APPENDIX №1

National Disaster Risk Reduction Strategy of Georgia

2017-2020

2017

Tbilisi, Georgia

Content

1. Introduction

This is the first National Disaster Risk Reduction Strategy (the National DRR Strategy) adopted by the Government of Georgia. The goal of the Strategy is to establish the unified disaster risk reduction (DRR) system, improve disaster preparedness and response capabilities at national and local levels, and to increase response efficiency to the possible threats.

The National DRR Strategy is one of the important components of the national security review process. The document defines activities for reduction of natural and man-made disasters, risks and challenges faced by the country and defines the main DRR policy directions.

The National DRR Strategy was developed by inter-agency working groups, within the coordination of the Office of the State Security and Crisis Management Council of Georgia. Significant contributions have been made by International organizations and NGOs in development of the Strategy.

Based on the National DRR Strategy an Action Plan was developed, which defines concrete activities, responsible and supporting institutions/agencies (if needed), as well as implementation timeframes and sources of financing (the state budget and/or support from donor organizations/grants).

1.1. Goal of the Strategy

The goal of Georgia's National DRR Strategy is to create unified, flexible and efficient system, which will ensure reduction of natural and man-made disaster risks by joint efforts and coordinated activities of the agencies defined in the Georgian legislation. The system will be based on the whole of government approach and fully comply with international standards. At the same time, the unified DRR system will be oriented on creation of a safe living and work environment and sustainable development of the country and its economy.

The objective of the document is the reduction of the natural and man-made disaster risks identified in the "National Threat Assessment Document 2015-2018" (floods, flash floods, landslides, mudflows, biological hazards, earthquakes, hails, avalanches, strong winds, forest and valley fires, chemical threats, soil erosion by water, draught, hydrodynamic accidents etc.) and to mitigate the possible damage.

Georgia, as a signatory country of many international treaties, ensures the implementation of the goals of three global framework documents of the United Nations: Sendai Framework for Disaster Risk Reduction 2015-2030 (March, 2015), Sustainable Development Goals (September, 2015; SDGs) and United Nations Framework Convention on Climate Change (June, 1992; UNFCCC) in the Strategy. The Strategy also ensures the implementation of Georgia's obligations taken under the above documents and the EU-Georgia Association Agreement in the sphere of prevention, preparedness and effective response to natural disasters.

The National DRR Action Plan combines planned and ongoing projects, programs, and initiatives of different Governmental agencies and non-government organizations, implementation of which will be monitored by the Office of the State Security and Crisis Management Council of Georgia.

The period, set for the implementation of the National DRR Action Plan and its activities, is 4 years (2017-2020). The National Action Plan defines responsible and supporting institutions/organizations (if needed) for each activity, as well as deadlines and sources of finance for implementation.

Taking into account that the elaboration of the National DRR Strategy started in the beginning of 2016, the Action Plan includes those activities, which implementation process started and finished in 2016. In such cases corresponding notes are made in the Action Plan.

The Action Plan has an appendix (Appendix №1) with listed additional activities, which is also noteworthy. The Georgian Government is taking measures to find additional resources for their implementation.

Assessment of Current Situation

Up to now Georgia had no unified DRR and disaster preparedness system, which is currently in the process of formation. Despite the fact that crisis and emergency response is systematized both at national and local levels, there is a need in constant improvement and refinement.

The existing legislation almost exclusively regulates disaster management, as well as, crisis and emergency response coordination and preparedness. Many laws and plans are being developed that aims at improvement of disaster risk assessment and reduction system in order to reduce the risks of natural and man-made disasters.

The daily work efficiency of public and private actors responsible for DRR depends on many factors. Reduction of disaster risks is impossible without constant upgrades, changes, and innovations. This process implies identification of gaps, detailed study of the existing situation and planning of corresponding measures based on received information.

Therefore, in March 2014, the Georgian Government and a group of UN agencies led DRR capacity assessment work using the methodology developed by the UN agencies. Based on the findings of the evaluation mission, the Disaster Risk Reduction Capacity Assessment Report was prepared. The recommendations were taken into account while developing the National DRR Strategy and the Action Plan.

Based on above mentioned and taking into account the existing challenges, the Government of Georgia has a holistic approach to envisage the implementation of natural and man-made disaster preparedness practices in Georgia in compliance with the four Priorities for Action of the Sendai Framework for Disaster Risk Reduction 2015-2030. This also fully corresponds to the measures defined within the EU-Georgia Association Agreement.

2.1. Legislation on Disaster Management

Taking into account the recommendations of the UN Office for Disaster Risk Reduction (UNISDR), the National DRR Strategy and the Action Plan are based on the Law of Georgia on the "Structure, Authority and Rules of Operation of the Government of Georgia", the Law of Georgia on the "National Security Policy Planning and Coordination", the Law of Georgia on "Public Safety", the Law of Georgia on "State of Emergency" and by laws issued based on the above mentioned legal acts.

2.1.1. The Law of Georgia on the "Structure, Authority and Rules of Operation of the Government of Georgia"

Article 29[1] of the Law of Georgia on the Structure, Authority and Rules of Operation of the Government of Georgia defines the sphere of competence of the advisory body to the Prime Minister of Georgia – the State Security and Crisis Management Council. This created legal grounds enabling the State Security and Crisis Management Council of Georgia to manage (under the direct command of the Prime Minister) potential or existing crisis situations caused by natural and human factors, in cases when activation of the national response mechanisms becomes necessary.

2.1.2. The Law of Georgia on the National Security Policy Planning and Coordination

The Law of Georgia on the National Security Policy Planning and Coordination was adopted in 2015, for the purpose of statutory regulation of Georgia's national security. The new law standardized the national security policy planning and coordination processes. Besides, paragraph 20 point 1 of the law defined issues related to

management of "all types of crisis situations in the area of national security and those threatening the state interests of Georgia". Crisis situation occurs when certain factors pose a significant threat to Georgia's state interests and there is a need to adopt political decisions of the Prime Minister.

The National DRR Strategy and Action Plan development process was primarily based on the Law of Georgia on the National Security Policy Planning and Coordination, according to which the Office of the State Security and Crisis Management Council coordinates elaboration process of national level conceptual documents. One of the strategic functions in this area is planning activities to avert hazards, risks, and challenges related to crisis situations. This process is coordinated by a structural unit of the Office of the State Security and Crisis Management Council – the National Crisis Management Center.

2.1.3. The Law of Georgia on Public Safety

The Law of Georgia on Public Safety defined the country's defense and security complex which includes prevention of emergency situations and mitigation of their results and therefore, DRR implementation aspects.

The law defined primary measures of emergency response, as well as competences of the Ministry of Internal Affairs and other institutions in the field of emergency prevention, assessment of its risks and mitigation of consequences. The law presents an integral emergency management system (at the national, autonomous, local and facility levels).

2.1.4. The Law of Georgia on State of Emergency

The Law of Georgia on State of Emergency defines a regime (triggered by different types of disasters) - a complex of special measures that should be taken for the rapid normalization of the situation and restoration of the law and order. The complex of measures that must be implemented during a state of emergency is inherently linked to the strategy.

2.2. The EU-Georgia Association Agreement

In 2014, an Association Agreement was signed between the European Union, the European Atomic Energy Community and their member states on the one hand and Georgia on the other hand. The Association Agreement is an action plan for Georgia's approximation with the EU and as such, it covers almost all spheres of the country's political, social and economic life. In sector policies, the goal of such cooperation is a stage-by-stage approximation with the EU standards, political association and gradual economic integration. The Agreement envisages deeper collaboration, sharing of experience and support of corresponding reforms by the EU in each sector.

Under the EU-Georgia Association Agreement, Georgia took an obligation to gradually approximate its legislation with the EU legislation and international legal instruments within certain timeframes. The Association Agreement envisages development of cooperation for prevention of natural and man-made disasters and improvement of the preparedness and response. The goals are: cooperation within the DRR format using the following tools: institutional connections and support; information, education and communication; support for the best disaster prevention and impact mitigation practices; cooperation for improving disaster management by refining the database on disasters, hazards and risks assessment; cooperation in evaluation of disaster impacts on the environment and public health.

2.3. Global Political Disaster Risk Reduction Framework

In the modern world, increased dynamics of natural processes and environmental deterioration caused by human activities damaged the ecological equilibrium. As a result, the last decades were marked by a significant global increase in the frequency of natural disasters and consequent human and material losses.

During the last century, an uncontrolled impact of human activities promoted the global climate change which is considered to be one of the causes of increasingly frequent natural disasters.

In parallel, excessive urbanization and construction of settlements in dangerous locations, negligence of relevant regulations and planning in developing countries, low level of risk awareness, extreme climatic events etc., enhanced the effect of natural disasters on people.

At present, the world's population is very vulnerable to disaster risks. Therefore, effective prevention of disaster risks is one of the most important objectives of the international community.

Risk management related to natural disasters is a systematic process of using administrative directives, organizations, operation skills and capacities for the implementation of strategies and policies targeted to reduce disaster risks and mitigate adverse effects of hazards.

The United Nations designated the years 1990–2000 as the International Decade for Natural Disaster Reduction. After 2000, an International Strategy for Disaster Reduction (UN-ISDR) was developed according to which national governments are the main management bodies, while comprehensive approaches are prioritized among previous rehabilitation and preparedness approaches. Priority is given to risk reduction, preventive measures, and rising the public awareness and responsibility levels.

Based on the International Strategy for Disaster Reduction, the UN World Conference on Disaster Reduction was held in 2005 in Kobe (Hyogo, Japan) and the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters was adopted. In March 2015, by the end of the term set in the Hyogo Framework for Action, the Third UN World Conference on Disaster Reduction was held in Sendai (Japan) and the Sendai Framework for Disaster Risk Reduction 2015-2030 - a successor international DRR instrument to the Hyogo Framework for Action was adopted. Georgia is a signatory of both documents which once again emphasizes the commitment of its government to implement DRR practices in the country.

The global political framework documents adopted by the UN in 2015: the Sendai Framework for Disaster Risk Reduction 2015-2030 (March, 2015), Sustainable Development Goals (September, 2015) and the Paris Agreement on Climate Change (December, 2015) are interlinked and targeted to reduce disaster risks, promote sustainable development, and reduce consequences of the climate change.

2.3.1. Sendai Framework for Disaster Risk Reduction 2015-2030

The Sendai Framework for Disaster Risk Reduction 2015-2030 implies the development of mechanisms for management of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters caused by natural or man-made disasters at all levels (global, regional, national and local) and in all sectors.

The document defines seven Global Targets that have to be achieved by 2020-2030. The Targets are:

1) Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality rate in the decade 2020-2030 compared to the period 2005-2015;
2) reduce the number of affected people globally by 2030, aiming to lower average global figure per 100,000 in the decade 2020 -2030 compared to the period 2005-2015;

3) Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030'

4) Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030;

5) Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020;

6) Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this Framework by 2030;

7) Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

In order to reduce disaster risks, countries have to implement special activities at local, national, regional and global levels, in the following four priority areas:

Priority 1. Understanding disaster risk

Disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capability, exposure of persons and assets, hazard characteristics and the environment. Such knowledge can be leveraged for the purpose of preliminary assessment of disaster risk, for prevention and mitigation, preparedness and response.

Priority 2. Strengthening disaster risk governance to manage disaster risk

Strengthening disaster risk governance at the national, regional and global levels is of great importance for prevention, mitigation, preparedness, response, recovery and rehabilitation. Disaster risk governance fosters collaboration, partnership and coordination across corresponding sectors and participants.

Priority 3. Investing in disaster risk reduction for resilience

Public and private investments in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation.

Priority 4. Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

The growth of disaster risk, indicates the need to further strengthen disaster preparedness for response and take action in anticipation of events. At the same time, it is necessary to ensure that capacities are in place for effective response and recovery at all levels. In order to "Build Back Better", consideration must be given to disaster risk reduction components in future development activities. It is critical to include these components are taken into account in the recovery, rehabilitation and reconstruction phases.

3. Main Priorities of Disaster Risk Reduction Policy

Preliminary identification and assessment of different disaster risks and planning of corresponding mitigation measures is critical for minimization of their negative consequences.

The National DRR Strategy and Action Plan will be implemented in compliance with the country's international obligations and the Georgian legislation, based on the principles of the Sendai Framework for Disaster Risk Reduction and taking into account national peculiarities.

Thus, the DRR policy defines the following priority areas:

3.1. Reduction of Natural and Man-made Disaster Risks Identified in the "National Threat Assessment Document 2015-2018"

One of the main priorities of the Georgian Government is to mitigate possible consequences of natural and man-made disaster threats identified in the "National Threat Assessment Document 2015-2018".

Implementation of these measures will facilitate maximum reduction of deaths, protection of private and public property, sustainable development of the country and its economy and improvement of the security of the environment.

3.2. Establishment of Disaster Risk Reduction System at National Level

The priority of Georgia's DRR policy is to establish an integral, flexible and efficient crisis management system which, through joint and coordinated efforts of institutions defined in the Georgian legislation, will ensure identification, assessment, prevention, and management of natural and man-made disasters and the fastest elimination or minimization of their negative consequences.

Georgia is a transcontinental country and due to its difficult geographic location is rather vulnerable to different types of natural disasters. Georgia's terrain, meteorological conditions and high anthropogenic pressure on the environment create favorable conditions for a number of natural disasters such as avalanches, landslides, washing of river banks, floods, draughts, hail, soil erosion, strong winds, natural fires, earthquakes etc.

According to the data accumulated during the recent years, the average number of extreme hydro meteorological events increased by 15%, while the average number of extreme geological events – by 58%. Consequently, the damage caused by the extreme events also increased. According to the recent numbers, only in 2015 the damage caused by extreme geological and hydro meteorological events reached GEL 389 million.

Taking into account the given circumstances, one of the most important directions of the DRR policy is the development of DRR capabilities and establishment of an integral management system in compliance with international standards.

Besides, in order to ensure proper functioning of the system, the existing legislation needs to be refined and amended accordingly and some new laws and bylaws have to be adopted.

For this purpose, the Georgian Government is committed to continue cooperation with the international community for the DRR policy development.

3.2.1. Improvement of Disaster Risk Management Legislation

The process of developing an integral DRR mechanism/system involves improvement of the legal framework in order to strengthen the disaster preparedness and response capabilities and ensure more effective response to hazards. Proper amendment of the legislation is one of the important aspects necessary for effective functioning of the DRR system.

3.2.2. Disaster Risk Reduction Capacity Building

In order to ensure effective operation of the national DRR system, constant capacity building and development is necessary. DRR capacity building includes professional development of the personnel of relevant institutions, as well as improvement of necessary material resources and introduction/development of an early warning and alarm system.

i. Capacity Building of Human Resources within the Disaster Risk Reduction System

Attracting and retaining qualified personnel is crucial for proper operation of the system. Therefore, one of the priorities is to support constant education and professional development of human resources employed in the disaster risk reduction and management area.

The Government of Georgia is ready to carry out a targeted HR policy in order to attract and retain qualified specialists. Besides, it will promote capacity building through various education programs, trainings and exercises.

ii. Capacity Development of Material Resources within the Disaster Risk Reduction System

One of the priorities for ensuring effectiveness of the DRR system is a development of material resources (equipment, emergency reserves, transport, and means of communication, needed for response to crisis situations). For this purpose it is necessary to evaluate and analyze the existing material resources, eliminate identified gaps, mobilize financial resources and plan capacity building/development measures.

iii. Development of Reserves for Crisis Situations to Ensure Disaster Preparedness

In order to ensure preparedness and effective management of disasters, it is important for the country to have a stock of basic consumer goods and emergency reserves that would allow quick implementation of liquidation/restoration operations.

To achieve maximum results at minimum costs, first of all it is necessary to develop a concept of creating, managing and using necessary reserves in the country, which has to be developed taking into account specificity and geography of potential natural and man-made disaster risks. It is also necessary to create a full data base of material resources already existing at state institutions, identify their volumes and shortages, find financial resources, store the emergency reserves in areas close to vulnerable territories and ensure their proper storage.

3.3. Establishment of the Disaster Risk Reduction System at Local Level

The DRR Strategy is one of the important documents developed at the state level. It describes strategic goals and vision of the Georgian executive authorities. An important priority of the disaster risk reduction policy is an implementation of local DRR systems in regions, in full compliance with the Government's strategy.

According to the existing legislation (the Law of Georgia on the National Security Policy Planning and Coordination) local self-government bodies are responsible to develop departmental action plans within their field of competence, in order to ensure the achievement of the goals and objectives underlined within the Strategy.

Therefore, the Government of Georgia is ready to cooperate with local authorities to ensure the implementation and development of the DRR system and awareness rising at local levels. This will promote formation of disaster risk resilient communities in our country.

3.3.1. Disaster Risk Reduction at Local Level

The Georgian Government is committed to define the general DRR policy and thus help local self-government bodies in the implementation of the unified national DRR methodology and in developing local DRR strategies and action plans. One of the priorities of the Georgian Government is to introduce at the local level the methodology for identification, analysis and assessment of natural disaster risks and to increase local capacities for implementing DRR measures.

i. Threat Assessment at Local Level

It is important that risks on local level are assessed by the local authorities. This implies identification of type of risk, risk factors, probabilities, possible consequences, vulnerabilities, and priorities. Implementation of the above measures will allow identification of risks.

ii. Planning the Disaster Risk Reduction Measures on Local Level

It is important for local authorities to carry out local preventive measures against the identified risks. It is also important to evaluate the capacities of local authorities, allocate necessary resources (financial and material) and plan/implement all measures which will allow to avert a disaster and/or reduce its risk.

iii. Enhancement of Disaster Risk Reduction Capacity Building at Local Level

The Georgian Government admits the importance of constant development of human and material resources of self-government bodies at local levels. In order to ensure effective implementation of the DRR system at the local level and sustainable development of regions, it is important to improve/strengthen the capacities of human and material resources.

3.4. Development/Implementation of Methodology/Approach for Post-Disaster Damages and Recovery Needs Assessment and Calculation of Economic Losses

Quick and correct calculation of losses and assessment of recovery needs with the use of a unified methodology is important for taking timely actions and efficient elimination of disaster results, as well as for evaluation and modeling of natural disaster threats.

These activities include measures to be taken before, during and after a disaster. A methodology for identification, collection and analysis of data will be developed; competences of different stakeholders (self-governments, state institutions, non-government sector, private sector, and international community) will be delineated; institution(s) responsible for coordination will be identified; economic and social mechanisms for disaster management will be developed (identification of funding sources, use of different social solidarity instruments etc.); a unified policy of the Government for payment of compensations and implementation of recovery activities will be elaborated based on a well-tested international methodology, international obligations (UN, EU) and prioritization of needs.

Development of these mechanisms will improve management in the following areas: registration (standardization, compatibility with international methodologies, possibility of data exchange, and accuracy), compensations (fair and efficient state assistance mechanism, possibility of cooperation with local communities, private sector and international community, development of an insurance market), justification/prioritization (assessment of the necessity of protective and preventive measures and better reasoning of the preventive policy) and risk modeling (verification of risk assessments with the use of local data, forecasting of indirect losses and development of economic models).

3.5. Integration of Early Warning and Alarm Systems into the National Disaster Risk Reduction System

Creation of early warning and alarm systems is essential first of all for the safety of the population, as well as, for ensuring the effectiveness of prevention and response activities.

Due to the above-mentioned, the Georgian Government deems it important to research the ways and possibilities for developing appropriate systems in high risk areas. It is necessary to work out a common approach and standards for early warning systems, which will notify/give signals to the population during a crisis situation.

3.6. International Cooperation in the area of Disaster Risk Reduction

Disaster risk reduction is one of the important areas of the international community's activities. Since, Georgia has a Euro-Atlantic course, it intensively cooperates with the EU, USA, UK, and Japan as well as with neighboring countries. Substantial attention is paid to the participation and cooperation in regional projects. The best and well-tested international approaches and experiences are shared. Besides, Georgia continues close cooperation with international organizations, including the UN, the Directorate-General for European Civil Protection and Humanitarian Aid Operations (ECHO) and international donor organizations working in Georgia.

3.7. Enhancement of Role of Media within the Disaster Risk Reduction System

In modern society, mass media's role is increasing. It significantly influences public consciousness, as well as, functioning and development of public institutions.

Therefore, cooperation with media is especially important, both for crisis management and introduction/implementation of preventive measures. It is necessary to inform and involve media at the maximum possible extent in order to disseminate reliable and accurate information, prevent panic and thus ensure safety of the population.

3.8. Enhancement of Cooperation with Academic and Scientific Community within the Disaster Risk Reduction System

Disaster risk reduction and disaster management is closely linked to coordination mechanisms between institutions and stakeholders. Involvement of all state institutions is necessary both at the national and local levels. Besides, responsibilities of the public and private sectors (including academia) must be clearly delineated in order to ensure mutual involvement, partnership, enhancement of roles, and better reporting and monitoring.

The Georgian Government, in cooperation with academic and scientific communities, is ready to establish the best international DRR practices in the country.

Therefore, one of the most important DRR policy directions is to promote cooperation with academic and scientific communities and private sector in order to ensure development of new products and services, which will be useful for the DRR purposes.

3.9. Implementation of Disaster Risk Reduction model into the Education System

Over the last years Georgia's education system experienced prominent transformation. The reform received a significant international support. In order to improve education efficiency, Government of Georgia increased public financing, introduced a new funding system, rehabilitated and renovated buildings and equipment of public schools, supplied schools with computers, introduced procedures for elaboration of the national curriculums, and organized regular professional development courses for teachers.

Despite the fact that in general, the level of education in the country is high, the population does not have proper understanding of natural disaster risks and potential consequences. Children are especially vulnerable because they often do not have proper theoretical knowledge and practical skills.

One of the priorities of the Georgian Government is to use knowledge and education for developing the culture of safety and ensuring sustainability. Inclusion of the education component into the DRR policy is important because children and young people are those who can enhance the culture of prevention in the country.

3.10. Enhancement of the Role of Private Sector within the Disaster Risk Reduction System

One of the priorities of the Georgian Government is to develop mechanisms for cooperation with the private sector in order to increase resilience of businesses to disasters and ensure implementation of disaster risks in business models.

It is important to provide the private sector with information about natural calamities and vulnerable sites (risk maps) and to take these factors into account while issuing licenses and construction permits.

It is desirable to involve the private sector into campaigns and trainings for raising public awareness about disasters, as well as, into research of disaster management issues and implementation of innovative projects.

Private sector's participation in realization of the DRR policy will help the achievement of efficient and fair distribution of costs between the public and private sectors (PPP initiatives).

It is also necessary to raise private sector's awareness and stimulate it to use insurance and reinsurance mechanisms against disaster risks.

3.11. Development of Geospatial Data Infrastructure for DRR

Formation of the national spatial data infrastructure is one of the requirements of the European Union for its member states (Directives of the European Parliament and European Council on the Infrastructure of Spatial Information in Europe - INSPIRE). According to the INSPIRE Directive, the geo-information sector, its legal framework and administrative issues should be brought into compliance with the European standards.

Free access to geographic information is a necessary precondition for healthy and sustainable social development. For this reason, the Georgian Government, similarly to the EU member states, decided to create and develop the national spatial data infrastructure in order to promote and improve access to the country's geographic data.

Georgia is the first country in the Caucasus region that started creating a national spatial data infrastructure compatible with the European standards and thus made one more step towards the European integration.

Spatial data infrastructure will be widely used, including for the purpose of disaster risk reduction and response.

In this regards, one of the most important DRR policy directions is the implementation of geospatial and space technologies and related services in the DRR system. As a result, the Georgian Government, private sector, academic community and general public will receive access to non-sensitive data. Besides, relevant Georgian institutions will be able to store information received, as a result of concrete local and distant observations of the earth and climate and evaluate and model disaster risks.

3.12. Gender Equality in the Disaster Risk Reduction Policy

Taking into account that women, especially during pregnancy, belong to a group of the population which is vulnerable to disasters, their participation at all stages of the disaster management system is very important.

Specific needs of women must be taken into account in disaster preparedness policy, as well as during the implementation of disaster prevention, assessment, preparedness and response measures.

3.13. Increasing the Role of Persons with Disabilities within the Disaster Risk Reduction Policy

In order to have a broader and more people-centered approach to DRR, it is necessary to ensure better participation of persons with disabilities (the group which is more vulnerable to disasters than the rest of the population), especially children with special needs, within the DRR policy. Disaster risk reduction practices are effective when they are accessible for each and every citizen.

It is necessary to raise awareness of people with disabilities regarding the approaches used for identification of natural disaster circumstances/types and risk analysis, assessment, and reduction. It is important that needs of persons with limited abilities are taken into account during risks assessment and planning processes (based on the universal principles of planning).

4. Natural and Man-made Disasters

By approving the "National Threat Assessment Document 2015-2018", the Georgian Government has already made a significant step towards identification of circumstances/types of natural and man-made disasters and analysis, assessment, and reduction of corresponding risks. The document contains information about hazards and challenges caused by natural and man-made factors that were identified as a result of a research carried out by a technical team consisting of representatives of state institutions. Causes, occurrence probability, and adverse consequences of these hazards are also described.

4.1 Floods and Flashfloods

In regards to flashfloods, the rivers of the South slope of Caucasus are characterized with the summer flashfloods, rivers of Meskheti and Likhi mountain ridges – are characterized with spring-summer flashfloods, the rivers of Kolkheti valley – are characterized with flashfloods during the whole year, while the rivers of East Georgia lowland and South Georgia highlands – are characterized with the spring- summer flashfloods.

Floods and flashfloods are characteristic to almost all Georgian rivers. The risk is especially high in the basins of Imereti, Samegrelo, Guria, Mtskheta-Mtianeti rivers, as well as territories along the River Mtkvari and the left bank of the Alazani River.

Before 1995, the recurrence frequency of intensive flashfloods was one in every 5-6 years. In 1995-2013, this parameter almost doubled (one in every 2-3 years).

Floods and flashfloods seriously damage human economic activities and infrastructure, take human lives, causes destruction, blocks roads, interrupts transport, damages electricity transmission lines and gas pipelines, etc.

The river Vere valley

It is well known that cities have the longest urbanization period. Thus, technogenic pressure on geological environment is the highest in large cities. In Tbilisi, with its complicated geological environment, intensification of negative natural and technogenic processes deteriorated the geo-ecological condition to a crisis threshold. After the earthquake that took place in 2002, negative geological events and geo-ecological complications achieved a critical level.

Combination of these factors, as well as intensive rainfall that took place on June 13-14 in the basin of the river Vere (according to the data of Tbilisi Meteorological Station – 49 mm in 3-4 hours) caused abrupt increase of the water level on the river Vere and its tributaries, stimulated formation of vast landslides and mudflows, and

subsequently led to deaths among the population and damage and destruction of the city infrastructure (regional roads between Tskhneti and Betania, Tskhneti and Akhaldaba, and Kojori-Manglisi, as well as the road interconnecting Tamarashvili street and Heroes Square in Tbilisi, residential buildings, different infrastructure and Tbilisi zoo).

At this stage, the river Vere basin and territories located in its vicinity are the most vulnerable areas.

4.2 Gravitational Processes, Landslides and Mudflows

Of all extreme exogenous geological processes, landslides and mudflows are the most frequent in Georgia, posing a serious threat to the population and damaging the country's economy. From time to time the impacts of these events (often catastrophic) are experienced by thousands of settlements, as well as agricultural land, roads, pipelines, high voltage power transmission lines, hydro-technical and melioration structures, mountain tourism complexes etc.

Before the last decade of the 20th century, the occurrence of extreme landslide-gravitational processes was mostly cyclic and, depending on the local geological and climatic conditions took place between 3-5 or 8-11 year intervals. From early 1990s, the intensity of these processes increased above the average background level almost every year, while the intervals between extreme occurrences became significantly shorter. As a result, more and more territories, settlements and infrastructural facilities are within the zone of their potential impact.

Landslide processes occur in all climatic/geomorphological zones of Georgia, starting from the Black See coast and ending with the high alpine zone. As of today, there are more than 50 000 locations with high risk and different levels of dynamics. Their total area exceeds 1.5 million hectares. More than 70% of dynamic landslides are in the zones of settled territories, agricultural land and infrastructural objects. Up to 2000 settlements with more than 200 000 population, as well as major roads, oil and gas pipelines, and large hydro-technical reservoirs are within the zone of direct threat. Different sections of Tbilisi, Sokhumi and Tskhinvali bypass roads are periodically destroyed by landslides. In total, 25% of linear infrastructural facilities are within the risk zone.

Mudflow is another natural phenomenon that contains even higher risk for physical safety of the Georgian population and engineering objects. Mudflows have heterogeneous dynamics and scale, high recurrence frequency and big subsequent economic losses.

Mudflows occur in all climatic/morphological zones of Georgia and in all types of geological structures. Although their recurrence frequency, volumes, energy, formation conditions and geological nature greatly vary depending on the relief and sensitivity of the geological structure of specific areas. At present, on the territory of Georgia, up to 3 000 potential mudflow paths are identified on small rivers and mostly on the first three tributaries of big rivers. Practically all settlements (population and infrastructure) located in the valleys of small rivers, as well as on Tsiv-Gombori and Saguramo-Ialoni ridges and in Kakheti foothills are within the mudflow hazard zones. Other high risk areas are: Tbilisi, Kvareli, Telavi, Sagarejo, Lagodekhi, Oni, Borjomi, Mastia, Lentekhi, Adigeni, Mtskheta, Tsageri etc. Periodically, 532 rivers with mudflow transformation potential threaten roads, linear-irrigation facilities and agricultural lands. In average, the country's annual losses caused by mudflows are within tens of millions of GEL, while at times of extreme intensity – more than 100 million GEL.

4.2.1 Areas with Extremely Intensive Landslide-gravitational and Mudflow Processes and their General Assessment

i. Gorge of the River Devdoraki - left tributary of the River Tergi (Dariali Section), (Kazbegi Munisipality)

Transformation of high risk mudflows takes place as a result of glacier pulsation dynamics and ice and rock avalanches (so called glacial mudflow transformation), as well as in case of strong rainfall and extreme increase of temperature in summer. The transformation process of mudflows is not a subject of cycling regime. The volumes of solid mudflows that move from the transit zone vary significantly – from several thousand m^3 to 1-10 million m^3. Geological composition of mudflows is mostly high density stone and mud. Due to the big inclination of the river bed, most of the mudflow mass reaches the bed of the river Tergi and usually blocks it, forming a 300-1000 meter cone along the river.

Periodically, mudflows fully or partially wash out or damage the key international highway, the Kazbegi Customs checkpoint, operating and under-construction hydro power plants, 700-1200 mm diameter "North-South" main gas pipeline and towers of a high voltage power transmission line. The mudflows often take human lives, while subsequent economic losses reach tens of millions of GEL.

ii. The River Duruji, left tributary of the River Alazani (Kvareli Municipality)

This area is marked by high density mud and stone mudflows. The volume of one mudflow varies from 0.13 to 3 million m^3. Occurrence of extremely destructive mudflows depends on rainfall intensity and duration, as well as on temporary blockage of the river bed in the upstream area of the valley. According to the statistics, this type of mudflow may occur every year or once in 5-10 years.

The mudflows transformed in the river Duruji basin threatens the population and infrastructure of town Kvareli, Telavi-Lagodekhi highway and gas pipeline.

iii. Landslides of the Mountain Pass of Gombori - between the River Gomborula and the River Turdo and Debris Flows (Sagarejo and Telavi Municipalities)

The mountain pass section of the Gombori ridge is characterized by landslides of different types, dynamics and deformation depth. The total landslide area exceeds 15 km^2. The situation is complicated by the flashfloods and erosions that occur in the same area.

The road between Tbilisi and Telavi as well as the population and infrastructure of the villages of Gombori, Verona and Kobadze are under the constant threat. Periodically the headwork structure of Telavi water supply system and the population does not receive water for several days.

iv. Left Tributaries of the River Iori – Antoki Ravine, Tvaltkhevi and Chailuri Ravine (Sagarejo Municipality)

Mudflows are formed in rough molasses of the south slope of Tsiv-Gombori mountain range. Mudflows occur every time when the precipitation level caused by a heavy rainfall exceeds 40-50 mm in 24 hours. Due to the extremely sensitive area of the geological environment, mudflow formation and recurrence frequency is annual and sometimes can occur several times a year. The geological structure is low density stone and mud. The volume of a single mudflow varies from several thousand m^3 to 100-150 million m^3.

Mudflows threatens Sagarejo town and villages of Sagarejo region - population and agricultural lands of the Antoki and Chailuri villages and Tbilisi-Telavi highway. In the past the flows blocked the highway several times.

v. Landslide Khoko, the Enguri Reservoir (Jvari, Tsalenjikha Municipalities)

From the geomorphological point of view the landslide is located in the middle of the left flank of Enguri reservoir. It begins at the inter-stream area of the Enguri and Magani rivers and goes into the reservoir in the zone where the water level changes. The landslide is formed in colored Jurassic layers (clay, gypsum, and sandstone), above which there are upper Jurassic and Cretaceous carbonate layers (massive cavern and breccia limestone). The landslide is spread in a significant part of the reservoir's left flank. Its dynamics is active, which is promoted by currently processed interbedded gypsum.

Khoko landslide poses a real threat to the sustainability of the reservoir on the Rioni River and Zugdidi—Mestia road (S-7). Large scale activation of the landslide may instigate disastrous processes.*vi. Territory of Mukhatgverdi Cemetery (Tbilisi Municipality)*

Landslides that have complicated mechanisms (block slides, plastic-flow, and suffusion-block) occur in lake and river deposits (lacustrine and terrace deposits) as well as slope deposits, including clayey facies of main rock layers.

In average the landslide deformation depth is 3-15 meters, while the damaged area reaches 50 hectares. The landslide processes are active.

Periodically the landslide processes threaten a part of the cemetery and damage the only access road.

4.3 Biological Hazards

Endemic and non-endemic diseases, as well as potential biological hazards, such as deliberate or accidental release of pathogenic agents, possible bacteriological terrorist attacks or massive use of biological weapons, create significant challenges for Georgia. In case of high exposure and vulnerability levels, the above factors can have extensive negative effects on the country's population and economy. Biological hazards may develop by natural outbreak of epidemics caused by highly dangerous pathogens, deliberate or accidental release of highly dangerous pathogenic agents into the environment or use of biological weapons for terrorism.

If biological agents with epidemic and pandemic potential are released into the environment, they will pose a significant threat to human and/or animal health. Such agents have a potential to become a biological weapon and/or are relatively easily spread. This can cause high incidence of a disease, mortality or mass disruption of public functions and may require implementation of measures at the national level for halting its spread and elimination/mitigation or consequences. Besides, it is worth to note that the majority of diseases with such potential are zoonotic (i.e. are transmitted between humans and animals).

4.3.1. Pandemic

Agents that have a pandemic potential can be fixed in Georgia during the first two months even if their source is in the farthest part of the world. The situation can be aggravated by the fact that agents with pandemic/epidemic potential can spread very quickly in any part of the country. Therefore, it is necessary to put in place and develop flexible mechanisms (review and refine activities, measures and procedures) which will enable public and private institutions to carry out quick and effective response to the threats.

4.3.2. The Threat of Outbreak of Highly Dangerous Infections

The biological agents that belong to highly dangerous pathogens are divided into the following two groups: 1) pathogens with high individual and low community risk. They cause severe human and animal diseases (and

subsequent serious economic losses), but usually are not spread by means of accidental contacts and there are effective ways for their prevention and treatment; 2) pathogens with high individual and community risk. They usually cause severe (often incurable) human and animal diseases and can be easily transmitted from one person to another or from an animal to a person and vice versa by means of an accidental contact and there are no effective ways for their prevention and treatment.

Possible scenario for propagation of highly dangerous biological agents in Georgia is very mosaic, because the sources and ways of transmission of infections/diseases caused by them are diverse (the list of highly dangerous biological agents is defined in Order N 01-18/n issued by the Minister of Labor, Health and Social Affairs on May 27, 2013, on Approval of the List of Highly Dangerous Pathogens). Identification of the "receiving contingent" (contingent which may get diseases) is possible and this may include the whole country.

4.3.3. Veterinary Threats

Highly dangerous animal diseases are those which seriously damage livestock production and animal products and at the same time are dangerous for human health.

Infectious diseases are caused by pathogenic microorganisms which include different bacteria, virus and fungus. Recently a new group - prions was added to the list. Fortunately according to the data available as of August 2016, diseases of this group are not registered in Georgia.

More than 100 infectious animal diseases are registered in Georgia. Some of them are common for both people and animals and some are spread only among several animal species. In Georgia such diseases are foot and mouth disease, rabies, swine classic and African fever, anthrax, brucellosis, avian Newcastle disease, Blue Tongue, smallpox, highly pathogenic avian flu.

4.3.4. Phytosanitary Hazards

According to the data of Food and Agriculture Organization (FAO), pests cause 34% of economic losses worldwide. Since, Georgia has many different climatic zones, up to 2 500 species of fungus and 1 500 species of harmful insects that may cause different diseases are registered here.

Damages caused by burrowing insects are especially harmful for less resilient annual plants. Georgian agriculture was seriously damaged by grasshopper infestation. In case of advantageous climatic conditions (drought, dry and warm winter) grasshopper infestation can damage up to 200 000 hectares of agricultural land (the infestation epicenter is the East Georgia).

Apart from grasshoppers, agricultural land may also be seriously damaged by harmful organisms (fungus, virus, bacteria, rodents etc.), that may cause significant loss of crops (up to 100%).

4.4 Earthquakes

Earthquake is a natural disaster, which at present cannot be forecasted in the short term period. Long-term forecasts allow us to avoid potential destruction and deaths by building earthquake-resistant infrastructure.

Developing countries find it especially hard to carry out rehabilitation after suffering from a significant economic losses. This is demonstrated by Georgia's examples (Tbilisi and Racha earthquakes), as well as examples of different developing countries (Haiti earthquake). Such countries usually fail to compensate losses and restore damaged infrastructure.

A damage caused by earthquakes are especially large in densely populated urban areas. In case of a strong earthquake, destruction of large vulnerable buildings leads to many deaths and huge economic losses.

The maximum magnitude of earthquakes recorded in Georgia is 7, but their effects estimated based on the MSK scale equal 8-10 magnitude. The maximum horizontal acceleration recorded during the instrumental period is - 0.55g.

During the instrumental period, earthquakes with an epicenter in Tbilisi occurred in 1912, 1913 and 1920. Their magnitude did not exceed 5-6 grades. On December 14, 2000 an earthquake Ms=3.5 happened in 11 kilometer distance to the South-West from Tbilisi. Despite the small magnitude, the earthquake damaged buildings in vulnerable districts of Tbilisi (Old Tbilisi and territories in the vicinity of the Freedom Square).

The earthquake that took place in Tbilisi on April 25, 2002 was also small - Mw=4.5, but 7 people died due to the vulnerability of the buildings. Schools and residential houses were damaged. The earthquake effect was 6-7 grades, while the maximum acceleration - 0.11g.

Based on the historical and instrumental data, the maximum effect of Tbilisi earthquakes was 7 grades, while the effect of more distant earthquakes in Tbilisi did not exceed 7-8 grades.

4.5 Hails

Hails happen in all parts of the country. Their intensity and frequency is especially high in the East Georgia. Hails occur 5 -15 times every year.

Hail can fully destroy crops and yield, damage tin, schist and tile roofs, brake windows and kill cattle and poultry. Hails can even kill people if the weight of one hailstone is 100-200 grams or more. According to incomplete data, the economic losses caused by hails exceeded GEL 140 million during the last 13 years.

4.6 Avalanches

Snow avalanches are caused by very fractured and inclined relief, intensive snowfall, quick increase of the snow cover, intensive melting of snow, snow storm, abrupt change of air temperature, and rain.

Snow avalanches happen every year, during the cold periods. The frequency and intensity of this extreme natural phenomenon has been increasing since 1970. Massive avalanches were recorded in 1970-1971, 1975-1976, 1986-1987, 1991-1992, 1996-1997, and 2004-2005. Every year, from 1 to 10 massive avalanches come down from the avalanche trigger zones.

Snow avalanches very seriously damage human economic activity and settlements, cause deaths, destruction, blockage of roads and traffic, damage of power transmission poles and gas pipelines, damage of forests etc.

Avalanches can isolate dozens of settlements for a long time and force hundreds of families to leave their homes.

4.7 Strong Winds

On the territory of Georgia strong Easterly winds occur on Kolkheti valley, in the lower part of the river Kvirila basin, and in the central part of Shida Kartli. Westerly winds occur on the whole territory of Georgia but predominantly in the Black See area, Shida Kartli, Kvemo Kartli and the South part of Kakheti. Strong winds of both directions, also occur on the ridge of mountain and high mountain regions.

During the last 20 years the recurrence frequency of this phenomenon doubled and now strong winds occur in every 4 – 5 years. Recurrence frequency of winds of 25-30 m/s speed is high and varies within 5-7 occurrences per year. Very strong winds (above 30 m/s) take place in Kutaisi-Zestafoni area and Tbilisi suburbs once or twice a year, while in other parts of the country – in average once in every 5 years. On mountain paths and ridge likelihood of very strong winds is higher - several times a year.

Strong winds damage telecommunication and electricity transmission lines, cause surge of the sea, dusty tempests, snow-storms and uneven distribution of snow. Subsequently, this causes snow-drifts, soil erosion etc. Taking into account the conditions existing in the country, formation of snow-drifts on highways is especially problematic. This hinders traffic and is very damaging for the country's economy.

4.8 Forest and Valley Fires

Forest fires of Samtskhe-Javakheti, Imereti, Kakheti, Shida Kartli and Adjara regions (forest areas belong to the I-III categories of fire hazard) are the most important amongst the danger of forest fires. According to the statistical data of the last years, the majority of forest fires, especially those that occurred near settlements, were caused by anthropogenic impacts.

Of all anthropogenic reasons of fires, the most noteworthy are the following: proximity of populated areas (negligence of the population, landfills etc.), practice of burning arable land, proximity of industrial facilities, absence of fire protection zones, violation of rules of using forests (disregard of the necessity to clean tree felling areas).

An important factor that incites the spread of valley fires is destruction of wind shelter belts (as a result of felling or burning). Anthropogenic reasons are aggravated by natural factors (e.g.: high temperatures in summer 2014).

If prevention and control measures are not taken, fires caused by both types of factors - natural and anthropogenic, can become very devastating. In Georgia massive fires can spread at several thousand hectares (in 2008, during the war between Russia and Georgia, fire destroyed up to 1000 hectares) and presumably can cause fatalities, destruction of regional infrastructure, evacuation of the local population and long-term ecological damage (minimum for more than 5 years).

Fire and valley fires are especially hazardous for soils. As a result of overheating of the humus layer and subsequent loss of organic matters and some nutrient materials, physical and chemical characteristics of the soil changes and its fertility deteriorates. The extent of soil damage depends on fire intensity and duration (the stronger is the fire, the higher are the losses of organic materials). Besides, soils are habitats of many micro and macro organisms, the majority of which cannot survive high temperatures. Subsequently, turnover of natural materials is distorted and the soil fertility deteriorates.

Fires are most dangerous on slopes, because destruction of a vegetation cover by a fire significantly increases the soil erosion risk.

4.9 Chemical Threat

Georgia's chemical security policy is mainly based on the UN Security Council's Resolution №1540 and international conventions, while the response measures and prevention of chemical incidents are the responsibilities of different ministries and institutions. The fact that the country has rather big chemical industry creates a certain hazard of chemical incidents.

It is also necessary to take into account that Georgia is a very important transit corridor for the Caspian oil products. In case of any accidents on the main railway line and pipelines, the threat of ecological contamination is rather serious due to their geographic location (densely populated areas and protected territories).

4.9.1. Hazard of Environmental Impacts of Arsenic Wastes

There are three storages of arsenic wastes identified in the valley of the Tskhenistskali River located in Lentekhi region. As of today, more than 50 000 tons of arsenic wastes are stored in metal containers in Tsana village. The

containers are so damaged that the leakage probability is high. The damaged containers create a hazard for the population of nearby villages, as well as the whole West Georgia, because the storages are located next to the valley of the Tskhenistskali River - a tributary of the Rioni River, which flows into the Black Sea. The climatic and hydro-geological processes stimulate spread of the contamination.

In the Uravi village of Ambrolauri region the hazard is caused by a former arsenic processing factory. All auxiliary buildings and infrastructure of the factory are currently destroyed. The underground storage of wastes located at 14 km distance from the factory has not been conserved. In some places the cover tiles of the landfill are rusted. Atmospheric precipitations get into the toxic wastes and leak into the environment. There is one conserved underground storage on the territory of the factory but it is not hermetically closed – the cover is damaged. In case of a flood on the Lukhuni River, the storage wall can be washed out.

4.10 Water Erosion

Water erosion creates significant ecological hazards for the environment and considerably damages the country's economy. In Georgia there are mainly two types of water erosions: 1) washing of land - so called "soil erosion"; 2) Washing of river banks - coastal erosion. 1 700 000 hectare area suffers from negative impacts of erosion.

In Georgia, erosion processes occur everywhere. They have become especially active during the last ten years because the majority of the coast protection structures were amortized and extreme erosive processes started on densely populated areas located on river coasts.

This phenomenon is equally typical to densely populated coasts of water rich rivers in the West Georgia and valleys of the East Georgia. It is natural that in parallel with the global climate change and intensification of man-made factors, the water erosion hazard will become even greater. In case of extreme erosion processes it may even take human lives.

Every year erosion destroys about 1 000 hectares of soil surfaces, while biogenic restoration of soils takes centuries.

Intensive washing of coasts occurs on foothill and lowland rivers. As of today, the total area of identified washed coast sections equals 1 500 km. In average, 150 hectares of highly fertile soil is destroyed in that area every year. Washing of river coasts often creates coastal landslides and destroys residential houses.

4.11 Draughts

Draughts occur practically on the whole territory of Georgia. They are especially intensive in Kakheti, Shida Kartli, Kvemo Kartli and Upper Imereti regions.

Draughts are caused by precipitation levels significantly below the norm, high atmospheric temperature and other anomalous hydrometeorological phenomena (including long periods of dry winds). In 2000, the draught that lasted for 7 months covered more than 50% of the country's territory. The natural disaster corresponded to all four categories defined in the international classification (meteorological, hydrological, agricultural and socio-economic). The economic loss exceeded GEL 300 million.

A draught can cover the whole territory of the country, especially Kakheti, Shida Kartli, Kvemo Kartli and Upper Imereti regions. It can completely destroy annual and significantly damage perennial agricultural plants.

4.12 Hydrodynamic Accidents

A large scale disaster may happen in Georgia on the following hydro-technical structures: hydro power plants (HPP) Enguri, Lajanuri, Shaori, and Zhinvali, as well as on Poti watershed structure. The most dangerous of all

abovementioned, is the hydrodynamic accident on Zhinvali HPP because it can have disastrous consequences for the country. Threat posed to Tbilisi is extremely high. Such an accident can be caused by an extreme natural processes, especially the large earthquake.

4.12.1. Enguri Hydro Power Plant

The dam of Enguri HPP is one of the highest reinforced-concrete arch dams in the world. It is located in the bed of the Enguri River, 33 kilometers away from Zugdidi.

The Enguri HPP arch dam is 274 m high. Its width in the river bed equals 660 meters, while the maximum height of water level in the reservoir does not exceed 250 meters.

The capacity of Enguri HPP reservoir is 1110 million m^3, while the surface area equals 10.13 million m^2.

In case of an accident on the Enguri HPP dam, the 27 800 meter wide water flow will rush into Zugdidi-Gali area and the Black Sea aquatic area. The water will spread in the East and West directions. The flooded zone may include the following settlements: city Zugdidi (northern part), town Jvari, and the villages of Zeda Lia, Saberio, Rike and Chuburkhinji.

4.12.2. Lajanuri Hydro Power Plant

Lajanuri HPP dam is located on the Lajanuri River, to the South-East from Tsageri. It has 69 meter high reinforced-concrete arch dam. In the riverbed cross-section the dam is 127 meters wide. The reservoir capacity is 25 million m^3, while the surface area equals 1.5 million m^2.

In case of an accident on Lajanuri dam, the flooded territory will include the villages Tvishi and Opurchkheti.

4.12.3. Shaori Water Reservoir

Shaori HPP reservoir is located in Racha. Its rock-fill dam is 11 meters high. Its length in the threshold area is 1 210 meters. The capacity of Shaori reservoir is 1.15 million m^3, while the surface area equals 92 million m^2.

In case of an accident on Shaori dam, the flooded territory will include the villages - Nikortsminda, Gogoleti, Lajana, Tvishi and Opurchkheti and the cities - Kutaisi and Samtredia.

4.12.4. Zhinvali Water Reservoir

Zhinvali reservoir is located in the town of Zhinvali in Dusheti region. It has an earth dam with clay core. The dam is 102 meter high, while the operating height is 96 meters. In the threshold area the dam is 415 meter wide. The capacity of Zhinvali reservoir is 520 million m^3, while the surface area equals 11.5 million m^2.

In case of an accident on Zhinvali dam a catastrophic flood will hit many settlements in Dusheti and Mtskheta municipalities: villages of Dusheti municipality - Chinti, Bodorna, Aragvispiri, Kubriantkari, Bulachauri, Tsitelsopeli, Abanoskhevi, Choporti; villages of Mtskheta Municipality - Jigura, Natakhtari, Tsikhisdziri, Dzveli Kanda, Mukhrani, Tsilkani, Akhalubani, Misaktsieli, and Saguramo; towns - Zahesi and Mtskheta and cities Tbilisi and Rustavi.

4.12.5. Poti Diversion Structure

Poti diversion structure was commissioned in 1959. Its main component is a weir consisting of 10 reinforced concrete sections. It diverts the flood flow of the Rioni River away from Poti, in Nabada direction. The weir has 10 openings with radial gates (cross section 4×14). The total length of the diversion structure is 180 meters. The weir is connected to a regulator weir which consists of 20 rectangular and 4 reinforced concrete sections with rectangular sluice openings. From here the 80 meter long city canal begins. The total length of the weir,

including the flood bed, but excluding the spillway apron, is 80 meters, of which the length of the weir body and runoff is 40 meters. At the end of the diversion structure there is an energy dissipater (constructed according to so called "Zhurin's design") – 1.5 meter high triangular gear teeth. The flood bed of the regulator weir does not have an energy dissipater.

Incorrect operation and destruction of the structure can cause irreparable disastrous consequences such as flooding of Poti and its nearby territories, destruction of the bridge on the dam, damage of Poti Port.

5. Implementation Mechanisms of the National Disaster Risk Reduction Strategy

This document defines the priority directions for disaster risk reduction that are indispensable and necessary. The Strategy served as a basis for development of an Action Plan, which defines concrete activities needed for the Strategy implementation, as well as responsible institutions, supporting and partner institutions/organizations, implementation timeframes and sources of finance.

Implementation of the Strategy and the Action Plan will be monitored and the documents will be periodically revised (updated) based on the results of regular studies and assessments of the situation, new hazards, risks and challenges. During this process, it is important to develop new DRR activities taking into account innovative approaches in the world and implement the best practices.

6. Conclusion

Thus, the goal of the National DRR Strategy is to prevent natural and man-made disaster risks identified in the "National Threat Assessment Document (2015-2018)", reduce their potential consequences, and ensure constant preparedness and coordination of response activities. At the same time, implementation of the activities defined within the document will ensure fulfillment of obligations undertaken by Georgia in this area and promote sustainable development of the country.