

**The Government of Georgia**  
**Resolution N 4**  
**January 11, 2017**  
**Tbilisi**

**On Approval of National Disaster Risk Reduction Strategy of Georgia**  
**2017-2020 and its Action Plan**

**Article 1**

National Disaster Risk Reduction Strategy of Georgia 2017-2020 (Annex N 1), its Action Plan (Annex N 2) and Annex of the Action Plan (Annex N 3) are approved in compliance with Article 5 of the Law of Georgia on the Structure, Authority and Rules of Operation of the Government of Georgia and Paragraph 15.4 of the Law of Georgia on the National Security Policy Planning and Coordination.

**Article 2**

The Resolution shall come into force immediately upon its publication.

**Prime Minister**      **Giorgi Kvirikashvili**

**National Disaster Risk Reduction Strategy of Georgia  
2017-2020**

2017

Tbilisi, Georgia

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## **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<sup>1</sup> 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 Meskheta 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 20<sup>th</sup> 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 Sea 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 Municipality)***

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<sup>3</sup> to 1-10 million m<sup>3</sup>. 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<sup>3</sup>. 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<sup>2</sup>. 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<sup>3</sup> to 100-150 million m<sup>3</sup>.

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  $M_s=3.5$  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 -  $M_w=4.5$ , 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 Sea 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<sup>3</sup>, while the surface area equals 10.13 million m<sup>2</sup>.

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<sup>3</sup>, while the surface area equals 1.5 million m<sup>2</sup>.

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

#### ***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 1210 meters. The capacity of Shaori reservoir is 1.15 million m<sup>3</sup>, while the surface area equals 92 million m<sup>2</sup>.

In case of an accident on Shaori dam, the flooded territory will include the villages - Nikortsminda, Gogoleti, Lajana, Tvishi and Opurchkhети 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<sup>3</sup>, while the surface area equals 11.5 million m<sup>2</sup>.

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.

## Action Plan 2017-2020 of the National Disaster Risk Reduction Strategy of Georgia

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
<b>1. Floods and flashfloods risk Reduction</b>	1.1. Ensure installation of high accuracy automatic equipment for measuring water level in the gorge of the Devdoraki-Amali rivers;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2016	Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency;	1 036 000 GEL	Completed	The observation system was purchased and delivered to Georgia. At present, necessary documents are submitted to the Government in order to allocate funds necessary for the implementation of work in the Devdoraki River gorge.
	1.2. Ensure installation of software in order to use the data received from Sakaeronavigatsia's meteorological radar (located in Tbilisi) for weather forecasts;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2016-2017	Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency;	260 000 GEL	Ongoing	Negotiations are going on for solving technical issues.
	1.3. Ensure purchase and installation of a meteorological radar in Kutaisi;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;  US Government;	2016 - 2017	US Government - GEL 2 600 000;  Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency - GEL 300 000;	2 900 000 GEL	Ongoing	The US Government is purchasing a meteorological radar within the support of the International Atomic Energy Agency. Presumably the radar will be purchased in March 2017.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	1.4. Ensure purchase and installation of two sets of aerological equipment;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018 - 2019	Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency/Donor organization;	1 000 000 GEL	Planned	In order to ensure highly accurate weather forecasts, it is necessary to carry out observations on meteorological parameters in high layers of the atmosphere (aerological observations). At present Georgia does not make any aerological observations. In order to cover the territory of Georgia with aerological observations, it is necessary to have minimum two sets of aerological equipment (sounding balloons, equipment for receiving signals from aerological sounding balloons, latex membranes, and hydrogen generators). One set will be installed in the West Georgia and the other in the East Georgia. It is necessary to purchase one equipment for receiving signals from the sounding balloons and a hydrogen generator. In order to carry out sounding twice in 24 hours, it is necessary to purchase latex balloons for GEL 430 000 every year.
	1.5 Ensuring implementation of studies necessary for developing hydraulic models of floods and flashfloods on the whole territory of Georgia;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;  Adaptation Fund;	2017-2020			Planned	The project proposal elaboration process is running.
	1.6. Ensure hydraulic and hydrological modelling in the River Vere basin;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;  UNDP;	2016	United Nations in Georgia/ From the UNDP budget;	40 000 GEL	Completed	

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	1.7 Ensure purchase / installation of mobile meteorological mini radars (60-100 km radius);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018 - 2019	Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency/Donor organization;	2 400 000 GEL	Planned	
	1.8. Organization of topographic and hydrometric work and automatic hydrometeorological observations on the River Otskhe (Adigeni municipality – Abastumani);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018	Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency/Donor organization;	50 800 GEL	Planned	Until 1990s, hydrological observations on the Otskhe river, Abastumani resort have been conducted . It is necessary to restore the station and add equipment that measures meteorological parameters; one hydrological and one meteorological station. It is necessary to carry out hydrometric and topographic work and Hydraulic and hydrological modelling.
	1.8.1. Upon completion of the work specified in Paragraph 1.8, ensure implementation of bank protection measures on the River Otskhe (Adigeni municipality – Abastumani);	Ministry of Regional Development and Infrastructure of Georgia	2018-2020	The state budget/Donor organization;		Planned	Necessary funding will be estimated after finishing elaboration of the technical design of the corresponding project.
	1.9. Organization of automatic hydrometeorological observations on the Krikhula River (Ambrolauri municipality - Ambrolauri);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018	Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency/Donor organization;	25 000 GEL	Planned	In Ambrolauri there is an operating meteorological station of a mixed type (automatic and manual). In Nikortsminda there is a small weather station. Within the framework of the Rioni project hydrological modeling was carried out and the zones of floods with different recurrence periods were mapped. Coastal protection work was partially implemented in Ambrolauri. Hydrological observations have not been carried out on the Krikhula river. It is necessary to arrange a hydrometeorological station.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	1.9.1. Upon completion of the work specified in Paragraph 1.9, ensure implementation of bank protection measures on the Krikhula River (Ambrolauri municipality - Ambrolauri);	Ministry of Regional Development and Infrastructure of Georgia	2018-2020	The state budget/Donor organization;		Planned	Necessary funding will be estimated after finishing elaboration of the technical design of the corresponding project.
	1.10. Implementation of topographic and hydrometric work and organization of automatic hydrometeorological observations on the Gveltakhevi River (Tianeti municipality - Zhebota);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018	Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency/Donor organization;	25 800 GEL	Planned	The hydrological station needs to be restored. It is necessary to implement hydrometeorological and topographic work, and hydraulic and hydrological modelling. Bank protection work is necessary on the left bank of the Iori river. Until 1990s there was a hydrological station at the junction of the rivers Kusnoskhevi and Iori.
	1.10.1 Upon completion of the work specified in Paragraph 1.10, ensure implementation of bank protection measures on the Gveltakhevi River (Tianeti municipality - Zhebota);	Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2018-2020	The state budget/Donor organization;		Planned	Necessary funding will be estimated after finishing elaboration of the technical design of the corresponding project.
	1.11. Implementation of topographic and hydrometeorological work and organization of automatic hydrometeorological observations on the Kisiskhevi River (Telavi municipality - Kondoli);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018	Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency/Donor organization;	25 800 GEL	Planned	In 2012-2013, within the framework of a UNDP project, flood and flashflood hazards were identified in all valleys of Telavi municipality. Reports were prepared and flood maps published. In Telavi (5 km away from Kisiskhevi) an automatic meteorological station was installed. On Tsivgombori mountain, at the outfall of the Kisiskhevi river a wind sensor was installed. On Tsivgombori mountain it is necessary to add equipment for metering precipitation and temperature. On the Kisiskhevi river it is necessary to carry out hydrometeorological and topographic work. Besides, near the Kondol village bank protection work has to be implemented.
	1.11.1 Upon completion of the work specified in Paragraph 1.11, ensure implementation of bank protection measures;	Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2018-2020	The state budget/Donor organization;		Planned	Necessary funding will be estimated after finishing elaboration of the technical design of the corresponding project.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	1.12. Organization of hydrometeorological observations and implementation of bank protection measures and river of the Lajanuri River bed (Tsageri municipality - Orbeli);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018	Ministry of Environment and Natural Resources Protection of Georgia/budget of LEPL Natural Environment Agency/Donor organization;	25 000 GEL	Planned	In the Orbeli village, the river bed has to be cleaned on the right bank, under the bridge and bank protection measures need to be taken. In the Orbeli village a small weather station needs to be installed.  Within the framework of Rioni project hydrological modelling of the Lajanuri River was carried out for different recurrence periods; Flood maps were prepared.
	1.12.1. Upon completion of the work specified in Paragraph 1.12, ensure implementation of bank protection measures and cleaning of the Lajanuri River bed (Tsageri municipality - Orbeli);	Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2018-2020	The state budget/Donor organization;		Planned	Necessary funding will be estimated after finishing elaboration of the technical design of the corresponding project.
	1.13. Ensure identification of damaged sections of the dam and implementation of studies on the river Rioni (Khobi municipality – Kvemo Chaladidi);	Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2018	The state budget/Donor organization;		Planned	No additional financing is needed
	1.13.1. Upon completion of the work specified in Paragraph 1.13, ensure restoration of the damaged sections of the dam on the river Rioni (Khobi municipality – Kvemo Chaladidi);	Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2018-2020	The state budget/Donor organization;		Planned	Necessary funding will be estimated after finishing elaboration of the technical design of the corresponding project.
	1.14 Organization of automatic hydrometeorological observations on the river Rioni (Oni municipality - Ghebi);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;  Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2018	Ministry of Environment and Natural Resources Protection of Georgia/budget of LEPL Natural Environment Agency/Donor organization;	25 000 GEL	Planned	Under the vehicle bridge, on the left bank of the river, there is a need to strengthen a 150-170 meter section. To the North, on the left bank of the river, the road was washed out and the settlement may be isolated from the rest of the world. Therefore, the bank needs to be strengthened. The height of the road to the Patara Gebi village needs to be increased (calculations must be based on water flow with 100 year recurrence period). The hydrological station needs to be restored. There is a weather station in the Gebi village; the hydrological station which existed on the bridge was washed of by the river.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	1.14.1 Upon completion of the work specified in Paragraph 1.14, ensure implementation of bank protection measures on the river Rioni (Oni municipality - Ghebi);	Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2018-2020	The state budget/Donor organization;		Planned	Necessary funding will be estimated after finishing elaboration of the technical design of the corresponding project.
	1.15. Implementation of topographic and hydrometric work and hydrological modeling on the river Kvirila (Sachkhere municipality - Chala);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018	Ministry of Environment and Natural Resources Protection of Georgia/budget of LEPL Natural Environment Agency/Donor organization;	40 800 GEL	Planned	On the right bank of the Kvirila river, in the center of the village, there is a need to strengthen a 400-500 meter section of the banks. Implementation of hydrometeorological and topographic work, as well as hydrological modelling is necessary. A meteorological station is operating in the Chikhi village of Sachkhere municipality and there is a hydrological station on the Kvirila river in Sachkhere.
	1.15.1. Upon completion of the work specified in Paragraph 1.15, ensure implementation of bank protection measures on the Kvirila River (Sachkhere municipality - Chala);	Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2018-2020	The state budget/Donor organization;		Planned	Necessary funding will be estimated after finishing elaboration of the technical design of the corresponding project.
	1.16. Implementation of automatic hydrometeorological observations, topographic and hydrometric work and hydrological modeling on the river Cheremiskhevi (Gurjaani municipality - Cheremi);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018	Ministry of Environment and Natural Resources Protection of Georgia/budget of LEPL Natural Environment Agency/Donor organization;	65 800 GEL	Planned	No hydrometeorological monitoring is carried out on the Cheremiskhevi river and nearby territories. Implementation of hydrometeorological and topographic work, as well as hydrological modelling is necessary. Near the Velistsikhe village, the left bank of the river needs to be strengthened. One meteorological station needs to be installed in Cheremi.
	1.16.1. Upon completion of the work specified in Paragraph 1.16, ensure implementation of bank protection measures on the river Cheremiskhevi (Gurjaani municipality - Cheremi);	Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2018-2020	The state budget/Donor organization;		Planned	Necessary funding will be estimated after finishing elaboration of the technical design of each project.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	1.17. Implementation of automatic topographic and hydrometric work and hydrological modeling on the river Tsinandliskhevi (Telavi municipality - Tsinandali);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018	Ministry of Environment and Natural Resources Protection of Georgia/budget of LEPL Natural Environment Agency/Donor organization;	40 800 GEL	Planned	Hydrometeorological and topographic work needs to be implemented, as well as hydraulic and hydrological modelling. The left bank of the river needs to be strengthened near the Tsinandali village. In 2012-2013, within the framework of the UNDP project, flood/flashflood hazards were identified on the river Tsinandliskhevi. Reports were prepared and flood maps published.
	1.17.1. Upon completion of the work specified in Paragraph 1.17, ensure implementation of bank protection measures on the river Tsinandliskhevi (Telavi municipality - Tsinandali);	Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2018-2020	The state budget/Donor organization;		Planned	Necessary funding will be estimated after the design of a corresponding project.
	1.18.Ensure reinforcement of a quarry-stone wall, installation of 1500 meter high reinforced concrete screen (including construction of a new 200 meter long concrete wall) on the river Duruji;  In the upstream area of the gorge - extension of the existing gabionade length by 40-50 meters and increase of its height by 2 tiers;  Regular cleaning of the river bed – minimum 500 000 m <sup>3</sup> annually.	Ministry of Regional Development and Infrastructure of Georgia ;	2016-2017	The budget of Ministry of Regional Development and Infrastructure of Georgia	3 000 000 GEL	Ongoing	Elaboration of the project design for rehabilitation of the quarry-stone wall is going on. (the estimated price does not include the costs of regular cleaning of the river bed)  Besides annual cleaning of the river bed, it is necessary to clean the accretion mass brought by the river during the previous years. According to the initial assessments, minimum 15 000 000 m <sup>3</sup> sediments must be removed from the river bed. Since the work volume is big, the decision must be made at the government level (see Paragraph 2.1).
<b>1.1. Flood preparedness within the educational institutions</b>	1.1.1. Implementation of continuous or, in case of impossibility, at least ten day /quarterly educational activities (evacuation training) at schools located in high risk geographic areas;	Ministry of Education and Science; Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2016-2017	The budget of Ministry of Education and Science;		Ongoing	No additional financing is needed.
	1.1.2. Implementation of awareness raising trainings for parents;	Ministry of Education and Science;  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2016-2020	The budget of Ministry of Education and Science;		Ongoing	No additional financing is needed. The specialists of Ministry of Education and Science will select an appropriate school.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
<b>2. Landslide-gravitational and mudflow risk reduction</b>	1.1.3. In order to raise the awareness of the population, ensure preparation and broadcasting of a special educational TV program about flood / flashflood risk reduction (diversity/selection of topics will be based on seasonal priorities);	Ministry of Education and Science;  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2016-2020	The budget of Ministry of Education and Science;		Ongoing	No additional financing is needed.
	1.1.4. Preparation of weekly educational TV programs;	Ministry of Education and Science;  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2016-2020	The budget of Ministry of Education and Science;		Ongoing	No additional financing is needed.
	2.1. In order to ensure protection from flashflood developed in the basin of the river Duruji, the following urgent measures need to be taken: 1. The Duruji river bed has to be cleaned regularly; 2. The river bed has to be expanded and made linear; the main water flow has to be concentrated in the center of the river bed (central axis); 3. At the dam foundation, washed slopes need to be filled with sediment materials removed from the river bed; 4. Restoration of the damaged sections of the dam and arrangement of new ones, where needed; 5. Construction of a one span bridge with high conductive capacity on the river Salmiskhevi; 6. Promotion of practices when the material accumulated in the floodplain and river bed is used for entrepreneurial activities;	Ministry of Regional Development and Infrastructure of Georgia ;	2016 - 2020			Ongoing	At present, the river bed is being cleaned in the middle part of the cone of the Duruji River, while in the upstream part – an early warning system for floods is being installed within the framework of a project funded by the Polish Government.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	<p>2.2 The following geological studies to be carried out in Tbilisi, on the adjacent territory of Mukhatgverdi cemetery:</p> <ol style="list-style-type: none"> <li>1. Detailed engineering-geological study of the territory;</li> <li>2. Drilling – total 350 m;</li> <li>3. Study of physical /mechanical and geotechnical characteristics of the ground: <ol style="list-style-type: none"> <li>a) field work;</li> <li>b) Laboratory tests.</li> </ol> </li> <li>4. Hydrological research – study of underground water;</li> <li>5. Topographic-geodesic mapping (scale: 1:2 000);</li> <li>6. Elaboration of a summarizing engineering-geological report with corresponding recommended activities and preparation of a special map in the GIS system.</li> </ol>	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018 - 8 months from the start of the work	Ministry of Environment and Natural Resources Protection of Georgia/budget of LEPL Natural Environment Agency/Donor organization;	160 000 GEL	Planned	<p>Monitoring carried out in 2016 demonstrated that the situation is extremely complicated and the hazard risk area had increased significantly. The risk area includes not only access roads, but also part of the cemetery territory and certain districts of Didi Digomi settlement. Therefore, it is necessary to carry out a complete study of engineering-geological conditions not only in the landslide areas, but also on a larger territory, including landslide development conditions, and to work out management measures.</p> <p>It must be noted here that in Autumn 2016, the National Environmental Agency is planning to arrange a monitoring network on the access road and adjacent territory of Mukhatgverdi cemetery in order to find out the landslide dynamics.</p>
	<p>2.3. Implementation of detailed engineering-geological studies of landslides and mudflows between the rivers Gomborula and Tordu and in a section of Gombory mountain pass:</p> <ol style="list-style-type: none"> <li>1. Preparation of topographic maps (minimum 1:25 000 scale)</li> <li>2. Comprehensive engineering-geological studies: <ol style="list-style-type: none"> <li>a) Spatial engineering-geological mapping of the territory;</li> <li>b) Drilling - 400 meters;</li> <li>c) Study of the ground water levels and regime;</li> </ol> </li> <li>3. <ol style="list-style-type: none"> <li>a) in the field;</li> <li>b) at the laboratory;</li> </ol> </li> <li>4.</li> <li>5.</li> <li>6. Elaboration of a summarizing engineering-geological report with corresponding recommended activities and preparation of a special map in the GIS system;</li> </ol>	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018-12 months from the start of the work	Ministry of Environment and Natural Resources Protection of Georgia/budget of LEPL Natural Environment Agency/Donor organization;	500 000 GEL	Planned	<p>On the territory between the rivers Gomborula and Tordu there are extremely complicated and diverse landslide and mudfloe processes which periodically significantly damage the road between Tbilisi and Telavi, threaten the population of the villages Gombori, Tetri Tsklebi and Kobadze and destroy their infrastructure. Full scale engineering-geological study of the territory has never been done. Only some periodical monitoring and assessment of the situation has been implemented. In order to have a realistic picture of the complicated geological processes, cause-effect relationship of their formation and activation, risk level and possible solutions, it is necessary to implement detailed comprehensive engineering-geological studies, prepare special maps of minimum 1:25 000 scale and indicate necessary management measures.</p>

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	2.4. Implementation of engineering-geological studies for risk reduction in the ravines of the left tributaries of the River Iori (Tvaltakhevi, Antoki, and Chailuri), in order to make the most optimal decisions on the tributaries that need to be cleaned and the amounts of sediments that have to be removed from each section. It is necessary to conduct preliminary studies and prepare minimum 1:25 000 scale special maps. For this purpose, it is necessary to implement engineering-geodynamic studies in the valleys of all abovementioned rivers and prepare corresponding reports;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018-3 months from the start of the work	Ministry of Environment and Natural Resources Protection of Georgia/budget of LEPL Natural Environment Agency/Donor organization;	130 000 GEL	Planned	
	2.5. Construction of 500/220 kV substation Jvari;	Ministry of Energy of Georgia;	2016	EBRD and KFW;	EUR 18 200 000	Completed	The project is currently at the phase of a feasibility study. Ministry of Environment and Natural Resources issued a license for production of gypsum from this site;
	2.6. Construction of 220 kV transmission line between substations Jvari and Khorga and connection of the existing 500 kV transmission line to Jvari substation;	Ministry of Energy of Georgia;	2016-2017	EBRD and KFW;	13 040 000 EUR	Ongoing	Some sections of 500 kV power transmission line Imereti (Enguri-Zestaphoni) are in the landslide hazard zones. If the line is disconnected, the existing 220 kV network will not be able to substitute it. This construction is necessary for elimination of the problem. It is also necessary for increasing the reliability and stability of the power system.
	2.7. Upgrade of the single-circuit 220 kV transmission line Menji-Khorga into a double-circuit transmission line;	Ministry of Energy of Georgia;	2016	JSC Georgian State Electrosystem, the World Bank	2 160 000 EUR	Completed	

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	2.8. Upgrade of the single-circuit 220 kV transmission line Kutaisi-Tskaltubo into a double-circuit transmission line;	Ministry of Energy of Georgia;	2016	JSC Georgian State Electrosystem, the World Bank	4 393 800 EUR	Completed	
	2.9. Upgrade of the single-circuit 220 kV power transmission line Kutaisi-Zestaphoni into a double-circuit transmission line;	Ministry of Energy of Georgia;	2016-2017	JSC Georgian State Electrosystem, the World Bank	3 712 786 EUR	Ongoing	
	2.10. Reconstruction of the 220 kV power transmission line Menji-Kutaisi;	Ministry of Energy of Georgia;	2017	JSC Georgian State Electrosystem, the World Bank	2 000 000 USD	Planned	
	2.11. Reconstruction of 110 kV power transmission line interconnecting substations Kazbegi and Larsihesi and located in the landslide hazard area;	Ministry of Energy of Georgia;	2016	Darial Energy Ltd.	2 200 000 USD	Completed	
	2.12. Installation of a hanging (on cables) section of the 1200 mm gas pipeline over the hazardous area at Kuro;	Ministry of Energy of Georgia;	2016-2017	JSC Oil and Gas Corporation;	3 551 000 GEL	Ongoing	The objective of this project is to increase the stability and reliability of the system.
	2.13. Rehabilitation of the 77.4 km section of 700mm gas pipeline Khashuri (Vaka) – Zestaphoni;	Ministry of Energy of Georgia;	2017-2020	JSC Oil and Gas Corporation;	88 000 000 GEL	Planned	This measure is a part of the work ongoing and planned for pipelines passing through landslide areas; It also serves the purpose of increasing reliability of the gas supply system.
	2.14. Rehabilitation of a gas pipeline Tabatskuri – Bakuriani (or Vaka – Bakuriani);	Ministry of Energy of Georgia;	2018 -2019	JSC Oil and Gas Corporation;	9 000 000GEL	Planned	This measure also serves the purpose of increasing reliability of the gas supply system.
<b>3. Biological Risk Reduction</b>	3.1. Identification of the baseline data of disease cases caused by highly dangerous biological pathogens and ensuring data collection and analysis during routine epizootic monitoring;	Ministry of Labour, Health and Social Affairs of Georgia/ LEPL the National Center for Disease Control and Public Health;	Continuously	Ministry of Labour, Health and Social Affairs of Georgia/ the budget of the National Center for Disease Control and Public Health;		Ongoing	No additional financing is needed.  The National Center for Disease Control and Public Health constantly implements epizootic monitoring program funded from the institutions budget. Besides, assistance can be received in the form of different projects from different international organizations (WHO, CDC).

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementati on Period	Source of Finance	Budget	Status	Note
	3.2. To update a map of endemic spread of highly dangerous biological pathogens;	Ministry of Labour, Health and Social Affairs of Georgia/ LEPL the National Center for Disease Control and Public Health;	Continuously	Ministry of Labour, Health and Social Affairs of Georgia/the budget of the National Center for Disease Control and Public Health;		Ongoing	No additional financing is needed.
	3.3. Elaboration of an algorithm for assessment of general risk of biological incidents;	Ministry of Labour, Health and Social Affairs of Georgia/ LEPL the National Center for Disease Control and Public Health;	Continuously	Ministry of Labour, Health and Social Affairs of Georgia/The budget of the National Center for Disease Control and Public Health;		Ongoing	No additional financing is needed.
	3.4. Elaboration of a public communication plans to be used in case of biological incidents / epidemic outbreak /epidemics / pandemic;	Ministry of Labour, Health and Social Affairs of Georgia/ LEPL the National Center for Disease Control and Public Health;	Continuously	Ministry of Labour, Health and Social Affairs of Georgia/The budget of the National Center for Disease Control and Public Health;		Ongoing	No additional financing is needed.
	3.5. Ensuring revision, approval and updating of response plans for biological incidents / epidemic outbreaks /epidemics / pandemic;	Ministry of Labour, Health and Social Affairs of Georgia/ LEPL the National Center for Disease Control and Public Health;	Continuously	Ministry of Labour, Health and Social Affairs of Georgia/The budget of the National Center for Disease Control and Public Health;		Ongoing	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	3.6. Elaboration and updating of disease specific response plans;	Ministry of Labour, Health and Social Affairs of Georgia/ LEPL the National Center for Disease Control and Public Health;	Continuously	Ministry of Labour, Health and Social Affairs of Georgia/The budget of the National Center for Disease Control and Public Health;		Ongoing	No additional financing is needed.
	3.7. Enhancement of epizootic supervision of diseases caused by highly dangerous pathogens and ensuring data collection and analysis;	Ministry of Agriculture of Georgia /LEPL the National Food Agency;	2017	Ministry of Agriculture of Georgia /the budget of LEPL the National Food Agency;	1 013 000 GEL	Planned	Every year, within the government program, LEPL the National Food Agency implements preventive measures against highly dangerous diseases. Besides, with the help of international organizations, it also implements projects to identify diseases caused by highly dangerous pathogens and to study their prevalence.
	3.8. Elaboration and updating of maps showing spread of diseases caused by highly dangerous pathogens;	Ministry of Agriculture of Georgia /LEPL the National Food Agency;	Continuously	Ministry of Agriculture of Georgia /the budget of LEPL the National Food Agency;	7 000 GEL annually	Ongoing	
	3.9. Ensure the enhancement of bio-security and bio-protection during implementation of field work;	Ministry of Agriculture of Georgia /LEPL the National Food Agency;	2016-2020	Ministry of Agriculture of Georgia /the budget of LEPL the National Food Agency;	349 920 GEL annually	Ongoing	The personnel working in this area must be regularly trained on bio-safety issues. The personnel shall have appropriate equipment.
	3.10. Ensure the dissemination of information among the population during epidemic outbreaks of diseases caused by highly dangerous pathogens;	Ministry of Agriculture of Georgia /LEPL the National Food Agency;	2016-2020	Ministry of Agriculture of Georgia /the budget of LEPL the National Food Agency;	30 000 GEL annually	Ongoing	Sharing of other countries' experience, if needed.
	3.11. Ensure the development of plans for response to diseases caused by highly dangerous pathogens;	Ministry of Agriculture of Georgia /LEPL the National Food Agency;	Continuously	Ministry of Agriculture of Georgia /the budget of LEPL the National Food Agency;		Ongoing	No additional financing is needed. Sharing of other countries' experience, if needed.
	3.12. Ensure the creation of sufficient supply of medications against diseases caused by highly dangerous pathogens;	Ministry of Agriculture of Georgia /LEPL the National Food Agency;	2016-2020	Ministry of Agriculture of Georgia /the budget of LEPL the National Food Agency;	3 223 150 GEL annually	Ongoing	Certain reserve stock needs to be created taking into account the epizootic situations existing in the neighboring countries and Georgia's transit function.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	3.13. Ensure the effective implementation of border control measures during export-import;	Ministry of Finance of Georgia/ LEPL the Revenue Service; Ministry of Internal Affairs of Georgia; Ministry of Agriculture of Georgia /LEPL the National Food Agency;	Continuously			Ongoing	No additional financing is needed.
	3.14. Ensure the preparation of a manual on bio-safety;	Ministry of Agriculture of Georgia /LEPL the National Food Agency;	2016-2017	Ministry of Agriculture of Georgia /the budget of LEPL the National Food Agency; Donor organization DTRA;	500 GEL	Ongoing	Work on the manual is carried out with the help of the US Defense Threat Reduction Agency. The budget covers only the printing costs.
	3.15. Implementation of joint trainings for personnel of the law enforcement bodies and institutions working in the human and animal healthcare sectors. The trainings must cover the issues related to identification of and response to situations carrying potential biological hazards (including criminal and epidemiological investigation - practical component);	Ministry of Agriculture of Georgia /LEPL the National Food Agency; Ministry of Internal Affairs of Georgia; Ministry of Labour, Health and Social Affairs of Georgia/LEPL the National Center for Disease Control and Public Health;	2016-2020	Donor organizations;		Ongoing	Donor organizations constantly provide assistance for training the personnel of these institutions.  No additional financing is needed.
	3.16. Elaboration of emergency management and biological risk management plans at all levels, taking into account the risks of chemical, biological, radiological and nuclear processes (in this case biological);	Ministry of Internal Affairs of Georgia/ LEPL Emergency Management Agency;  Ministry of Labour, Health and Social Affairs of Georgia; Ministry of Agriculture of Georgia ;	2017-2018	Ministry of Internal Affairs of Georgia/ The budget of the LEPL Emergency Management Agency;		Planned	No additional financing is needed.
	3.17. Organization of preparation and maintenance of safety passports and declarations at biologically hazardous facilities for identification and assessment of risks related to potential development of hazardous natural and technogenic emergency situations;	Ministry of Internal Affairs of Georgia/ LEPL Emergency Management Agency;	2017-2018	Ministry of Internal Affairs of Georgia/, The budget of the LEPL Emergency Management Agency;		Planned	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	3.18. Ensure periodical simulation exercises and trainings on emergency situations that may be caused by biological incidents/epidemic outbreak /epidemics / pandemic;	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;  Ministry of Labour, Health and Social Affairs of Georgia; Ministry of Agriculture of Georgia	2017-2020	Ministry of Internal Affairs of Georgia/ The budget of the LEPL Emergency Management Agency;		Planned	No additional financing is needed.
	3.19 Gathering of information and preparation of maps regarding diseases caused by highly dangerous biological pathogens, their endemic area and locations, in order to create an integrated electronic data base;	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;  Ministry of Labour, Health and Social Affairs of Georgia/LEPL the National Center for Disease Control and Public Health;  Ministry of Agriculture of Georgia /LEPL the National Food Agency;	2016-2020	Ministry of Internal Affairs of Georgia/ The budget of the LEPL Emergency Management Agency;		Ongoing	No additional financing is needed.
<b>4. Earthquake Risk Reduction</b>	4.1. Ensure the assessment of Georgia's seismic hazards;	Illia State University/ the Institute of Earth Studies /the National Seismic Monitoring Center;  MIT; Massachusetts Technological University; USA;	2016-2017	The US State Department; Lawrence Livermore National Laboratory	100 000 USD	Ongoing	Modernization of the seismic and geophysical monitoring systems will improve accuracy of calculations necessary for preparation of a seismic hazard map. At present, the research is based on the data of an analogue network and the digital network data for last 12 months.  The analogue data needs to be processed again in order to ensure higher accuracy of calculations.  The map of seismic hazards must be updated once in every five years, based on new observation materials.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
<b>4.1. Improvement of the legal framework regulating Georgia's spatial arrangement, urban development and construction sectors, in the context of European integration</b>	4.1.1. Ensure the adoption of Georgia's spatial arrangement and construction code;	Ministry of Economy and Sustainable Development;  German Federal Enterprise for International Cooperation (GIZ);	2016 - 2017	German Federal Enterprise for International Cooperation (GIZ);		Ongoing	A Draft Code of Georgia's Spatial Arrangement and Construction was submitted to the Government of Georgia for review.
<b>4.2. Spatial and Territorial Planning</b>	4.2.1. Ensure the development of a General Scheme for Georgia's spatial arrangement: 1. Definition of the organization framework; 2. Agreement of the spatial arrangement methodology; 3. Preliminary preparatory research; 4. Analysis of the existing situation; 5. Development of a common vision and general goals; 6. Development of a general scheme for Georgia's spatial arrangement; 7. Preparation of a general strategic action plan; 8. Approval of the general scheme; 9. Popularization and advertisement of the general scheme.	Ministry of Economy and Sustainable Development;	2016-2020	The state budget/ a donor organization;		Ongoing	On May 30, 2016 the 4 <sup>th</sup> meeting of the Government Commission on Development of the Spatial Arrangement Scheme took place. The meeting reviewed proposals submitted by four candidate consortiums. The Commission selected the proposal of consortium COWI (Denmark); In order to strengthen the main task force and supporting working group, the consortium has to nominate candidate foreign and Georgian specialists and experts, provide documents proving their qualification and experience and attach the organization structure; At present the materials are being prepared for submission to the Government.
	4.2.2. Ensure the preparation of documentation for urban development of Bakhmaro recreation territory;	Ministry of Economy and Sustainable Development;	2016-2017	The budget of Ministry of Economy and Sustainable Development;	177 000 GEL	Ongoing	On February 25, 2016, the Georgian Government issued Decree №317 – On Implementation of Certain Measures for Development of Bakhmaro Recreation Zone. Ministry of Economy and Sustainable Development announced a tender for preparation of documents on urban development of Bakhmaro recreation territory in order to select the design service provider. Art Studio Ltd won the tender. The tender winner has already started working on the urban development documentation.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	4.2.3. Ensure elaboration of documentation for spatial-territorial planning of Mestia municipality and Mulakhi community villages (11 villages: Cholashi, Artskheli, Zardalshi, Lakhiri, Majvdieri, Murshkeli, Zhabeshi, Zhamushi, Gvebra, Chvabiani, and Tsaldashi);	Ministry of Economy and Sustainable Development;	2016-2018	The budget of Ministry of Economy and Sustainable Development;	708 000 GEL	Ongoing	On May 5, 2016, the Georgian Government issued Decree №773 - On Implementation of Community Development Activities in Mestia and Mulakhi. Ministry of Economy and Sustainable Development announced a tender for preparation of spatial-territorial planning documents for villages of Mestia Municipality and Mulakhi community (11 villages: Cholashi, Artskheli, Zardalshi, Lakhiri, Majvdieri, Murshkeli, Zhabeshi, Zhamushi, Gvebra, Chvabiani, and Tsaldashi). The tender was won by GIS and DZ Consultation Center Ltd. At present work is carried out to prepare a contract. The tender winner has already started the work on preparation of the urban development documentation.
	4.2.4. Ensure elaboration of documentation for spatial-territorial planning of Akhmeta municipality and Tusheti settlements – villages: Omalo, Dartlo, Parsma, Girevi, Dochu, Jvarboseli, Shenako, Diklo, Indurta, and Etelta, as well as settlements of Akhmeta municipality – Zemo Alvani and Kvemo Alvani;	Ministry of Economy and Sustainable Development;  German Federal Enterprise for International Cooperation (GIZ);	2016-2018	The budget of Ministry of Economy and Sustainable Development;  German Federal Enterprise for International Cooperation (GIZ);	708 000 GEL	Ongoing	On May 11, 2016, the Georgian Government issued Decree №799 - On Implementation of Community Development Activities in Akhmeta municipality and Tusheti. A tender was announced by Ministry of Economy and Sustainable Development for preparation of documentation for spatial-territorial planning of Akhmeta municipality and Tusheti settlements – villages: Omalo, Dartlo, Parsma, Girevi, Dochu, Jvarboseli, Shenako, Diklo, Indurta, and Etelta, as well as settlements of Akhmeta municipality – Zemo Alvani and Kvemo Alvani. The tender was won by Studia 21 Ltd. The tender winner has already started work on preparation of the urban development documents.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	4.2.5. Ensure elaboration of documentation for urban development of Bakuriani and Didi Mitarbi;	Ministry of Economy and Sustainable Development;	2016-2017	The budget of Ministry of Economy and Sustainable Development;	354 000 GEL	Ongoing	On July 7, 2016, the Georgian Government issued Decree № 1373 - On Implementation of Certain Activities for Development of Bakuriani and Didi Mitarbi; Ministry of Economy and Sustainable Development announced a tender for preparation of urban development documents for Bakuriani and Didi Mitarbi. The tender was won by the company - Architecture Bureau Ltd and the work has already started.
	4.2.6 Elaboration of a construction regulation plan in in Ikalto Ravine - the Ikalto Village of Telavi Municipality;	Ministry of Economy and Sustainable Development;	2016-2017	The budget of Ministry of Economy and Sustainable Development;	94 400 GEL	Ongoing	On July 23, 2016, the Georgian Government issued Decree № 1182 - On Implementation of Certain Necessary Activities for Development of Territories in the Ikalto Ravine - the Ikalto Village of Telavi Municipality; Ministry of Economy and Sustainable Development announced a tender for preparation of the construction regulation plan. The tender was won by the company - Free Architects Ltd and the work has already started.
	4.2.7. Ensure elaboration of spatial – territorial planning documents for municipalities, settlements and recreational territories;	Ministry of Economy and Sustainable Development;	2017-2018	The budget of Ministry of Economy and Sustainable Development;	2 000 000 GEL	Planned	
<b>4.3. Theoretical and practical education at schools, kindergartens and universities regarding earthquake hazards, taking into account the inclusive component</b>	4.3.1. Implementation of corresponding activities at schools, for teachers and students, in order to finish the integrated civil safety strategy /framework program;	Ministry of Education and Science of Georgia;  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;  ASB; Save the Children; UNICEF/DRR Center;	2016-2017	The budget of “the DRR in Education” - project funded by the European Commission;	ASB - 352 000 EUR  Save the Children - 75 000 EUR	Ongoing	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	4.3.2. Implementation of practical earthquake trainings/exercises at public and private schools: Ensuring that each class implements individual exercises once a month, in order to promote achievement of DRR results specified in the national curriculum; Implementation of an evacuation simulation exercise for the whole school twice during an academic year;	Ministry of Education and Science of Georgia;  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2016-2020	The state budget/Donor organization;		Ongoing	No additional financing is needed.
	4.3.3. Conducting theoretical lessons for awareness raising at schools and nearby communities where the students will advocate for correct response to earthquakes and disseminate necessary knowledge;	Ministry of Education and Science of Georgia;  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2016-2020	The state budget/Donor organization;		Ongoing	No additional financing is needed.
	4.3.4. In order to enhance parents' involvement, a comprehensive joint evacuation exercise with participation of teachers, students and parents, should be organized once a year by schools administration;	Ministry of Education and Science of Georgia;  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2016-2020	The state budget/Donor organization;		Ongoing	No additional financing is needed.
	4.3.5. Ensure the usage of broadcasting companies (the Public Broadcaster) for dissemination of information on DRR issues, awareness raising and improvement of practical skills;	Ministry of Education and Science of Georgia;  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2016-2020	The state budget/Donor organization;		Ongoing	No additional financing is needed.  These activities will be implemented with participation of students, teachers, parents and specialists who will demonstrate methods of teaching response behavior in practice.  The scenario will include demonstration of an inclusive approach and approaches applied to different age groups.  It might become necessary to find an additional source of finance and to attract the private sector.
<b>5. Hail Risk Reduction</b>	5.1. Elaboration of a project for modification of the anti-hail system located in Kakheti;	State Military Scientific-Technical Center "Delta"	2016	Delta's existing budget allocations;		Completed	At the end of the term LEPL Delta will make a presentation on the project.
	5.2. Elaboration of a project for implementation and installation of anti-hail systems in Kvemo and Shida Kartli;	State Military Scientific-Technical Center "Delta"	2016	Delta's existing budget allocations;		Completed	At the end of the term LEPL Delta will make a presentation on the project.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	5.3. Elaboration of a project for implementation and installation of anti-hail systems in Samtskhe-Javakheti;	State Military Scientific-Technical Center "Delta"	2016	Delta's existing budget allocations;		Completed	No additional financing is needed.  At the end of the term LEPL Delta will make a presentation on the project.
<b>6. Avalanche Risk Reduction</b>	6.1. Identification of risk zones for snow avalanches in Bakhmaro recreational zone and along its access road; mapping of the risk zones and development of risk elimination /mitigation recommendations;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2016-2017	Ministry of Environment and Natural Resources Protection of Georgia/budget of LEPL Natural Environment Agency/Donor organization		Ongoing	No additional financing is needed.
	6.2. Study of possibilities for using active techniques of controlling snow avalanches (artificial triggering of smaller less destructive avalanches) along Gudauri-Kobi section of the road Tbilisi-Stephantsminda-Larsi;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;  Ministry of Regional Development and Infrastructure of Georgia /Roads Department of Georgia;	2017	The state budget/Donor organization;		Planned	No additional financing is needed.
	6.3. Identification of snow avalanche risk zones in other parts of the country that have avalanche hazards (Adjara, Swaneti, Racha-Lechkhumi); mapping of the risk zones and development of risk elimination /mitigation recommendations;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2017-2020	Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency/Donor organization;	20 000 GEL	Planned	
	6.4. Installation and operation of automatic weather stations for monitoring snow parameters and avalanche risks: - Bakhmaro - 2 units; - Swaneti - 3 units; - Adjara - 3 units; - Racha-Lechkhumi - 2 units;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2018-2020	Ministry of Environment and Natural Resources Protection of Georgia/budget of the Natural Environment Agency/Donor organization;	800 000 GEL	Planned	

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	6.5. Construction of 500 kV power transmission line between substations Ksani and Darialhesi;	Ministry of Energy of Georgia;	2017	The state budget; Donor organizations;  KFW;	26 357 401 EUR	Planned	Georgia's cross-border 500 kV power transmission line Kavkasioni (Enguri – Tsentralnaia), passes through an extremely difficult relief with avalanche hazard. The risk of its disconnection is high. The purpose of the described work is to ensure existence of a stand-by option.  This measure will also improve the stability and reliability of the system and increase its transit potential.
	6.6. Construction of 500/110 kV substation Kazbegi;	Ministry of Energy of Georgia;	2020	KFW;	22 000 000 EUR	Planned	
	6.7. Construction of 500 kV power transmission line between substations Kazbegi and Darialhesi (up to the border with Russia);	Ministry of Energy of Georgia;	2020	KFW;	1 047 000 EUR	Planned	
	6.8. Construction of 500 kV power transmission line between substations Kazbegi and Mozdoki (up to the border with Russia);	Ministry of Energy of Georgia;	2021	KFW;	8 000 000 USD	Planned	The length of the power transmission line that needs to be built from the Russian border to Mozdoki substation is about 120 km. The project cost is about USD 60 million. Financing of the construction is Russia's obligation. The main issues have already been agreed. At present consultations are going on to finalize details.
<b>7. Reduction of strong wind risks</b>	7.1. Creation of an early warning system: long term (seasonal – up to 3 months), medium term (up to 1 month), short term (up to 10 days) and extra-short term (up to 2 days);	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2017-2020	The state budget/Donor organization;	The budget will be defined after completion of necessary studies	Planned	At present consultations are going at Ministry after which it will become possible to develop a plan of concrete activities.
	7.2. Adoption of legal regulatory framework on wind protection zones (including wind break belts) on the whole territory of Georgia; identification of organizations responsible for management, protection and restoration of the protection zones and development of a national action plan for their preservation and further management;	The Government of Georgia;  Ministry of Environment and Natural Resources of Georgia;  Ministry of Agriculture of Georgia ;	2017			Planned	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
<b>8. Forest and valley fire risk reduction</b>	8.1. Classification of Georgian forests according to fire hazards;	Ministry of Environment and Natural Resources of Georgia/ the Forest Policy Service / LEPL the National Forest Agency/ LEPL Agency of Protected Territories;	2017-2020	The state budget  Donor: the Government of German Federation	4 855 000 GEL  4 000 000 EUR	Planned	On certain territories necessary activities are already going on. Additional funds are necessary for finishing the process. Starting from 2013, a phased inventory taking process has been going on in Georgia. Its implementation depends on the availability of funds and number of specialists.  Future source of financing needs to be found.  An agreement on the fund allocation was practically achieved with the Government of German Federation.
	8.2. Ensuring formation of fire resilient forest stands (planting of fire resilient species, cleaning of underbrush and wastes) in the forest areas where the fire hazard is high and in the degraded zones;	Ministry of Environment and Natural Resources of Georgia/ the Forest Policy Service /LEPL the National Forest Agency;	2016-2020	The state budget/Donor organization;	3 000 000 GEL	Ongoing	
<b>8.1. Legal framework for forest and valley fire risk reduction</b>	8.1.1. Adoption of stricter sanctions against setting fire deliberately or by negligence;	Ministry of Environment and Natural Resources of Georgia/ the Forest Policy Service / LEPL the National Forest Agency/ LEPL Agency of Protected Territories;	2017			Planned	No additional financing is needed.
	8.1.2. Ensuring approval of fire safety policy documents;	Ministry of Environment and Natural Resources of Georgia/ the Forest Policy Service / LEPL the National Forest Agency/ LEPL Agency of Protected Territories; ENVSEC;	2017			Planned	The document was prepared by the UN (ENVSEC) project: Enhancement of the National Potential for Fire Management and Wildfire Disaster Risk Reduction in the South Caucasus.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	8.1.3. Ensuring preparation of integrated institutional response plans;	Ministry of Environment and Natural Resources of Georgia / the Forest Policy Service / LEPL the National Forest Agency/ LEPL Agency of Protected Territories;  Ministry of Internal Affairs of Georgia;	2017			Planned	No additional financing is needed.
	8.1.4. Preparation of a package of legal amendments and an action plan based on the document: Ecosystem Assessment of Fires on Agricultural Lands;	Ministry of Environment and Natural Resources of Georgia; GIZ's program: "Integrated Management of biodiversity in the South Caucasus"	2016 - 2017			Ongoing	No additional financing is needed.
<b>8.2. Capacity building for forest and valley fire risk reduction</b>	Installation of an early warning system against wildlife fire;	Ministry of Environment and Natural Resources of Georgia;  OSCE/ENVSEC;	2016-2018	The state budget/Donor organization;		Ongoing	No additional financing is needed.
<b>8.3. Awareness raising on forest and valley fire risk reduction</b>	8.3.1. Awareness raising of population at national and local levels. Awareness raising of shepherds and farmers; organization of trainings regarding dangerous consequences and prevention of fires;	Ministry of Agriculture of Georgia /LEPL the National Food Agency;  Ministry of Internal Affairs / LEPL Emergency Management Agency;	2016-2018			Ongoing	No additional financing is needed.  The activity will be financed from the budgets of involved institutions.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	8.3.2. Installation of information boards and special signs in those state owned forest territories where the fire hazard exists (44 forest areas), especially in recreational zones;	Ministry of Environment and Natural Resources of Georgia/ the Forest Policy Service / LEPL the National Forest Agency/ LEPL Agency of Protected Territories;	2016-2020	Ministry of Environment and Natural Resources of Georgia/ the Forest Policy Service / LEPL the National Forest Agency/ LEPL Agency of Protected Territories;	130 000 GEL	Ongoing	As of 2016, 1000 signs were installed in 44 forest areas, in 9 regions.
<b>8.4. Educational activities regarding forest fires in Georgia – continuously or in every decade / quarter.</b>	8.4.1. Conduction of theoretical classes at schools and nearby communities in order to raise awareness about proper response during forest fires;	Ministry of Education and Science;  The project funded by the European Commission DIPECHO;	2016-2017	The budget of “the DRR in Education” - project funded by the European Commission		Ongoing	No additional financing is needed.
	8.4.2. Preparation of social advertisements and usage of media;	Ministry of Education and Science;  The project funded by the European Commission DIPECHO;	2016-2017	The budget of “the DRR in Education” - project funded by the European Commission;		Ongoing	No additional financing is needed.
	8.4.3. In order to increase parents’ involvement a comprehensive joint evacuation exercises with participation of teachers, students and parents, should be organize once a year by the school administration ;	Ministry of Education and Science;  The project funded by the European Commission DIPECHO;	2016-2017	The budget of “the DRR in Education” - project funded by the European Commission;		Ongoing	No additional financing is needed.  It is possible to use expert resources of Ministry of Education and Science and help school administration.
	8.4.4. Ensure teaching of forest fire prevention measures during school excursions;	Ministry of Education and Science;  The project funded by the European Commission DIPECHO;	2016-2017	The budget of “the DRR in Education” - project funded by the European Commission;		Ongoing	No additional financing is needed.
	8.4.5. Implementation of information dissemination campaigns on importance of forests as sources of diverse resources and their rational use;	Ministry of Education and Science;  The project funded by the European Commission DIPECHO;	2016-2017	The budget of “the DRR in Education” - project funded by the European Commission;		Ongoing	

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
<b>9. Reduction of Chemical Threat Risks</b>	9.1. Adoption of a government resolution on Safety Passports of potentially hazardous facilities;	<p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>The Government of Georgia;</p> <p>PPRD East Program – in compliance with the requirements of SECESO III on the control of major-accident hazards involving dangerous substances;</p>	2016	Ministry of Internal Affairs of Georgia / the budget of LEPL Emergency Management Agency;		Ongoing	No additional financing is needed.
	9.2. Formation of a working group on chemical threat reduction;	<p>Ministry of Environment and Natural Resources of Georgia;</p> <p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>Ministry of Defense of Georgia;</p> <p>Ministry of Regional Development and Infrastructure of Georgia ;</p>	2016-2017			Ongoing	<p>The draft resolution has been prepared.</p> <p>No additional financing is needed.</p>

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	9.3. Study of chemical threats on the territory of Georgia, implementation of search activities for high risk damaged containers and cylinders; demarcation of identified territories and installation of warning signs; mapping of the territories;	<p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency/ the Department of Civil safety;</p> <p>Supporting Organization: NGO Consortium Ecological Awareness and Waste Management (EAWM);</p> <p>Georgian Society of Nature Explorers "Orchis";</p> <p>Greens Movement of Georgia / Friends of the Earth Georgia;</p> <p>The Government of Sweden</p>	2016-2017	The Government of Sweden		Ongoing	No additional financing is needed.
<b>10. Reduction of risks caused by water erosion</b>	10.1. Improvement of the sea beach parameters in Sarpi by adding inert materials, in order to ensure stability of access ramp (overhead road) to the border checkpoint;	Ministry of Regional Development and Infrastructure of Georgia ;	2016	The budget of Ministry of Regional Development and Infrastructure of Georgia;	40 000 000 GEL	Completed	
	10.2. Protection of Adlia-Batumi sea beach from erosion;	Ministry of Regional Development and Infrastructure of Georgia / LEPL Georgian Municipal Development Fund;	2016-2017	The EBRD;	20 000 000 GEL	Ongoing	
	10.3. Mitigation of erosion of the sea beach in Kobuleti;	The city municipality; Ministry of Regional Development and Infrastructure of Georgia / LEPL Georgian Municipal Development Fund;	2016-2017	Ministry of Regional Development and Infrastructure of Georgia / the budget of LEPL Georgian Municipal Development Fund;	2 042 000	Ongoing	

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	10.4. In the territory of Kolkheti valley: in the municipalities of Bagdati, Vani, Samtredia, Lanchkhuti, Abasha, Martvili, and Khobi as well as in Poti, implementation of activities for regulation of the Rioni river bed and protection of banks (mostly restoration of embankments washed out by floods.	Local municipalities; Ministry of Regional Development and Infrastructure of Georgia ;  Ministry of Agriculture of Georgia ; Ministry of Environment and Natural Resources Protection of Georgia	From 2017	The state budget; the Asian Development Bank or any other donor organization;	To be defined based on the feasibility study	Planned	
	10.5. Protection of critical sections of the Alazani river bank near the border (swashway /looped bank) in order to avoid a situation when large land lots will turn out to be on the other side of the river (in Azerbaijan);	Local municipalities; Ministry of Economy and Sustainable Development; Ministry of Regional Development and Infrastructure of Georgia ; Ministry of Agriculture of Georgia ; Ministry of Environment and Natural Resources Protection of Georgia;	2016-2017	The state budget;	To be defined when the engineering project design is ready	Ongoing	Elaboration of the engineering design is carried out for 3 identified sites.
<b>11. Draught risk reduction</b>	11.1. Development of recommendations about agricultural work to be carried out during droughts and dissemination of this information among farmers;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2017-2020			Planned	No additional financing is needed.
	11.2. Installation of software for using satellite information in the field of agrometeorology;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;  The World Meteorological Organization (WMO); The European Meteorological Satellite Organization (EUMETSAT), The Food and Agriculture Organization (FAO); The Drought Management Centre for Southeastern Europe;	2018-2020			Planned	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	11.3. Purchase, installation and startup of automatic agro-meteorological stations in Sagarejo, Dedoplistskaro, Shilda, Shiraki, Ulianovka - mine, Akhasheni, Giorgeti, Shalauri, and Kistauri;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;  Food and Agriculture Organization (FAO);	2017	Food and Agriculture Organization (FAO);		Planned	No additional financing is needed.
	11.4. Restoration of existing melioration systems and construction of new ones in draughty regions, in order to provide irrigation water to agricultural land;	Ministry of Agriculture of Georgia / Georgian Amelioration Ltd.	2016 – 2017	Ministry of Agriculture of Georgia / the budget of Georgian Amelioration Ltd.	33 200 000 GEL	Ongoing	This will increase the area of irrigated agricultural land from 100 000 hectares to 110 000 hectares.
2017 - 2022			Ministry of Agriculture of Georgia / the budget of Georgian Amelioration Ltd.	215 300 000 GEL	Planned	As a result of this measure rehabilitated melioration infrastructure will provide water to additional 185 000 hectares while new melioration infrastructure will provide water to 4664 hectares of land. The project will continue until 2022.	
	11.5. Rehabilitation of Zemo Samgori irrigation systems;	Ministry of Agriculture of Georgia / Georgian Amelioration Ltd.;  Supporting Organization: ORIO;	2017 - 2020	Donor organization - ORIO  Ministry of Agriculture of Georgia / the budget of Georgian Amelioration Ltd.	25 883 400 GEL  46 420 800 GEL	Planned	
<b>12. Hydrodynamic Accident Risk Reduction</b>	12.1. Improvement of models existing on risky reservoirs (Enguri, Lajanuri, Shaori, Zhinvali and Sioni) with the use of modern technologies;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2017-2020			Planned	At present it is impossible to calculate an exact budget. Budgeting must be done for each specific site.  With the exception of Jhinvali reservoir (provided for in Paragraph 2.1.1).

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	12.1.1. Modelling of different scenarios of accidents causing water discharges from Jhinvali reservoir;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;	2016-2017	Polish Aid Agency	27 500 GEL	Ongoing	
	12.2. Elaboration of measures necessary for creation of early warning systems on Enguri, Lajanuri, Shaori, Jhinvali and Sioni reservoirs;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;  Ministry of Internal Affairs of Georgia;	2017-2020			Planned	No additional financing is needed.
	12.3. Implementation of measures for assessment of the condition of Poti diversion structure on the river Rioni and for planning further measures;	Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;  Ministry of Regional Development and Infrastructure of Georgia ;  Ministry of Agriculture of Georgia ;  Poti municipality;  Supporting Organization:  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2017			Planned	No additional financing is needed. This measure must be implemented jointly by Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency, Ministry of Regional Development and Infrastructure of Georgia, Ministry of Agriculture of Georgia, and Poti municipality;
	12.4. Preparation of evacuation plans for population of the cities and villages that can be flooded as a result of hydrotechnical accidents on risky water reservoirs (Enguri, Lajanuri, Shaori, Zhinvali and Sioni);	Corresponding municipalities;  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2017-2020			Planned	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
<b>13. Legal framework</b>	13.1. Approval/adoption of the Law of Georgia on Crisis Situations;	The office of the State Security and Crisis Management Council of Georgia;	2016-2017			Ongoing	No additional financing is needed.
	13.2. Adoption of bylaws provided for in the Civil Safety Law in the field of emergency situation risk identification and assessment. Organization of their implementation;	Ministry of Internal Affairs of Georgia;	2016			Ongoing	No additional financing is needed. The activities are funded within the framework of the project Clean up Georgia (Phase III)
	13.3. Refining and development of the emergency situation management system; organization of documentation maintenance: safety passports and safety declarations related to identification and assessment of emergency situations; organization of preparation of emergency and risk management plans at all management levels;	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2017-2019			Planned	No additional financing is needed.
<b>14. Enhancement of DRR capacities at national and local levels</b>	14.1. DRR awareness raising among decision makers at national level by means of trainings, seminars and instruction;	The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center  Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	2017-2020			Planned	No additional financing is needed.
	14.2. DRR awareness raising among decision makers at regional/municipal (city) levels by means of trainings, seminars and instruction;	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;  Corresponding municipalities;	2017-2020	The state budget/Donor organization;		Planned	The amount necessary for financing these activities must be defined after the elaboration of teaching programs.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	14.3. Regular retraining of the technical personnel working in the area of disaster risk assessment and reduction, elaboration/implementation of training programs/modules;	<p>The Office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center Center;</p> <p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;</p> <p>Ministry of Labour, Health and Social Affairs of Georgia/ the Emergency Situations Coordination and Regime Department;</p>	2017-2020	The state budget/Donor organization;		Planned	The amount necessary for financing these activities must be defined after the elaboration of teaching programs.
	14.4. Elaboration (or adaptation to the Georgian reality) of DRR training modules for media representatives (TV, radio, printed and electronic media) and organization of a workshop for media representatives;	<p>The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center Center;</p> <p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>Ministry of Environment and Natural Resources Protection of Georgia/LEPL Natural Environment Agency;</p> <p>ASB</p>	2017	Donor organization		Planned	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	14.5. Implementation of necessary research for establishing the national DRR Platform;	<p>The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center Center;</p> <p>Ministry of Education and Science;</p> <p>the National Academy of Science of Georgia;</p> <p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>Supporting Organization: The UN Office for Disaster Risk Reduction (UNISDR);</p>	2017-2018			Planned	No additional financing is needed.
	14.6. Establishment of the national DRR platform in compliance with international standards;	<p>The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center Center;</p> <p>Ministry of Education and Science;</p> <p>the National Academy of Science of Georgia;</p> <p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>Supporting Organization: The UN Office for Disaster Risk Reduction (UNISDR);</p>	2017-2018			Planned	Establishment of the national DRR platform will enable the Georgian Government to use a simplified method for receiving funds necessary for reduction of different hazards identified in Georgia by means.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	<ul style="list-style-type: none"> <li>4.7. Implementation of an alternative digital communication system (portable radio transmitters) for the institutions providing urgent medical services;</li> <li>ensure existence of field hospitals in order to reduce health damage risks caused by major damage of infrastructure;</li> <li>sharing of international practices (USA, Canada, Norway etc.) for timely and adequate medical response to emergency situations;</li> </ul>	<p>Ministry of Labour, Health and Social Affairs of Georgia; LEPL Medical Emergency Center (regional);</p>	<p>2017-2018</p> <p>2017</p> <p>2016 -2020</p>	<p>Work is carried out to find a source of funding;</p> <p>Work is carried out to find a source of funding;</p> <p>Work is carried out to find a source of funding</p>	<p>The budget evaluation is going on</p> <p>The budget evaluation is going on</p> <p>The budget evaluation is going on</p>	<p>Planned</p> <p>Planned</p> <p>Ongoing</p>	
<p><b>15. Enhancement of coordination between international organizations / NGOs working in Georgian within the disaster management sector in order to ensure effective preparedness and response</b></p>	<p>15.1. Enhancement of coordination mechanisms between NGOs by means of corresponding terms of reference and joint simulation exercises;</p>	<p>The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center Center;</p> <p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>Georgia Red Cross Society; Denmark Red Cross Society; the UN Office in Georgia; OXFAM; ASB; Save the Children; DRR Centre; CENN; UNICEF;</p>	<p>2016 - 2019</p>	<p>Donor organization</p>		<p>Ongoing</p>	

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	15.2. Implementation of a joint training of NGOs and public institutions.	<p>The office of the State Security and Crisis Management Council of Georgia/ the National Crisis Management Center Center;</p> <p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>Georgia Red Cross Society;</p> <p>Denmark Red Cross Society;</p> <p>the UN Office in Georgia;</p> <p>OXFAM;</p> <p>ASB;</p> <p>Save the Children;</p> <p>DRR Centre CENN UNICEF</p>	2016-2020	The office of the State Security and Crisis Management Council of Georgia		Ongoing	
	15.3. Ensuring elaboration of a joint plan for humanitarian preparedness together with international and local organizations;	<p>The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center Center;</p> <p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>Disaster Management Country Team - UN;</p>	2017-2019			Planned	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	15.4. Ensuring elaboration of an education program in DRR based on inclusive approach, in 6 Georgian Universities;	Ministry of Education and Science; ASB	2016 - 2017	From the budget of ASB's project, "We Are Ready! Education for Safety, Inclusive Approach to DRR";	352 930 EUR	Ongoing	No additional financing is needed.
	15.5. Conducting trainings for trainers (DiDRR) on inclusive approach to DRR for employees in 6 Georgian universities;	Ministry of Education and Science; ASB;	2016 - 2017	From the budget of ASB's project, "We Are Ready! Education for Safety, Inclusive Approach to DRR";		Ongoing	No additional financing is needed.
	15.6. Elaboration of a guidelines for students at 6 Georgian universities;	Ministry of Education and Science; ASB;	2016 - 2017	From the budget of ASB's project, "We Are Ready! Education for Safety, Inclusive Approach to DRR";		Ongoing	No additional financing is needed.
	15.7. Establishment of iDRR education resource centers in 6 Georgian universities;	Ministry of Education and Science; ASB;	2016 - 2017	From the budget of ASB's project, "We Are Ready! Education for Safety, Inclusive Approach to DRR";		Ongoing	No additional financing is needed.
	15.8. Elaboration of education materials and trainers' training modules on inclusive education in DRR, for their further use in the regional preschool education system;	Ministry of Education and Science; ASB;	2016 - 2017	From the budget of ASB's project, "We Are Ready! Education for Safety, Inclusive Approach to DRR";		Ongoing	No additional financing is needed.
	15.9. Enhancement of organizations of persons with limited abilities on the inclusive DRR approach;	Ministry of Labour, Health and Social Affairs of Georgia; Ministry of Education and Science; ASB;	2016 - 2017	From the budget of ASB's project, "We Are Ready! Education for Safety, Inclusive Approach to DRR";		Ongoing	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	15.10. Elaboration of guidelines in compliance with the Sendai Framework Agreement, with active participation of persons with limited abilities and their organizations;	Ministry of Labour, Health and Social Affairs of Georgia;  Ministry of Education and Science;  ASB;	2016 - 2017	From the budget of ASB's project, "We Are Ready! Education for Safety, Inclusive Approach to DRR";		Ongoing	No additional financing is needed.
	15.11. Ensuring elaboration of a media guidelines on DRR issues;	The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center;  ASB;	2016 - 2017	From the budget of ASB's project, "We Are Ready! Education for Safety, Inclusive Approach to DRR";		Ongoing	No additional financing is needed.
	15.12. Conducting of two seminars for journalists on inclusive approach to DRR, in order to raise their awareness;	The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center;  ASB;	2016 - 2017	From the budget of ASB's project, "We Are Ready! Education for Safety, Inclusive Approach to DRR";		Ongoing	No additional financing is needed.
	15.13. Dissemination of technical information on DRR among the authorities and population of Adjara, in compliance with the newly established emergency management system and gender sensitive approaches;	The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center;  The Georgian Government Organization / Assistant to the Prime Minister of Georgia on Human Rights and Gender Equality Issues;  OXFAM;	2016-2017	From the budget of the OXFAM's project "Supporting Natural Disaster Risk Reduction in the South Caucasus"	595 237 EUR	Ongoing	No additional financing is needed.
	15.14. Enhancement and promotion of coordination during the natural disaster risk reduction process at the national and regional levels in AdjaraAdjara (by means of regional sustainability forums);	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;  Supporting Organization: OXFAM;	2016-2017	From the budget of the OXFAM's project "Supporting Natural Disaster Risk Reduction in the South Caucasus"		Ongoing	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	<p>15.15. Enhancement of the capacity and readiness of executive authorities to ensure protection of children in emergency situations and reflection of this purpose in the government plans and documents;</p> <p>Development of a DRR training module taking into account children's interests and specific approaches during emergency situations, in cooperation with the Emergency Management Agency of Ministry of Internal Affairs of Georgia and Save the Children;</p> <p>Organization of trainings for the contact persons of executive authorities working on DRR issues;</p>	<p>The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center;</p> <p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>Supporting Organization: Save the Children;</p>	2016-2017	From the budget of Save the Children's project „Child Oriented Inclusive Approach to DRR” financed by ECHO;;	8 000 EUR	Ongoing	No additional financing is needed.
	<p>15.16. Provision of support to the National Center of Teacher Professional Development in order to make it possible to introduce DRR mechanisms in the education system:</p> <ul style="list-style-type: none"> <li>• refreshing of the training module: “Disaster Risk Reduction – Based on Inclusive Education Principles” based on the comments and recommendations provided by the National Center of Teacher Professional Development;</li> <li>• Handover of the revised training module to the National Center of Teacher Professional Development for approval. The training module provides for 21 contact teaching hours and 5 independent studying hours – total 26 hours which is 1 ECTS;</li> <li>• Training of the trainers chosen by the National Center of Teacher Professional Development on the subject of DRR based on the inclusive education principles;</li> </ul>	<p>Ministry of Education and Science/ The National Center of Teacher Professional Development;</p> <p>Save the Children;</p>	2016-2017	From the budget of Save the Children's project „Child Oriented Inclusive Approach to DRR” financed by ECHO;	5 000 EUR	Ongoing	No additional financing is needed.

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	<p>15.17. Consideration of children's needs during disasters and incorporation of inclusive approaches into the curriculums of Save Schools and the Emergency Management Agency;</p> <p>Renewal of the joint working group of organizations and public institutions working on the Safe School issues and coordination of the working group meetings during which Save the Children will advocate for protection of children's needs during disasters and incorporation of inclusive approaches into the Safe School concept;</p>	<p>Ministry of Education and Science;</p> <p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>Save the Children;</p>	2016-2017	From the budget of Save the Children's project „Child Oriented Inclusive Approach to DRR" financed by ECHO;	400 EUR	Ongoing	No additional financing is needed.
<b>16. Harmonization of the preparedness and response mechanisms / institutions with international standards and mechanisms</b>	16.1. Preparatory work has to be done for joining the international system of humanitarian response (e.g.: INSARAG, UNDAC);	<p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>OCHA-ROCCA; UNDP; IOM;</p>	2016 -2019	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency		Ongoing	
	16.2. Ensuring application of international humanitarian standards for response to emergency situations in Georgia;	<p>Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;</p> <p>OCHA-ROCCA; UNDP;</p>	2016-2018	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency		Ongoing	<p>Organization of a consultation meeting on regionalization of INSARAG in the Caucasus and Central Asia;</p> <p>In compliance with the Government's instructions, provision of assistance to the Emergency Management Agency for establishing a national INSARAG group and ensuring its training for INSARAG's eternal classification;</p> <p>Facilitation of sending local Disaster Management Officers to the UN Disaster Assessment and Coordination (UNDAC) Induction Courses (depends on the availability of places at this induction course);</p> <p>Ensure participation of UN members in simulation exercises on disaster assessment and coordination issues conducted at the national and regional levels.</p>

Priority Area	Activities to be Implemented	Responsible / Supporting Organizations	Implementation Period	Source of Finance	Budget	Status	Note
	16.3. Joining of the International Charter on Space and Major Disasters;	The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center;  UN-SPIDER;	2016-2017			Ongoing	In compliance with the Government's instructions, ensuring introduction of the Humanitarian Charter & Minimum Standards in Humanitarian Response in Georgia (e.g.: SPHERE);  Provision of support to the Georgian Government in signing the UN – Georgia Model Agreement on Customs Facilitation in Humanitarian Assistance;  In compliance with the Government's instructions, facilitation of adoption of international guidelines and disaster risk management legislation suitable for the Georgian context.
	16.4. Enhancement of cooperation with the UN Office for Outer Space Affairs;	The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center;  UN-SPIDER;	2016-2017			Ongoing	
<b>17. Elaboration of mechanisms for recording/calculating damages caused by disasters and needs for impact mitigation instruments</b>	Ensuring the implementation of a methodology /approach for evaluation of post-disaster damages and restoration needs, as well as for calculation of economic losses;	The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center;  PPRD East	2016-2017	The state budget/Donor organization;		Ongoing	Attraction of different donors, including the United Nations and the World Bank.
<b>18. The role of the private sector in the DRR system</b>	18.1 Coordination of the measures necessary for ensuring access of the private sector to information about natural disasters and vulnerable sites (risk maps).	The office of the State Security and Crisis Management Council of Georgia/the National Crisis Management Center;	2017-2020			Planned	No additional financing is needed.
	18.2 Subsidizing insurance of crops in the agricultural sector.	Ministry of Agriculture of Georgia	2017	The budget of Ministry of Agriculture of Georgia	8 000 000 GEL	Planned	The issue of financing this measure is regulated every year, based on a Government decree

NOTE: The Action Plan has Appendix N 3 which includes the measures that are also important and for the implementation of which the Georgian Government is making efforts to find additional resources.

## Annex to the Action Plan of the National Disaster Risk Reduction Strategy of Georgia

(Activities are representing significant directions and actions are carried out by the Government of Georgia in order to find additional resources)

	Activities to be Implemented	Responsible/ Supporting Organizations	Source of Finance	Budget	Comments
1	Provide trainings/simulation exercises on risk evaluation, communication and coordination;	Ministry of Agriculture of Georgia/LEPL National Food Agency; Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	Not defined	Annual GEL 500 000;	
2	Permanent trainings/re-trainings of the personnel working in the field on highly dangerous pathogens;	Ministry of Agriculture of Georgia/LEPL National Food Agency; Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	Not defined	Annual GEL 400 000	
3	Carry out professional development activities (emergency medical/non-medical crew trainings) for medical staff of emergency medical service providers, in order to reduce the health damage risks;	Ministry of Labour, Health and Social Affairs of Georgia of Georgia LLE Emergency Centre (regional);	Not defined	160 000	Annual number of medical/non-medical staff - 1500
4	Implementation of GPS system (considering the geographic factors) in order to reduce health damage risks and ensure the immediate access to the emergency medical services;	Ministry of Labour, Health and Social Affairs of Georgia of Georgia	Not defined	GEL 25 200	
5	Ensuring capacity building of biosafety and biodefense in the laboratory network;	Ministry of Labour, Health and Social Affairs of Georgia of Georgia/LEPL National Centre for Disease Control and Public Health;	Not defined	USD 700 000	Operations of biosafety and biodefense systems in laboratory networks are annually financed from the institution's internal budget. Nevertheless, the network needs additional funding to strengthen the system. It is preferable to finance the specified amount from the State Budget or by the international donor organizations (WHO, CDC).
6	Provide trainings/simulation exercises on risk evaluation, communication and coordination;	Ministry of Labour, Health and Social Affairs of Georgia of Georgia/LEPL National Centre for Disease Control and Public Health; Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	Not defined	USD 50 000	Presented cost is approximate. It depends on the type and scope of the simulation exercises. Additional funding could be obtained from the State Budget or from the international donor organizations (WHO, CDC).
7	Ensure establishment the supplies of diagnostic materials for a response to new/emerging biological incidents, epidemics/pandemics;	Ministry of Labour, Health and Social Affairs of Georgia/LEPL National Centre for Disease Control and Public Health;	Not defined	GEL 50 000–20 0000	The country has certain supplies for the diagnostics of the biological agents spread in Georgia. In the case of a worldwide spread of epidemics, the country might need to purchase materials that it does not have in storage. The assistance can be provided by the State Budget or by international donor organizations. The budget may vary because it is impossible to predict which epidemics would threaten the world in future.
8	Ensure the set up and installation of the public health emergency management center and implementation of local and international media monitoring practices for the identification of potential threats;	Ministry of Labour, Health and Social Affairs of Georgia/LEPL National Centre for Disease Control and Public Health;	Not defined	USD 400 000	The most part of expenses is needed for the procurement/installation of the necessary equipment. The expenses are presented for the entire time period.
9	Ensure the implementation of the so called "Safe School" in 5 (five) secondary schools in order to strengthen the safety component;	Ministry of Education and Science of Georgia	Not defined	GEL 1 000 000	In 2015-2016, Zugdidi Public School #1 was rehabilitated in accordance with the "safe school" concept, within the EC-funded project. The budget was approximately GEL 200 000. The project was implemented by the "DRR Centre".
10	Ensure purchase of micro zoning field equipment for Tbilisi City;	Ilia State University/Institute of Earth Sciences and National Seismic Monitoring Centre;	Not defined	USD 1 200 000	Field equipment, designed for studying the ground characteristics by means of geophysical methods, should be purchased.

11	Arrangement of water reservoirs, fire-fighting roads and paths in the territory of the identified 44 forest units;	Ministry of Environment and Natural Resources Protection of Georgia/Forest Policy Service/LEPL National Forestry Agency;	Not defined	GEL 2 000 000	The medium term action plan of LEPL National Forestry Agency for 2017-2020 envisages GEL 500, 000 for the fire prevention (including mineralized zoning) measures.
12	Ensure creation of mineralized zones and clean-up/rehabilitation of already existing ones, in the territories of 9 initially identified regions:	Ministry of Environment and Natural Resources Protection/Forest Policy Service/LEPL National Forestry Agency/LEPL Agency of Protected Areas;	Not defined	GEL 1 000 000	
13	Ensure employment of seasonal firefighters/watchmen and purchase of the primary fire-fighting equipment during the periods of fire hazards;	Ministry of Environment and Natural Resources Protection of Georgia/Forest Policy Service/LEPL National Forestry Agency/LEPL Agency of Protected Areas;	Not defined	GEL 1 500 000	
14	Elaboration of a project for safe storage of hazardous industrial waste containing arsenic and implementation of the project in village Uravi of Ambrolauri municipality (stage II);	Ministry of Environment and Natural Resources Protection of Georgia; Ministry of Regional Developments and Infrastructure of Georgia;	Not defined	USD 1 000 000	
15	Safe storage of hazardous industrial waste containing arsenic (stage II) in village Tsana of Lentekhi municipality, according to the project elaborated by the European experts;	Ministry of Environment and Natural Resources Protection of Georgia; Ministry of Regional Developments and Infrastructure of Georgia;	Not defined	EURO 2 500 000	
16	Setting up necessary infrastructure (big reservoirs/tanks) in Eastern and Western Georgia in order to neutralize chlorine and other hazardous chemicals in the historical and newly discovered burial sites;	Ministry of Environment and Natural Resources Protection of Georgia; Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency; Ministry of Defense of Georgia; Ministry of Regional Development and Infrastructure of Georgia	Not defined	GEL 100 000	
17	Creating/operating early warning system of snow avalanches in Bakhmaro resort zone and on its access roads;	Ministry of Environment and Natural Resources Protection of Georgia/ LEPL National Environmental Agency; Ministry of Regional Development and Infrastructure of Georgia;	Not defined	Annual GEL 70 000	Necessary allocation is made in the budget of the Ministry of Regional Development and Infrastructure to pay for the services rendered by the Ministry of Environment and Natural Resources Protection /LEPL National Environmental Agency.
18	Operating anti-hail system in Kakheti region;	LEPL STC "Delta";	Not defined	GEL 4 369 200	
19	Ensuring elaboration of technical regulations/standards regulating the construction sector and harmonizing them with the European standards: • Translation of Eurocodes into Georgian language;  • Ensuring elaboration of the National Annexes to the Eurocodes.	Ministry of Economy and Sustainable Development of Georgia	Not defined	For the translation Eurocodes into Georgian GEL 255600  National Annexes elaboration for Eurocodes is approximately GEL 900 000	
20	Construction of a coastal-protection structure to safeguard the main railway line in Tsikhisdziri;	JSC "Georgian Railway";	Not defined	GEL 600-700 thousand	
21	Purchasing of modern fire-rescue vehicles;	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	Not defined	GEL 37 400 000	
22	Provision of specialized machinery and equipment for the personnel;	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	Not defined	GEL 27 400 000	
23	Supervision of the civil safety sector based on the legislation, in order to provide the emergency risk management;	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	Not defined	GEL 1 400 000	

24	Organize teaching and training for the emergency response forces and population, in order to provide emergency prevention, preparedness and response;	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	Not defined	GEL 1 400 000	
25	Construction/rehabilitation of modern firefighting rescue infrastructure.	Ministry of Internal Affairs of Georgia/LEPL Emergency Management Agency;	Not defined	GEL 19 500 000	