



2012 GEORGIA SEVERE STORMS AND FLOODING

Joint Needs Assessment



THE WORLD BANK



GFDRR
Global Facility for Disaster Reduction and Recovery



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Foreword

It was on July 19th, 2012 that severe storms swept through Kakheti, Mtskheta-Mtianeti and Samtskhe-Javakheti regions of Georgia which began in the Samtskhe-Javakheti region around midnight with egg-sized hail stones and torrential rains moving to the Mtskheta-Mtianeti Region. By the time the storm had arrived in Kakheti the hail and heavy rain was accompanied by strong wind and associated flash floods. The disaster badly damaged agricultural lands, homes, and municipal infrastructure, affecting as many as 25,000 families.

In the aftermath of the disaster, the Georgian Government undertook measures to mitigate immediate effects of the storms, mobilizing emergency assistance to meet the most pressing needs of the people living in the affected regions.

While these efforts were mainly channelled toward immediate humanitarian assistance, the government approached the World Bank and the UN with the request to support assessment of the disaster consequences and identification of actions needed for better recovery.

In response to the request, a team consisting of international and national consultants from UN agencies, World Bank and GFDRR in close cooperation with government representatives from central and regional levels conducted a mission on a Joint Needs Assessment, during the period 06-17 August, 2012.

Upon completion of the assessment, findings and the initial recommendations on the long-term and short-term recovery needs were presented to the government for further agreement and completion of the recovery framework.

However, the finalization of the recovery framework coincided with pre-election period which soon followed by a complete reshuffle of the government thus limiting their participation in the process.

The work on recovery framework was resumed after the appointment of a new government since reducing disaster losses and risk remained one of the priorities of the government - given the on-going occurrences of disaster both in Kakheti and other regions of Georgia had caused substantial financial losses.

In order to acknowledge the importance of the recovery framework, as a set of actions that can help foster resilient recovery and development (by the government), a joint technical workshop on the finalization of the recovery framework was conducted on 17 July, 2013 with the participation of JNA team members and representatives of relevant ministries.

The recovery activities provided in this report reflect the outcomes of the discussions on this recovery framework at and a general approach of the government to improve its approach to recovery.

List of Participating Agencies

Ministry of Agriculture

Ministry of Education and Science

Ministry of Environment and Natural Resources Protection/ National Environmental Agency

Ministry of Internal Affairs/ Emergency Management Department

Ministry of Labour, Health and Social Affairs

Ministry of Regional Development and Infrastructure

Regional Municipality of Kakheti

International Organization for Migration (IOM)

United Nations Children's Fund (UNICEF)

United Nations Development Program (UNDP)

United Nations Entity for Gender Equality and Empowerment of Women (UN Women)

United Nations Population Fund (UNFPA)

World Bank/GFDRR

World Vision International

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Acronyms and Abbreviations

BBP – Basic Benefits Package

CAT – Computer Adaptive Test

CAT DDO – Catastrophic Deferred Drawdown Option

CCEE – Climate Change and Environmental Education

CRIF – Catastrophic Risk Insurance Facility

DaLA – Damage and Loss Assessment Methodology

DRM – Disaster Risk Management

DRR – Disaster Risk Reduction

ECHO – European Commission Humanitarian Aid and Civil Protection Department

EMD – Emergency Management Department

ERC – Education Resource Centre

GDP – Gross Domestic Product

GEL – Georgian Lari

GFDRR - Global Facility for Disaster Reduction and Recovery

GoG – Government of Georgia

IBRD – International Bank for Reconstruction and Development

IDP – Internally Displaced Person

MIA – Ministry of Internal Affairs

MICS – Multiple Indicator Cluster Survey

MIP – Medical Insurance Program

MIS – Management Information System

MoEP- Ministry of Environment and Natural Resources Protection

MoLHSA – Ministry of Labour, Health and Social Affairs

MRDI – Ministry of Regional Development and Infrastructure

NCDC&PH – National Centre for Disease Control and Public Health

NEA – National Environmental Agency

NERP – National Emergency Response Plan

PFA – Psychological First Aid

PHF – Primary Healthcare Facilities

PIRLS – Progress in International Reading Literacy Study

RD – Road Department

RDA – Rural Development Association

SEEC CRIF – Southern Europe and Caucasus Catastrophe Risk Insurance Facility

SSA – Social Service Agency

TIMSS – Trends in International Mathematics and Science Study

TSA – Targeted Social Assistance

UBP – Universal Benefit Package

UNDP – United Nations Development Program

UNHCR – UN Refugee Agency

VGT – Vaziani-Gombori-Telavi road

WASH – Water, Sanitation and Hygiene

WB – World Bank

Executive Summary

- 1. Severe storms swept through eastern and southern Georgia on July 19th, 2012 badly damaging agricultural lands, homes, and municipal infrastructure, thus affecting 25,000 families.** The storms began in Samtskhe-Javakheti region around midnight with egg-sized hail stones and torrential rains before moving to Mtskheta-Mtianeti Region, arriving in Kakheti at 4 am. The hail and heavy rain (72 mm/day measured in Telavi municipality, Kakheti) was accompanied by strong wind (115 km/h in Telavi) and associated flash floods. While the affected regions are prone to similar meteorological events such as hailstorm, heavy rain, and droughts, the severe storm and flooding of July 19 caused significantly more damage than usual storms.
- 2. This medium-size hazard resulted in a disproportionate socio-economic disaster: about 75,000 people were affected and 202 Million GEL (USD 123 million) ¹ in economic impact.** This is an indicator of the increasing vulnerability to climate-related hazards for public and private assets, in particular for strategic private sector assets such as agriculture and agribusiness. Without undertaking important mitigation actions, the climatic changes occurring in Georgia and across the Caucasus countries may dramatically increase the frequency and risks of such medium-size/high-impact disasters. ²
- 3. Within hours of the disaster, the Georgian Government activated the Emergency Response Mechanism for Kakheti, where almost one-in-six people were affected by the disaster.** On the same day as the disaster the Prime Minister set up an on-site Emergency Coordination Group, comprising of different ministries and local governments. Specialized emergency services at national, regional and local levels were mobilized and began debris removal, emergency repairs and rehabilitation to critical infrastructure such as roads, bridges, electricity, water supply systems, and gas lines. The government also began rapidly repairing and replacing damaged roofs, while distributing food and non-food items to affected families. The other two affected regions, Samtskhe-Javakheti and Mtskheta-Mtianeti, had only one tenth of the affected families compared to Kakheti; and the Governors, local authorities, and community members had the capacity to immediately respond and stabilize the disaster at regional level.
- 4. Following a request from the government, the United Nations and World Bank offices in Georgia agreed to offer support in conducting a Joint Needs Assessment (JNA) for recovery and reconstruction, laying down the key pillars for a resilient recovery, and**

¹ Exchange rate: USD 1 equal to GEL 1.64

² The projections of a World Bank Country report on climate change and agriculture suggest that over the next 38 years, Georgia will experience mean temperature increases (by 3.5°C in West Georgia and 4.1°C in the East), reduced rainfall, increased variability of precipitation, and increased such as likelihood of flooding and length of flooding.

organizing the technical expertise of the international community. The JNA brought together various national assessments undertaken by the government and its partners, with the tools and framework of the quantitative Damage and Losses Assessment methodology (DaLA), qualitative findings from focus group discussions with affected people, and several consultative meetings with individual agencies, representatives of national, regional and municipal authorities and affected communities, as well as extensive field visits. Based on the needs identified through the assessment, globally accepted guiding principles for recovery and reconstruction, and existing programmatic interventions by government and key partners, the JNA team developed a Recovery Framework to guide the development and implementation of a Recovery and Reconstruction program.

5. The economic impact, including physical damage and financial losses, were high: GEL 202.3 Million (USD 123 Million). Losses were three times higher than the damage inflicted and the private sector suffered ten times more financial impact than the public sector. Overall, 18,500 ha of crops were damaged, mainly high value crops (i.e. fruit and vegetables), affecting about 20,000 farmers. In addition to this 5,255 houses and residential buildings also received severe damage, including the apartments of 75 families in Telavi, now internally displaced; 30 schools and kindergartens, affecting 4,442 children; eight Primary Healthcare Facilities, serving around 19,500 people; and water head works, embankments, roads and energy system lines that support municipal infrastructure.

Table 1: Summary of Economic Impact due to the 2012 Severe Storm and Flooding in Georgia (million GEL)

Theme	Sector	Economic Impact			Ownership by Sector	
		Damage	Losses	Total	Public	Private
Productive	Agriculture and Livelihoods	24	129.5	153.5	0	153.5
	Flood Mitigation Structure	8	10	18.0	10.7	7.3
Infrastructure	Housing	18.4	4.05	22.4	2.4	20
	Water and Sanitation	2.1	1.9	4.0	4.0	0
	Transport	1.3	0.8	2.1	2.1	0
	Energy	0	0.3	0.3	0.3	0
Social	Education and sport facilities	1.9	0	1.9	1.9	0
	Health and Social Protection	0.1	0.01	0.1	0.1	0.0
	Total GEL Million	55.7	146.6	202.3	19.4	182.9
	Total USD Million	34.8	91.6	123.3	12.1	114.3

6. The main agricultural impact of the storm in Kakheti, where a total of some 18,500 ha of crops were damaged, mainly comprised high value crops (i.e. fruit and vegetables).

The scale of effect of this was extremely high amounting to fruit and leaves being ripped off permanent crops, and the hail causing extensive damage to trunks, opening wounds thus making them susceptible to fungal infection. Vegetable crops, melons and potatoes (especially in Akhaltsikhe) were also destroyed with some regrowth on grape vines with the exception of peach and nectarine orchards, sustaining long term damage that will require extensive replanting. In total some 20,000 farming households have been affected.

7. **Immediate human needs are met and emergency repairs to homes and infrastructure completed or on-going, led by local government, and supported by the national government.** Food and non-food items for farmers and households have been distributed, roofs for the 5,255 houses and residential buildings repaired with on-going cash compensation. National and international organizations have also supported the relief and recovery operations but with urgent short-term recovery needs needing to be addressed - rehabilitating the water supply system, education and health facilities.

8. **Water service hours cut in half for 40,000 people in Telavi.** The water curfew has restricted in-town residents to receive on average six hours of water per day, and six hours of water every two days for villages thus having an impact on reduced coping costs for affected families. Due to this, the installation of pumps, the purchase of water and containers and long hours spent on productive labour in order to address the problem of water shortage has been required. The main damage was on Telavi water head works when flash floods washed away 650 meters of water main pipes and cutting the water intake of high villages damaging 800 meters of pipe. Despite the completion of some emergency repairs, there is an urgent need (not yet committed) for about GEL 2 Million (USD 1.22 Million), to restore this municipal infrastructure to pre-disaster conditions.

9. **Access to pre-schools and school services there is a risk of more than 4,400 school children, and 19,500 people have limited access to quality healthcare services. Significant damage to the roofs of** thirty schools and kindergartens, including asbestos roof sheets, thus making the re-opening of schools in September difficult. Financial resources is also lacking in affected families in order to cover preschool and school education-related costs, due to their main source of income being completely lost. Finally, eight Primary Healthcare Facilities have experienced considerable roof damage, some of them also with asbestos sheets resulting in some of the equipment, including an electrocardiogram, being completely damaged. Part repair costs, such as kindergartens, are under the municipal budget with an urgent need of 2 million GEL (USD 1.22 Million), not yet committed, to cover all time sensitive activities.

10. **The Recovery Framework outlines a strategy that identifies and prioritizes recovery and reconstruction needs for helping communities *build back better*.** Drawing from the assessment and national development priorities, the Recovery Framework outlines: (1) strategic priorities; (2) key pillars of an effective recovery process; (3) actions by the impacted sector in the short - medium and long-term - that can accelerate recovery; (4) the guiding principle for recovery and reconstruction process and (5) coordination and monitoring arrangements. Actions

that can help foster resilient development (especially in light of the climate change taking place in Georgia) are also identified in each sector and included in an overall recovery and reconstruction plan proposed as a means of achieving resilient recovery. A chapter dedicated to Disaster Risk Management is also included.

11. Support for the agriculture sector in order to accelerate restored income and reducing future losses. The proposed package for recovery and restoration in agriculture provides for private goods and comprises of: i) cash compensation linked to the level of damage, together with a 12 month interest holiday farming loans (these interventions have been proposed by the government); ii) packages of technology and training that aim to generate income through the introduction of short term crops, helping the permanent, speedy recovery to crops from hail damage; and, iii) restore farming households' productive, assets through rehabilitation and the re-plantation of vines, peaches and nectarines. In the longer term, proposed actions in agriculture will stress competitiveness (principally through the professionalization of agriculture) and actions aimed at building resilience (notably irrigation and insurance mechanism).

12. An opportunity to change the paradigm of continuing risk. The country has an opportunity to move from a reactive approach of disaster management to a more proactive disaster risk management. It also allows the opportunity to focus not only into the disaster itself but into the development of the country. In this sense, the activities should be prioritized in all sectors in reducing the existing risks avoiding the creation of new risks, and activities to improve the response against disasters.

13. Strengthen a Comprehensive Disaster Risk Management system. In the short-term, mainstream disaster risk reduction and climate change adaptation will be within the framework of the Kakheti Regional Development Strategy³. The strategy should incorporate aspects of i) risk identification and hazard monitoring; ii) risk reduction, both structural and non-structural; iii) risk awareness and preparedness; iv) risk financing mechanisms; and v) resilient reconstruction.

14. Elaborate a strategy for Disaster Risk Financing, including contingency funding and risk transfer. While relief and recovery operations are unplanned expenses, it is still possible to elaborate contingency mechanism at regional, national, or international level (i.e. WB CAT DDO), the catastrophic deferred drawdown option, is a contingent credit line that provides immediate liquidity to WB IBRD member countries in the aftermath of a natural disaster⁴). Most of the risk can be mitigated, few can be retained, and some transferred, using an insurance mechanism. By providing a solid insurance mechanism, such as CRIF (Catastrophic Risk

³ under preparation by Regional Authorities, supported by the Ministry of Regional Development and Infrastructure and GiZ

⁴ The CAT-DDO is a financial instrument that offers IBRD-eligible countries immediate liquidity of up to \$500 million, or 0.25% of GDP (whichever is less) in case of a natural disaster. The instrument was designed by the World Bank to provide affected countries with bridge financing while other sources of funding are mobilized.

Insurance Facility⁵), farmers, homeowners, private sectors, and government agencies can access reliable products and transfer some of the risks related to hydro-meteorological and geological hazards.

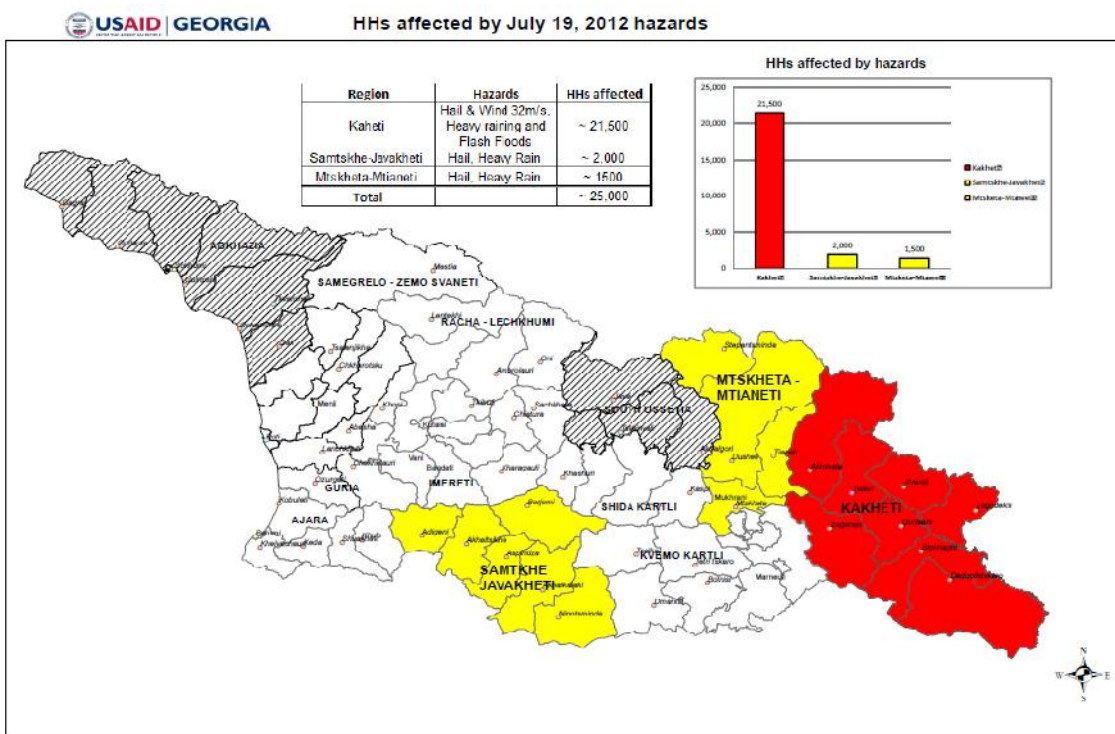
15. Protect people and assets by investing in Mitigation: an opportunity. International experience shows that for each dollar spent in mitigation, the average benefit is four dollars. Some crucial structural mitigation opportunities are: i) developing a Flood Risk Management Investment Plan, including flood control system, risk-based model, prioritization of flood mitigation infrastructure and environment protection; ii) undertaking a strategic mitigation plan for critical infrastructure, such as schools, hospitals and key public buildings and infrastructure, including a vulnerability assessment and an implementation plan for retrofitting or rehabilitating critical infrastructure, based on risk exposures and strategic functionality.

⁵ The Southeastern Europe and Caucasus Catastrophe Risk Insurance Facility (SEEC CRIF) increase access of homeowners, farmers, the enterprise sector, and government agencies to reliable financial protection from losses caused by climate change and geological hazards. The SEEC CRIF now has 3 country members and two more are in the process of joining the facility (e.g. Albania, Serbia, Macedonia - members; and BiH and Montenegro are in the accession process).

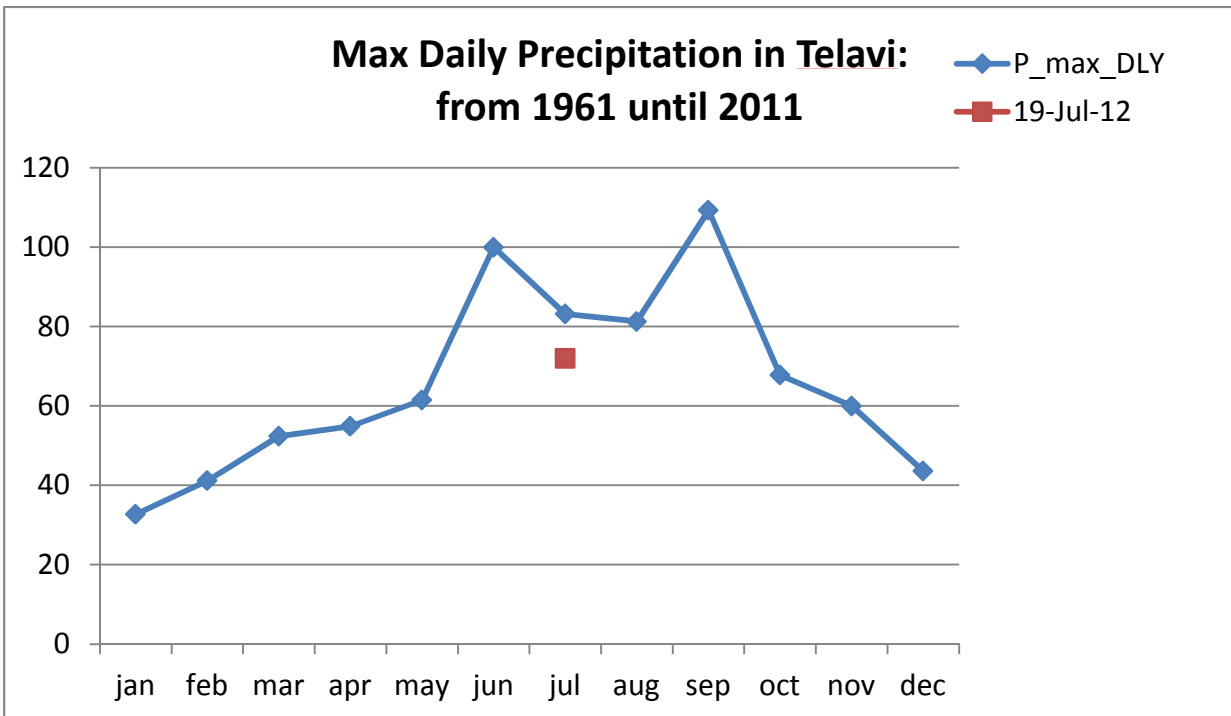
Section I – The Disaster

The event

16. Severe storms swept through eastern and southern Georgia on July 19th, 2012 badly damaging the homes and agricultural lands of over 25,000 households. The storms began in Samtskhe-Javakheti region around midnight with egg-sized hail and torrential rains, later moving to Mtskheta-Mtianeti Region and by the time the storm arrived in the Kakheti at 4 am, hail and rain were accompanied by wind gusts of 32 m/s (115 km/hr.)⁶, flash flooding and rock flows. While the affected regions are highly vulnerable to natural disasters, such as flash floods, droughts, hailstorm, strong wind and earthquakes - the severe storms and flooding of July 19th, caused significantly more damaging than usual storms.



⁶ National Environmental Agency, Hydro meteorological Department, Khatuna Kokosadze, Aug 9, 2012



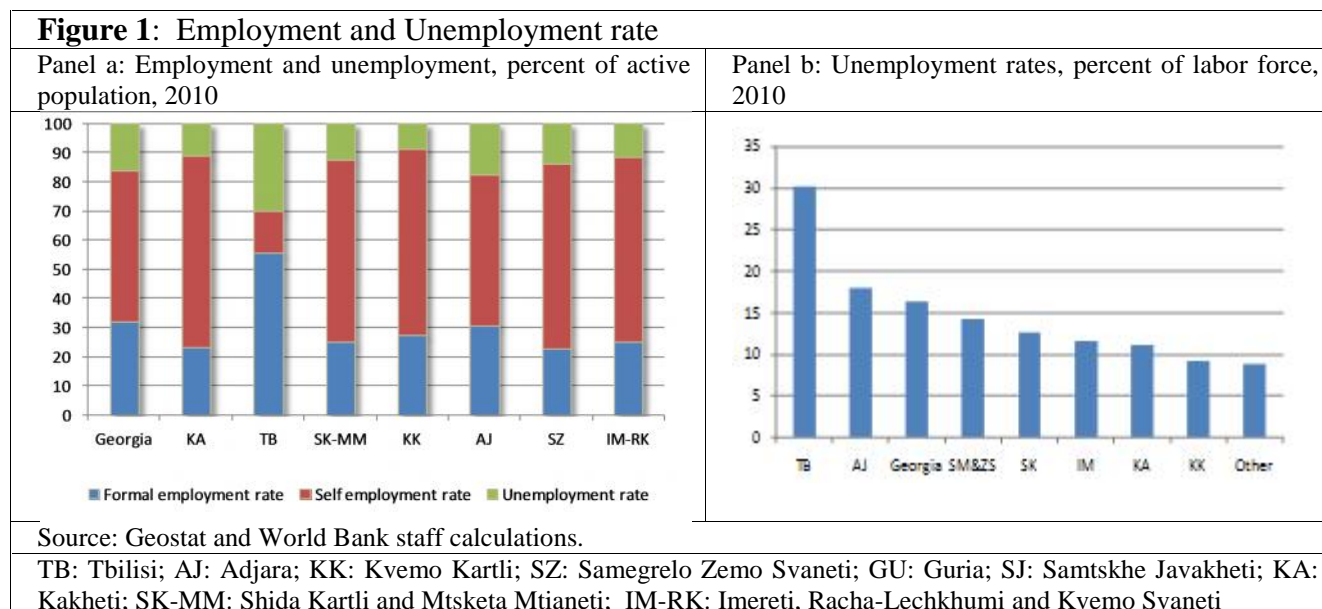
17. This medium-size disaster resulted in relatively high impacts to houses and infrastructure, presenting the government and its partners with both a warning and opportunity. The climate change occurring in Georgia and across the Caucasus countries, in general, may increase the frequency of these types of disasters. When coupled with the prevalence of out of date housing materials and soviet-era infrastructure not built with disaster risk reduction measures, many communities will become increasingly vulnerable to climate related disasters, in addition to the seismic risks already faced.

18. The data provided by the Ministry of Environment Protection is very limited due to the restrictions in the number of equipment they presently have. However historical records show storms, often known as severe storms, occurring about 136 times, consisting of hail - 126 times in flash floods and 45 times in strong winds in the last 15 years. On the scale of damage this type of storms is considered as a once in a 10 year storm (see Annex 8).

Socio economic background of affected regions and % of Households at or below the poverty line

19. The employment composition is also quite striking in Kakheti, Shida Kartli – Mtskheta Mtianeti with less than 25 percent of the adult population being employed in the formal sector. The rest are self-employed individuals (more than 40 percent), mostly concentrated in the agricultural sector, retail trade and other small scale services. The stock of land has been divided into small plots, which provides low-productive occupations. In saying this, all in all, Kakheti

has the highest employment rate in the country (Figure 1: panel a. and b.), but highly unproductive. Georgia as a whole has a much smaller number of self-employed, but quotes higher rates of unemployment than Kakheti.

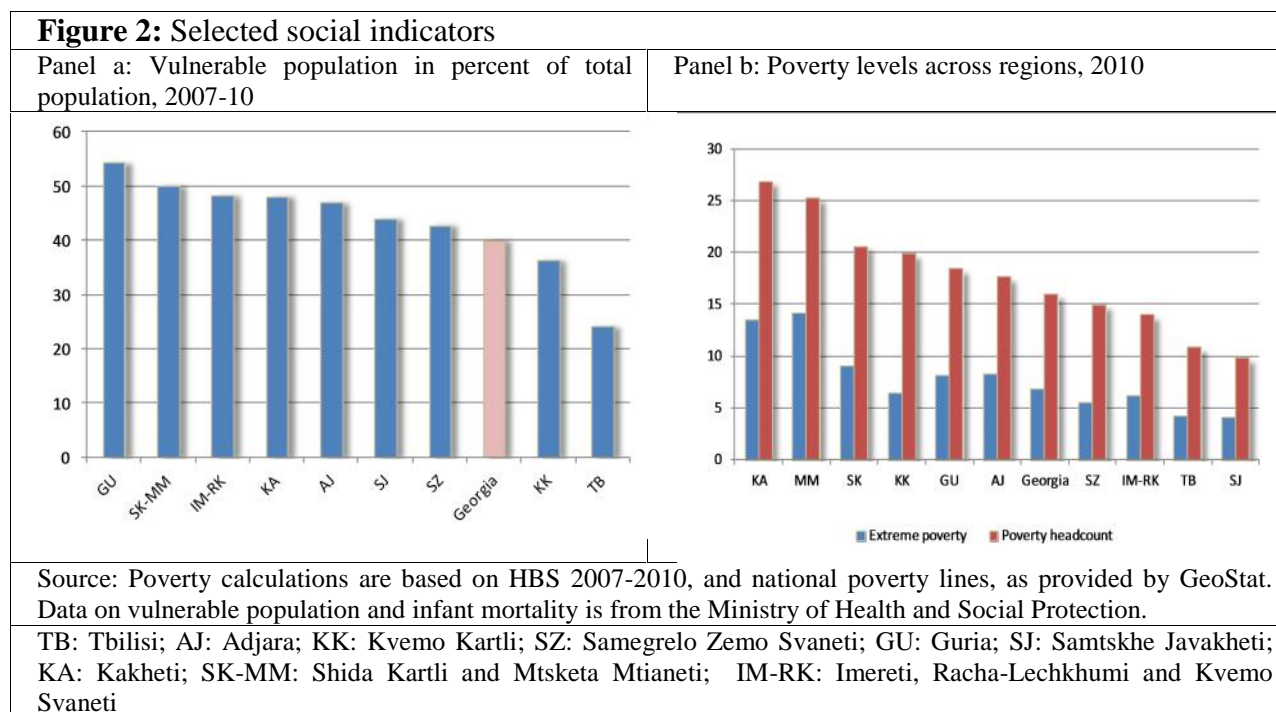


20. Regional disparities in poverty rates are consistent with income and consumption aggregates. For the country as a whole, rural poverty rates (24.3 percent) are relatively higher than urban poverty rates (17.6 percent), with the trend towards narrowing this gap interrupted by the crisis. By regions, poverty is the highest in Kakheti, Shida-Kartli and Mtskheta-Mtianeti, and it is the lowest in Tbilisi and Samtskhe Javakheti (Figure 2: panel b). While income inequality measures have not been calculated by regions, it is clear that (income) inequality in Tbilisi is known to be much higher than in the rest of the regions.

21. Social programs have played an important role in smoothing out structural (e.g. population) and cyclical factors thus affecting living conditions across regions with the proportion of a vulnerable population accounting for 40 percent of the country's total population - broadly defined to include citizens who receive pensions, apply for targeted social assistance for the poorest households (TSA) and recipients of the state-financed medical insurance plan for the poor (MIP). Pensioners represent the bulk of the vulnerable population (20 percent of the total population), followed by MIP and TSA recipients (roughly 20 and 10 percent respectively).⁷ Kakheti, Shida Kartli and Mtskheta Mtianeti and Samtskhe Javakheti have more proportion of a vulnerable population than average (Figure 2: panel a). Social transfers might also explain why a region such as Samtskhe-Javakheti consumes, on average, more than their

⁷ Because of overlaps (a pensioner can be a TSA recipient), the total vulnerable population is less than the sum of the beneficiaries under each program.

income. More generally, regions with a significant proportion of this vulnerable population tend to be placed in the middle of the scale of the regional distribution of poverty.



Regional Impacts

Kakheti

22. In Kakheti, the impact of the severe storms and flooding was 10 times greater than in the other two regions with the most affected municipalities in Kakheti are Telavi, Gurjaani, Kvareli and Lagodekhi municipalities. The storm affected 14 settlements in Telavi, 10 settlements in Gurjaani, 6 settlements in Kvareli and 5 settlements in Lagodekhi.

23. According to the National Environmental Agency of the Ministry of Environment Protection, precipitation data for July 19th in Telavi, the capital of Kakheti, were 72 mm during the entire day. Nonetheless, the hail and rains, combined with strong winds and flash flooding, resulted in damage to 3187 private houses and 101 multi storey buildings, educational facilities, the water supply system, electricity lines, gas supply, bridges, roads and water mains. A total of 17,710 households of arable lands were affected by the disaster. As of July 2012, the Governor's office estimated that 13,075 farming households had crops highly damaged, 2,728 farming households suffered medium crop damage, and another 1,907 farming households suffered little

crop damage. The major crops impacted include vineyards, peach and nectarine orchards, watermelon, and other fruit.⁸

Samtskhe-Javakheti region

24. In Samtskhe-Javakheti the impacted municipalities include: Akhaltsikhe, Adigeni and Vale with the storm affecting 19 settlements in Akhaltsikhe. In comparison with Telavi municipalities, where a majority of damage was caused by wind and hailstorm in Akhaltsikhe, large-sized hail was the major source of damage to houses and crops. Over 200 houses were severely damaged, and more than 1,500 had moderate damage. The hailstorm also destroyed 750 ha of arable land.⁹

Mtskheta-Mtianeti

25. In Mtskheta-Mtianeti Region impacted municipalities were: Tianeti and Dusheti. The storm affected 5 settlements Tianeti (Nakalakari, Sioni, Khevsuretsopeli, Simonaantkhevi and Gulelebi), and 1 settlement in Dusheti (Bulachauri village).

Immediate Response

Government Response at the Regional and national Level: Overview of Government Response and Relief operations

26. In response to this disaster, the Georgian Government declared Kakheti a Level 2 emergency as the level of damage caused by the disaster required national government and its assets to aid in the response operations and implement emergency measures. The other two affected regions, Samtskhe-Javakheti and Mtskheta-Mtianeti, only required a Level-1 response, which meant that the Governors, local authorities, and community members had the capacity to address the impacts of the disaster.

27. On the same day of the disaster, the President ordered to set up an on-site Emergency Coordination Group chaired by the Prime Minister comprising of different ministries, including the Ministry of Internal Affairs, the Ministry of Finance, the Ministry of Defence, the Ministry of Regional Development and Infrastructure, and other line ministries. The Emergency

⁸ Estimates according to Regional Governor and disseminated through GRCS on 31 July and SitRep - Rapid Needs Assessment Report of Care International and Rural Development Association.

⁹ (Kakheti SitRep 3)

Coordination Group coordinated a national emergency relief response. The Prime Minister also tasked each ministry to identify relief needs in Kakheti and mobilize resources to implement the work. Specialized emergency services of national, regional and local levels were mobilized and began debris removal, emergency repairs and rehabilitation to critical infrastructure such as roads, bridges, electricity supply systems, and gas lines. The government also began rapidly repairing and replacing damaged roofs. This effort was reinforced by more than 1,000 reservists and members of the Georgian military's engineering battalion, using the Ministry of Defence's military machinery, as well as the cleaning services of Tbilisi Municipality. Spontaneous volunteers from different regions of Georgia also joined the cleaning and emergency repair missions¹⁰. The President also appointed a Special Envoy to Kakheti to ensure that immediate effects of the disaster would be remedied. Due to these efforts, within days of the disaster, approximately 5,255 roofs were repaired and critical infrastructure was operable.

28. Even while emergency repairs to homes and critical infrastructure were underway throughout the impacted regions, the government began planning for the recovery and reconstruction of impacted communities. On July 26th, the Ministry of Finance formally requested that the United Nations, the World Bank, along with other international partners, offer support to the government through conducting a joint assessment of the impacts of the disaster and related recovery and reconstruction requirements. On August 7th, the joint disaster assessment team met in Tbilisi, Georgia and commenced the Georgia Severe Storms and Flooding Joint Assessment. The joint assessment team was composed of government officials, international agencies, and international NGOs. During the following two weeks, the joint assessment team contributed to field assessments, stakeholder interviews, focus groups, and data collection in order to analyse the damages, losses, recovery needs, priority actions (over the short and medium/long term), and disaster risk reduction strategies that should be taken to support resilient recovery of impacted communities. This report contains the final conclusions and recommendations from the Severe Storms and Flooding Joint Assessment.

Overview of Government Assistance Package

29. Immediate Relief and Response (days) roofing repairs conducted and/or materials provided to communities (complete)

- Food packages distributed, e.g. cooking oil, pasta, rice, beans (complete)

¹⁰ Kakheti Situation Report 3

- Cash Compensation to affected households (complete), more than **24,616,000 GEL, USD \$15.3 Million**
- Fungicides distributed to farm owners to stabilize damaged crops (complete)
- Health care costs waived for disaster-related injuries and illnesses (on-going)

Recovery (Days to Months)

- Social Support Assistance (SSA) for requesting families who were made vulnerable due to the disaster (on-going)
- Agricultural Loans interest payments postponed for 1 year (under discussion)
- Waiver on school fees for 1 year (under discussion)

National and International Response

30. Immediate Relief and Response (days)

- ECHO: the European Union provides over €18,000 to help families, channelled through the Georgian Red Cross Society
- UNHCR provided relief items to about 300 persons in Telavi
- USAID, CARE, World Vision and RDA conducted rapid assessments and focus group interviews
- World Bank provided USD 50,000 to repair IDP housing
- UNDP has allocated US\$100,000 as a part of its Emergency Response for Early and longer-term recovery efforts

Section II: Estimate of Damages and Losses, and Human Development Impact

The Objectives of the Joint Assessment

31. Following the request for assistance from the government, the United Nations and the World Bank offices in Georgia agreed on jointly conducting a comprehensive assessment, led by the government, supported by several partners, including the Global Facility for Disaster Reduction and Recovery (GFDRR). The Joint Needs Assessment (JNA) aimed to answer the following questions:

- What is the socio-economic impact of the heavy rain, hail storm, strong wind and associated flash floods?
- What are the medium-to long term recovery and reconstruction recommendations and needs?
- In the medium and long term, how can the risk of future floods and other hazards be reduced and how can their impact be mitigated through mainstreaming disaster risk reduction?
- What is the guiding framework for the recovery and reconstruction process?

32. In particular, the main objectives were to:

- Determine the socio-economic impact of the disaster including the valuation of damages and losses, including identify the damages and losses and their costs on physical structures, disruption of essential public services and alteration of community processes, in the public and private sector;
- Identify recovery and reconstruction needs per sector, including the costing in the medium and long term (time definition changes per sector, indicatively medium term will be 0 -12 months, long term will be 0-3/5 years);
- Provide inputs to the government in mainstreaming disaster risk reduction in different sectors by reducing vulnerabilities and exposures and mitigating potential impacts; and
- Provide inputs to the government for preparing a Recovery Framework through a consultative process that results in (1) strategic prioritization of needs within and between sectors (2) the sequencing of needs, by geography (regions, towns, etc.), and by time (short, medium, and long-term interventions); (3) the programming of needs, by ascertaining the timeframe for implementation, responsible ministries, indicators for

success (4) ensuring that DRR and other cross cutting issues are addressed within each sector's and overall needs (5) an overall recovery and reconstruction plan

33. Wherever possible, all the data and analysis were divided per geographical and group in relation to people distributions, including gender analysis, in order to better target recovery and reconstruction operations. The geographical coverage of the JNA focused on the areas affected by the July 19, 2012 severe storm and floods, in particular: Kakheti (Telavi, Sagarejo, Akhmeta, Lagodekhi municipalities); the Mtskheta-Mtianeti region and Samtskhe-Javakheti (Akhalsikhe, Aspindza, Ninotsminda, Akhalkalaki municipalities).

Methodology

34. The JNA brought together various national assessments undertaken by: the government and its partners; the tools and framework of the quantitative Damage and Losses Assessment methodology (DaLA); qualitative findings from focus group discussions with affected people and several consultative meetings with individual agencies, representatives of national, regional and municipal authorities and affected communities, as well as extensive field visits. Based on the needs identified throughout the assessment, globally accepted guiding principles for recovery and reconstruction and existing programmatic interventions by government and key partners, a Recovery Framework was developed in order to guide the development and implementation of a Recovery and Reconstruction program.

35. The sectors assessed are: Agriculture and livelihood, Flood Mitigation Structure, Housing, Water Supply and Sanitation, Transport and Energy, Education and Sport Facilities, Health and Social Protection. In addition, cross-cutting issues were incorporated in the Recovery Framework for most of the sectors: Disaster Risk Reduction and Climate Change along with Gender and Vulnerable People. Due to the relative small impact at a national level and the government request, the team has not undertaken a macro-economic analysis, since the forecasted impact on GDP would have been negligible.

Summary of Damage and Losses and Sectoral overview, and Human Development Impact

36. The economic impact, including physical damage and financial loss, was significantly high, amounting to 202.3 Million GEL (USD 123 Million). Losses were three times higher than the damage with the private sector suffering ten times more economic impact than the public sector. Overall, 18,500 ha of crops were damaged, mainly high value crops (i.e. fruit and vegetables), affecting about 20,000 farmers. Severe damage also occurred to 5,255 houses and residential buildings, including the apartments of 75 families in Telavi who were previously

internally displaced people; 30 schools and kindergartens, affecting 4,442 children; eight Primary Healthcare Facilities, serving around 19,500 people; and, water head work, embankments, roads and energy system lines that support municipal infrastructure.

Table 1: Summary of Economic Impact due to the 2012 Severe Storm and Flooding in Georgia (million GEL)

Sector	Subsector	Economic Impact			Ownership by Sector	
		Damage	Losses	Total	Public	Private
Productive	Agriculture and Livelihoods	24	129.5	153.5	0	153.5
	Flood Mitigation Structure	8	10	18.0	10.7	7.3
Infrastructure	Housing	18.4	4.05	22.4	2.4	20
	Water and Sanitation	2.1	1.9	4.0	4.0	0
	Transport	1.3	0.8	2.1	2.1	0
	Energy	0	0.3	0.3	0.3	0
Social	Education and sport facilities	1.9	0	1.9	1.9	0
	Health and Social Protection	0.1	0.01	0.1	0.1	0.0
Total GEL Million		55.7	146.6	202.3	19.4	182.9
Total USD Million		34.8	91.6	126.4	12.1	114.3

Figure 3 Economic Impacts due to the 2012 Severe Storm and Flooding in Georgia (Million GEL)

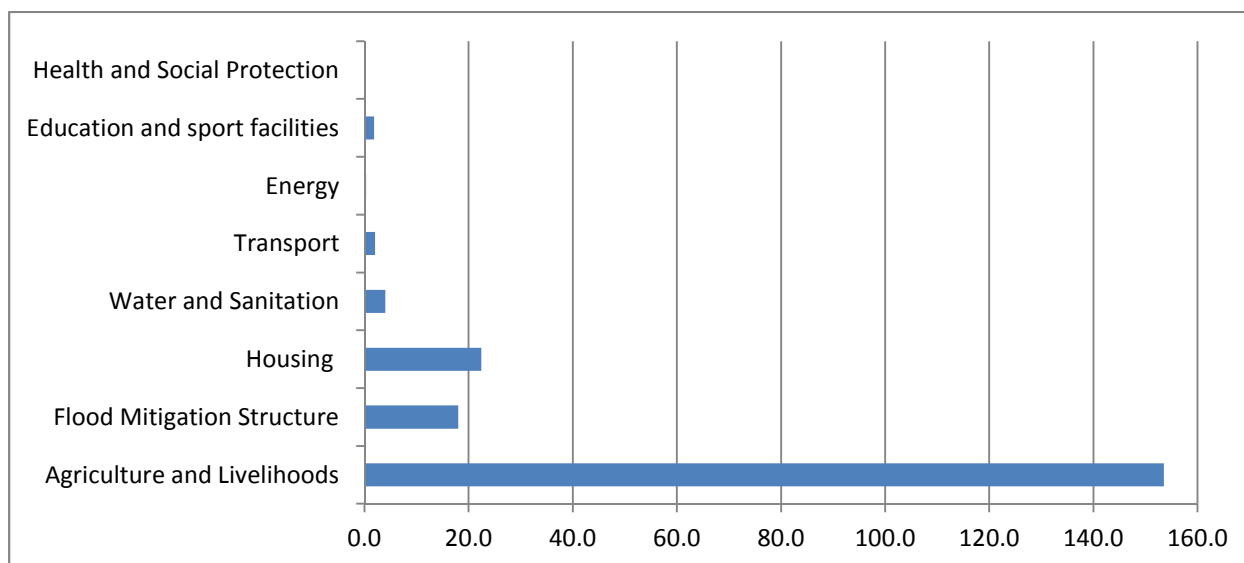


Figure 4: Economic Impact due to the 2012 Severe Storm and Flooding in Georgia (percent)

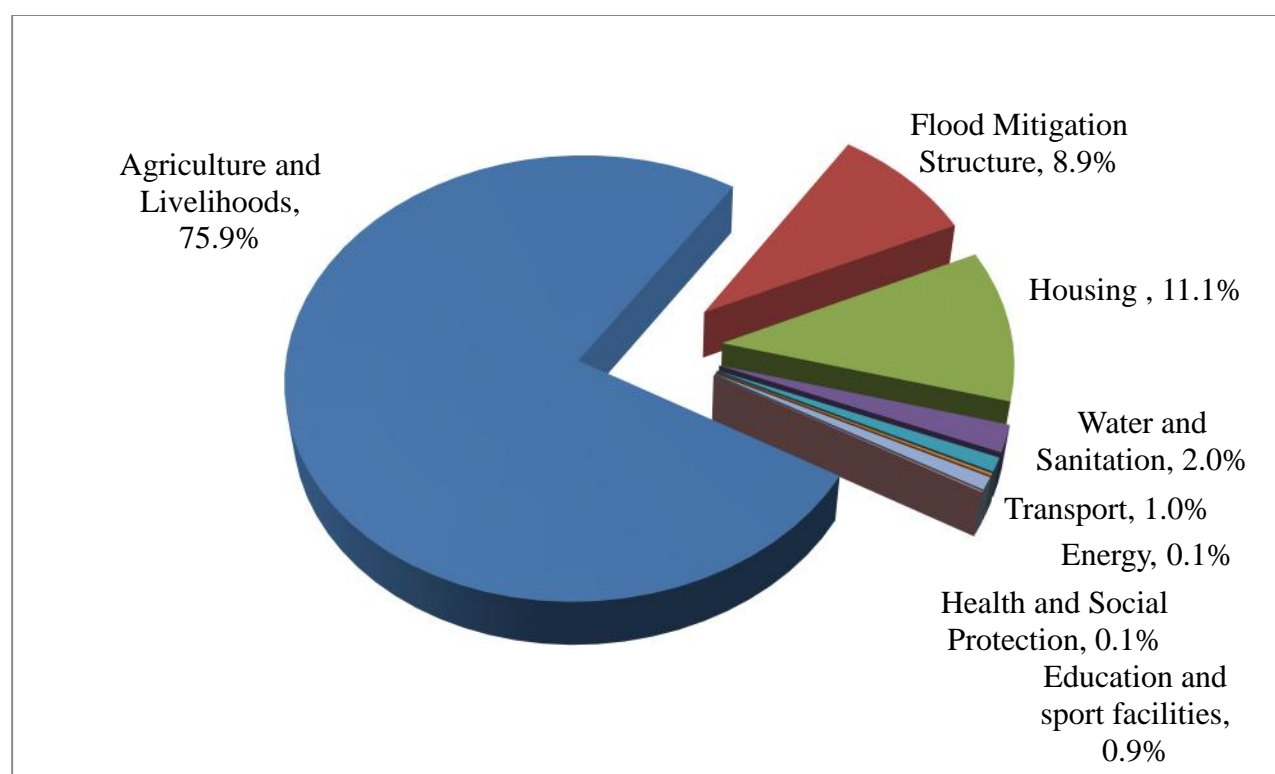
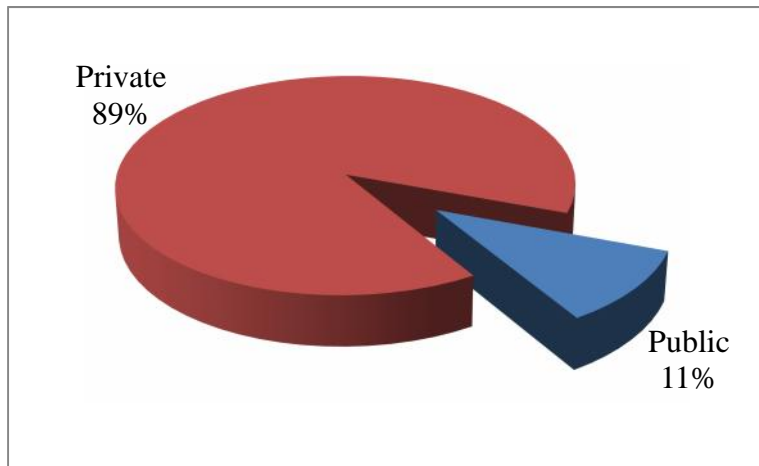


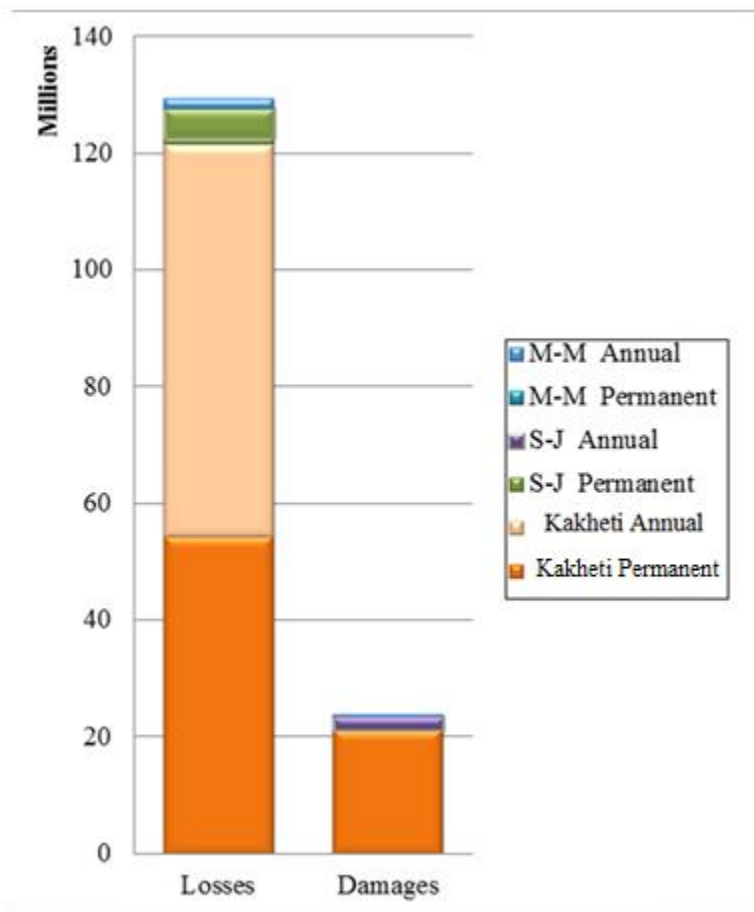
Figure 5: Distribution of the economic impact by ownership (public or private)



37. For the agriculture sector, the losses estimated is GEL 129.4 million (USD 78.4 million). By far the majority of these losses were incurred in Kakheti (around 94%) with the split between permanent and annual crops being 53:47. These figures are based on local government estimates of hectares affected, net return, plus sunk variable costs up to the point of the hail damage. This data has been checked against figures generated by CARE, USAID and others.

38. The total level of damage is estimated to be 24 million GEL (USD 14.5 million) with the majority of which costs relate to replanting the estimated 60% of the areas of damaged peaches amounting to GEL 16.4 million. This also includes replanting 5% of the most-damaged grapes and replacement of lost potato seed (GEL 2.8 million). All this combined, the storm will have adversely affected the Georgia farming sector by some GEL 153.5 million (USD 93 million).

Figure 6: Estimates of Losses and Damages by Region and Annual and Permanent Crops (M-M: Mtskheta-Mtianeti region; S-J: The Samtskhe-Javakheti region)



39. Given that all flood infrastructures has been constructed decades ago and maintenance of the river has lacked upkeep, rocks and sediment have blocked the river thus significantly reducing its capacity. Flash floods have overflown the river banks due to high flood peaks thus creating serious damage to river protection work (levee's, bank protection-revetments and gabions). The floods have also damaged homes in the flood plain, farmland and city structures.

40. The number of damaged houses totals to 5,039 houses with the total number of damaged multi storey buildings being 216 residential buildings. The total damage and losses for the sector is 22.43 million GEL and the largest impact of storm on housing is reported from 35 settlements in Kakheti. About 3,187 private houses and 101 multi-story buildings were damaged, of which about 801 houses roofed with ceramic tiles were damaged. In Samtskhe-Javakheti region, about 1,836 houses 115 multi storey buildings were spoiled, of which 200 houses were severely damaged. In the Mtskheta-Mtianeti region, about 16 houses were severely damaged in Tianeti. Most severe damages occurred to roofs, including gutters, which were either blown away due to the strong wind,

41. Additionally, 75 IDP families living in Telavi (100 persons) in two communities experienced damages. The roofs of their four multi storey buildings as well as inner living spaces were severely damaged.

42. Damage and losses in the water supply and sanitation sector in Telavi can be considered as severe and relatively less in villages considering the pre-disaster poorly developed infrastructure. The biggest damage occurred to the water head work (intake) system in Telavi as well as the water main supply pipe to city. After approximately one month from the event, service with water in Telavi was limited to only 5-7 hours/day, resulting in a sharp increase in residents and business coping cost (losses). The total damage and losses for the water supply and sanitation amounts to 4.04 million GEL.

43. Flood impact on the road network in Kakheti could be classified as moderate with no notable damage to the main road network and the VGT road (which is the most susceptible to high precipitation due to active landslides). Severe impact from the heavy rain and respective floods has not been suffered. In saying this, some slope slippage and increased rock-falls has occurred along the road. No accounts of new land-slide or acceleration of slippage of the existing landslides have been noted although some local and non-paved access roads have suffered from the rapid increase of the runoff. In a few places culverts have failed to cope with the increased runoff thus resulting in blockage, causing failure of the embankments. Despite being within moderate classification, the flood has necessitated additional river embankment protection measures with further measures being required to prevent further damage to the roads and contain losses caused by eroded embankments. In addition, as part of our response, damaged culverts need to be cleared and/or replaced. The total damage and losses assessed for this was 2.1 million GEL.

44. In affected areas, the majority of the pre-school and school facilities were affected. More specifically 17 out of 39 kindergartens were affected more significantly with 1,232 children of pre-school age; out of 39 schools 13 were damaged with 3,210 children of school age under the risk of being not able to start the new school year. In addition to that, vocational training centre and University of Telavi (1,800 students) were affected by the disaster. Sports facilities in Telavi were also damaged by the disaster with significant levels of impairments. In total, the damage and loss to the education sector amounts at 1.86 million GEL.

45. Damage and losses to the physical infrastructure of the health sector is limited to 8 PHC facilities with a variety of damages. All PHC facilities are covered by asbestos roofing materials which are in immediate need of demolition. Roofing materials containing asbestos in good condition generally do not pose serious health risks (e.g. cancer, mesothelioma). However, where damage or deterioration applies, harmful asbestos fibres are released into the air thus affecting building occupants. Only two PHC facilities out of 8 are equipped adequately with basic equipment, such as ECG, with one being damaged; patient files have also been destroyed in some PHC centres. The total damage and loss to the health sector amounts to 0.15 million GEL.

Section III: Recovery and Reconstruction Framework

Introduction

46. This section presents the requirements for recovery and reconstruction that will restore the livelihoods of affected individuals and households, as well as the economic output of the affected areas to pre-disaster levels, including rehabilitating farms, rebuilding damaged infrastructure and restoring services. Recovery and reconstruction takes into account the principle of “building back better,” ensuring damaged assets will be rebuilt in a way that reduces risks to future disasters and the impacts of climate change.

47. The impact of disasters can create set-backs to a country and community’s long-term development trajectory, but can also present opportunities to address difficult, long-standing development issues. While the impact of the severe storms and flooding was localized, there is a general awareness of the risks associated with natural disasters and climatic changes occurring in Georgia that must be taken into account as part of overall poverty reduction and economic growth.

48. The Recovery Framework establishes a strategy that identifies and prioritizes recovery and reconstruction needs for helping communities build back better. The Recovery Framework draws from the government’s existing guidance documents to outline (1) strategic priorities (2) key pillars of an effective recovery process, (3) actions by impacted sector in the short, medium and long-term that can accelerate recovery, (4) guiding principle for recovery and reconstruction process, and (5) coordination and monitoring arrangements. Actions that can help foster resilient development (especially in light of the climatic changes taking places in Georgia) are also identified in each sector and included in an overall recovery and reconstruction plan proposed as a means for achieving resilient recovery.

49. Georgia is committed to becoming a “successful, prosperous and united Georgia where every citizen will enjoy a decent living environment and will be provided with the opportunities to become a successful and prosperous member of the global community.”¹¹ The impacts of the July 19th storms and flooding have the potential to slow the pace of progress towards realizing this vision in disaster-affected regions. In particular, Kakheti should coordinate with targeted recovery and reconstruction action not being taken. However, past strategic planning and programming efforts have equipped the government with sector-specific plans for achieving this

¹¹ Strategic “10-Point Plan” of the Georgian Government for Modernization and Employment 2011-15, p. 1

vision.¹² By responding to the recovery-needs generated by this disaster, the government and its partners can accelerate progress towards current development goals, and by taking risk reduction and climate change into account, ensuring the resilience of development gains.

Recovery and Reconstruction Strategy

50. Rising to the challenge of implementing a coherent recovery and reconstruction strategy will facilitate modernization of the impacted regions, with improved living conditions for the population. As the storm was not an especially unusual event, these types of such event will recur if adequate measures are not taken in reducing risk. In addition to structural mitigation measures being in place, reducing disaster impacts in the future requires attention to important aspects of governance, such as land use planning, housing, water management, environmental protection, and disaster risk reduction.

Strategic Priorities

51. An effective, results-oriented recovery and reconstruction program is required to address the needs of those most affected by the July 19th severe storms and flooding. The preparation of a recovery and reconstruction program should be guided by a strategy that focuses on accelerating progress towards the government's strategic priorities, which are a high growth economy with more and higher paid jobs and improving the social status of citizens.¹³ Within these strategic parameters, five pillars are proposed to guide the development and prioritization of short, medium and long-term recovery actions that can help foster resilient development and minimize the threat of long-term development setbacks due to natural disasters.

52. The pillars include:

- Maximizing on opportunity when implementing disaster recovery plans in order to create a more resilient agriculture sector capable of stimulating modernization and competitiveness
- Ensuring disaster affected children and youth have continued access to high quality education, including learning materials and safe educational infrastructure.

¹² See Strategic "10-Point Plan" of the government for Modernization and Employment 2011-15, Millennium Development Goals, United Georgia without Poverty, and sector-specific plans. Measures Related to the Strategy of Agriculture, Development 2012-2022, etc.

¹³ (1) Creating more and higher paid jobs, since employment and the return to a high-growth economy is the primary concern of both economic and social policy; (2) Improving the social status of our citizens (among others through improvements of healthcare and social assistance systems).

- Guaranteeing disaster affected vulnerable groups, IDPs and women in particular, are protected and measures needed for their full recovery are in place
- Providing accessible, high quality, modernized, and affordable healthcare and social services to all impacted by the disaster
- Revitalizing the municipal infrastructure to support economic growth and living conditions
- The effective use of natural resources and protection of the natural environment of Georgia, thus minimizing a risk of natural catastrophes when possible

Pillar 1 - Turn the disaster into an opportunity to create a more resilient agriculture sector capable of stimulating the modernization and competitiveness.

53. Agriculture and Livelihoods: the most heavily impacted sector of the economy was agriculture, with over 20,000 small farmers impacted by the disaster. Some farmers will want to replant nectarines and peaches, while others may want to shift to annual crops that are less risky investments. These types of changes create space for changes in the agriculture sector, and can be used to stimulate modernization and commercialization of farming, and in turn, the competitiveness of Georgian agriculture.

Priority Actions

54. In the short-term, compensation packages provided to affected farms can encourage the emergence of commercial farmers who want to invest and expand with modern technology and improved techniques. The current deficit of seedlings for replanting damaged crops is also an incentive for rapidly establishing nurseries and demonstration/education centres where high-yield and high-efficiency species can be presented with modern technology demonstrated and used. Efforts to accelerate the modernization and commercialization of the agricultural sector will need to be accompanied by training and extension support in vine, peach and nectarine rehabilitation, crop insurance and diversification. (Annex 1 provides policy and implementation options for addressing short-term recovery needs.)

55. In the medium and long-term, the risks to a vibrant agriculture sector should be examined and addressed through a Risk Assessment and Management plan. Already, it is imperative to rehabilitate and/or establish irrigation, flood control, and drainage systems to support farm productivity and efficiency and strengthen resilience to climatic shocks. The current situation, in which there is an uneven understanding and adoption of crop insurance by farmers (with many farmers sceptical about affordability and the likelihood that insurers will actually pay out in the event of loss) should also be addressed by improving awareness and access to affordable and

reliable insurance mechanisms that can help farmers more predictably confront the impact of extreme weather events on their livelihoods.

Pillar 2 - Ensure disaster affected children and youth have continued access to high quality education, including learning materials and safe educational infrastructure.

56. Education: The Georgian Government is committed to providing high-quality and safe education infrastructure¹⁴ for its youth by rapidly rehabilitating schools being a top recovery priority, especially with the new academic year beginning in September. Seventeen kindergartens and 13 schools, including their roofs, classroom facilities, and in some cases, playgrounds and sports facilities were badly damaged by severe storms thus placing 4,442 children at risk of not being able to start kindergarten and schools on time, notably in a safe and secure learning environment. In addition, safely removing and disposing of damaged asbestos roofing materials that have contaminated school grounds is imperative for schools to become operational. Since 2005, the responsibility for rehabilitating and managing schools rests with two different authorities: Municipal Government is responsible for kindergartens and pre-school, and the Ministry of Education and Science for all other schools. This has implications for the speed of the recovery process, as Municipal Governments often have fewer financial resources and management capacity, and have pressure to allocate local funds to other standing priorities such as housing, infrastructure and agriculture. Presently, the Ministry of Education is rapidly renovating schools, and should achieve this short term goal of re-opening schools; however, the timeline for completing renovations to kindergartens and pre-schools is less clear, while the need is urgent.

57. Before the disaster, kindergarten enrolments in Kakheti were already 20% below the national average, due to rural areas lacking access to nearby facilities. For 70-80% of the local population, affordability of pre-school (kindergarten), primary and secondary education is a major challenge, as expenditure on books, clothes and tuition fees is required during a period in which families are trying to recover their livelihoods. The decreased access to nearby schools, combined with financial strains on families, may result in fewer children attending kindergartens/pre-schools, which can have an impact on both on long-term educational outcomes, as well as the ability of mothers (primary care givers) to work outside the household and earn additional income during a time of financial stress for the family.

¹⁴ United Georgia without Poverty

Priority Actions

58. In the short-term, rehabilitating affected schools, repairing roofs and windows, and safely disposing of asbestos roofing material is the most urgent priority, which should be completed in the next three months for an estimated cost approximately 1.8 million GEL. While the Ministry of Education is on track to meet this goal, Municipal Governments need additional financial and institutional support to rehabilitate damaged kindergartens in order to make them safe for children and open on time.

59. The affordability of school during a time of recovery must also be addressed. Affected and disadvantaged families in the regions should ideally be exempt from payment of their children's pre-school education for the coming year. This should be implementing order in reducing disparities, promote equity amongst the young children, and enhance learning and development so that children are ready for further schooling. For secondary education, tuition is free, in spite of the cost of purchasing textbooks and other school-related materials proving a barrier to families sending children to school. Therefore, it is suggested that the government provide affected and disadvantaged students with financial support necessary to obtain items required for school. For higher education, the government is exploring waiving school fees for one year for disaster affected students.

60. There is also a lack in essential learning materials (at levels pre-school to university) that must also be replaced prior to school beginning, e.g. textbooks, recreational supplies, desks, chairs, and bookcases. The source of financing and procurement for these essential learning materials is currently unclear, although it must be addressed in order to provide children with quality education.

61. In the medium and long-term, many of the schools in the affected areas (especially pre-schools kindergartens) will need to be brought up to optimal building and safety standards to increase resilience to all hazards. These infrastructure improvements include ensuring children have access to safe, clean water and sanitation facilities at the educational institutions. In terms of educational programming, schools are an excellent forum for increasing awareness about disaster risk reduction, as children can bring techniques and strategies for preventing, mitigating, and responding to natural disasters to their families. While this disaster occurred in the early morning, when students were home, school and kindergartens emergency preparedness plans are also needed, especially given range of hazards to which communities are exposed. School systems should become part of coordinated local level emergency management plans and school safety/disaster preparedness (establishment of school disaster management boards/committees, development of school disaster preparedness and evacuation plans, organization of simulation exercises and drills) should be integrated into existing education policy and processes. In order to increase the capacity of children and schools/pre-schools in hazard prone areas to better prepare for, mitigate and respond to disasters, it is required to address the capacity building of teachers and school management on disaster risk reduction as well as on climate change and

environmental education (CCEE). This will require MES¹⁵ to support teacher training on the aforementioned topics and the use of interactive and age-appropriate methods to convey messages to children and influence disaster preparedness practices in school and at home (e.g.: dissemination of family disaster preparedness plans).

Pillar 3 - Ensure disaster affected vulnerable groups, IDPs and women in particular, are protected and measures needed for their full recovery are in place

62. Affected vulnerable groups, IDPs and women, may further become marginalized. Women could be further exposed to increased housekeeping responsibilities caused by fetching water from nearby water sources, which impact on more substantial demand on sanitation and cooking with the probability of child care contributing further to the worsening of their psychological and physical health. IDPs are also more susceptible to moving into extremely poor tiers of the society as their social ties, livelihoods and psychological health is generally worse off than that of the non-IDPs. The elderly and handicapped are yet other vulnerable groups in need of special considerations and specific targeted assistance since these groups require different stabilization and recovery measures due to their prior-to disaster vulnerable status.

Pillar 4 - Provide accessible, high quality, modernized, and affordable healthcare and social service to all people impacted by the disaster

63. Healthcare - eight Primary Healthcare Facilities were damaged by the disaster with many of the PHFs already being in disrepair thus lacking basic medical equipment (required by national standards). The disaster also damaged and exposed asbestos roofing material thus requiring professional remediation. While rapid rehabilitation of these facilities is critical to restore basic medical services to a somewhat 19,500 people, undertaking it in the broader context of the government's effort in order to modernize and improve the quality of the healthcare system overall should be taken into consideration. Issues such as the co-location of PHFs with local government administrative buildings, availability of basic equipment such as electrocardiograms (EGCs), scales and refrigerator for storing test specimens, the transition to an electronic health care system (that uses computers for record keeping and electronic patient files rather than paper-based files) are among the actions needed for the most impacted PHFs to bring them up to national standards.

Priority Actions

¹⁵ Ministry of Education and Science of Georgia

64. In the short-term, emergency repairs (at a cost of 150,000 GEL) are urgently needed within the next two months to PHFs, including roof repairs and proper clean-up and disposal of asbestos at damaged facilities. The borderline-poor, which is made more vulnerable by the disaster, may experience a relatively sharp spike in health costs (as a percentage of income) with assurance given from the Ministry of Labour, Health and Social Affairs (MoLHSA) that cover is offered to all affected families under the state subsidized health insurance scheme¹⁶. The MIP offers a free, extensive benefit package financed through general tax revenues targeting the poorest segment of the population. During this coming year, it is also recommended that the Ministry of Health ensures proper water supply and sanitation systems are given to all damaged PHFs, alongside the rapid repair or replacement of basic furniture, damaged medical equipment (e.g. ECGs) in order to ensure basic operability of PHFs.

65. To ensure that basic primary health care is available and accessible to all affected Georgians, medium and long-term activities to commence now include ensuring that all disaster-affected PHFs have basic medical equipment, even those prior to the storms. This includes upgrading medical facilities to national standards (as described above) and providing refresher training to PHFs personnel on emergency health response issues and psycho-social rehabilitation. In addition, a health education and awareness program is needed to inform people of hygiene norms and common disaster-related illnesses that are preventable such as water borne diseases. Since prevention of diseases and readiness and response mechanisms for public health threats are a national priority, the affected municipalities should also consider strengthening their capacity for emergency preparedness and response. As part of this effort, the Ministry of Labour Health and Social Affairs should also develop and implement a program alongside private sector partners in order to ensure health facilities are disaster resilient and human resource capacities of health personnel are enhanced respectively.

66. Social Protection - the Georgian Government has established a sophisticated social protection system aimed at targeted, accurate, and efficient assistance to beneficiaries which is being administered by the Social Service Agency currently managing pensions and social assistance the government to issue cash compensation to disaster affected individuals and households, now vulnerable due to the disaster. The SSA may need to ensure it has sufficient capacity to absorb surges in new applicants and implement the various cash compensation and cash transfer programs planned by the government over the next year or more, so that the goal of a fine-tuned social policy can be achieved, even during recovery from a natural disaster. Psycho-social support to affected communities may also be needed for strengthening coping mechanisms and helping the prevention and/or response to the possibilities of developing complicated grief as well as increases in domestic violence that may occur. Following large disasters, domestic violence often increases. A study conducted in 2010, found that Kakheti was among the regions

¹⁶ A universal insurance program covering whole population of Georgia launched since summer, 2013

with the highest prevalence of domestic violence (around 92% of women interviewed reporting some form of domestic violence)¹⁷ accompanied by the fewest amount of accessible resources to help victims.

Priority Actions

67. In the short-term, the government and its partners should establish education and training programs on psychological first aid (this training is intended for PHFs personnel in view of local capacity building initiatives), and provide psychosocial assistance to affected communities. Simultaneously, the government should promote its nation-wide ‘Domestic Violence Hotline’ in order to increase affected communities’ awareness of available support services. Since the SSA service model relies on people self-identifying as potentially eligible for government assistance, it may need to develop additional strategies to identify and target the newly vulnerable who may be less familiar with government social assistance mechanisms. In addition, the SSA will such as need to rapidly strengthen its capacity to manage the influx of new SSA recipients and recipients of other ministries cash compensation that is transferred through the mechanism SSA has in place, e.g. bank arrangements, debit cards, etc.

68. In the medium to long-term, the social services and public awareness programs should be continued, so that there is an adequate safety net provided to vulnerable people and households to aid a full recovery.

Pillar 5 - Revitalize the municipal infrastructure to support economic growth and living conditions

69. Water and Waste Water: The Georgian Government is committed to revitalizing Georgian cities by rehabilitating and strengthening municipal infrastructure.¹⁸ The extent of damage of the severe storm and flooding caused to municipal infrastructure such as water and waste water systems in Kakheti and the City of Telavi poses a serious challenge to community revitalization and economic growth. Telavi wastewater treatment plant, sewage collection system, water main pipe and distribution network were built in the 1950s-60s and are presently dilapidated partly due to having exceeded their useful life span which has been impacted by decades of inadequate maintenance resulting in this fragile infrastructure being devastated by the disaster. The most significant damage was done to the water head work (intake) system in Telavi as well as the water main supply pipe to the city, which has resulted in reduced water supply to both the City of Telavi and its surrounding villages. While emergency repairs are

¹⁷ 2010 N Anti Violence Network of Georgia

¹⁸ United Georgia without Poverty

certainly critical to stabilizing water and sanitation services, the recovery and reconstruction process will need to focus on building back better and ensuring operations and maintenance costs as well as the cost of investing in the requisite institutional capacity are taken fully into account.

Priority Actions

70. In the short-term, the most urgent recovery need in the Water and Sanitation sector is to restore water to local communities by completing emergency rehabilitation work by January 2013 (estimated at 2 mill GEL). To the extent possible, the local economy should be stimulated by hiring local labour to accomplish repairs. In addition, local authorities and partners may consider supporting scale projects aimed at helping the household and community level to better protect existing water sources, especially headwork and water main supply pipes.

71. In the medium and long-term, the water and sanitation system will need to be strengthened and made resilient to all hazards (e.g. floods, earthquakes, etc.). This will more than likely require planning and implementing new construction and/or extensions to the existing water and sanitation infrastructure. As part of building back better, and ensuring the resilience of municipal infrastructure, the Georgia United Water Company may want to ensure that adequate operational and maintenance costs are accounted for within its long-term plans, and that water meters are installed as part of organizing and maintaining a water and waste water system capable of supporting the rapid economic growth in Kakheti alongside decent living conditions for its inhabitants.

72. Flood Control - reinforcing river banks, rehabilitating irrigation systems and amelioration (land improvement) are priorities for the Georgian Government that underpin sound watershed management and flood control practice.¹⁹ The flash flooding that occurred along Telavi and other rivers in Kakheti reinforce the importance and urgency of revitalizing flood control infrastructure. Not only is flood control critical to protecting people, their homes, and acceptable living conditions, it also protects against shocks and setbacks to economic growth. In fact, experience in other countries shows that every dollar spent in river maintenance can bring two to three times the benefits to the people who live beside the river. In Kakheti, almost 10,000 people were directly affected by flash flooding that was mainly caused due to poor maintenance of the river channels and riverbank reinforcement. As part of the recovery and reconstruction process, the underlying problem of aged infrastructure will certainly need to be addressed – with all flood infrastructures being constructed decades ago which have not been adequately maintained, causing disastrous impacts during peak flows.

Priority Actions

¹⁹ United Georgia without Poverty

73. In the short-term, the Roads Department of the Ministry of Regional Development and Infrastructure, which is responsible for the maintenance of Georgia's waterways, will need to implement major repair and rehabilitation of river protection work including: river revetments, dikes, gabions, and erosion prevention spurs in the Telaviskhevi river, Vanta River, Turdo, River and Telavi area-Zuzumbo.

74. In the medium to long-term, the Highways Department should use findings from its study on river work and river cleaning needs in the Kakheti to guide efforts to restore natural river conditions. These efforts should include developing and/or updating flood risk management plans, including risk-based models for infrastructure and people, prioritization of flood mitigation infrastructure and environmental protections. A holistic floodplain management program should also be established that can provide communities hazard and inundation maps as well as other risk management tools. Once the rivers are rehabilitated, appropriate operational and maintenance costs should be budgeted to ensure that river banks and river sections are properly maintained and desilted. This work will result in erosion prevention, reduced risk of flooding, and fewer negative impacts to economic growth and living conditions.

75. Housing - the severe storms and flooding caused damage to over 5,255 residential buildings and negatively impacted on the living conditions for all families whose homes experienced a reduction in municipal services due to direct damage to the municipal infrastructure. With assistance from the Georgian Government, all 5,255 roofs have either been repaired or have 'works in progress, including gutter and other types of rehabilitation. This includes the repair of two apartment buildings that house 75 Internally Displaced People, to whom the government has special and legal obligations to assist with housing.²⁰

Priority Actions

76. In the short-term, repairs to roofs and damaged structures should be completed. In the medium to long-term, the government could consider initiating a disaster resilient housing program for residential buildings, by in-kind financial support for retrofitting and rehabilitating builds (e.g. tax discounts for work or energy-efficiency "green" oriented work), and a ban on using financial aid for asbestos and asbestos containing sheets for roofing.

Pillar 6 - Effectively use natural resources and protect the natural environment of Georgia, minimizing a risk of natural catastrophes when possible.

²⁰ Strategic "10-Point Plan" of the government of Georgia for Modernization and Employment, 2011-15

77. This pillar of the Recovery Framework, which is critical to protecting Georgia's development gains, is addressed in a stand-alone chapter.²¹

Financing

78. Financing needs are large, but the cost of doing nothing would be even larger. Given the very limited capacity of the flood management system, the state of municipal infrastructure and public facilities, the quality of housing older housing stock and lack of an early warning system and usage of hail nets, such costs can be expected in order to recur more frequently unless urgent efforts are made to mitigate the effects of future disasters.

79. Financing will come from a number of sources. The government will invest its own resources. It is also soliciting financial support from international development partners. Funding can be mobilized through a number of modalities: borrowing from multilateral and bilateral sources, including accelerated emergency terms; reallocation of funds under ongoing donor-supported projects and programs; and, through additional financing arrangements. In many cases municipal and regional governments may have some accumulated resources that should be drawn upon to support recovery and reconstruction in their communities. The private sector will also contribute through savings and borrowing. Finally, "sweat equity" through community contributions will also play a significant role at the local level, particularly in the provision of better housing.

Recovery and Reconstruction Program

80. The JNA presents a set of post-disaster activities the recovery and reconstruction program to be undertaken to achieve two main goals:

- Recovery of all economic activities at the macroeconomic, sectoral and personal/household Levels
- Reconstruction of destroyed or damaged physical assets, using pre-defined post-disaster standards

81. Financial needs for the recovery and reconstruction program have been estimated based on the damage and loss assessment caused by the severe storms and flash flooding. To ensure

²¹ United Georgia without Poverty

full recovery from the negative impact of the disaster, program interventions and their corresponding financial needs are presented. Financial needs for reconstruction are defined on the basis of the estimated value of damage while adopting a strategy that seeks to introduce disaster-resilient standards, depending on the availability of funding. A “building-back-better” strategy requires quality and technological improvement, relocation of selected activities to safer areas, improved design and construction standards, structural retrofitting and adequate flood-control measures and schemes.

82. The JNA has also highlighted the need to develop longer-term solutions to address priority policy issues. Development solutions for the major policy issues highlighted in the JNA, such as commercialization and modernization of agriculture, the strengthening of the municipal infrastructure, and disaster risk reduction will require concerted efforts over many years, well beyond the period covered by the JNA.

Guiding Principles for Implementation

83. The Recovery Framework is based on the Georgian Government’s implicit guiding principles, as well as best practice for disaster recovery and reconstruction. Guiding principles serve as a collective vision of the post recovery future and can serve as design criteria for the recovery process. For the recovery from the 2012 Severe Storms and Flooding, the Guiding Principles are the following:

- 1) Ensuring a people-centred, equitable, and rapid recovery and reconstruction process that provides more assistance to the most vulnerable and those who need it most
- 2) Ensuring accountability and transparency to ensure guarantee progress and maximum impact of activities and investments on recovery
- 3) Reducing communities’ vulnerability to climate and hazard related risks as part of the recovery process
- 4) Fostering a unity of effort, by setting common recovery policies, strategies and standards so that all stakeholders proceed with recovery efficiently and effectively
- 5) Promoting active collaboration between stakeholders to assure interventions are consistent with reconstruction policies and goals established by the government
- 6) Promoting gender equality and empowerment of women

Institutional, Implementation, and Coordination Arrangements

84. Recognizing the potentially devastating impacts of the disaster, the President appointed the Prime Minister to set up a special team to respond to the disaster and appointed Levan

Bezhashvili with a Special Envoy to Kakheti responsible for coordinating the relief and recovery. The Minister of Finance was asked to lead and coordinate government-wide interagency efforts to assess the impact of the disaster and address the recovery needs identified in this report. Ministries, under their existing authorities and budget constraints are responsible for addressing recovery and reconstruction-related needs in coordination with regional and local authorities. The Georgian Government has also requested that the international community and private sector partners support the recovery and reconstruction in the affected regions to the greatest extent possible, and to factor climate change and disaster risk reduction into future endeavours and support to Georgia.

Section IV: Reducing Risks

Introduction

Disaster Risk and Climate Change Profile

85. A complex mountainous topography and climate makes Georgia prone to weather-related and geo-morphological processes and hazards. The entire country is subject to seismic intensities of 7-9 (on the MSK scale) with weather-related hazards, floods and flash floods affecting Georgia regularly. Hailstorms are observed on a seasonal basis and their intensity and frequency is extremely high in Eastern Georgia. Five to 40 cases are annually recorded in the country, destroying from 0.7% to 8.0% of total agricultural lands. Relatively high speeds of wind are peculiar for Kolkheti lowland, Imereti, Shida Kartli, Tbilisi, Kakheti and The Samtskhe-Javakheti regions - 32-55m/sec²² with hazard exposure to buildings, infrastructure and agriculture sectors. These storms are known as severe storms.

86. In addition to the above mentioned, climate change projection models predict even more increase of extreme weather conditions, translating to a heavier and uneven seasonal distribution of precipitation with possible dramatic consequences, with the probability of devastating natural disasters such as landslides, avalanches, river floods, flash floods and mudflows, causing human casualties and economic losses to rise in the near future²³.

Present Institutional Framework for Disaster Risk Management and Climate Change Adaptation

87. The disaster risk management system in Georgia is governed by the 2007 law on Protecting Population and Territory of Georgia from Natural and Manmade Disasters. It elaborates on response mechanisms for three-tiered levels:

88. The highest political (central) level - activated by the National Security Council, in accordance with the organic law on National Security Council of Georgia and chaired by the President. The mechanism becomes operational in case of a large-scale crisis pertaining national interests of the country, including natural calamities. Decisions on this level are made by the

²² National Report on State of Environment of Georgia, 2007-2009, Ministry of Environment Protection

²³ The Second National Communication on Climate Change in Georgia

President with implementation lying under the responsibility of relevant ministries/government bodies.

89. National Level - activated in case of a crisis covering national scale. Coordination mandate of the immediate response falls under the Emergency Management Department (EMD) of the Ministry of Internal Affairs/MIA.

90. Local Level - activated in case of a crisis within the boundaries of a region/autonomous republic or municipality. Response coordination responsibility is on relevant regional authorities.

91. National Emergency Response Plan (NERP), adopted by the Decree of the President in August, 2008, assigns functions to each Ministry in case of a crisis. According to the document leading agency for coordination of the efforts is the EMD, under MIA. As per NERP, Georgia Red Cross has the responsibility to coordinate all international and national organizations' emergency response support.

92. On January 2010, the emergency response system was decentralized, i.e. special emergency services operated on local, regional and national levels (EMD). Besides the coordination function, EMD was mandated to ensure stand-by preparedness of the relevant emergency services on regional/local levels, through providing regular training and support in local/regional contingency planning.

93. In regards to the risk reduction and prevention actions, some responsibilities are divided between various governmental stakeholders. National Environmental Agency, under the Ministry of Environment Protection is in charge of hazard observation/monitoring, data collection, processing and production of forecasts, predictions and early warnings. Meanwhile, the Agency deals with weather-related and geo-hazards; the Seismic Monitoring Centre, under Ilia State University is responsible for monitoring over seismic activities through its observation network.

94. As for the risk reduction measures, the current set-up suggests only hard structural measures for flood risk prevention, that is the responsibility of the Ministry of Regional Development and Infrastructure. Non-structural measures, such as building codes, urban planning, land-use planning etc. are considered as one of the components within the mandates of relevant line ministries, e.g. the Ministry of Economy and Sustainable Development, the the Ministry of Agriculture etc.

Analysis of Disaster Risk Management Capacity

95. Over recent years, significant steps have been made by the Georgian Government towards the improvement of the preparedness and response system of the country against

emergency situations on institutional and legislative levels. Numbers of regulations and normative acts had been adopted setting contingency planning requirements on national, regional/local levels thus establishing a structured institutional framework for disaster preparedness and response on central, national and local levels.

96. However, the analysis, through individual meetings with major stakeholders and desktop review has revealed some deficiencies in the system. Particularly, lack of mechanism for regular updates of national/regional/local response plans with participation and consideration of the capacities of the stakeholders involved. It has been noted that this could negatively impact on the preparedness and later response capacities. Furthermore, development gaps between national and regional/local emergency response services were identified by the stakeholders; the latter included both discrepancies in skilled staff and special equipment. Reasons for the disproportion lay in the different sources of funding, while the central emergency service was funded from the state budget, relevant regional/local bodies depended on highly limited regional/local budget allocations. Preparedness actions were mostly limited to training and re-training of relevant staff. The absence of a multi-hazard early warning system could be considered as a different constraint for the effective preparedness that would ensure on-time alerting of people on expected emergencies as well as carrying out disaster prevention activities.

97. Besides disaster preparedness and response components of the DRM, the analysis identified some gaps within disaster prevention and mitigation capacities both on legal and institutional levels. The 2007 Law on Protecting the Population and Territory from Natural and Manmade Emergency Situations promotes a unified system for prevention, mitigation, preparedness and response. However, it elaborates mainly on response mechanisms while provisions on prevention and mitigation are fragmentary. Duties and responsibilities regarding avoidance and mitigation of disaster risks were in some instances delegated to different governmental organizations, without a unified legal framework. Moreover, since Georgia had no national platform for DRR or a strategy, the mandates of various ministries and agencies did not always clearly state which agency was responsible for which part of disaster risk reduction activities. The observation also made is that there is a significant scientific expertise and technical capacity available nationally but not systematized and analysed regularly. Additionally, it is not transformed into informed decision-making for actual prevention and mitigation actions.

98. Capacities concerning disaster risk monitoring, forecasting and early warnings are limited. Clear evidence of this was a situation at the national service responsible for hydro-meteorological observation, data collection, processing, and prediction. The system used to work mainly with ground stations with their numbers being dramatically declined since 1990s from 155 stations to 30 hydro-meteorological stations. In addition to the reduced number of observation points, no upper air measurements were conducted and, in terms of the lack of special radar systems, no local input could be provided to global weather model. There is no capability to use local models to work out the local weather changes leading to the difficulty in the monitoring and detailed prediction for intense localized weather-related hazards such as such

as hail or the supplementary windstorms recorded on the 19th of July in three eastern regions of Georgia. This consequently impacted on any capability for forecasting and early warning.

99. Current practice in Georgia for disaster mitigation measures is limited to riverbank and coastline protection activities related to erosion and floods and flash floods, without consideration of multi-hazard risk mitigation actions, such as risk transfer, hail suppression systems etc. Furthermore, there is no disaster management action plans in place that would integrate comprehensive risk assessments both on national/local levels for their further consideration into development and planning documents (e.g. land-use planning, urban planning, development strategies etc.).

Needs for Disaster Risk Management and Climate Change Adaptation

100. Analysis of the disaster management system in Georgia has identified the following categories of needs: i. Coordination of the DRM; ii. Mainstreaming DRR in regular development work across sectors iii. Strengthening institutional and organizational capacities for DRM on national and local levels; iv. Financing disaster losses, recovery and reconstruction, and risk transfers. A detailed description of the activities foreseen under each category of needs are provided below:

Coordination of Disaster Risk Management

101. National DRR policy or strategy is a national level challenge; an entry point for demonstrating a coordinated approach to DRM could be established with a National DRR Platform under coordination of identified DRR focal ministry which would be supported with relevant laws/decrees for implementation. As a result, communication and information sharing could be improved and linkages between DRM stakeholders at all levels strengthened.

The Mainstreaming of DRR in Regular Developmental Work across Sectors

102. There is an imminent need for the country to support and maintain sustainable development. This will only be achieved if the latent risk of adverse natural events is taken into consideration in all sectors and at all governmental levels. So that accumulating risk can be avoided, the country should focus its efforts to i) identify, understand, and prioritize the existing risk; ii) reduce the existing risk; iii) avoid the creation of future risk; and iv) improve response capacities at all levels. This approach can be done by embracing a comprehensive disaster risk management framework.

103. A systematic disaster risk management approach involves i) risk identification and the monitoring of hazards, ii) risk reduction, both structural and non-structural measures; iii) risk awareness and preparedness; iv) risk financing mechanisms; and v) resilient recovery. The need for mainstreaming disaster risk reduction as a development concept in medium and long term recovery efforts as well as regional planning has once again become evident after the post-disaster needs assessment of 2012 in Georgia. Moreover, with climate change expected to result in increased occurrences of extreme weather, unless disaster risks are taken into consideration, recovery and development investments will be put at unnecessary, and possibly not well understood, risks.

104. Risk identification. In order to have any risk reduction strategy it is necessary to understand what risks Georgia faces. Identifying risk it is not an easy task as it entails understanding the natural hazards and interaction they have with humans, identifying the elements exposed to specific hazards and evaluating their vulnerability. In addition to this, calculating the potential losses in order to prioritize interventions. In summary, if we don't know the problem, we cannot solve it.

105. In the medium to long-term, it will be crucial to develop and regularly update Flood Risk Management Plans, including a risk-based model for infrastructure and people, prioritization of flood mitigation infrastructure and environment protection. In addition, the development of a floodplain management program, including hazard and inundation maps, funding, operations and maintenance for river de-silting and preservation of river protection work will be required.

106. Risk reduction activities. Once the risk is understood, risk reduction activities can be identified and prioritized. This can be structural measures such as investments in mitigation measurements such as flood protection or retrofitting infrastructure, but also non-structural such as building codes, incorporating disaster risk in development/territorial planning, etc.

107. The aim of disaster risk reduction initiatives should be building a sustainable capacity at different governance levels, involving both institutional and non-institutional aspects, and to assist authorities to build a knowledge base and institutional memory based on systems, not individuals. A comprehensive methodology should be developed and applied for mainstreaming DRR in development planning, specific sectors of rural and urban development, including local planning for budgeting and the establishment of local 'reserve funds'..

108. An urgent need to strengthen and maintain flood mitigation infrastructure in areas that are at high risk of recurring floods and flash floods was identified by the post-disaster needs assessment mission resulting in experience in several countries showing that every \$ invested in river maintenance is able to bring two to three times the benefits to the people who live beside the rivers. As a result of this, the repair and rehabilitate of major river protection work, such as river revetments, dikes, gabions, erosion prevention spurs, in Telaviskhevi River, Vanta River, Turdo River, Telavi area-Zuzumbo is required.

109. It is equally important to consider the projected impact of climate change together with these conventional structural measures [that may not resist progressively increasing flood discharge volumes in the face of climate change], consider adopting more climate resilient and sustainable engineering solutions. These may include bio-engineering measures that involve the use of local natural material and vegetative cover to restore the physical, biological and chemical flood-plain functions in order to improve water saturation and transmission so that damage can be minimized. It seems that knowledge of such advanced and climate -‘smart’ flood / flash flood management in Georgia is limited and traditional engineering solutions of Soviet legacy still prevail. It will be useful therefore for a combined solution to be discovered which would involve improving existing structural and introducing non-structural, bio-engineering options that help increase natural infiltration and discharge transmission of the floodplain.

110. The mission also identified a list of damaged critical public buildings, kindergartens, public schools, primary health facilities. While access to the services would be provided through repairing the damaged roofs of the facilities, the safety of the buildings need to be ensured and thus need for thorough assessment of structural safety and technical conditions of the constructions, at least for primary health care and education facilities as further retrofitting was identified. Success of all the above mentioned activities significantly depends on the level of ownership and commitment of the affected communities and authorities as their involvement in the risk identification and assessment process is crucial. To meet the goal, a targeted public outreach and communication strategy should be developed and implemented. In the long-term, the strategy should become an integral part of the national strategy for Environmental Education for Sustainable Development, as an input for both informal and formal education.

111. Risk Awareness and preparedness. There is a latent need that all the actors are aware of the risks they are facing and that they are prepared to respond to it. Public education campaigns will assist the government’s efforts in reducing risk, avoiding the creation of new risk and responding more efficiently to disasters. Preparedness in efforts should involve all levels of government in all sectors as well as the public in general as each of them has a responsibility and needing to be clearly communicated. Drills and simulations help to identify the communication failures in earlier stages. These exercises should be part of national, municipal, local emergency and contingency plans.

112. One of the crucial elements of the disaster risk management is prevention and avoidance of hazard, through detailed monitoring and the forecasting of localized hazards. During the assessment it was identified that there is a need to upgrade the hydro-meteorological system. The key elements of the technical assistance would be: 1) a study of the present system of ground observation stations and the development of rehabilitation programs and an increase their density; 2) at least 60 telemetric ground stations installed that feed data to the central computer on real time for forecasting of floods and other hazards on local level; and 3) an investigation

into the need for a Doppler Radar wind profiles and other equipment to see storm movement, wind speed in conjunctions with ground stations to predict severe storms and hail etc.

113. In regards to strengthening preparedness, the need for regular updating of regional/local emergency response plans with detailed standard operational procedures on data readiness, gathering, dissemination and unified methodology for damage assessment and recovery planning was identified. The establishment of a mechanism for a multi-hazard early warning system that integrates specific SOPs and functional network of all stakeholders with unified database should be considered as one of the significant components as well. To achieve the above mentioned technical support, facilitation and relevant training for the personnel would be required.

114. While it is beneficial to focus on developing capacities to cope with disasters, floods, flash floods, mudflows, and earthquakes, it is equally important that the long term efforts of such actions are taken into account in order to adapt climate change. Support needs to target the most vulnerable groups of society as well as local and national governmental institutions to undertake direct climate change adaptation measures. This also relates to exposure of people, economic assets being minimized and assurance of the limitation (to acceptable levels) of potential damage to development such as the effects of flooding or other extreme weather-related events.

115. Advocacy - Awareness raising among Political, Senior Policy and Government Department Officials, Media, Communities and Academic Institutions is a priority strategy for building knowledge and understanding on the benefits of risk reduction and the roles these organizations play in implementing risk reduction programs.

116. Risk financing strategy - Immediately after the disaster the Georgian Government made reallocations in the state budget, creating extra budget lines for immediate response and relief needs, as well as earmarking certain amounts for short-term rehabilitation work and reserve funds. In total GEL 162 was mobilized.

117. Nevertheless, an increase in the exposure of the country to adverse natural events will eventually result in a rise in calamity related thus requiring effective financial instruments to assist them to cope with financial needs resulting from disasters. Since no prevention and mitigation efforts can fully insulate any country against losses from major disasters, disaster risk financing mechanisms can be considered as an efficient means for the countries to financially protect themselves, as well as foster disaster risk management efforts. The disaster risk financing strategies allow countries to increase their financial response capacity in the aftermath of disasters and to reduce the economic and fiscal burden of disasters by transferring excess losses to the private capital and insurance markets.

118. Disaster risk financing and insurance tools can be classified into four broad categories -

1. Sovereign disaster risk financing: financial strategies to increase the financial response capacity of governments in the aftermath of natural disasters, while protecting their long-term fiscal balances;
2. Property catastrophe risk insurance: develop catastrophe insurance markets and increase property catastrophe insurance penetration among homeowners, small and medium enterprises, and public entities;
3. Agriculture insurance: develop programs for farmers, herders, and agricultural financing institutions (e.g. rural banks, microfinance institutions) to increase their financial resilience to adverse natural hazards;
4. Disaster micro insurance: facilitate access to disaster insurance products to protect livelihood of the poor against extreme weather events and promote disaster risk reduction in conjunction with social programs such as conditional cash transfer programs.

119. It should be emphasized that any cost-effective disaster risk financing and insurance strategy first requires a detailed assessment of the economic and fiscal impact of natural disasters.

120. Resilient Reconstruction - while in the phase of reconstruction the most difficult part is to balance the speed of the reconstruction while not reconstructing the risk as building back better should be a priority when possible. The reconstruction phase is an opportunity where governments have to include disaster risk measures in order to avoid the construction of new risk. In order to do that, the country should have recovery and reconstruction plans ahead of events. It is vital that all the institutions at all levels are aware of their responsibilities beforehand. Therefore, having clear institutional arrangements will facilitate reconstructions efforts and at the same time, reviewing administrative and legal framework for rapid rehabilitation and procurement arrangements ex ante can help towards a more efficient and resilient reconstruction. Also, having clear awareness of the risk areas and the areas where hazards are prone will save time for reconstruction efforts. In cases where this information is not available, it is advisable to implement rapid but extensive exercises to identify safe areas for reconstruction.

Strengthening Institutional and organizational Capacities for the Disaster Risk Management on National and Local Levels

121. Strengthening capacity of disaster risk management system could be achieved through a review and harmonization of a legal and institutional framework b. the elaboration of regional/municipal disaster risk management action plans c. raising prevention/mitigation and preparedness capacities on a national and local level.

Review and harmonization of legal and institutional framework

122. As the assessment report describes, the 2007 Law on Protecting the Population and Territory from Natural and Man-made Emergency Situations promotes a unified system for prevention, mitigation, preparedness and response. However, it elaborates mainly on response mechanisms while provisions on prevention and mitigation are fragmentary.

123. Consequently there is a need for a harmonized, unified legal framework encompassing all elements of disaster risk reduction (prevention, mitigation, preparedness, and response), with clear roles and responsibilities awarded to relevant entities at all different levels of administration.

The elaboration of regional/municipal disaster risk management action plans

124. The formulation of a disaster risk management action plan requires the introduction of the development of a comprehensive, participatory risk assessment toolkit to regional/municipal practitioners. The assessments can provide the relevant authorities with sufficient risk knowledge and information for identification and implementation of effective and cost-efficient disaster mitigation alongside climate change adaptation actions. An important aspect of the mitigation action plan is the financial sustainability of the activities, i.e. the existence of special reserve funds at the regional/local budgets that would ensure maintenance of mitigation structures, as well as the effectiveness of preparedness and response actions together with ensuring the community participation in DRM plans preparation phase aiming at wider community ownership

125. A timeframe and cost-estimations for the DRM-related needs are enclosed in **ANNEX 11**.

Annex 1: Agriculture and Livelihoods

1. Pre-Disaster Situation

126. Agriculture is the main economic sector in the affected areas - this dominates regional GDP and employment in the three affected regions, with over 80% of Kakheti's population of 400,000 employed in agriculture. These regions are also the leading producers of several of the crops which were damaged in the storm. Thus, Kakheti is Georgia's main producer of grapes, peaches and nectarines, while Samtskhe-Javakheti produces more than half of Georgia's potatoes.

127. Agriculture in the affected regions, as in Georgia more generally, is dominated by household production. Plot sizes are small with a high level of fragmentation, and yields are often low, largely as a result of poor agronomic practices and the varieties cultivated.

2. Disaster Impact on Sector

128. The main impact of the extreme weather event of July 19th was in Kakheti, where a total of some 18,500 ha of crops were damaged, mainly high value crops (i.e. fruit and vegetables). The scale of the effect was extremely high with permanent crops, fruit and leaves being ripped off and the hail causing extensive damage to the trunks of the plant, opening wounds thus making the plants susceptible to fungal infection. Vegetable crops, melons and potatoes (especially in Akhaltsikhe) have been largely devastated and although inspection of the crops showed promising re-growth in grapes, peach and nectarine orchards were reported to have sustained long term damage. In total, some 20,000 farming households were affected.

129. In the longer term the Georgian Government would be wise to not consider this as a single incident but both as a warning of the type of extreme weather events that require planning and preparedness in order to be used as an opportunity that helps encourage the emergence of a professional farming sector.

Table 2 Estimate of Hectares Damaged and Level of Loss and Damage

Kekheti (Telavi, Lagodekhi, Kuaveli & Gurjaani)		Estimated Losses %			Est Damages
Crop Name	Damaged Area(ha)	100%	70-80%	> 50%	% Replant
Grape (Vineyards)	7500	70%	20%	10%	Minimal
Peaches etc.	3000	100%			60%
Maize	1000	100%			
Tomatoes	2000	100%			
Other Veg	4000	100%			
Melons	1000	100%			
Samtskhe-Janakheti (Akhaltzikhe)					
Crop Name	Damaged Area(ha)	Severe	Moderate	> 50%	% Replant
Potatoes	419	47%	53%		73%
Vegetables	177	81%	19%		(new seed)
Maize	318	5%	95%		
Fruit	166	63%	37%		
Cereal	53	58%	42%		
Mtskheta-Mtianeti (Dusheti-Tianeti)					
Crop Name	Damaged Area(ha)	100%	70-80%	> 50%	% Replant
Maize	92	60% est	25% est	15% est	
Beans	105	60% est	25% est	15% est	
Potatoes	103	60% est	25% est	15% est	73%
Wheat	10	60% est	25% est	15% est	(new seed)
Kekheti (Telavi, La	18500	93%			
Samtskhe-Janakhe	1132	6%			
Mtskheta-Mtianeti	310	2%			
TOTAL (ha)	19942				

3. Damage and Losses

130. The preliminary estimate of farm losses in 2012 amounts to 129.4 mil GEL (US\$ 78.4 mil). By far the majority of these losses were incurred in Kakheti (around 94%) with the split between permanent and annual crops being 53:47. These figures are based on local government estimates of hectares affected, net return, plus sunk variable costs up to the point of hail damage. This data has been checked against figures generated by CARE, USAID and others.

131. The total level of damage is estimated to be 24 mil GEL (US\$ 14.5 mil), with the majority of the cost being replanting, estimated at 60% of the areas of damaged peaches (16.4 mil GEL), replanting 5% of the most damaged grapes and replacement of lost potato seed (2.8 mil GEL) is also considered. Combined together, this extreme weather event will have adversely affected the Georgian farming sector by some 153.5 mil GEL (\$ 93 mil).

Figure 7: Estimates the Losses & Damages by Region & Annual/permanent crops

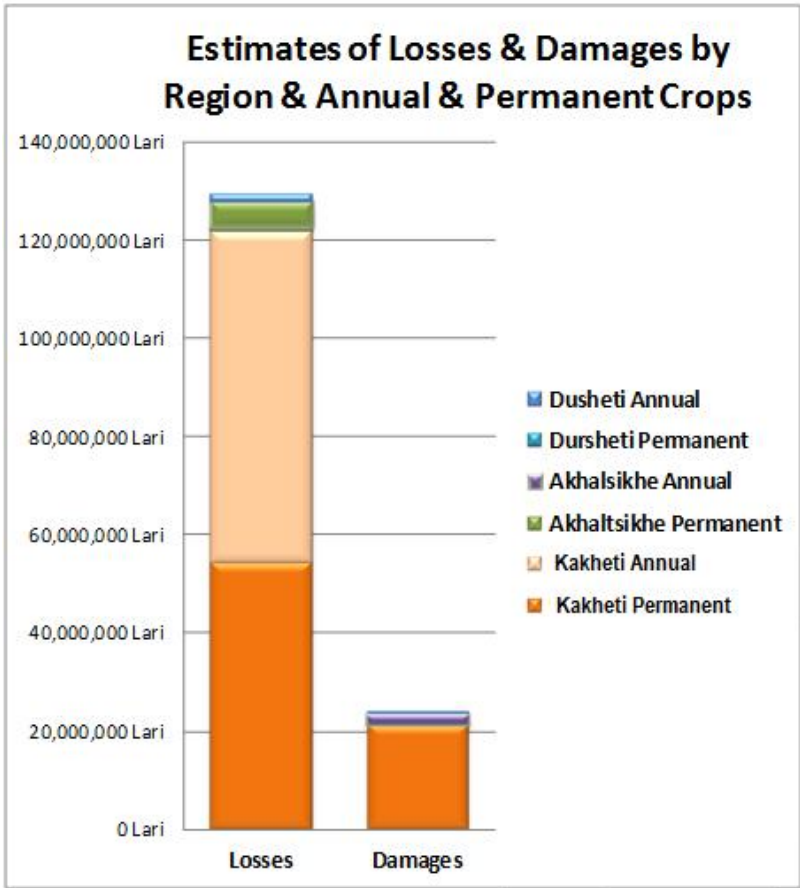
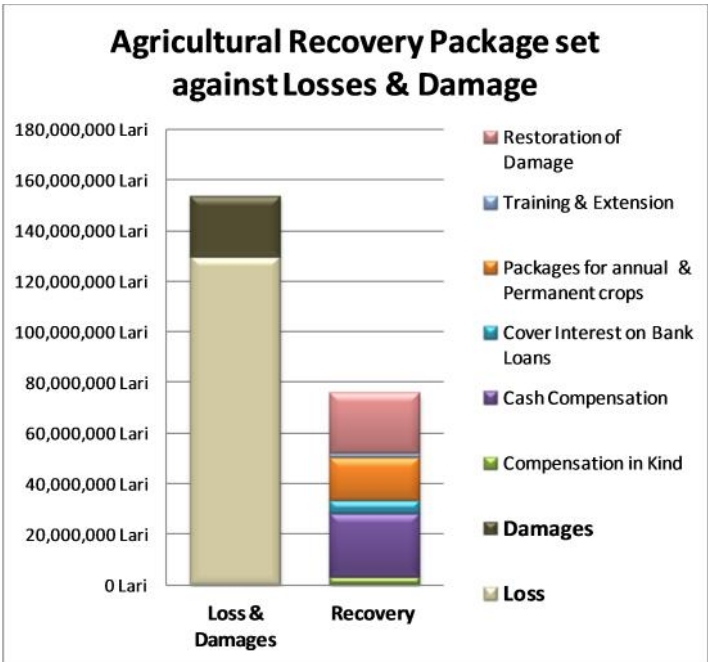


Figure8: Agricultural recovery packages set against losses & damage

4. Recovery and Reconstruction Needs

132. This hail storm serves as a reminder of the fragility of the farming community to weather events and the high costs that such incidents cause to the poor and vulnerable. Consequently, this hail storm can be considered as both a warning and as an opportunity: a warning of the type of event which is likely to occur with increasing frequency; and, an opportunity to shift some of the agricultural sector to being more competitive and professional. In fact, there is an emerging census that a more commercialized agriculture sector, coupled with planning and investment to build resilience of it, will increase resilience to continuing climate change and increased



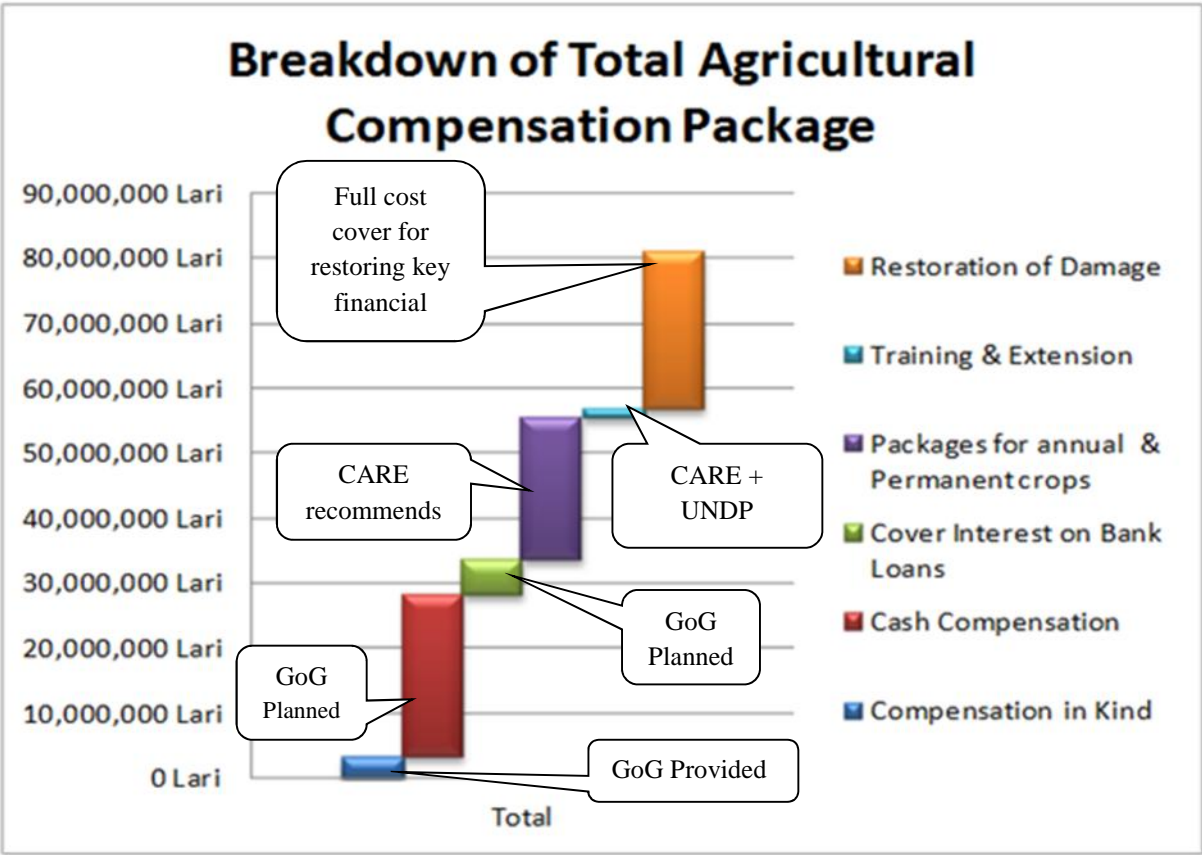
extreme weather events.

133. The short, medium, and long-term recovery needs identified in this section were developed with this opportunity in mind. (Note: Annex 11 contains a summary of recovery needs and priority actions.)

a) Overview of Short-term Recovery Needs and Priority Actions (0-12 months)

134. A key question for the Georgian Government pertains to the level and type of support provided to impacted farming households? There are obvious dangers in setting a precedent and linking compensation levels to loss and damage. This might raise expectations that budgetary funding will be used to cover any losses in the future as a result of extreme weather, irrespective of its size and scale. In addition, the government should consider its long-term development objectives as it designs assistance to farms, for example: is the objective (1) to return agriculture in the affected areas to the condition prior to storm damage or rather (2) to use public funding in part or full to bring about beneficial changes in the structure and type of agriculture in Georgia?

Figure 9: Breakdown of total agricultural compensation package



135. A number of suggestions have been made by the government, The UN, and Non-Governmental Organizations on how to approach the agricultural restoration and recovery package which are set out in the figure above. If all these investments are made, collectively they will amount to approximately, some 76 mil GEL, equivalent to 49% of total losses and

damages. This amounts to approximately 3,800 GEL (\$ 2,300) per individual affected farming household.

136. The current outlined package for recovery and restoration provides for private goods, and a balanced approach which:

- Relieves financial, and other, stresses on affected farmers (cash compensation linked to level of damage & interest holiday for 12 months on Bank farming loans) – proposed by the Georgian Government,
- Takes a proactive approach through technology and training packages aiming to generate an income through the introduction of short term crops, and helping the speedy recovery of permanent crops from hail damage while also taking the possible future changes in agriculture as a result of climate change into account – these interventions have been proposed by CARE and UNDP, and
- Restoring farming households' productive, assets - these have been suggested by the Local Authorities and cost at 100% of the estimated damages,

137. The three major cost elements are (1) cash compensation, which is a per hectare payment, linked to the level of damage, (2) the technical packages of inputs in the medium term, (3) the restoration of productive assets at 25 mil GEL, 17 mil GEL and 24 mil GEL respectively.

138. The table below explores some of the options for cost reduction. Amongst the suggestions are:

- Converting a proportion of the cash payment for vouchers redeemable at input suppliers e.g. for seed, fertilizer, sprays. The GoG can decide what proportion of input costs can be covered by the voucher. These vouchers are redeemable by the input supplier from the GoG.
- Linking the provision of the technology packages to those farmers who attend the training course. This would help focus interventions on those producers that are genuinely interested and willing to make changes in production packages.
- Reducing the cost of fruit and vine planting material by using a Georgian nursery to produce its own budded material (largely from imported elite rootstock and bud wood) and using yearling material, plus only covering the cost of basic inputs during the establishment stage.

Table 3: Options for cost reduction

	Million GEL	Function	Priority	Budget Cutting Options	Revised Budget
Compensation in Kind	3.15	Immediate agricultural input needs	N.A.	N.A.	3.15
Cash Compensation	24.93	Partial cash compensation, safety net	High, as cash safety net to reduce financial shock	A proportion of this could be used as vouchers to subsidies purchase inputs	24.93

Cover Interest on Bank Loans	5.20	Relief of personal & financial stress from interest payments	Medium-High, although mainly larger farmers, has important role in relieving financial stress	Possibility of an agreements with loaning banks	5.20
Technology Packages Annual & Permanent crops	17.05	Short term income & crop rehabilitation	Medium-High, provides tools to support farmers to help themselves & generate income or help crops better recover	(i) providing farmers with vouchers for cashing in at input suppliers, (ii) &/or linking technology packages to attendance of training ²⁴	8.52
Training & Extension	1.59	Vital to help farmers mitigate damage, restore income and think strategically on future crop options	High, cost effective & will enhance use of technology packages	Low cost & cost effective intervention	1.59
Restoration of Damage	24.06	Vital to restore critical income generating assets	High, as provides for long term income recovery	Covering costs of planting material & some key inputs only, using lower cost materials	9.79

These lower cost options might lower the funding requirements by some 25 mil GEL.

139. In Kakheti, as an immediate response, the fruit and vine growers were to supply fuel and fungicide to facilitate crop recovery costing some 300 GEL per farmer. The authorities have suggested two other immediate measures:

- To provide a cash grant to individual growers based on the estimated level of damage that they have experienced. This will comprise 1,500 GEL per grower for severe damage, 1,000 GEL for moderate damage, and 500 GEL for minor damage. At a split of 65:20:15, the average disbursement per farming household will be some 1,250 GEL (\$ 758) with the total cost of these cash grants being budgeted at 25 million GEL; and
- To provide a 12-month extended grace period on interest on agricultural bank loans, although it is not clear whether this would be funded from budgetary sources. Interest rates stand at about 25% per annum (pa). Around 60% of farmers take out such loans, largely for input costs (seed, fertilizer, and sprays). The cost is estimated at 5 mil GEL

140. In addition, input packages linked to training (see below) are needed. These would be combined with training to ease the loss of income from crop damage. These packages would comprise (a) inputs to enable producers to introduce a short term crop and obtain some income, and (b) inputs for producers with permanent crops to facilitate crop recovery and help prevent

²⁴Assumed in reducing the numbers who receive the technology packages by half

plant diseases. These, it is envisaged, would be provided via the local Departments of Agriculture at a cost of 15.4 mil GEL

141. Training and extension support in vine, peach and nectarine rehabilitation - most farmers expect a fall in wine grape production for the following, and possibly two subsequent seasons, with a full recovery of output only by the third season. Rehabilitation of vineyards will be mainly through pruning and fertilizer application and it is important that farmers adopt an optimum package of measures in order for an immediate regain of the normal yield. It's also possible to rehabilitate some of the younger damaged peach and nectarine trees through pruning, combined with fertilizers and other agrochemicals eliminating the case of older trees or those with major damage which will require replanting.

142. In order to ensure best practice in pruning and input use, half-day farmer field schools will be held on both subjects, with damaged vineyards and peach and nectarine orchards used as demonstration areas. Field schools on pruning should be held as soon as possible in order for the autumn pruning to be done to best standards. This would be done on half a day each which could be held the same day or later in the year.

143. Delivery of training and extension will be through the Extension Centre in Kachreti and other public sector extension providers in Kakheti and the other two affected regions, as appropriate. The Kachreti Extension Centre already has expertise in wine grape production but not in recovery from storm damage hence staff and those of other extension providers needing brief training on the extension packages for vineyard and orchard rehabilitation.

144. It is expected that approximately half the farmers in the affected areas (i.e. about 2,000 farmers) will attend these field schools. Assuming 25 farmers per each half day field school, 80 half day field schools would therefore be offered.

145. Crop insurance - few farmers currently take out crop insurance and, while this may in part reflect the cost of premiums, it can also be indicative of farmers' lack of knowledge of the type and cost of the insurance coverage available. Half-day training seminars will therefore be offered to farmers on crop insurance, again by the extension providers in Kakheti and the other affected regions.

146. Prior to these seminars, there will be discussions with insurers offering weather-related crop insurance in Georgia to review the packages that could be offered in the context of widespread replanting of peaches and nectarines. The insurers would also be invited to give presentations at the training seminars.

147. Diversification - the losses associated with perennial crops may persuade some farmers to diversify into annual crops, where the extent of losses, and risk, is lower. Farmers in Georgia have generally been slow to diversify which seems to result both from concerns about marketing and lack of information on production practices. There are diversification opportunities in

Kakheti with studies²⁵ suggesting that, in annual crops, the best potential is found in berries, tomatoes, melon, potatoes, sunflower and soybeans.

148. Short seminars will therefore be offered by extensive providers on diversification, focusing on agronomic practices, financial returns, and markets. These seminars will also address varietal options in peaches, nectarines and vines to such that those farmers who want to replace damaged orchards and vines with new varieties will be able to picture the varieties available and costs and returns involved. In order to reduce costs, half day seminars respectively on crop insurance and diversification will be held on the same day.

c) Medium and Long-term Recovery Needs and Priority Actions (0-5 years)

Recovery of High-value Crops

149. Between 50% and 60% of the storm-damaged peach and nectarine orchards cannot be rehabilitated and will need to be replanted if farmers wish to resume production of these crops. Given that some 3,000 ha of peach and nectarine orchards have been damaged, this means that around 2,000 ha will need to be replanted. It is expected that many farmers will choose to replant varieties of peach and nectarines that are currently available and widely grown in Georgia. Others, probably a minority, will prefer to replant varieties which are not available in Georgia but which offer advantages in, variety, yield, time of harvest (i.e. early or late season), appearance, taste and ease of harvesting.

150. Locally-produced seedlings are, however, not certified and, furthermore the availability of peach and nectarine seedlings in Georgia stands at 200,000-300,000. As a result, the full requirements for replanting (estimated between 750,000 and 800,000 seedlings) cannot be met in time for replanting in spring 2013 from locally-produced material. Some farmers may therefore decide to delay replanting or diversify, potentially into annual crops which offer a quicker return and/or lower risk.

151. Recovery support to peach and nectarine farmers could be designed to encourage farmers to replant with improved varieties. In this case, two recovery packages could be offered to farmers – one which allowed farmers to replant with their choice of variety and a second which obliged farmers to select for a list of approved varieties. The cost per hectare of replanting with locally-available varieties is estimated at 6,500 GEL per hectare, as compared to 12,000 GEL per hectare for replanting with imported varieties. In each case, farmers would face variable costs of 1,200 GEL per year, prior to getting the first harvest at the end of the third year after replanting (which should then be sufficient to finance the input costs in the fourth year).

152. It is not thought that extensive vine replacement will be required, with only 5% of vines subject to severe damage. Indeed, partly as a result of price support arrangements for wine

²⁵ http://www.undp.org.ge/files/24_743_203776_kakheti-agriculture-eng-modified.pdf

grapes²⁶, there are weak financial incentives for farmers to replant (for a summary of the short term recovery needs and costs see Annex 11 Recovery Framework).

Avoiding Impact of Extreme Climate Events

153. Drought will be best combated by a combination of investment in irrigation, coupled with the introduction and uptake of farming practices which better conserve water. Investments are needed to counter the decline in irrigation systems as well as in the development and dissemination of agronomic techniques and technologies which make better use of the water available. Flood, the deleterious effects will be best minimized by restoration and maintenance of the draining systems, coupled with cultivation practices and quick response to eliminate standing water. Hail, new technologies are emerging in reducing the incidence of hail through the detection of imminent hail events through tracking of lightning and specific cloud formation and the use of small rockets/cannon to facilitate the formation of rain rather than damaging hail.

Use Recovery to Support the Strategic Framework for Agriculture

154. For the Government, there are multiple elements in building a strategy for mitigating agriculture risks. These would perhaps best be incorporated in an Agricultural Sector Risk Management Study, to improve resilience and reduce vulnerability. Such studies take a holistic view of a country's agricultural risks and typically involve (i) risk assessment and prioritization (ii) stakeholder assessment (including the sensitivity of the sector and ability to adapt to climate change); (iii) risk management strategies, covering mitigation, transference (such as insurance) and coping mechanisms. These in turn lead to recommendations on Implementation instruments such as investments and technical assistance, and policy support. Most typically the recommendations from these diagnostic studies focus on mitigation strategies and investments across the whole gamut of agricultural risks.

155. In 2011 the Georgian Government initially expressed considerable interest in the possibilities taking out 'Catastrophe Risk Insurance'. Some preliminary investigations were carried out and draft Catastrophe Risk Insurance Adaptable Program and Loan document prepared. The document emphasizes that Georgia is exposed to several major weather related risks, such as drought, flood and hailstorms with the average annual damage cost anticipated at around 50 million GEL (US\$30 million equivalent) – possibly to go as high as 300 million GEL (US\$ 180 million), as was the case after the 2000 severe drought. Georgia has also been witnessing an increased frequency of floods and droughts during the last 10 years. Catastrophes and weather risks particularly affect small-scale farmers whose economic livelihood depends on agricultural production.”

156. This project has not yet been taken forward.

²⁶Farmers receives GEL 0.15 per kg for wine grapes sold to wineries regardless of quality, provided minimum sugar levels are met.

157. There are a number of reports which are generating a consensus view of the future of the Georgian Agricultural sector.

158. The “Georgia: Strategic Plan of Development, a Ten Point Plan of Modernization & Employment” has at its sixth point, covering agriculture, the following:

“The Government of Georgia intends to create a modernized and commercial primary and processing agriculture sector at logistics centres, in parallel to the traditional and household agriculture.”

The plan aims that:

- i) Agro-industrial production should be increased by 50%,
- ii) Development of fruit production, through increasing access to better and productive saplings and the diversification of commercial fruit growing, be in place.
- iii) Rehabilitation and development of the irrigation systems takes place, with new modern technology irrigation and the operation being based on the public-private partnership.

159. Under preparation, the report entitled “Measures related to the Strategy of Agriculture Development 2012-2022” focuses on the implementation of the GoG’s Agricultural strategy, the actions include:

- i) Enhancing the Competitiveness of Farmer and Rural Entrepreneurs/Organizations,
- ii) Value Chain Development,
- iii) Development of Regional and Agricultural Infrastructure.

160. The World Bank’s “Georgia - Rural Development Briefing Note” emphasizes:

- Removing disincentives or constraints to farmers leaving the farm sector to retire or seek employment in the non-farm sector, and improve incentives for farm operators seeking to expand through land rental and purchase,
- Creating conditions for investment in the agribusiness sector which could provide significant rural employment,
- Removing disincentives or constraints to diversification of the existing farm production,
- Increasing the productivity of existing agricultural production.

161. The World Bank emphasizes the need for investment support in **rural infrastructure: drainage, irrigation and flood control**. Irrigation was identified as an important constraint by 49% of the farming population. Long-term investment in improved irrigation, drainage and flood control will be critical in order to reduce disaster risks.

Annex 2: Flood Mitigation Structure

1. Pre-disaster Situation

162. Flood control and river erosion structures have been constructed for the whole of the Kakheti river basin with most of the structures being constructed many decades ago. The largest municipality in the region, Telavi, has several rivers and the main Telaviskhevi river channel converted to canals moving through the city. In addition the canal has been lined with concrete to improve the efficiency and the alignment so that any flood water that enters them is rapidly passed through the city out to the Alazani River downstream. Yet, not all the river channels are lined. Most river banks are protected by gabions at critical areas to prevent erosion of the banks and by flanged culvert outlets as they pass under roads. Channels appear to be rarely maintained, given that the rivers are all filled with rocks and sediment to the level of the river bank. Although upstream catchments where the rivers originate are fully forested it seems the sediment and rocks come from the river bed. The discharge capacity of rivers is therefore limited due to the clogging of river channels with rocks.

163. Telaviskhevi River and the tributary rivers pass through Telavi and through villages downstream. As a result, as many as about 10,500 people out of the 71,000 impacted by the July 19 storm were vulnerable to major floods. Flash floods are reasonably frequent in this region as indicated by a study done by an ECHO supported project. Flash floods occur only over several hours but overflow the banks and flood property and farm land in rural areas.

2. Disaster Impact on Sector

164. **Flood Impacts.** The July 19 event demonstrated that in Telavi there is a serious risk of flash floods. Of the 31 village and settlements, five settlements downstream of Telavi, with approximately 10,000 people, being seriously affected by the floods. Flood-related losses to private and public sector are estimated at 10 million GEL, with 75% of the losses suffered by farm families.

165. All flood infrastructures were constructed decades ago with a severe lack in maintenance of the river, which had not been done for decades, resulting in all rivers being full of rocks and sediment. This has led to a reduction on river capacity which has been significantly reduced - due to rocks and sediment - then contributing to flash flood occurrence thus overflowing the river banks. These peak floods have created serious damage to the river protection work (levee's, bank protection-revetments and Gabions). The floods also damaged homes in the flood plain, farmland and city structures.

166. In terms of infrastructure the impact of the floods noted were follows:

- a. Concrete channel of The Telaviskhevi River which passes through the city was damaged seriously in many parts. The bottom of the concrete channel was gouged out in many places (Photo 1). In addition, lack of maintenance to the upstream barrage had been filled with rocks, making it difficult for it to serve its purpose of removing sediment and rocks that were coming down the channel. Consequently, during the severe storm, the barrage failed, and flood waters destroyed part of the channel. Downstream from the barrage, the river channel was filled with additional rocks and sediment and it caused floods downstream.



Photo 1 Concrete River channel Damage

- b. In the village of Vanta on the Vanta River, the soil embankment was washed away and stone gabions damaged with homes and farmlands being badly damaged by the floods



Photo 2 Erosion River Bank

- c. In Karajala village, on Telaviskhevi River, the river channel was filled with sediment for 1.8 km leading to several gabions being washed away. The flood damaged several farm houses and damaged farmland (see Photo 3).



Photo 3 Telaviskhevi River filled with stones and rocks

- d. In the Zuzumbo area in Telavi a large river culvert concrete protection wall foundation was weakened leaving the wall sloping into the river
- e. In Busheti village, on the Busheti River, an embankment of 300 metres was damaged resulting in the flood overflowing the banks thus damaging several farm houses and their farmland
- f. In Kondoli Village, a reinforced concrete revetment protecting the river bank of the Kisiskhevi River, was destroyed.

3. Damage and Losses

167. Most of the damage caused was to flood infrastructure while the losses were to flood impact to homes and farmland. The table below gives the estimates of damages and losses.

Table 4 Damage and Losses (mil GEL)

	Impact	Damage	Losses	Public Losses	Privatelosses
1	Telavi River: 1.5 km concrete lining/3.5 km of river bed sedimentation and flooding	3.76	3.89	1.03	2.86
2	Village Vanta on Khevi River 400 m of soil embankment destroyed/80 m of gabion destroyed	0.96	0.93	0.21	0.71
3	Turdo River channel sedimented 1.8 km and flooded, 110 Gabions destroyed-Karadzhal Village	1.01	2.70	0.77	1.93
4	Village Bushti/Bushti Khevi	1.01	0.77	0.20	0.57
5	Village Kondoli/Kisiskhevi Khevi	0.88	1.71	0.48	1.23
6	Zamzunbu Area Telavi	0.40	0.00	0.10	0.00
	Total	8.02	10.00	2.69	7.31

4. Recovery and Reconstruction Needs

Short Term Recovery Needs and Priority Actions

168. The short-term needs are to repair the key damaged structures so that if a similar flood reoccurs the capacity of river will be sufficient to handle the flows. In addition the cleaning of the rivers must be done so that their capacity can be increase. The major short term recovery needs are summarized in the Recovery Framework in Annex 11).

Table 5 Short term recovery needs

Items Needed	Major work	Costs (GEL)
Telavi River work	Desilting of Upstream barrage Concrete channel of river bed repair River desilting to Alazni River	7,000,000
Vanta River	Install Bank protection with Gabions	100,000
Turdo River	Repair and reinstall Gabions	1900000
Telavi area- Zuzumbo	Desilt 2.5 km of the river around Karajala	
	Replace concrete and place in opposite bank	
	Construction a concrete wall for Left bank	
	Gabian Protection for downstream bank	
	Reinforce Bridge	300,000
	Subtotal	9,300,000
	Planning survey and design	325500
	Contingency	375000
	Sub Total	10,000,500
Items Already		

executed		
Busheti River	Soil Embankment reconstructed	100000
Kisishevi River	Village Kodoli embankment	150000
	Sub total	250000
	Total	10,250,500

169. The total cost of recovery needed is 10.255 million GEL. The Municipal Government has already constructed about GEL 0.25 million of work on the Busheti and Kisishevi Rivers. Completing this type of project will not only help ensure the safety but also continued economic growth of people living in flood prone areas, since the risk of flooding would be substantially reduced.

170. The Roads Department would be responsible for undertaking these work using contractors with the surveys and designs being performed by the Municipality and the bidding for contractors (Roads Department). Contractors should be encouraged to use a female workforce so that the design and surveillance of the project can be improved, as well as providing support to facilities in the construction camps. The construction supervision will be undertaken by independent supervisors appointed by the Roads Department. The Municipality will assist in the construction supervision, to maintain the quality of work.

Medium and Long-term Term Recovery Needs and Priority Actions

171. Improving flood control is paramount to revitalizing municipal infrastructure and ensuring positive economic growth and living conditions. The key actions necessary in the medium and long-term are:

- a) The undertaking of river bank protection and river cleaning of as many rivers as possible to reduce the risk of flooding and river erosion. The reduction of risk of river flooding will bring significant benefits to the municipalities and to the villages along the river bank.
- b) Once rivers are rehabilitated there is a need to maintain the rivers and adequate budgets must be allocated by the Central Government to maintain the river banks and river sections. Previous experience in several developing countries shows that every GEL invested in river maintenance can bring two to three times the benefits to the people who live beside the rivers

172. The key issue for all rivers in Kakheti is the need to repair the broken river protection work and to desilt the rivers thus restoring the river channel. Restoring the river channel capacity will keep the river flows within the channel and the protection work will prevent erosion of the river banks. River bank erosion causes loss to both of farm houses and farmland to villages. The Roads Department has performed a study to locate within Kakheti with most of the key river work and river cleansing work needing to restore rivers to their natural condition in order to

prevent flooding and to diminish loss of land (due to erosion of the river banks). (A summary of medium and long-term recovery action is found in Annex 11: Recovery Framework.)

173. Works to be performed for Medium-Long period - There is seven key municipalities where the river sections and river banks must be repaired or cleaned to restore them back to their natural condition. Table 6 indicates all areas for long term flood mitigation measures amounting 24.8 million GEL.

Table 6 long term flood mitigation measures

Municipality and Rivers	Key Work	Costs
1. Kvareli Municipality – Duruji River	River bank protection River desilting	GEL 8.2 million
2. Lagodekhi Municipality- Kabali River	River bank protection River desilting	GEL 5.1 million
3. Sighnaghi Municipality- Anagi and Bodbiskhevi Rivers	River bank protection	GEL 3.2 million
4. Akhmeta Municipality- Khodasheni River	River bank protection	Gel 0.45 million
5. Dedoplistskaro Municipality –Alazani River	River bank protection	GEL 3.18 million
6. Signagi Municipality- Alazani River	River bank protection	GEL 4.5 million
7. Gurjaani Municipality	River bank protection	GEL 0.20 million

Annex 3: Housing

1. Pre-disaster Situation

174. Most housing units in the impacted regions are old single story masonry buildings, made of sandstone and bricks and roofed with corrugated metal sheets, asbestos or ceramic tiles. Houses in urban areas, which are generally in poorer condition, are almost universally connected with all municipal infrastructures, have water supply either directly through house connections, stand-pipes or wells, but without sewerage connections. Toilets are often located separately in the back yard using pit-latrines. Electricity networks are available, and most roads are in poor conditions in rural areas.

2. Disaster Impact on Sector

175. The total number of damaged houses is 5,039 houses with the total number of damaged multi storey buildings being 216 residential buildings.

176. The largest impact of storms on housing is reported from 35 settlements in Kakheti. About 3,187 private houses and 101 multi storey buildings are damaged, of which approximately 801 are roofed with ceramic tiles left damaged. Most of the damaged houses in Kakheti were in Telavi and Gurjaani cities and their surrounding villages.

177. In The Samtskhe-Javakheti region, about 1,836 houses 115 multi storey buildings were damaged, of which 200 houses were severely damaged. Most damaged houses in Samtskhe-Javakheti region were in Akhaltsikhe city and its surrounding villages. In Mtskheta-Mtianeti region, about 16 houses were severely damaged in Tianeti with the most severe damage occurring to roofs, including gutters, which were either blown away due to strong winds, such as in Kakheti and Mtskheta-Mtianeti regions, or broken to pieces due to large-sized hailstones, such as in Samtskhe-Javakheti region. There have been very few cases of destroyed houses (referring to houses that have been identified as uninhabitable due to the storm damage).

178. In some partially or severely damaged houses, however, the walls and foundations were exposed due to heavy rain, which caused cracks in walls that would ultimately need to be rebuilt. Glass windows were also broken due to hailstone. Most affected people were not evacuated out of their houses with widespread damage to household possessions. All household members, some of them in towns, operating small enterprises, were not able to operate for 2-3 days. Also 30 vehicles, that were damaged, had to be repaired.

179. Additionally, 75 IDP families living in Telavi (100 persons) in two communities experienced damages. The roofs of their four multi storey buildings as well as inner living spaces were severely damaged. Details are provided in the table below:

Table 7: Details of damaged multi-stories buildings and inner living spaces

Community Location	#. of families / people	Families beyond poverty line	Vulnerability Level (Description)	Description of Community
Telavi, former Technical Institute facility, Tbilisi Highway No.28	26 families – 75 persons	23 families (67 persons)	24 children under 16; 4 elderly over 60; 9 women led families	Shida Kartli (new IDPs from the 2008 conflict). Main source of income is IDP allowance, pension, social assistance, and temporary work.
Former military facility – Telavi, Tbilisi Highway No.26	49 families – 144 persons	12 families (33 persons)	30 children under 16; 14 elderly over 60; 12 women led families	Abkhazia (old IDPs from 1992-1993 conflict). Main source of income is IDP allowance, pension, social assistance, and temporary work.

3. Damage and Losses

Table 8: Damages, Losses and Needs in the Housing Sector

Currency	Damages and Losses			Needs		
	Damages*	Losses	Total	Short-term	Medium-term	Total
GEL Million	18.38	4.05	22.43	24.69	37.03	61.72
USD Million	11.35	2.50	13.55	40.00	60.00	100.00

* Cost of damage assumes a) an average USD3,000/house for removal of old roofs, safe disposal, and installation of new roofs and windows; and b) USD15,000 per multi-story building.

4. Recovery and Reconstruction Needs

180. Safer homes increase the resilience of people and the economy to disaster-related shocks. Quality housing stock is also integral to the revitalization of cities and municipal infrastructure which both set the issue of short and long-term housing recovery in the context of the government's efforts to spur economic growth and create decent living conditions for all Georgians.

Short-term Recovery Needs and Priority Actions

181. In response to the destruction, the Georgian Government has provided the following measures: restoration of damaged roofs; a clean-up of them and windows; restoration of gas, water, and electricity supply systems; the provision of financial compensation ranging from 300 to 1,500 GEL per household based on the severity of damage; In restoring roofs, some regions hired workers to do the work, such as Kakheti and Mtskheta-Mtianeti, while materials were provided to households in Samtskhe-Javakheti region for self-installation. It is also worth noting that as the domestic market in Georgia could not provide all required materials at once, some 85,000 m² of zinc roofs were imported from Turkey to serve damaged houses in Samtskhe-Javakheti region.

182. The most urgent short-term recovery needs are:

- 1) Finalizing the rehabilitation of all damaged roofs and structures
- 2) Ensuring households use appropriate and equipment with environmentally safe techniques for the removal of damaged asbestos sheeting
- 3) Complete repairs to housing for formerly Internally Displaced Peoples, at a cost of US\$100.000

Medium and Long-term Recovery Needs and Priority Actions

183. In the medium to long-term, the government should consider initiating a disaster resilient housing program for residential buildings. This program could provide in-kind financial support for retrofitting and rehabilitating buildings, i.e. tax discount for work or green-oriented rehabilitation.

Annex 4: Water supply and sanitation

1. Pre-disaster Situation

184. Water and sanitation services are provided by the Georgian United Water Company in the cities and towns of Kakheti, while it is provided by municipalities in villages. The most affected area of the storm was in Telavi in Kakheti. Other affected villages include Akura, Karajala, Busheti and Shalauri in Telavi municipality; and Vachnadziani, Vazisubani, Kalauri and Akhasheni in Gurjaani municipality. Damage to water and sanitation systems in Mtskheta-Mtianeti and the Samtskhe-Javakheti regions were insignificant.

185. The city of Telavi is supplied by seven different old water head works (intake): “Tbiltsklebis Tskaro”, “Jvaripatiosnis Tskaro”, “Burusi Tskaro”, “Nakalakari Tskaro”, “Psitistsikhis Tskaro”, “Tikhiani Rikis Tskaro” and “Mtis Tskaro”. The production of head work meets the 25,000m³/day water demand of Telavi but due to high leakage/losses in main, aged, water pipe and distribution network, as well unmetered water consumption, water supply is restricted to a mere 10 hours per day.

186. The Telavi wastewater treatment plant and sewerage collection system is equally as old. Constructed in the 1950s-60s, the treatment plant is fully amortized and has exceeded its expected life span leaving it in complete ruins and unable to operate, reportedly since the “end of the Soviet era.” Likewise, the sewerage system is fully dilapidated with many collectors clogged or broken, such that sewage is often diverted to the artificial open irrigation channel through the city, which connects to the Alazani River by discharging untreated sewerage to the river thus creating anti-sanitary conditions in the city, causing a higher rate of pollution to the city and stresses on the environment in general. More than 50% of sewerage network is amortized causing a big risk of cross contamination as well.

187. As for villages, the main source of water supply is ground or spring water. Most villages in Kakheti are small in population, with an average 1,500m³/day water demand. There are no sewerage networks which means that generally, households rely on sanitary pit-latrines; often located in their backyards.

2. Disaster Impact on the Sector

188. Damage and losses in the water supply and sanitation sector in Telavi can be considered as severe, and relatively less in villages considering the pre-disaster poorly developed infrastructure. The biggest damage was done to the water head work (intake) system in Telavi as well as the water main supply pipe to the city. Water service in Telavi is now limited to only 5-7 hours/day, resulting in a sharp increase in residents and business coping cost (losses).

189. In villages, artesian wells have suffered due to sedimentation and floods alongside parts of the 219mm main water pipes crossing rivers to serve Akura, Karajala Shalauri being washed away. There has also been damage to access roads to head works and wells in the villages of Vachnadziani, Vazisubani, Kalauri and Akhasheni. Service with water in these villages is now limited to only 5-8 hours every other day, resulting in a sharp increase in residents' business coping costs (losses).

190. A section of about 40m of the 630mm diameter main water supply pipe to Telavi city has also been washed away as the pipe installed at the ridge of the river bank was without enough flood protection resulting in the main pipe and road installed underneath washing away.

191. This was alongside several head works and 600m of the 219mm diameters of water supply pipe to the city running in the bed of the river being washed away.

192. Additionally, approximately 300m of the 219mm diameter main water supply pipes to villages were washed away alongside twelve shallow wells and springs in the 8 villages reported being flooded and/or affected due to contamination by infiltration of flooded waters. The most affected were villages in Telavi and Gurjaani municipalities.

3. Damage and Losses

193. Table 9 shows estimates of damage, losses and needs in the water and sanitation sector.

Table 9: Damages, Losses and Needs in the water and sanitation

Currency	Damages and Losses			Needs*		
	Damages**	Losses	Total	Short-term	Medium-term	Total
GEL Million	2.1	1.94	4.04	19.44	24.3	43.74
USD Million	1.3	1.20	2.5	12.00	15.00	18.00

* This includes the cost of: a) a proposed rehabilitation of Telavi wastewater treatment plant at an estimated cost of 8.00 million USD, b) priority improvements to rural sanitation, and c) relocation/retrofitting of infrastructure in order to reduce risk impacts of possible future disasters

** The damage's cost in Telavi city is \$1.1 million

4. Recovery and Reconstruction Needs

194. Water and sanitation infrastructure is obsolete and/or poorly developed throughout the country, especially in the rural areas, including the localities affected by floods.

Short-term Needs and Priority Actions

195. The recovery and reconstruction strategy focuses on small-scale projects at household and community level, such as protecting existing water sources especially head works and water main supply pipes, upgrading and improving existing sanitation facilities thus reducing groundwater contamination risk by household sanitation and domestic livestock infiltrations. These actions could be undertaken with reduced costs using local labour.

Medium and Long-term Needs and Priority Actions

196. While planning and deciding on the new construction or extension of the water and sanitation infrastructure, the need still exists for water meters to be installed, the operational and maintenance costs need to be considered, as well as the organizational set up of consumers of water supply and sanitation services.

Annex 5: Transport

1. Pre-disaster Situation

197. Georgia has a well-developed road network with the number of roads per 1,000 sq. meters being similar to that of most countries in the region. It has a total road network of 20,930 km, of which 1,564 km are international roads, 5,466 km are secondary, and 3,750 km are core local roads. About 34 percent of secondary and local roads are paved, 59 percent are gravel, and 7 percent are of earth. Road network in Kakheti is also well developed with approximately 124 km being international roads, 717 secondary and about 1,100 km local roads.

198. The road network in Georgia is fully publicly owned and maintained. The Ministry of Regional Development and Infrastructure (MRDI) is responsible for the maintenance of the main, secondary and core local roads network. The Roads Department (RD) of the MRDI manages and administers the entire road network except for non-core local and all municipal roads.

199. The government, through budget funding and three Bank-financed road projects, has provided substantial funding to rehabilitate a majority of the roads in Kakheti. Kakheti Road Improvement Project has funded the rehabilitation of 56 km of Vaziani-Gombori-Telavi (VGT) road with the Secondary and Local Roads Project funding the rehabilitation of the Akhmeta-Gurjaani-Lagodekhi road. This will also fund rehabilitation of approximately 400 km of roads including the eastern part of Kakheti.

2. Disaster Impact on Sector

200. The flood impact on the road network in Kakheti could be classified as moderate with no notable damages to the main road network. The VGT road, which is the most susceptible to high precipitation due to active landslides, has not suffered severe impact by the heavy rain and respective floods. However, there has been some slippage of slopes, and increased rock falls along the road. There have been no accounts of new land-slides or any acceleration of slippage of the existing landslides. Some local and non-paved access roads have also suffered from the rapid increase of the runoff. In a few places culverts have failed to cope with the increased runoff thus being blocked, causing failure of the embankments.

201. The flood however, has necessitated additional river embankment protection measures which are required to prevent further damage to the roads and contain losses caused by eroded embankments. In addition, as part of the response to floods, damaged culverts need to be cleared and/or replaced.

202. There were two spots on the VGT road which have been impacted by the floods that require immediate intervention; 1. On the km post 56 of the VGT road box-culvert needs to be replaced and washed section of the embankment backfilled. 2. On the km post 61 two parallel pipe culverts have been blocked and need to be replaced. The blockage has caused erosion of the embankment which also needs to be backfilled. The km post 23 of the secondary road Akhmeta-Telavi-Bakurtsikhe, river crossing over the river Turdo, access road embankment needs to be reinforced and riverbed cleared of the flood debris.

203. More significant improvements are needed for riverbank protection; 1. Akhmeta Municipality, river, Zemo Khodasheni ravine, has been clogged with debris requiring clearing and the construction of gabion walls. Both sides of the same river need to be strengthened by 3 levels of gabion walls which are also required for the river Tekhiani (Gomborula), near Gombori village.

3. Damage and Losses

204. The table below presents an overall monetary value of the damages and losses caused by the flood.

Table 10: Damages, Losses, and Need in the Road Sector in Kakheti

Currency	Damages and Losses			Needs		
	Damages	Losses	Total	Short-term	Mid-term	total
GEL Million	1.25	0.8	2.1	-	-	-
USD Million	0.75	0.5	1.3	-	-	-

205. The total damage and loss to the transport sector in Kakheti caused by the flood is approximately 1.3 million USD.

4. Recovery and Reconstruction Needs

Short-term Needs and Priority Actions

206. While the design of the main and secondary roads in Kakheti seem to be robust and show resilience to the extreme climate conditions, immediate implementation of the riverbed and overall flood control measures are required.

Medium and Long-term Needs and Priority Actions

207. The floods have caused riverbed clogging and pose an increased threat to the roads and in case of new floods, riverbeds need to be cleared and the embankment strengthened in order to avoid potential future damage to the road infrastructure.

Annex 6: Education and Sport Facilities

1. Pre-disaster Situation

208. Kakheti, where damage to schools occurred, had relatively good access to basic education prior to the disaster. The admission and enrolment to basic education are close to that of the national average, despite very low urbanization of the region. Access to primary and secondary levels is relatively high, with a gross enrolment rate of 96%. This is not only close to the Georgian average but also to other European countries and as a result, about 20 percent of the population has completed primary school while approximately 50% secondary school (see Figure 10). On a negative note, only about 25% of children aged 4-6 years old participate in pre-school education as compared to 45% in Georgia on average. This is very low by European standards (much lower than in Poland and Romania where the average rate reaches 70%). Estimates indicate that “locality” is the main factor affecting the probability of children aged 4 to 6 being in preschool in the country. In rural areas, the lack of access to facilities nearby is the main reason why parents do not send their children to preschool.

209. In addition, the deteriorated quality of education gives sufficient reason for moderate expectations regarding education in Kakheti, and the rest of Georgia. Only one of the higher education institutions in the region has been granted national accreditation in 2006. Moreover, education in the past, even in the basic sciences, may not have been adequate for modern labour requirements. This is an area that calls for support with some of the measures in this regard already being underway. The limited opportunities for education workers in the region for their participation in the international grant programs and skills improvement courses are also national problems. Transforming education into a competitive advantage for the population of Georgia in general with Kakheti in particular being the first to require an increase in budgetary funding for the education sector, followed by successful implementation of the comprehensive institutional reform (which will require several years).

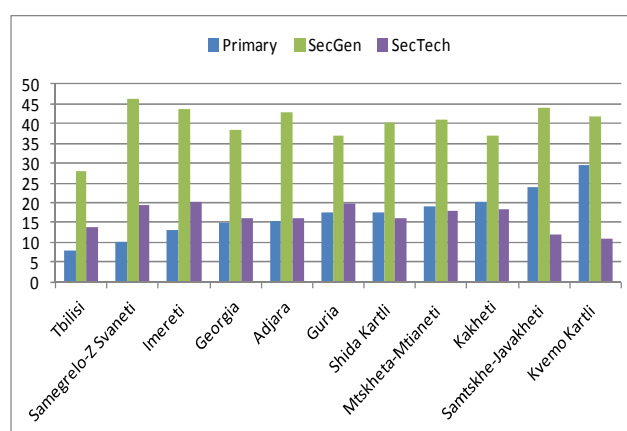
210. Most of the population recognizes the importance of education, yet it remains unclear how many resources they are able and willing to allocate for the desired level and type of education. The problems faced by the regional education sector, which require national-level solutions, include inadequate remuneration of staff and teaching quality, as well as deficiencies in the management system, which could not be considered specific to the region.

Table 11: Preschool and basic education gross enrolment rate, 2006

	Preschool enrolment	Enrolment rates in Basic Education
Children	Aged 4 to 6	Aged 7 to 17
	%	%
Rural	13,6	95,2
Urban	34	97,6
Region		
Kakheti	20,9	95,6
Tbilisi	34,8	98,3
Shida Kartli	10,5	95,7
Qvemo Kartli	22,5	94,2
Samtskhe-Javakheti	13,8	97,1
Adjara	13,5	95,1
Guria	11,6	97,2
Samegrelo	33,7	96,9
Imereti	17,9	95,5
Mtskheta-Mtianeti	27,3	100
Total	23,1	96,4

Source: World Bank using Georgia 2006 HBS data
[Need to be updated based on 2010 HSB].

Figure 10: Population by education, 2010



Source: World Bank using 2010 HSB, 2010

2. Disaster Impact on the Sector

211. In affected areas, the majority of the pre-school and school facilities were affected, more specifically out of 39 kindergartens 17 were affected, more significantly with 1,232 children of pre-school age. Out of 39 schools, 13 were damaged with 3,210 children of school age under the risk of not being able to start the new school year. In addition to that, the vocational training centre and University of Telavi (1,800 students) were affected by the disaster in addition to sports facilities in Telavi being damaged by the disaster with significant levels of impairments.

212. It should be noted that the educational establishments in the affected areas were in poor physical condition before the disaster, especially pre-school facilities/kindergartens. A certain

number of school premises are in disarray but appearing to be under government coordination in order for schools to be ready for the new school year.

3. Damage and Losses

213. The damage to schools and kindergartens is remarkable thus impacting on long-term problems in education. Apart from immediate infrastructural needs, no precise data exists on asbestos roofing. Based on the data available, only 7 damaged kindergartens and 4 schools need full re-roofing, since asbestos materials will pose serious health risks to children and personnel.

214. Teachers and other personnel employees are not at risk of job losses as due to the resulting in no need of re-deployment to other educational institutions.

215. Table 11 shows the estimates for the damage, losses, and needs in the education sector of the affected areas.

Table 12 Damage, Losses, and Needs in Education

Currency	Damage and Losses			Needs		
	Damage	Losses	Total	Short-term	Medium-term	Total
GEL	1,787,400	72,990	1,860,390	1,400,000	460,390	1,787,400

4. Recovery and Reconstruction Needs

Short-term Needs and Priority Actions

216. The main set of disaster response in the education sector focuses on the meeting of children's right for education ensuring access. While physical access might not be at risk the affordability might be an issue with recent survey findings (World Vision, Focus Group Discussions, Aug. 9, 2012) explicitly showing post disaster parental financial vulnerability due to being left with little or no potential income thus the purchase of school books and clothes for their children being at a low or non-existent. After the disaster, 90% of parents have not been able to buy books for the coming academic year. It is also worth mentioning that youth's attitude towards education is exemplary, as they have demonstrated that they are more eager to study harder despite their expression of fear regarding the purchase of books and affordability of private tuition.

217. The situation in the pre-primary education field is more or less stable despite the Needs Assessments by World Vision and the Preschool Agency of the Telavi Municipality report on preschool infrastructure detailing damage to roofs, window frames, window glasses and walls. In Telavi total 17 kindergarten buildings have been badly affected. Due to the fact that since 2005

the preschool education sector has been decentralized in Georgia, all administrative, financial and managerial functions for preschool education currently rest with the municipalities while the Ministry of Education and Science of Georgia bears sole responsibility for primary and secondary schools, higher education and science. The situation in Kakheti is unclear in relation to the affordability of funds and or availability of any operational framework by municipalities to initiate urgent rehabilitation of damage in kindergartens that would make them ready and accessible by children as of a new academic year in September. In addition to the damage in infrastructure, the kindergartens lack essential materials for early learning and stimulation of young children, recreational supplies, desks, chairs, bookcases (*list of needs available*). In addition, approximately 70-80% of the local population will not be able to afford to pay kindergarten monthly fees. The government is promising to subsidize the tuition fee for kindergartens for those affected by the disaster. Books, textbooks and learning materials will be an issue as well since women are the primary caregivers of children, employment outside the home will have a high chance of decreasing.

218. In Secondary Education, while the Ministry of Education and Science has budgeted and initiated rehabilitation of damage and loss of school infrastructure, the accessibility of students to essential learning supplies (books, clothes, shoes) and school furniture (desks, chairs, boards, bookshelves, etc.) still needs urgent attention and resolution. The Telavi Education Resource Centre reports on about 50% infrastructure damage (roofs, window frames and glasses) and lack of essential supplies in the 13 schools identified as badly affected. As mentioned above, the government promises to postpone the fee for those students whose families have been affected by the disaster.

Medium and Long-Term Needs and Priority Actions

219. While the main set of the immediate measures should be focusing on the infrastructure rehabilitation, provision of the educational material lost during the event, equipment, waiving the fees there should also be a reduced risk of starting new academic year. The medium and long term needs are listed below:

- Increase awareness of disaster risk reduction (DRR) should be integrated through various teaching/learning initiatives including information campaigns and training
- The availability of Emergency Preparedness and recovery plans in schools and kindergartens
- Teaching Disaster Risk Reduction (DRR) in secondary schools and kindergartens
- Ensuring safe, clean water and sanitation facilities at the educational institutions
- Training students and communities in prevention and mitigation measures for natural disasters (to be coordinated with the Ministry of Education)

- Cross sectorial – the establishment of an overall Emergency Coordinator office responsible for recovery of Kakheti, data collection for all sectors, the analyses and planning with respective stakeholders.

Annex 7: Health and Social Protection Sectors

1. Pre-disaster Situation

220. **General background:** In the context of reducing the overall tax burden with limited public finances to spend on health, the focus of the social protection sectors (including health) has been to promote greater private sector involvement in both finance and delivery, and to target public funding to the poor.

221. **Social safety nets:** Among the safety net programs, the most important in terms of resources (around 1% of GDP in 2011 budget) and poverty impact is TSA (Targeted Social Assistance). The TSA program was introduced in August 2006 and is a means of testing a cash benefit program that targets the extreme poor. At present, about 429,292 people (about 10% of all population, out of them 55 % females) receive monthly assistance of between 24-30 GEL per person. As for Kakheti, the number of households receiving TSA benefits equals 19,330 (54,867 persons) with the similar male/female ratio as for the whole country. The State Social Service Agency is charged with the responsibility of administering the program. An automated management information system (MIS) was developed comprising a database of poor and vulnerable households. In addition to the TSA, this database is used to target other government programs, such as medical insurance programs. Currently, the database of applicant households contains data on almost 50% of whole population of Georgia.

222. **Health:** Recent trends in Georgia's health indicators point to steady improvement²⁷. The government is in the midst of a major health reform, with greater private provision of services, combined with the Medical Insurance Program (MIP), subsidized for the poorest and with the further expansion of publicly funded health insurance for elderly and children under 5 (with the goal to increase the number of insured population to at least 2.5 mil by 2015). The MIP offers a free, extensive benefit package financed through general tax revenues and targeted to the poorest segment of the population based on a sophisticated proxy means test. For the past five years, the number of insured people has increased from 40,000 to 1.5 million and as of 2011, more than one million people have been covered by state-funded medical insurance, including more than 900,000 citizens living below the poverty line. Data for Kakheti, per district is shown on the Table 13 below. The general population is eligible for the Universal or Basic benefits Package

²⁷Life expectancy has increased and infant mortality and maternal mortality rates have declined. Considerable progress has been observed in terms of achieving the Health Millennium Development Goals (MDGs): Infant mortality per 1000 live births has dropped from 31 in 2000 to 14 in 2010. However, there is still some way to go to achieve the MDG target of 7 per 1000 live births by 2015. The maternal mortality has fallen from 58.7 deaths per 100,000 live births in 2001 to 19.4 deaths per 100 000 live births in 2010. Life expectancy increased from 70.3 years in 1995 to 74.4 years in 2010.

(UBP or BBP) offering a limited benefit package with relatively high co-payments which is being scaled back significantly in 2009 due to budget cuts. This, in turn, means that many borderline poor will be very vulnerable to catastrophic health spending.

Table 13. Persons insured under the Medical Insurance Program for Poor, budget

Municipality	# of insured persons	% from population	Amount of money transferred
Akhmeta	11,268	26.7	127,569
Gurjaani	19,181	27.4	216,950
Dedoplistskaro	6,702	21.9	76,025
Telavi	10,844	15.3	120,920
Lagodekhi	10,585	20.4	120,001
Sagarejo	10,748	18.0	121,828
Sighnaghi	8,447	19.4	95,514
Kvareli	7,231	19.4	81,050
TOTAL for Kakheti	85,006	20.9	959,856

223. **Access to health care in Kakheti is slightly below the national average** with the level of inputs in health resembling many other regions - Imereti, Tbilisi and Ajara excepted. There are just over 350 doctors and about 300 staff per 100,000 residents in Kakheti (compared with 470 and 420 in Georgia's average, respectively), see table14 below for a more detailed breakdown.

Table 14: Health outcomes and inputs, 2009

Regions	Infant mortality rate per 1000 live birth	Diseases of the circulatory system, fatality rate	Neoplasms, fatality rate	Number of doctors per 100 000 inhabitants	Number of medical staff per 100 000 inhabitants	Number of hospital beds per 100 000 inhabitants	Total number of encounters per 1 rural population
Georgia	14,1	6,4	2,3	467,2	424,9	309,1	0,85
Ajara	11,8	6,6	2,2	327,1	519	269,4	0,82
Tbilisi	19,5	6,5	2,1	881,6	639,6	499	0,32

Kakheti	8,7	7,4	12,1	340,1	271,3	163,7	1,03
Imereti	19	6,2	2,3	402,7	443	342,1	0,98
Samegrelo & Z Svaneti	3,6	2,2	5,7	296	335,5	204,2	0,72
Shida Kartli	8,7	7,9	8,1	269,9	301,7	192,2	0,96
Kvemo Kartli	3,3	6,9	5,7	197,9	170,6	170,5	0,55
Guria	1,8	11,1	11,1	283,6	320,6	189,5	1,13
Samtskhe – Javakheti	7,3	11	2,7	227,5	325,2	301,9	0,75
Mtskheta – Mtianeti	5,7	9,6	0	309,3	292,1	121	1,11
Racha – Lechkhumi & Kvemo Svaneti	0	6,7	0	427,7	532,4	450,7	0,67

Source: Ministry of Labour, Health and Social Affairs of Georgia

224. The number of visits to health facilities reflects relatively good out-patient care utilization in the region with the general health status being satisfactory and not differing significantly from the average in the country. In addition, spatial disparities in provision and access within the region seem to be small. Health system indicators for Kakheti's municipalities do not reveal a significant difference between urban and rural places. For example the best access to health is very similar in Akhmeta to Sagarejo (see Figure 11).

Figure 11: Health Input Indicators, Districts, Georgia 2009

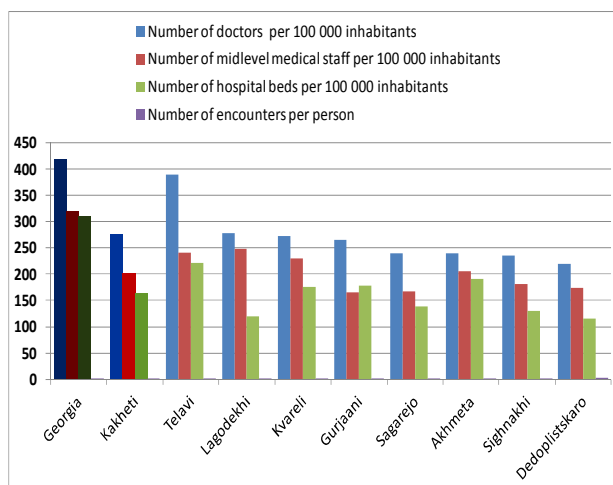
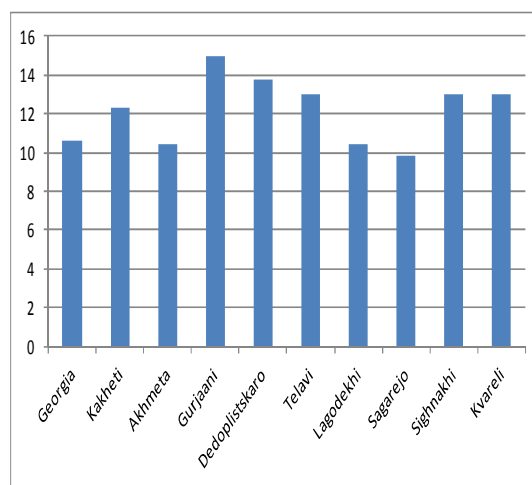


Figure 12: Mortality rate per 1000 inhabitants, Districts, Georgia, 2009



225. **Domestic violence** - Domestic violence is a widely spread phenomenon throughout the country, with Kakheti being no exception. The reluctance to disclose such instances are also common place thus hindering a proper response. According to the study conducted by NGO Anti-Violence Network of Georgia in 2010, Kakheti was identified as one of the most problematic regions of Georgia from a domestic violence point of view. According to this study, around 92% of interviewed women in Kakheti claimed to be victims of different forms of domestic violence. However, according to the official statistics of the Ministry of Internal affairs of Georgia during 2008-2009-2010, no Restrictive Orders (preventive and protective measure foreseen by Georgia's Domestic Violence Law) have been issued in Kakheti which is indicative of the discrepancy between the need and the response. No NGO-run or government shelters for the victims/survivors of domestic violence operate in Kakheti; few NGOs offer crises centre services. The State Fund for the Protection and Assistance of the Victims of Trafficking and Domestic Violence usually accommodates victims from Kakheti in Tbilisi and Gori shelters.

2. Disaster Impact on the Sector

226. In affected areas, all health care institutions have been continuously providing services to the population in need under the "business-as-usual" regime. Almost all regional, district level hospitals are brand new or under the reconstruction thus the in-patient services never being interrupted. As for the PHC facilities, only 8 were affected with various levels of damage. In total, damaged PHC facilities are serving around 19,500 people mostly residing in Telavi and Gurjaani. The majority of the PHC facilities have been sharing space with administrative units of the local governments (e.g. Shalauri PHC) or occupying small areas in the big, most commonly dilapidated buildings. Staffing of the PHC facilities with minor exceptions is adequate to the population and demographic needs. In all affected PHC facilities, doctors and nurses are females.

227. All health care needs of those damaged during the disaster are being covered by the state budget. There were 52 damaged persons (17 women) treated under Telavi regional hospital, out of which 13 patients with most complicated conditions being transferred to Tbilisi. The level of damages varies from simple excoriations to fractures/trauma, and chemical poisonings (probably due to the wrong use of pesticides). Treatment cost already claimed is around 6,000 GEL with estimated costs reaching 15, 000 GEL by the Ministry of Labour, Health and Social Affairs who ensure that the need will be covered adequately.

228. The Ministry of Labour, Health and Social Affairs (i.e. Department of Emergency Situations Coordination and Regime and its regional representative) and local authorities provided an adequate, very effective response to the disaster. The special hotline (organized by the ministry) is very instrumental in collecting, analysing and coordinating the efforts. In order to avoid any potential epidemics (such as water-borne diseases, hepatitis A, etc.), chemical

poisoning cases and to address certain psycho-social issues (such as supporting communities in coping with disaster related experiences and facilitating re-elaboration of individual and collective losses) as well as ensuring that further health promotions and information campaigns are in place, and respective training for the PHC personnel are provided.

3. Damage and Losses

229. Damage and losses to physical infrastructure of the health sector is limited to 8 PHC facilities with a variety of damages. The overall infrastructure damage is estimated at 66, 200 GEL which covers only immediate needs of PHC facilities. Since all PHC facilities covered by asbestos roofing materials need imminent demolition. Roofing materials that contain asbestos are in general good condition and do not pose serious health risks (e.g. cancer, mesothelioma). However in cases of damage and deterioration, harmful asbestos fibres are released into the air. These microscopic fibres can place individuals in the surrounding area at risk of asbestos exposure and asbestos-related diseases. Once asbestos fibres have been released into the air, they can also become attached to the clothing of workers or other nearby individuals to be then carried into the home leaving additional individuals exposed. For this reason, the demolition needs to be done based on the professional advice.

230. Only two PHC facilities out of 8, equipped adequately with the basic equipment, such as ECG. One ECG has been damaged and patient files have been destroyed in some PHC centres.

231. For estimates of damage, losses, and needs in the health sector see Table 15 below.

Table 15: Damage, Losses, and Needs in Health

Currency	Damage and Losses			Needs		
	Damage	Losses	Total	Short-term	Medium-term	Total
GEL	148,360	4,000	152,360	152,360	62,000	214,360

4. Recovery and Reconstruction Needs

Short-term Needs and Priority Actions

232. The short-term needs of the health care sector include the quick renovation of the PHC facilities in the affected areas (total number of facilities 8). In the short-term, water supply and sanitation issues are in need of special and very urgent attention. Another very urgent aspect of the PHC facilities relates to the complete re-roofing of almost all PHC centres, since the roofing material includes asbestos.

Medium and Long-term Needs and Priority Actions

233. Based on the National Health Care Strategy, 2011-2015, one of the priority objectives implies assuring and improving the quality of medical services. In order to achieve these quality improvements, all health care services should be available at the right time and should be delivered from an adequately equipped facility and at an appropriate cost. The physical assess to PHC facilities in affected areas is adequate, however the material-technical basis is far beyond the basic requirements. Almost all PHC facilities are lacking in basic medical equipment and furniture, e.g. ECG, scales, refrigerators, etc.

234. The routine health care information system (statistical reporting) requires regular reporting, thus all PHC facilities being obliged to report on to the National Centre of Disease Control and Public Health (NCDC&PH) on a regular basis. For this purpose, the NCDC developed a minimal number of national health indicators, based on which, the population's health is continuously monitored and evaluated while trends are being analysed and reported. This newly developed health management information system will enhance ties among primary, secondary and tertiary level facilities with the direct support of electronic notifications, prescriptions, electronic referrals and feedback forms. In order to meet these reporting requirements, all PHC level facilities should have computers.

235. It is necessary to have proper health education and awareness programs in place, especially for water-borne diseases that target women, children and men separately, as well as training in provision of psychological first aid (PFA)²⁸ psycho-social assistance to the affected communities²⁹, so that the PHC personnel can support the population in tackling this very challenging endeavour. In addition to this, the promotion of the nation-wide DV hotline number (2309-903) in order to increase targeted communities' awareness on the availability of victim support services (legal aid, shelters, socio-economic rehabilitation).

236. Based on the information received through focus groups that were based on a survey implemented by the World Vision in Telavi and Gurjaani municipalities on August 9, 2012, 95% of local inhabitants claim to give them socially unprotected status and to be supported by the national government. Some community members have already referred to SSA in order to be considered as part of on-going program which aims to provide families with monthly allowances. The SSA needs to mobilize the personnel in order to facilitate the process, so that the beneficiaries will receive the social benefits, including health insurance vouchers in coming months.

²⁸ Psychological First Aid: Guide for field workers, World Health Organization, War Trauma Foundation, World Vision International

²⁹ Mental Health, Psychosocial Assistance, and Cultural Integration in Emergency and Displacement: IOM Perspective (Guidelines for Programming)

237. For emergency and disaster preparedness, it is necessary to form effective coordination between the Georgian government, various ministries and local governments. Therefore, amendments and supplements will be made to the Emergency and Disaster Preparedness and Response plan to reflect respective coordination mechanisms. It is also highly recommended to increase emergency response capacity of the central as well as regional health authorities and their subordinated structures through the introductions of sound managerial principles. To mitigate high economic and social risks posed by man-made or natural disasters and in order in reducing the potential damage, the government will ensure early detection and expedient coordinated response measures.

Annex 8: Agriculture Statistics

Kekheti (Telavi, Lagodekhi, Kuaveli & Gurjaani)												
				Est of Variable costs	Net Retun + Vr Cost \$/Ha	\$ Loss	Lari Loss	Est of Max Cash Deficit after Replanting	% Replanted	\$ Loss	Lari Loss	
Crop Name		Damaged Area(ha)	Average Net Return									
Grape (Vineyards)		7500	1848	515	2364	\$ 19,323,864	31,884,375 Lari	\$ 8,000	5%	\$ 3,000,000	4,950,000 Lari	
Peaches etc.		3000	3727	818	4545	\$ 13,636,364	22,500,000 Lari	\$ 5,500	60%	\$ 9,900,000	16,335,000 Lari	
Maize		1000	1152	485	1636	\$ 1,636,364	2,700,000 Lari					
Tomatoes		2000	5455	1818	7273	\$ 14,545,455	24,000,000 Lari					
Other Veg		4000	3485	1455	4939	\$ 19,757,576	32,600,000 Lari	\$ -	\$ -	0		
Melons		1000	3485	1364	4848	\$ 4,848,485	8,000,000 Lari	\$ -	\$ -	0		
Sub-Totals		18500				\$ 73,748,106	121,684,375 Lari			\$ 12,900,000	21,285,000 Lari	
Samtskhe-Janakheti (Akhaltsikhe)												
Crop Name		Moderate Damaged Area(ha)	Severe Damaged Area(ha)	Average Net Return	Est of Variable costs	Net Retun + Vr Cost \$/Ha	\$ Loss	Lari Loss	Est of Max Cash Deficit after Replanting	ha replanted	\$ Loss	Lari Loss
Potatoes	223.5	195	4404	1050	5454	\$ 1,794,911	2,961,604 Lari	\$ 4,000	329.1	\$ 1,316,400	2,172,060 Lari	
Vegetables	33	143.5	3485	1455	4939	\$ 806,603	1,330,895 Lari					
Maize	301	16.5	1152	485	1636	\$ 322,527	532,170 Lari					
Fruit	61	105	3727	818	4545	\$ 643,636	1,062,000 Lari					
Cereal	22	31	800	400	1200	\$ 53,040	87,516 Lari					
Sub-Totals		1132				\$ 3,620,718	5,974,185 Lari	\$ 4,000	\$ 329	\$ 1,316,400	2,172,060 Lari	
Mtskheta-Mtianeti (Dusheti-Tianeti)												
Crop Name		Damaged Area(ha)	Average Net Return	Est of Variable costs	Net Retun + Vr Cost \$/Ha	\$ Loss	Lari Loss	Est of Max Cash Deficit after Replanting	ha replanted	\$ Loss	Lari Loss	
1050	Maize	92	1152	485	1636	\$ 132,480	218,592 Lari					
	Beans	105	3485	1455	4939	\$ 456,400	753,060 Lari					
	Potatoes	103	4404	1050	5454	\$ 494,351	815,678 Lari	\$ 4,000	90.64	\$ 362,560	598,224 Lari	
	Wheat	10	800	400	1200	\$ 10,560	17,424 Lari					
Sub-Totals		310				\$ 1,093,791	1,804,754 Lari	\$ 4,000	\$ 91	\$ 362,560	598,224 Lari	
TOTALS		19942			TOTALS	\$ 78,462,615	129,463,314 Lari			\$ 14,578,960	24,055,284 Lari	

Gross margins

Peaches and nectarines

Peach and nectarine																
Replanting with Georgian varieties of peaches and nectarines																
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
<u>Gross revenue per ha</u>																
Yield per hectare (kg)	0	0	2500	7500	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000	15000
Price per kg	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
sub-total (gross revenue)	0	0	1625	4875	9750	9750	9750	9750	9750	9750	9750	9750	9750	9750	9750	9750
<u>Costs per ha</u>																
Replanting costs	6500															
Fertiliser	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450
Agrochemicals	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Irrigation water (if charged)	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Other costs	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
sub-total (costs)	7720	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220
Gross margin per ha	-7720	-1220	405	3655	8530	8530	8530	8530	8530	8530	8530	8530	8530	8530	8530	8530
Present value of gross margins	46,691															
Cumulative gross margin	-7720	-8940	-8535	-4880	3650											

Replanting with improved varieties of peaches and nectarines using imported seedlings																
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
<u>Gross revenue per ha</u>																
Yield per hectare (kg)	0	0	2500	7500	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
Price per kg	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
sub-total (gross revenue)	0	0	1625	4875	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000
<u>Costs per ha</u>																
Replanting costs	12000															
Fertiliser	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450
Agrochemicals	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
Irrigation water (if charged)	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Other costs	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
sub-total (costs)	13220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220
Gross margin per ha	-13220	-1220	405	3655	11780	11780	11780	11780	11780	11780	11780	11780	11780	11780	11780	11780
Present value of gross margins	61,084															
Cumulative gross margin	-13220	-14440	-14035	-10380	1400											

Wine grapes

Wine grapes																
Replanting with improved wine grape varieties																
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Gross revenue per ha																
Yield per hectare (kg)		0	0	0	0	7000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000
Price per kg		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
sub-total (gross revenue)		0	0	0	0	4200	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400
Costs per ha																
Replanting costs		10000														
Fertiliser		300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Agrochemicals		330	330	330	330	330	330	330	330	330	330	330	330	330	330	330
Irrigation water		70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Other costs		300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
sub-total (costs)		11000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Gross margin per ha		-11000	-1000	-1000	-1000	3200	4400	4400	4400	4400	4400	4400	4400	4400	4400	4400
Present value of gross margin	12,393															
Rehabilitation of 100% damaged vineyards producing low quality grapes																
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Gross revenue per ha																
Yield per hectare (kg)		0	0	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Price per kg		0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
sub-total (gross revenue)		0	0	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700	2700
Costs per ha																
Rehabilitation costs		650	650													
Fertiliser		200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Agrochemicals		200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Irrigation water (if charged)		70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Other costs		200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
sub-total (costs)		1320	1320	670	670	670	670	670	670	670	670	670	670	670	670	670
Gross margin per ha		-1320	-1320	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030	2030
Present value of gross margins	13,302															
Rehabilitation 100% damaged vineyards producing high quality grapes																
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Gross revenue per ha																
Yield per hectare (kg)		0	0	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
Price per kg		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
sub-total (gross revenue)		0	0	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200	4200
Costs per ha																
Rehabilitation costs		800	800													
Fertiliser		300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Agrochemicals		300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Irrigation water (if charged)		70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
Other costs		300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
sub-total (costs)		1770	1770	970	970	970	970	970	970	970	970	970	970	970	970	970
Gross margin per ha		-1770	-1770	3230	3230	3230	3230	3230	3230	3230	3230	3230	3230	3230	3230	3230
Present value of gross margins	21,805															

Peach and nectarine replanting

Cost of peach and nectarine replanting on 60% of the damaged orchards (damaged area 3,000 ha, replanting 2,000 ha) GEL												
Cost of replanting peaches and nectarines with Georgian varieties (GEL)												
Replanting cost per ha	6,500											
Input costs prior to first harvest per ha	3,660											
Total cost per ha	10,160											
Number of hectares to be replanted	2,000											
Grand total	20,320,000											
Cost of replanting peaches and nectarines with 70% Georgian varieties, 20% imported varieties and 10% of replanting area planted to other crops (GEL)												
Area replanted with Georgian varieties (ha)	1,400											
Area replanted with imported varieties	400											
Area replanted with other crops	200											
<i>Replanting with Georgian varieties</i>												
Replanting cost per ha	6,500											
Input costs prior to first harvest per ha	3,660											
Total cost per ha	10,160											
Total cost for replanted area	14,224,000											
<i>Replanting with imported varieties</i>												
Replanting cost per ha	12,000											
Input costs prior to first harvest per ha	3,660											
Total cost per ha	15,660											
Total cost for replanted area	6,264,000											
<i>Replanted area to other crops</i>												
Grubbing and land preparation per ha	1,500											
Variable costs per ha (indicative)	4,000											
Total costs per ha	5,500											
Total costs for replanted area	1,100,000											
Grand total	21,588,000											

Unit Costs

Crop Name	Average Net Return	Est. of Variable costs	Est. Av. Yield
	\$ US	\$ US	MT/Ha
Grape (Vineyards)	1848	515	6
Nectarine	3348	818	10
Peach	3727	818	15
Corn	1152	485	5
Water-Melon	3485	1364	50
Tomato	5455	1818	50
Pepper	5121	1697	35
Cucumber	3091	1455	30
Eggplant	4121	1333	25
Potatoes	4404	1050	30

Source UNDP Georgia

Replanting & Establishment cost of Fruit & Grapes

	Per Hectare
Grapes	\$ 8000-10000
	\$ 5000-
Peaches	6000

Annex 9 – Additional Background on Education

238. General background - Georgia's education system has achieved internationally acceptable levels of net enrolment and school completion rates despite relatively modest levels of public expenditure at approximately 2.7 percent of GDP in 2011. Notwithstanding the fact that Georgia spends on education half of what is spent on average within the region, indicators such as gross primary and secondary enrolment rates do not differ from those regionally. There is indeed a very strong (92 percent) primary enrolment rate and close to full gender parity in classrooms. Learning outcomes have been benchmarked through trends in an International Mathematics and Science Study (TIMSS) - 2007 and Progress in International Reading Literacy Study (PIRLS) 2006.

239. The quality of education remains as 'work in progress', though the Georgian Government has put a number of new initiatives in place in order to address this issue. A new *Strategy for the Development of Education in 2010-2015* has been adopted, which puts a strong emphasis on improving the quality of general education. Among many, some of the new initiatives introduced by the government throughout 2010 include emphasis on English language proficiency, ICT literacy, and increased safety in schools, improving teacher qualifications and introducing new school leaving examinations. In the framework of the state program "Teach and learn with Georgia", roughly 1,000 English speaking individuals were invited to live in Georgia and teach in schools along with their Georgian counterparts.

240. The 1st round of School leaving examinations, also referred to as Computer Adaptive Test (CAT), were carried out in July, 2011, in which 30% of the school graduates demonstrated a high level of knowledge. The teacher certification process was launched across the country, which mandates each teacher to obtain accreditation by 2014. Hereby, it should be noted that the majority of teachers are women and in general women constitute over 80% of all the employees of the education sector. The first graders have been provided with the net-books free of charge in September 2011 so that strong ICT skills can be built. School branding was also introduced involving a mandatory assessment of general education institutions with a ten star system, to keep the public informed about the quality of education offered. At the higher education level, accreditation of higher education programs is currently being carried out by the National Centre for Quality Enhancement.

241. The pre-school and kindergarten education: The pre-primary education system was reorganized and essentially decentralized in 2005. As a result, local governments have become responsible for the establishment of pre-school educational institutions, approval of their statutes,

and for the appointment of persons to represent and control their affairs³⁰. There has been a significant increase in pre-school attendance in recent years. In 2005, pre-school attendance was an average of 43 per cent (39 per cent of four year olds and 47 per cent of five year olds). The 2010 Reproductive Health Survey (RHS) showed that nearly two-thirds (63 per cent) of 5 year olds were attending pre-school. The latest data from the survey is confirmed by a reported increase in enrolment of 2-5 year olds by various municipalities. The cost of the pre-school is paid 50/50% by the local budget and HH with poor families being subsidized fully by the state.

242. Primary Education - Georgia has a strong tradition of education, with almost universal primary school enrolment rates across the country. However, the 2005 Multiple Indicator Cluster Survey (MICS) found that primary school attendance was lower among children of Azeri ethnicity (87 per cent, against a national average of 95 per cent).

243. As part of the education reform all educational institutions were established as public legal entities. Each school is governed by a Board of Trustees empowered by financial management authority and made up of teachers, parents and government officials. The administrative structure of the education system was also adapted with a network of 72 Education Resource Centres being established, providing support to schools through data collection, organizing training, conducting research, and monitoring accounting. In 2006, the Ministry of Education and Science established the National Curriculum and Assessment Centre, which introduced a new curriculum and textbooks for all primary grades in 2010. In the 2010-2011 school years, the government began providing free textbooks for particularly vulnerable children.

244. School infrastructure has improved throughout the country. According to some reports, by 2010 all Georgian schools had been provided with electricity and heating systems. However, conditions related to water, sanitation and hygiene (WASH) remain underdeveloped in many places.

245. Secondary Education - extensive reforms have been implemented in the secondary school sector since the 2003 Rose Revolution. These have included increased expenditure on education, the removal of widespread corruption from the university entrance examination and funding process, decentralization and local management of both secondary and primary education. In 2011, a new curriculum and textbooks were introduced to all secondary school grades with the aim of improving learning outcomes. As with the new primary school curriculum, these are outcomes oriented and designed to encourage active learning rather than the mechanical transfer of knowledge. There has also been a comprehensive overhaul of teaching skills and professional

³⁰Selim Iltus (2007). *School Readiness in Georgia - Findings from Research on School Readiness*. Retrieved [29 June 2011] from [http:// www.unicef.org/georgia/School_Readiness_Study.fi nal\(1\).doc](http://www.unicef.org/georgia/School_Readiness_Study_final(1).doc)

standards through the National School Building program, which has a school rehabilitation budget of GEL 500 million (USD 329 million) for the period up to 2011, a number of general schools have been rehabilitated and new schools have been built. At the same time, in order to concentrate resources and adjust to declining student numbers in the next few decades, about 1,000 public general schools have been merged.

Annex 10: Additional Background on Health and Pensions

246. With the ongoing national health reforms, medical services are being provided through privately owned health care facilities. A massive privatization process of the health care facilities started in 2007 which entailed the government's hospital sector development plan being budgeted out of an investment of 1.2 billion GEL in the hospital sector over the two years (2011-2012). For the past several years, up to 50 modernly equipped hospitals have started functioning, including: the National Centre for Lung Diseases, Ambrolauri, Kutaisi and Zugdidi regional hospitals, Mental Health and Narcology Centre, the Emergency Department of the Republican Hospital, MediClub Georgia, the University Clinic at the First Clinical Hospital, the Scientific Research Institute of Experimental and Clinical Medicine and New Hospital etc. Within the frames of the health infrastructure development program, 150 medical facilities are targeted to be renovated and/or reconstructed by 2013. The new facilities are expected to emerge on the principles of a referral network and will offer inpatient, outpatient and pre-hospital (ambulance) services. At the same time, these facilities are expected to be multi-profile, in order to provide greater comfort to patients. Because of this initiative, every administrative territorial unit will possess a new medical centre and 8,000 hospital beds will be established in the country within the completely renovated medical infrastructure. Construction or rehabilitation of new hospitals is a responsibility of the private insurance companies that are in charge of the MIP throughout the country.

247. With respect to health system performance, Georgia lags far behind all regional groupings, with a low outpatient contact rate and a high out-of-pocket (OOP) spending. 72% of the health care spending comes from households, which imposes a heavy burden on Georgian families. It should be noted that this financial burden grew significantly between 2001 and 2009 with the household expenditure on healthcare being approximately 15% of a households' disposable income in 2001, while in 2009, reaching 34%. Increased spending levels for outpatient drugs were major contributors to this growth.

248. **Pension and old age savings programs:** Pensions in Georgia cover both the formal and informal sector workforce since eligibility is conditioned upon reaching a certain age irrespective of working history. All Georgians above 60 (women) and 65 (men) receive a basic pension amounting to approximately 100 GEL per month with those having a working history receiving a slightly higher pension. The system of pension benefits also includes disability and survivor's benefits with approximately 850,000 citizens (around 20% of the population) receiving some form of pension. Pensions are administered by the Social Service Agency and are delivered monthly to nominated bank accounts with money being withdrawn using ATMs.

249. Pensions in Georgia are financed from the state budget. In 2010, public spending on the elderly, disabled and survivor's pensions was at 4.3% of the GDP, which is up from 2.9 percent

of GDP in 2007 largely due to the upward adjustment of the basic pension. Empirical evidence shows that pensions play an important role as a poverty and inequality reduction instrument.

250. One of the major amendments in the final version of the state budget 2012 was related to the new pension package plan, involving an increase of the minimal monthly pension from the current 100 GEL to GEL 125 and funding 15 GEL health insurance vouchers for all pensioners from September, 2012.

Annex 11: Recovery Framework

Short, Medium, and Long-Term Recovery Needs and Priority Actions by Sector

Agriculture and Livelihoods – Short Term Recovery Priorities and Actions (through July 2014)						
Objective: Turn the disaster into an opportunity to create a more resilient agriculture sector capable of stimulating the modernization and competitiveness.						
Activities (Priority Order)	Estimated Needs ['000 GEL]	Indicative Time Frame	Lead Implementer	Existing Initiatives and Partners in this sector	Suggested Indicator of Output/progress	Challenges/Risks to achieving objectives
Relieve financial and other stress through cash compensation to affected farmers (see Annex 1 for suggested implementation options)	24.927	Completed	Ministry of Agriculture / MRDI / Ministry of Finance		Cash contribution 100% disbursed	
Training and extension support to farmers in dealing with damaged plants, and better management practice of farming	0.11	Q3 2013- Q4 2014	Extension providers, CARE and UNDP	Government support to extension provision UNDP-supported provision of extension from the Kachreti Extension Centre	Number of farmers attending farmer field schools	Farmers do not attend the field schools and use sub-optimal pruning and fertilizer applications Poor pay out by insurers in response to the recent storms undermine confidence in insurance.

Stop crop loss, and facilitate crop recovery by providing fungicides to affected farmers	3.150	Complete	Ministry of Agriculture		# of Farmers provided fuel and fungicides	Farmers may need information on proper fungicide application techniques to avoid accidental poisoning
Relieve financial and other stress by providing a grace period on interest payments for agricultural loans	5,198	Complete	Ministry of Agriculture / Ministry of Finance & Banks			Does a grace period mean that farmers never have to pay this year's interest on loans? Farmers may have non-agricultural loans they find difficult to pay due to the disaster's impact on their crops
Improve financial compensation practices (card system)		2013-2014	Ministry of Agriculture/MRDI		Farmers get special plastic cards or other documents to guarantee use of the funds for the intended purposes	Quality of individual damage assessment Expectations and attitude of farmers toward the volume of the support and freedom of choice for using these funds
Accessibility of household production means and machinery	Depends on the cases	2013-2014	Ministry of Agriculture/Agricultural Project's Management Agency	MoA, state LTD 'Mechanizatori'	Farmers get services in terms of machinery and other mechanization work	
Improved information collection on			Ministry of Agriculture/local authorities, WB,			

damage data and participation in recovery activities			UNDP, UNICEF and others involved in JNA			
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Agriculture and Livelihoods – Medium & Long-Term Recovery Priorities and Actions (through July 2017)

Activities (Priority Order)	Est. Cost	Indicative Time Frame					Lead Implementer	Existing Initiatives and Partners in this sector (Current funding)	Suggested Indicator of Output/progress	Challenges/ Risks to achieving objectives
		2013	2014	2015	2016	2017				
Improve practice of skill, knowledge management Arrange nurseries and demonstration/education centres where high-yield and high-efficiency species will be presented and modern technology used.	192,000 GEL (UNDP)	X	X	X			Ministry of Agriculture, UNDP, MoES, Information Consultancy Centres under MoA (in 54 municipalities), MRDI, local authorities	UNDP implemented project 'Modernization of VET and Extension in Agriculture'	# of client farmers getting access to high quality plants, instant directions, guidelines	Cooperation between the VET Colleges
Improve rural infrastructure, namely flood and drainage systems to strengthen the agriculture sectors resilience to hazards and impacts of climate change							Ministry of Regional Development and Infrastructure/ Ministry of Agriculture/local municipality			
Support in Improvement of risk and crop insurance options available to farmers	Various components for farmers support	x	x	x			Ministry of Agriculture, UNDP	SDC supported project 'Modernization of VET and Extension in Agriculture'		

Flood Control – Short Term Recovery Priorities and Actions (through 2014)

Objectives:

1. Revitalize the municipal infrastructure to support economic growth and living conditions
2. Effectively use natural resources and protect the natural environment of Georgia, minimizing a risk of natural catastrophes when possible

Activities	Estimated Needs [‘000 GEL]	Budget already allocated (State or donors or NGOs)	Indicative Time Frame	Lead Implementer	Existing Initiatives and Partners in this sector	Suggested Indicator of Output/progress	Challenges/Risks to achieving objectives
<p>Telavi River Rehabilitation</p> <ul style="list-style-type: none"> -Desilt upstream barrage -Construction Concrete lining -Desilt downstream river channel 	7000	36,844.33 USD	2012/2013	Road Department & Municipality	<p>Department has long term plans for riverbank protection</p> <p>Under the UNDP Project “Immediate Response to 2012 Disasters in Georgia” flash flood/mudflow/flood hazard risk maps were developed for Telavi town and Telavi municipality Based on the maps, project design reports were prepared on Telavi mudflow/flood control systems</p> <p>The hazard maps were prepared by the National Environmental Agency</p>		

Vanta River – Construct bank protection using gabions	100		2014 start Finish after 1.5 months	Road Department & Municipality	Department has long term plans to habilitate the river	Design and bidding and award & construction total 1.5	Major issues are the budgets
Turdo river- Repair and reinstall gabions & desilt river bed	1900		2014 start and finish after 8 months	Road Department & Municipality	Department has long term plans to habilitate the river	Design and bidding & construction	Major issues are the budget
Zuzumbo Telavi area- -. Remove concrete blocks and place them on right side for bank protection -Install Gabions downstream for protection of river banks -Construct a concrete wall for the left side - Reconstruct small bridge	300		2013 start after 2 months and finish after 7 months	Road Department & Municipality	Department has long term plans to habilitate the riverbanks	Design and bidding and award & construction total 7 months	Major issues are the budget
Busheti River Soil embankment reconstruction	100	100	Completed	Roads Department/Municipality		Construction completed	No issues
Village Kondoli- destroyed concrete revetment	150	150	Completed	Roads Department/Municipality		Construction Completed	No issues

Flood Control: Medium & Long-Term Recovery Priorities and Actions (through July 2017)

Activities	Est. Cost	Indicative Time Frame					Lead Implementer	Existing Initiatives and Partners in this sector (Current funding)	Suggested Indicator of Output/progress	Challenges/Risks to achieving objectives
		2013	2014	2015	2016	2017				
Kvareli Municipality –Duruji River bank protection & desilting	GEL 8.2 million	, ← = =====	----- -		----- -	==== →	Roads Department	Municipality 5% and Central Government 95%	Design and planning in 2013 Start of Construction 2014-2016	Budgets from Government
Lagodekhi Municipality- Kabali River bank protection & desilting n	GEL 5.1 million	, ← = =====	----- -		----- -	==== →	Roads Department	Municipality 5% and Central Government 95%	Design and planning in 2013 Start of Construction 2014-2016	Budgets from Government
Sighnaghi Municipality- Anagi and Bodbiskhevi Rivers' bank Protection	GEL 3.2 million	, ← = =====	----- -		----- -	==== →	Roads Department	Municipality 5% and Central Government 95%	Design and planning in 2013 Start of Construction 2014-2016	Budgets from Government
Akhmeta Municipality- Khodasheni River Bank Protection at two sites: - at Alaverdi monastery; - at wine company "Badagoni"	Gel 922,700	comp leted					Roads Department	Municipality 5% and Central Government 95%	Design and planning Construction	Budgets from Government
Dedoplistskaro Municipality –	GEL 847,900	In progr					Roads Department	Municipality 5% and	Design and planning	Budgets from Government

Alazani Riverbank Protection at two sites: - “kaklis kure” - conjunction with river Jamparaschai		ess						Central Government 95%	Construction	
Sighnaghi Municipality- Alazani River- River bank Protection	GEL 4.5 million	, ← = ==== =	----- -		----- -	==== →	Roads Department	Municipality 5% and Central Government 95%	Design and planning in 2013 Start of Construction 2014-2016	Budgets from Government
Gurjaani Municipality- River bank Protection	GEL 0.20 million	, ← = ==== =	----- -		----- -	==== →	Roads Department	Municipality 5% and Central Government 95%	Design and planning in 2013 Start of Construction 2014-2016	Budgets from Government
Develop flood plain management program							National Environmental Agency/municipality	Ministry of Regional Development and Infrastructure UNDP		Financial allocations
Develop and update flood risk management plan							municipality	National Environmental Agency Ministry of Regional Development and Infrastructure UNDP		Financial allocations

Education: Short Term Recovery Priorities and Actions (through 2014)						
Objective: Increase global competitive by ensuring disaster affected youth have continued access to high-quality education infrastructure, education, and school materials						
Activities	Budget already allocated (State or donors or NGOs)	Indicative Time Frame	Lead Implementer	Existing Initiatives and Partners in this sector	Suggested Indicator of Output/progress	Challenges/Risks to achieving objectives
Higher Education						
Secondary Schools/Education						
Rehabilitate infrastructure in 15 affected schools: > 11 schools in Telavi municipality, > 3 in Gurjaani municipality, > 1 in Lagodekhi municipality	738 225.29	Completed	MES Ministry of Science and Education		# of schools with rehabilitated infrastructure	Allocation of required funding Lack of timing for delivery Limited coordination on needs between MES and Donors
Supply 12 affected schools with basic learning furniture & materials		completed	Ministry of Science and Education		# of schools with essential supplies delivered	Lack of required budget and funding sources Lack of timing for delivery Limited coordination on needs between MES and Donors
Supply 12 affected schools with		completed	Ministry of Science and Education	N/A	# of schools with textbooks available	Lack of required budget and funding

textbooks for free access by students					for free distribution to students	sources Lack of timing for delivery Limited coordination on needs between MES and Donors
Preschool Education						
Rehabilitate infrastructure in 17 affected kindergartens: - 14 in Telavi - 2 in Gurjaani municipalities - Kvareli: n/a - Lagodekhi: n/a		2012	Local municipality	N/A	# of kindergartens with rehabilitated infrastructure	Lack of local or donor funding, low delivery
Supply 17 affected kindergartens with basic materials for early learning, recreation and school readiness of children	N/A	2012	Local municipality	UNICEF	# of kindergartens with essential learning supplies	Lack of required budget and funding sources Lack of timing for delivery Limited coordination on needs between Municipalities and Donors

Education: Medium & Long-Term Recovery Priorities and Actions (through July 2017)

Activities	Est. Cost	Indicative Time Frame					Lead Implementer	Existing Initiatives and Partners in this sector (Current funding)	Suggested Indicator of Output/progress	Challenges/ Risks to achieving objectives
		2013	2014	2015	2016	2017				
Integrate/strengthen teaching of Disaster Risk Reduction discipline at university, secondary schools and kindergartens	Rough estimation of 300,000	X	X				Ministry of Science and Education Local municipalities	ECHO, UNICEF, SC, WV, donor organizations	Status of DRR education at universities, school, and pre-school facilities	Limited human, technical and financial capacity
Availability of Emergency Preparedness and recovery plans in schools and kindergartens	Rough estimation of 200,000	x	x				Ministry of Science and Education Emergency Management Department Local municipalities		% of schools with plans	Limited human, technical and financial capacity

Health and Social Protection: Short Term Recovery Priorities and Actions (through 2014)

Provide accessible, high quality, modernized, and affordable healthcare and social services to all people impacted by the disaster

Activities	Estimated Needs ['000 GEL]	Budget already allocated (State or donors or NGOs)	Indicative Time Frame	Lead Implementer	Existing Initiatives and Partners in this sector	Suggested Indicator of Output/progress	Challenges/Risks to achieving objectives
Rehabilitate 8 PHC facilities affected by the disaster	148,360 GEL	148,360 GEL	Completed	MoLHSA	Donor organizations	8 facilities rehabilitated, incl. re-roofing	
Equip two PHC facility with basic medical equipment (e.g. ECG, scales, refrigerators)	4,000 GEL				Donor organizations	2 ECG purchased	
Ensure all disaster affected population in need with a medical service	4534.23 GEL	4534.23 GEL	Completed	MoLHSA			

Health and Social Protection: Medium & Long-Term Recovery Priorities and Actions (through July 2017)

Activities	Est. Cost	Indicative Time Frame					Lead Implementer	Existing Initiatives and Partners in this sector (Current funding)	Suggested Indicator of Output/progress	Challenges/Risks to achieving objectives
		2013	2014	2015	2016	2017				
Equip 6 PHC facilities with basic medical equipment (e.g. ECG, scales, etc. – not yet included costs for refrigerators)	12,000	12,000					MoLHSA	Donor organizations	6 PHC facilities adequately equipped	
Equip all PHC facilities with basic computer	10,000	10,000					MoLHSA	Donor organizations	6 PHC facilities adequately equipped with computers	
Communication campaigns on water-borne infections, hygiene norms, psycho-social issues	30,000	10,000	5,000	5,000	5,000	5,000	MoLHSA	UN Agencies, IOM, Care, Save the Children, USAID	# of campaigns with KAP surveys	
Capacity Development in Emergency and Disaster Preparedness	10,000	5,000	5,000				MoLHSA	UN Agencies, IOM, Care, Save the Children, USAID	# of campaigns with KAP surveys	

Disaster Risk Reduction – Short Term Recovery Priorities and Actions (through 2014)

Objective: Turn the disaster into an opportunity to create increased awareness with regional and municipal authorities and across different development sectors.

Activities (Priority Order)	Indicative Time Frame	Lead Implementer	Existing Initiatives and Partners in this sector	Suggested Indicator of Output/progress	Challenges/Risks to achieving objectives
DRR Mainstreaming in strategies and policies					
1. Mainstreaming DRR in Kakheti Regional Development Plan- DRR Sensitization – Technical assistance on sectoral application of DRR for planning and budgeting	3-6 months	Kakheti regional authorities/MRDI	UNDP, GiZ, MoEP/NEA, CENN, WB	DRR considerations in Regional Development Plan, both sectoral (prevention/mitigation) and general (preparedness/response)	Insufficient human capacity at regional/municipal level Insufficient interest and commitment from regional/municipal stakeholders
2. Develop DRR awareness raising strategy targeting Kakheti policy makers and wider public, including familiarization of the use of regional/municipal hazard maps, sectoral specific DRR , land-use, zoning, public information, and preparedness aspects for risk reduction policy development and management	12 months	Ministry of Environment and Natural Resources Protection/local municipality	MRDI, UNDP, Regional media, NGOs, CBOs	Regional policy makers have knowledge and capability and apply standard DRR measures consequently	Insufficient interest and commitment from regional/municipal stakeholders
3. Local municipality staff's awareness raising on DRR through	2013-2014	MRDI/Centre for Effective Governance/ Ministry of	Donor organizations		Insufficient interest and commitment from regional/municipal

training		Environment and Natural Resources Protection			stakeholders
Strengthening Institutional and Organizational DRR capacity					
1. Post-disaster review to improve Kakheti Regional and Municipal (6) emergency management plans (incl. capacity building needs assessment and follow up capacity building)	2013-2014	EMD/ Kakheti regional authorities	UNDP, SDC, MoEP/NEA, MRDI	Updated regional and municipal emergency management plans building on recent emergency experience and improved emergency management capacity at regional and municipal level	Insufficient human capacity at regional/municipal level Insufficient interest and commitment from regional/municipal stakeholders
1. Enhanced ³¹ capacities for post-disaster damage data collection and assessment, information systematization and inter-agency coordination	2013-2014	MRDI, MoEP/NEA, EMD	Local government/Line ministries, donor organizations		Insufficient human capacity Insufficient interest and commitment from regional/municipal stakeholders

³¹ The activity was proposed by Education team members on the workshop on finalization of JNA recovery framework, 17 July, 2013

Disaster Risk Reduction – Medium to Long Term Recovery Priorities and Actions (through July 2017)

Objective: Turn the disaster into an opportunity to create increased awareness with regional and municipal authorities and across different development sectors.

Activities (Priority Order)	Indicative Time Frame	Lead Implementer	Existing Initiatives and Partners in this sector	Suggested Indicator of Output/progress	Challenges/Risks to achieving objectives
DRR Mainstreaming in strategies and policies					
1.Regional risk zoning (risk/hazard risk assessment, elaboration of recommendations)	2013-2017	National Environmental Agency	Ministry of Regional Development and Infrastructure/local municipality		Insufficient financial allocations
2.DRR Awareness building strategy targeting national, regional policy makers as well as general public developed and implemented (continued from short term)	2013-2017	Ministry of Environment and Natural Resources Protection	UNDP, MRDI, EMD, Regional media, NGOs, CBOs	Policy makers understand cross sectoral nature of DRR as a development concept	Insufficient commitment of relevant agencies
Strengthening Institutional and organizational capacities					
1.Review and harmonize DRR Legal Framework	2013-2015	Ministry of Environment and Natural Resources Protection/EMD	MRDI NGOs UNDP	Harmonized legal DRR framework	Insufficient commitment of relevant agencies
2. Develop and implement uniform Regional and Municipal Disaster Risk Management plans and make access to disaster recovery funding contingent on existence and application of DRM plans.	2013-2017	EMD	MRDI, UNDP, EMD, MoEP/NEA	Full coverage of annually updated uniform regional and municipal disaster risk management plans	Insufficient human and financial resources
3.Study on Kakheti (flash-) flood early warning system, and cost-benefit analysis of different options	2014	MoEP, EMD, Regional Authorities	UNDP, MoEP/NEA, MRDI	Storm-flood and flash- flood rehabilitation and action plan developed	Insufficient human capacity
4.Establish multi-hazard early warning system in	2014-2017	MoEP/NEA, EMD	MRDI, GiZ, USAID, Regional Authorities	Institutional capacity developed for early	Insufficient human and financial resources for

Kakheti to improve preparedness and adaptive capacity of at risk population in Kakheti				warning and timely alert communication to at risk population Hydro-meteorological/early warning capacities in Kakheti improved	upgrading hydro-met stations and improving monitoring and alerting network
5.Kakheti Holistic sector-based (agriculture, health, education, disaster/climate risk analysis and determination of appropriateness of mitigation measures (e.g. insurance, hail nets, drainage, crop and variety selection, retrofitting of public buildings, safe schools) ³²	2013-2015	MoEP	Line ministries, donor organizations	Cross-Sector integrated disaster/climate risk assessment and full set of appropriate mitigation/prevention measures	Insufficient human capacity Insufficient financial resources
DRR Financing					
1.Study and develop disaster risk financing strategy and its application in Georgia (insurance, reserve recovery funds, micro-insurance, etc.)	2013-2017	MRDI	Line ministries, donor organizations/NGOs	Multi-hazard disaster/climate risk financing strategy	Insufficient human capacity Insufficient financial resources

³² The JNA report suggests such a holistic disaster/climate change risk management analysis for the Agriculture sector

