following ones: village Lemshveniera of Gardabani district, where population is supplied with potable water by schedule (every second day for certain hours). One of the districts of the village does not have water supply at all and population has to carry water from their neighbors. Village Kapanakhi of Gardabani district is supplied with water by schedule. Village Disveli of Bolnisi district is supplied with water from Bolnisi (pumped) and village gets water twice a week. Village Khatisofeli of Bolnisi district does not receive water for over a year. Village was receiving water from village Khachini, but because pipes were old and the pump broke, they stopped receiving water. Population has to bring potable water from spring, which is 2 km away from the village.

Village Khikhani of Marneuli district has problems with potable water too. In September local authorities provided to village 1500 GEL, population also collected 7 GEL from each household, after which they have changed the pipes and village had water by schedule, but this lasted only 20 days. Now population is requested to pay 1500 GEL for 20 days of using water, after which they are promised to be supplied with water again. There are two water supply points in the village from which population has to carry it to their homes.

In Village Maradisi of Marneuli district there are watersupply pipes lowered, but the houses are not connected to the pipes. (There are 12 water supply points in the village from which population has to carry it to their homes). Fees for water amount to 1 GEL per capita and major part of population can not afford to pay it, that is why water is supplied twice a week. Population also uses wells in their yards.

In village Maret'i of Marneuli district potable water is the main problem. Watersupply system was depreciated by the period of resettlement. In 1994 by efforts of population pipes were lowered from the central watersupply facility, which is 7 km away. In 2006 this pipes also broke and today population does not have potable water. In spring sewerage system was rehabilitated.

In village Tamarisi Marneuli district potable water is also the main problem. Villagers mainly use water from wells although not all households have them (digging of well costs 1500 GEL) and they have to bring water from wells of their neighbors.

In village Tsintskaro of Tetrtskaro district potable water is supplied from village Ksovreti, but pipes need to be replaced, due to which village receives water once a week or in ten days. In village Khaishi of the same district there are only 7 sources of water. Village receives potable water by schedule twice a week.

In Tsalka district all three interviewed villages – Imera, Beshtasheni and Bashkoi has serious problems with potable water. Imera and Beshtasheni have one spring each, which quite often are dry. In Bashkoi watersupply system was restored although broke down again quite soon and the village has no water.

In some of the villages potable water is dirty and not fit for use. Thus, in village Erisimedi of Sighnaghi district population uses small wells, where water is polluted and can't be used as potable, as it is hazardous for health. All families don't have wells and they have to bring water from several springs or neighbors. Population of the village says that out of 108 pupils 100 are coughing permanently, which according to them is caused by dirty water. In 2007-2008 for dealing with the water supply problem was allocated 36 thousand GEL, although the problem remains unsettled. Polluted water is also supplied to village Chivchavi of Tetrtskaro district.

Problems with irrigation water are characteristic to village Lemshveniera of Gardabani district and village Khaishi of Tetrtskaro district. Respondents state, that due to problems with irrigation water they lose crops. In some of the villages there is no irrigation system at all. These are: village Kapanakhi of Gardabani district, village Udabno of Sagarejo district, village Erisimedi of Sighnaghi district, villages Disveli and Tandzia of Bolnisi district, villages Khikhani and Maret'i of Marneuli district, village Tsintskaro of Tetrtskaro district, villages Imera, Beshtasheni and Bashkoi of Tsalka district.

Residents of village Khatifeli of Bolnisi district indicate to pollution of irrigation water, who use for irrigation water of Kazreti. According to them water is polluted by heavy metals and other hazardous chemical substances, due to which around 60% of crops is lost. Main reason for pollution of water is Madneuli gold mining plant.

In villages Tamarisi and Maradisi of Marneuli district there is no problem of water supply, although residents indicate to high costs of irrigation water, as irrigation of one hectare of land costs 150 GEL per household.

### ***(c) Employment***

According to population of village Kapanakhi of Gardabani district they used to live much better in Svaneti and revenues generated by family members were much higher, than in Kapanakhi. In Svaneti they were mainly subsisting through farming and cattle breeding. In village Kapanakhi the main source of their revenues is cattle breeding (almost all households have several cows and they sell dairy products). Very small part of population is employed mainly on the railway. In village Lemshveniera employment is the biggest problem. Around 80% of villagers are unemployed. In village Lemshveniera average monthly income of a family is 100-150 GEL. Main source of income is cultivation of land and cattle breeding.

In village Disveli of Bolnisi district major part of population is unemployed. Main source of income is cultivation of land and cattle breeding. Some have hay production. In village Disveli average monthly income of a family is 70-100 GEL (mainly pensions). There was a family, which did not have any income at all (Natela Shanidze's household). The family consists of 9 members and is living in extreme need.

In village Khatifeli part of population has seasonal employment (in the period of harvest Azeri population hires villagers and pays them 7-8 GEL a day). In village Khatifeli average monthly income of a family is 80 GEL (mainly pensions, the only thing that elderly receive without any obstacles). . Main source of income is cultivation of land and cattle breeding.

In village Chivchavi of Tetrtskaro district majority of population, which used to live in Svaneti was employed in different organizations. They also used to cultivate land and had cattle. Today their biggest problem is unemployment. Few are employed in the village school, kindergarten and ambulatory. In village Chivchavi average monthly income of a family is 70 GEL. (Mainly pensions). Main source of income is cultivation of land and cattle breeding (not all households have cattle). .

In village Khaishi situation with employment is similar. Here differently from Chivchavi several people had temporary employment on Baku-Tbilisi-Ceyhan pipeline construction. In village Tsintsikaro respondents stated, that they go to find employment to Azerbaijan, work there on temporary basis and receive 7-8 GEL a day.

In village Erisimedi of Sighnaghi district Main source of income is cultivation of land (potato and corn) and cattle breeding too (sell dairy products). In the village was recently opened a center, which buys milk from farmers. This helped out population a lot, as in conditions of difficulties with transportation (taxi vans are once a week and the road is in bad condition) they don't have to go far to sell their production. This is very important as cattle breeding is one of the Main sources of income for population. The matter is that cattle in the village is grazing on its own and often goes to the territory of Azerbaijan. As villagers say Azeri population steals the cattle. There were numerous occasions, when residents of Erisimedi applied to Georgian and Azeri police, although it is very rare that they return their cattle. According to some of respondents problem can be dealt through building of simple borders.

### ***(d) Energy supply***

Population has problems with energy supply too (as well as gas and firewood). Majority of villages either don't have natural gas at all, or pipes are lowered and government is promising to supply gas in nearest future.

In village Kapanakhi of Gardabani district biggest problem is related to the cost of electricity. Despite the fact, that there are individual meters in the village, population has to pay more than consumed. Main reason is that on the main control meter the aggregated consumed amount always exceeds the actual consumed by households. Population has been trying to identify source of this excess and correct it. Similar problems were in several other villages as well.

In village Kapanakhi gas pipes are lowered and as population states, they used to have gas, but not any more. Several villages have gas pipes connected too though gas is not supplied. In village Kapanakhi population is using firewood for heat and cooking, which costs around 600-700 GEL per year. Majority of villages use firewood for heat and cooking, while very few households use gas cylinders for cooking. Amounts are approximately the same - 600-700 GEL per year. Respondents from other villages often indicated to firewood vouchers, distributed to population previous winter and stated that they basically did not use these vouchers, as it is even more expensive to get firewood with vouchers. Another reason was that stands, designated or logging were in very remote areas which makes it difficult to transport firewood.

### ***(e) Healthcare***

One of the biggest problems of ecomigrants is lack of primary healthcare facilities in the places of their settlement. In villages, where there are no healthcare facilities population had to apply for different measures to have urgent aid. There were cases, when health of population was suffering due to polluted water. Villages, where there is no primary healthcare service (ambulatory) are the following: village Khikhani of Marneuli district, villages Tandzia and Disveli of Bolnisi district, village Erisimedi of Sighnaghi district, villages Chivchavi and New Khaishi of Tetrtskaro district.

In village Khikhani ambulatory facility was built this year, although the village has no physician yet. According to population this problem is going to be solved soon. In village Tandzia there is ambulatory although it is used for other designation. Presently there is stall and live several households. Village has no physician. If somebody needs medical aid they have to go to Bolnisi. In village Erisimedi there is newly refurbished ambulatory and it is open once a week, when physician comes to village. There were numerous cases of Malaria in the village, although during 2007-2008 number of new cases has reduced.

Villages, where there is no primary healthcare service (ambulatory) are the following: Maradisi and Tamarisi in Marneuli district, Khatisofeli in Bolnisi district, Kapanakhi in Gardabani district, Imera, Bashkoi and Beshtasheni in Tsalka district.

It is noteworthy, that among ecomigrants there are many disabled of II and III category. They say, that the state is not interested in implementation of projects for improvement of their health status and think, that the state should take care of them.

### ***(f) Education***

In territories, populated by ecomigrants there is no possibility of alternative education except for public kindergartens and schools. Even these facilities are not available in all villages.

In village Kapanakhi there is no school and kindergarten. Children have to go to Azeri school in Gardabani district. In village Khatisofeli there is no school and kindergarten too. The former school building is so damaged, that it is impossible to conduct lessons and Children have to go to school in Bolnisi. Population stated that they have applied to different state structures, including the Ministry of Education on numerous occasions with request of rehabilitation of school but to no avail. There is no kindergarten in the village too.

In village Erisimedi is the same situation as in Khatisofeli. In the public school of Erisimedi there are no conditions for learning. Walls of the building are damaged (risk of falling), inventory is outdated, no computers, small classrooms, standard on 3 meter distance between the blackboard and school-desks is violated, due to which 70% of children are short-sighted. There is no kindergarten in the village or any entertainment and recreational facility.

In village Imera school is also a problem. Population opened school in a house, abandoned by Greek family. It is in terrible condition presently. Resources were allocated for refurbishment of old school but the same year the ceiling of the school fell.

### ***(g) Road infrastructure and transport***

To ensure, that population has opportunity of selling its produce and not be isolated from the outer world road infrastructure and transport is of crucial importance. Problems of roads and transport are closely linked.

In village Maradisi population stated, that bad roads was their biggest problem. This problem was more or less dealt with and they are grateful to the governor of the region. There is tax van, touring every day and it transports population to Kulari. Village Khikhani has problems with roads too. There were promises on behalf of the government, that the roads shall be rehabilitated but nothing has been done up to now. This issue becomes extremely acute in winter season. As to transport, there is a bus carrying passengers every day.

Village Erisimedi is at 43 km distance from Tsnori and this section of the road is in extremely poor state. Bad roads create numerous problems. In the event of calling for ambulance it can not reach the village in time. There were cases, when women had labors in the ambulance vehicle, as they could not reach the healthcare facilities in time.

In village Kapanakhi there are two interrelated problems: no school. Despite the fact, that the road was repaired, there is no means of transportation in the village and children have to go to school by foot. Situation is especially heavy in winter, when children can not go to school.

In village Imera road infrastructure is in dire state. In Tsalka, including Imera there is no public transport. Population can not transport their produce to the market (mainly cheese). Those few, who are employed in Tsalka, have problems in reaching their jobs. There is one car in the village and whole population uses that car.

#### ***(h) Natural conditions***

Apart from all the above mentioned problems for resettled population as urgent issue remains the problem of natural conditions in their new place of settlement. History of village Erisimedi of Signaghi district is quite interesting in this regard. According to population Georgian-Azerbaijan border is following the river Alazani. In 1956-60 Alazani's river bed changed and around 900 hectares of land was left on the other bank of Alazani. According to respondents there was the risk, that Azeri population would start settling on these territory. The government reached decision to develop village on this 900 hectares. Village Erisimedi was founded as a result of this decision (as population says they are basically protecting the borders). It seems, the government did not foresee as to what kind of risks population may be subjected due to the fact, that village is located within three river basins – Alazani, Belakanchai and Katekhchai (these are tributaries of Alazani). In case of high water on Alazani tributaries runoffs increase too and they flood lands and houses and damage roads. There are huge losses due to this basically after every strong showers (3-4 years ago half of the village was flooded).

In village Imera of Tsalka district natural conditions are very severe. In winter temperature reaches -30 degrees. The roads are blocked and population is isolated. In village Khikhani of Marneuli district frequency of droughts increased and in conditions of problems with irrigation water population is facing serious hardships. The same problems are characteristic to village Udabno and New Khaishi, where intensiveness of droughts increases every summer.

### ***8.2 Current Institutional Framework of natural disaster risk management***

Institutional Framework for management of migration is of extremely fragmentary and incomplete character, while the structure is extremely simple. In legislation problems of ecomigration are not directly considered at any stage of the cycle of natural disaster risk management. Number of subjects, participating in given sphere is extremely small. The main ones are the Ministry of Health, Labor and Social Protection and the Ministry of Resettlement of Refugees and IDPs.

#### **• The Ministry of Health, Labor and Social Protection (and the Department of Coordination of Emergency Situations of the Ministry)**

In the institutional Framework of natural disaster risk management key player is the Ministry of Health, Labor and Social Protection. According to Regulations of the Ministry within the system of the Ministry is the Department of Coordination of Emergency Situations, whose main functions and competencies are:

- a) Mobilization of resources and capacities of the Ministry for the purpose of provision of timely healthcare services to population in emergency situations and coordination of activities of healthcare facilities;
- b) Elaboration and implementation of mobilization plans on provision of healthcare services to population, affected as a result of technological and natural disasters and epidemics; Supervision over maintaining of mobilized reserves.
- c) Implementation of functions, authority and responsibilities of a secret operational organ as provided by Decree No42 of the President of Georgia on „Approval of normative act on enforcement of the law on the State Secret“, adopted in January 21, 1997.

It is clear that the department is mainly oriented towards planning and implementation of measures for provision of timely healthcare services to population in emergency situations.

#### **• The Ministry of Refugees and Settlement**

The Ministry of Refugees and Settlement is the key player in the sphere of management of problems, related to ecomigrants. One of the competencies of the Ministry is implementation of the executive authority for the purpose of ensuring of social and legal protection of population, affected by natural disasters and control over migration and resettlement. According to Regulations of the Ministry it is responsible for organization of migration flows, caused by technological and natural disasters and epidemics, provision of temporary or permanent place of residence, creation of conditions for adaptation and integration of migrants and their social protection.

Among authority of the Department of migration, repatriation and refugees is organization of resettlement of migrants in regard with natural disasters and promotion of adaptation and integration of migrants. One of the functions of the Department is also elaboration of effective system of management of ecomigration processes and promotion of their rehabilitation; monitoring of migration processes over the territory of Georgia; forecasting of natural disasters in the high risk zones and implementation of program of resettlement of ecomigrants; elaboration of programs of adaptation and integration of migrants on new places of settlement and development of data base on ecomigrants.

### **8.3 Current legal framework on migration caused by natural disasters**

Currently in Georgia there is no normative act, which would regulate all aspects of migration caused by natural disasters. Differently from the term "natural disaster" the term "ecomigration" or "ecomigrants" is not represented in modern Georgian environmental legislation. As we have stated above, in environmental legislation there are two exclusions: 1. Article 25 of the law on Water Resources, which provides for resettlement of population from the hazardous zone and damaged houses in the event of natural disasters. Although the law does not assign to them the status of ecomigrants. 2. Article 13 of the law on the State of Emergency, which provides regulation for ecomigrants. Namely, according to this article in the state of emergency (including natural disasters, ecological disaster or ecological disaster zones) or for the purpose of its prevention the state should provide to affected population housing, compensate damages and assist with employment and other aspects. The law also does not assign the status of ecomigrants to affected population.

The approach towards compensation of damages is also of fragmentary character. There is no normative document, which would regulate all possible aspects and would not be designated for one specific region. For example, in regard to natural disasters in Samegrelo-Zemo Svaneti, Racha-Lechkumi Kvemo Svaneti, Imereti, Samtskhe-Javakheti, Shida Kartli, Mtskheta-Mtianeti, Kvemo Kartli, Kakheti and Adjara Autonomous Republic on the basis of the Decree No166 of the Prime Minister of Georgia, adopted in May 3, 2005 was established the State Commissions on studying the volume of damage, caused by natural disasters which was assigned to ensure evaluation of damages caused by natural disasters in cooperation with ministries, regional administrations, local bodies of governance and self-governance within 10 days for the purpose of promotion of effective implementation of measures, targeted towards elimination of negative impact of natural disasters. The commission was also responsible for coordination of humanitarian aid, received from international and donor organizations and foreign states and coordination of activities of ministries, regional administrations, local bodies of governance and self-governance.

Resolution No203/n of the Minister of Health, Labor and Social Protection, adopted in August 3, 2005 is also regulating provision of assistance to population damaged by natural disasters. Namely, in emergency situations (natural disasters, mass damage to population, epidemics, rare diseases) for humanitarian purposes of in the event of urgent state needs for the purpose of drafting of conclusion on importing of unregistered drugs on the territory of Georgia shall establish commission and regulate its activities and import and usage of medication.

It is another issue, whether activities of such commission shall be effective in emergency situations, especially when it has to deal with importing of such drugs, which have not been subject to state expertise. It should also be taken into consideration, that in the event of mass damage to population such medication has to be distributed to large part of population, which may be hazardous in itself.

In paragraph 8 of Resolution No157 of the Government of Georgia, adopted in September 12, 2005 "On Measures for regulation of provision of humanitarian aid, state cash allowances, and regulation of registration and social assistance to refugees and IDPs", is stated: "Ministries in the process of implementation of humanitarian aid projects should assign priority to refugees and population affected by natural disasters".

Article 168, paragraph 1, sub-paragraph "m" (Exemption from taxes) of the Tax Code of Georgia states the following: *"from the income tax shall be exempt the cost of housing, received on gratis basis, as well as housing, received by ecomigrants affected by natural disasters in the area of resettlement on gratis basis"*.

Given provision of the Tax Code is directly related to Resolution No 111 of the Government of Georgia, adopted in July 7, 2005. Namely, the resolution regulates the issue of provision of land plots to population, affected by natural disasters. It states, that due to natural disasters in different regions of Georgia houses of population were demolished and damaged. Majority of these houses were in the right of way of rivers and in vicinity of landslides, where restoration of houses and residing of population is inadmissible, due to which there is the need of provision of land plots to population. For this purpose in administrative-territorial units of Georgia, for the purpose of resettlement of population affected by natural disasters local authorities shall have the right in accordance to requirements of current law provide (construct) new housing to population away from the right of way of rivers and landslide risk zones. Authorities of Adjara Autonomous Republic and local authorities shall be responsible for ensuring provision of land plots.

With the issues of ecomigrants is indirectly dealing the legislation, regulating aspects of acquiring of land and resettlement. The law acquisition issues are regulated by the Contractual Agreements, provided by the Civil Code of Georgia (purchase agreements). As to resettlement, the Constitution provides for inviolability of the property rights. The Constitution also provides for expropriation of property for public needs in cases, provided by the law (for example the law on "Rules of expropriation of property for public needs", adopted in July 23, 1999). This is implemented on the basis of court ruling and for relevant compensation (article 21 of the Constitution). It is clear, that expropriation of property for

public needs and rules of implementation of such expropriation are not directly related to resettlement of population in regard to natural disasters or rules of provision of compensations. These are totally different spheres.

#### **8.4 Current policy in management of migration caused by natural disasters**

Several attempts of solving problems of ecomigrants were implemented starting from 2004. Namely, the Ministry of Refugees and Settlement on the basis of geological conclusions started collection of information state of houses in mountainous regions. In the same period the government started the program of provision of housing for ecomigrants.

In June 2004 the government undertook another step and adopted Resolution on establishment of commission, regulating ecomigration processes in Tsalka, Akhalkalaki and Ninotsminda districts. The Resolution was elaborated as response to conflict, created between local Armenian in Tsalka and Georgia ecomigrants from Adjara, resettled in the region. It stated that ecomigration processes needed to be regulated urgently and new approaches had to be adopted. The Resolution provided for establishment of regulatory commission, which within two weeks should have come up with proposals on regulation of problems of resettled, local communities and other aspects. Although, the resolution was not followed by actions. The commission was established, although it did not become a functional body and soon stopped existence. It is clear that problems still remain and social, economic and legal aspects related to ecomigrants need to be solved to ensure peaceful coexistence of local population and resettled ecomigrants.

In March 2006 the Ministry of Refugees and Settlement has initiated a new presidential program „My house“, which was focused on development of data base on households, affected by natural disasters and facing the need of immediate resettlement. The Ministry elaborated the system of evaluation, to ensure establishment of the category of damage and on the basis of conclusions conduct resettlement of population.

The Ministry of Refugees and Settlement developed information data base within the framework of the program „My house“, covering the period from the 90s up to now. Data bank on households, damaged by natural disasters in the 80s and resettled to different regions is being developed too.

As of today on the basis of available information we can state, that in 55 villages of 17 districts was planned to build 5094 houses, were built 3090 houses, presently population lives in 2723 houses. 367 houses are not resided by affected families. Out of remaining 2004 houses to be built construction of 280 has not started at all, while 1724 houses are uncompleted. The issue of households, residing in completed houses needs to be revisited. According to information, available to the Ministry several hundred families live in these houses illegally.

Information on affected families starting from the 90s was processed and analyzed. According to available data overall number of households affected by natural disasters is 31341. To first category (the house or its part is demolished) belong 13% of households; to the II category (damaged or not fit for residence) belong 18% of households; to III category (damaged not subject to repair or restoration) – 51 % of households; to IV category (affected territory adjacent to the house) belong 18% of households.

Table 13. Distribution of houses of I, II, III and IV category of damage by regions.

<b>Regions</b>	<b>First Category</b>	<b>Second Category</b>	<b>Third Category</b>	<b>Forth Category</b>
Imereti	1203	2629	8506	666
Shida Kartli	798	614	1279	67
Samtskhe-Javakheti	678	52	1226	8
Racha-Lechkhumi	316	544	999	922
Guria	308	359	995	895
Samgrelo-Zemo-svaneti	305	739	1341	678
Adjara	189	469	558	2052
Kakheti	123	59	557	160
Mtskheta Mtianeti	85	84	476	132
Kvemo Kartli	32	11	236	0
In Total	4037	5560	16164	5580

As it is clear from the table provided above, situation is especially grave in Imereti, Shida Kartli and Samegrelo-Zemo Svaneti. In 2005-2008 the Ministry of Refugees and Settlement has bought houses for households affected by natural disasters.

It is clear, that it is urgent to resettle population from houses of II and III category of damage, as they either can not live in their houses at all, or they can not live there safely. Households from III and IV category are sometimes viewed as potential economic or demographic migrants, i.e. in majority of cases they can not subsist due to unavailability of land plots.

Number of potential migrants in Adjara and Khulo is so big, that according to some representatives of the government several million GEL is necessary for successful management of migration processes, while the pace of purchasing of houses by the state is extremely low.

Development of such data base, which reflects state of houses damaged by natural disasters is a very good start and it indicates to the readiness of government to find solutions to current problems.

## Conclusions and Recommendations

By analysis of policy legislation, institutional framework and financial aspects of natural disaster risk management and migration, caused by these processes it is established, that policy and legislation of given sphere is of extremely superficial character. Policy is not structured and comprehensive, while legislation does not provide for mechanisms of enforcement, procedures, authority and responsibilities of relevant structures, especially in the sphere of migration, caused by natural disasters. It is frequent, when different laws assign responsibility in given sphere to different structures of the executive power or responsibilities are not clearly delimited. There are no unified provisions, regulating estimation of damages, caused by natural disasters.

Funding for managerial organs is limited even in the period of natural disaster, as well as immediately after their occurrence. Despite substantial increases in the revenues of the state budget, these funds are still not sufficient. Limited budgetary funds are mainly channeled for development of such priority areas as defense, law enforcement, social security and economy. Funding for solving of problems of ecomigrants is not sufficient for causing tangible changes in the given sphere.

There are no extrabudgetary environmental funds on central or regional levels, which would ensure provision of financial resources for management of environmental activities. In Georgia environmental activities are mainly funded by external sources, such as credits provided by international financial institutions and grants of donor countries.

Banking and supervisory sector is not involved in funding and ensuring natural disaster risk management.

Another important factor is unavailability of early warning system, designated for timely warning of population residing in high risk zones. The same is true in regard to forecasting and monitoring of natural disasters. In different scientific-research institutions there is sufficiently qualified staff, although in the process of elaboration of strategic plans and risk reduction their capacities are used insufficiently. Presently state does not have natural disaster risk reduction strategy and activities of the state structures are spontaneous and case based. Due to this activities of different state structures are often not coordinated.

Analysis of policy and legislation of natural disaster risk management and migration, caused by these processes has also revealed, that harmonization of national legislation with EU legislation of environmental sphere, especially in regard to those instruments, which promote consideration of the risk of natural disasters in the process of decision making, is one of the tasks to be implemented urgently. It is true, that today Georgia is not a member of the EU, but International Agreement on EU–Georgia partnership and the actions plan, adopted within the framework of European Neighborhood Policy commits the country to bring legislation in compliance with relevant directives and regulatory principles of given sphere.

Below are provided recommendations on measures, which are to be implemented for improvement of the system of management of natural disasters and migration processes:

- (a) Elaboration of policy/strategy for natural disaster risk management in cooperation with stakeholders;
- (b) Elaboration and adoption of national, regional and local response plans on emergency situations, caused by natural disasters;
- (c) Define clear criteria of delimitation of competencies between the central and local organs in the sphere of natural disaster risk management;
- (d) Conducting of well organized, functional geo-monitoring and hydro-meteorological observation activities and risk assessments, based on unified methodology of risk assessment;
- (e) Strengthening of available environmental instruments and introduction of new mechanisms, which shall promote consideration of natural disaster risks in the decision-making in regard to certain activities (projects) and/or implementation of development programmes;
- (f) Elaboration and adoption of provisions regulating estimation of damage caused by natural disasters and establishment of amounts of compensation due;
- (g) Elaboration and adoption of legal basis for insurance against natural disasters;
- (h) Promotion of transparency in the sphere of funding provided for natural disaster risk management; Delimitation of funding, provided for activities on prevention and natural disaster impact elimination in the state budget;

- (i) Establishment of wider information system on the territory of the country, including development of unified computer network, which shall ensure improvement of preparedness for emergency situation and uninterrupted provision of detailed informational flows;
- (j) Inclusion of media into information network, especially on regional level, which shall promote timely provision of information in emergency situations; part of it
- (k) Improvement of awareness and readiness of public in regard to natural disasters, cooperation with civil society and other stakeholders; seeking of effective ways of public involvement in the processes of prevention of natural disasters and elimination of negative impacts caused by them;
- (l) Elaboration of strategy for migration management caused by natural disasters;
- (m) Elaboration and adoption of legislation in the sphere of migration, caused by natural disasters or entering of amendments to current legislative framework;
- (n) Elaboration of strategy and plans for resettlement caused by natural disasters;
- (o) Relevant measures should be conducted for solving of problems of those ecomigrants, who have resettled to different regions of the country in the 80s and are still facing numerous challenges especially in the sphere of housing and land titles;
- (p) Development of special plan for answering the needs of persons, impacted by natural disasters; Creation of special reserve funds for provision of medical, humanitarian and other assistance;
- (q) Strengthening of international cooperation in natural disaster risk management and migration, caused by natural disasters. At the same time, in the process of planning of projects and programs within the framework of international donors' assistance it is important to take into consideration natural disaster risk management and ensure that these projects and programs do not increase vulnerability of population to natural disasters.

Green Alternative

5a, Kipshidze St, 0162 Tbilisi, Georgia  
Tel: +995 32 22 16 04, Fax: +992 32 22 38 74  
E-mail: [greenalt@greenalt.org](mailto:greenalt@greenalt.org)  
Web: [www.greenlat.org](http://www.greenlat.org)

