Disaster Identification and Disaster Risk Reduction in the Kvemo Kartli Region of Georgia

ALLIANCES KVEMO KARTLI

ICCN

MercyCorps

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

Abbreviations

BSE – Bovine Spongiform Encephalopathy Disease (mad cow disease)
DRR – Hazard Risk Reduction
DRM – Hazard Risk Mitigation
GAP – Good Agriculture Practices
HVA – High Value Agriculture
ICCN – International Center on Conflict and Negotiation
UN – United Nations

Introduction

ICCN implements the DRR, Gender and Governance component of the Market Alliances against Poverty program in Kvemo Kartli region (Alliances-KK) as a partner of Mercy Corps. The programme is funded by the Swiss Agency for Development and Cooperation (SDC). The goal of the programme is to contribute to poverty alleviation and the transition to a durable market economy for the livestock sector in the Kvemo-Kartli region of Georgia. ICCN will work in the target area of Dmanisi, Tsalka and Tetritskaro municipalities. The ICCN component in the program covers good governance issues, involvement of women and the provision of gendered perspective to project livestock value chain based interventions and the introduction and application of Disaster Relief Reduction (DRR) by local governance structures.

The project will facilitate the three local municipalities of the project area, Dmanisi, Tetritskaro and Tsalka to have enhanced capacity to support the growth of a robust and durable agricultural sector, which is more resilient to natural disasters.

This document will focus on Disaster Identification in the three municipalities of the project area as a basis to inform Disaster Risk Reduction activities in Alliances KK. In addition, within the Scope of Work we have analyzed current regulatory framework pertaining to the institutional settings and roles and responsibilities of state institutions. During the development of this document ICCN conducted field visits in Kvemo-Kartli Region of Georgia, in Dmanisi, Tsalka and Tetritskaro municipalities, where Key Informant Interviews and Focus Group discussions with both municipality and EMD representatives and the general population were facilitated. Based on an analysis of the information obtained during the survey, ICCN will be to assist these regions to strengthen their livestock based livelihoods through the lens of an increased resilience to the disasters identified in the study. The information will enable the identification of potential entry points for; future program interventions, the involvement of Governmental DRR structures, the identification of their responsibilities and the coordination of mechanisms on central and local levels.

ICNN conducted DRR surveys with 24 Focus Groups in the villages of Dmanisi, Tetritskaro and Tsalka municipalities and key informant interviews and Focus Group Interviews with local government representatives including EMD representatives. ICCN provided Focus Group and key informant interview data to the Gergili Ltd Consultant in order to analyze this information and compile a final report.

Note Concerning the Outbreak of Anthrax in the Project Area

The widespread of animal diseases was found to be one of the DRR issues negatively influencing the development of livestock husbandry in the target municipalities. An outbreak of Anthrax occurred whilst finalizing this report please see Annex 4 for detailed information.

Purpose of the Project and Background

The identification of the potential risks and natural hazards in the project area covered three municipalities in the Kvemo-Kartli Region of Georgia; Dmanisi, Tsalka and Tetritskaro. Low-lying areas in Dmanisi and Tetritskaro enjoy good access to fertile agricultural land, some of it irrigated, and grow cereals, vegetables and cut hay for their cattle. A large part of Dmanisi is highland. Dmanisi municipality is located approximately 1,000-1,300 meters above sea level. Tetritskaro municipality located altitude also varies from 450 m (eastern part) up to 1,400 m (western part). In contrast, Tsalka situated 1,500m above sea-level, is a largely pastoral area with potatoes as the main cash crop. In cattle, 53% own 1-2 breeding females and 38% own 3-10; in sheep 100 ewes is considered minimal for subsistence. The region as a whole houses the country's largest cattle and second largest sheep populations. In the summer the populations are swollen by herders who bring cattle from Kakheti Region to graze the upland pasture. The main sheep breed is the Tushetian fat rump breed which is kept for milk, meat and wool. Communities in Kvemo-Kartli are vulnerable to a variety of natural hazards. The area has seen seismic activity in the past, but more recently hail storms, floods, landslides and livestock disease outbreaks have impacted the population.

Government Regulations with Respect to the Hazard Identification and Mitigation

This part of the survey provides an analysis of the current legislative framework on natural hazards and identifies the roles and responsibilities of the institutions against disasters.

The Law of Georgia on Protection of the Territory and Population from Natural and Technological Emergencies 2007 as amended in 2009

This is one of the main laws, which regulates natural hazard issues. The law regulates emergencies, created by natural hazards. Response is viewed as part of the risk reduction cycle. The law is mainly focused on the organization of measures after the disaster has taken place and is less oriented towards preventive measures. This is confirmed by the following: Article 4 of the law states, that one of the purposes of the law is the prevention of the occurrence and spread of natural disasters, although according to the definition of 'emergency situation' the law extends to on-going or occurred natural disasters (i.e. elimination of results). Consequently, it becomes clear, that there is certain conflict between definition and the objective. As to the Regulations of the Emergency Management Department, the issue is regulated differently. According to Article 9 of the Regulations, part of the mandate of the Department is the 'Establishment of the Special Consultative Council for the purpose of prevention of emergency situations of natural and technological character, mitigation of their results and elimination on the basis of elaboration of comprehensive measures and targeted programs'. To summarize Special Permanent Commissions are established to deal with disasters. Different representatives of different institutions such as national structures and local bodies of governance represent these commissions. The commissions are established: a) Under the President – special state commission on fighting against floods b) Under the Council of Minister of Autonomous Republics – commissions of Autonomous Republics on fighting against floods c) Under the local bodies of governance – district and city commissions on fighting against floods d) Under the state structures – Departmental commissions on fighting against floods.

The Law of Georgia on the State of Emergency 2007

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

General Hazard Definition

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

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

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

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

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

Identification of the natural hazards and potential risks in Georgia

In this part of the document, we covered only the hazards which are relevant to Georgia. The territory of Georgia is located on the border of subtropical temperate climate zones and belongs to the climatic zone of the Mediterranean Sea, although the typical characteristics of this zone are substantially modified by local mountainous relief and the climate of Georgia is characterized by great diversity. Due to complicated mountainous relief and climatic peculiarities, Georgia belongs to one of the most complicated regions from the point of the development of natural hazard processes, temporal recurrence and the scope of their negative impact on population and engineering-technical facilities.

Strong impact natural geological hazards (causing catastrophic results) periodically affect thousands of settled areas, agricultural lands, roads, gas and oil pipelines, towers of medium-voltage power transmission lines, hydro-technical and amelioration facilities, mountain tourism and recreation facilities and etc. Hazards are located in almost all geographical zones in Georgia starting from the Black Sea region, and ending with high mountainous-naval zone, where the geological situation is extremely complicated and reaches a critical point. Negative socio-economic, demographic and ecological impact, caused by mudflows, landslide-gravitational and erosive occurrences, flooding, washing-off of the sea and water reservoir banks, avalanches, glacial slides etc, affects almost all spheres of human activities. The situation is especially grave in mountainous regions. This causes desertion of large number of villages and abandoning of agricultural lands.

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

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

Table 2. Landslides and mudflows occurring during 1980-94 in urban areas of Georgia registered in the process of regional monitoring:

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

Mudflows

Mudflows are characterized in Georgia by their intensiveness and recurrence and they are characteristic to all geological formations and geomorphologic zones – starting from foothill areas ending with high mountainous areas. Especially large scale mudflows form in the Caucasus and Adjara-Trialeti high mountainous zones, including glacial mudflows formed in the glaciers. The mechanism of their formation and their dynamics is the least researched and there are many aspects that need to be studied.

Negative geological impact of surface water

From 1957-78 within the geographic area, due to the erosion of river banks and soil erosion in the 200 thousand hectares agricultural land have been lost. As of today these indicators have increased substantially due to so-called "speeded anthropogenic" erosive processes. This is causing severe abrasion of arable lands, located on steep slopes where the soil-formative layers are stripped, and which causes biogenic regeneration to take a long time and needs implementation of relevant measures. Regions, particularily susceptible to erosion include mountainous Adjara (87%), Svaneti, Dusheti, Kazbeghi and Lechkumi.

Earthquakes

The territory of Georgia, which represents part of Caucasus seismogenic region, belongs to one of the most complicated geodynamic regions due to the force and accompanying negative impacts of earthquakes. The region is characterized by wide variety of seismic activity. The volcanic mountains of Javakheti and the southern slopes of the Caucasus are characterized by high activity of earthquakes.

Hydro-meteorological events

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

Floods

Flooding occurs throughout the whole territory of Georgia. Atmospheric precipitation and melting of snow has a major impact on hydrology. Rivers, flowing from mountainous regions are characterized by high precipitation and are replenished from water from the melted snow and are flowing at high velocity. A large number of rivers rise from the Caucasus Ridge, which has a large number of glaciers and deep snow cover. The period of intensive flooding for such rivers lasts around 6 months. The level of water increases especially in spring and summer, when snow starts melting. As a rule, such rivers have one peak of high water. At the same, time those rivers, which take their rise from the foothills of the Caucasus, are characterized by two peaks of high water, which is caused by melting of snow cover and showers. Catastrophic flooding previously was happening in every 8-10 years, while recently these events occur every 5-6 years.

Avalanches

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

Drought

Droughts are characteristic to practically whole territory of the country. Kakheti, Shida Kartli, Kvemo Kartli and Zemo Imereti regions suffer from droughts in particular. Previously severe droughts would happen every 15-20 years, recently it happens every 6-7 years. From the point of humidity Georgia is contrasting region. In the Central and Minor Caucasus and Kolkheti valley annual precipitation exceeds 1 000mm. In other regions precipitation is lower and on average amounts to 300-450 mm. That is why the problem of desertification, which is preconditioned by draught, is of current importance for Georgia, especially for eastern regions. A vivid example of the above are the especially dry summers of 1998-2000, which caused serious damage to the Georgian economy. In the event of the continuation of global warming the process of desertification may affect arid and semi-arid landscapes of plains and upland regions of Eastern Georgia, as well as sub-alpine and alpine zones.

Strong and lengthy hurricanes

Strong and lengthy hurricanes are characteristic to all territories in the country. Their frequency and intensiveness is especially high in the Eastern Georgia and Imereti regions. The recurrence of such hurricanes has doubled and they occur every 4-5 years. Hurricanes cause serious damage to agricultural sector.

Hail

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

Agricultural Infestation

Agricultural infestation is the naturally occurring infection of vegetation, crops or livestock with insects, vermin, or diseases that render the crops or livestock unfit for consumption or use. Because of Georgia' overall agricultural industry and related facilities and locations, the potential for infestation of crops or livestock poses a significant risk to the economy of the country. Some level of agricultural infestation is normal in Georgia. The concern is when the level of an infestation escalates suddenly, or a new infestation appears, overwhelming normal control efforts. The levels and types of agricultural infestation appear to vary by many factors, including cycles of heavy rains and drought as already discussed in the previous section.

Animal Disease

One of the key concerns regarding this hazard is the potential introduction of a rapid and economically devastating animal disease, such as Foot and Mouth disease, Bovine Spongiform Encephalopathy (BSE) disease or Anthrax. This type of infestation would affect not only farmers,

ranchers, and butchers, but also support and related industries. Agricultural products processing does occur in the planning area. There are meat processing/distribution facilities and dairy processing/distribution facilities in the region. The loss of milk production, abortion, decrease in production, and other lasting problems resulting from an outbreak could cause continuous and severe economic losses, widespread unemployment, and potential civil disorder. Zoonotic[1] disease can their impact on human health are a serious danger, please see Annex 4 detailing the outbreak of Anthrax in the project area.

Identification of the potential risks and natural hazards in Kvemo Kartli Region of Georgia

The hazards and the main natural disasters, specific to the Kvemo Kartli Region according to research undertaken by the Ministry of Environment include: landslides, avalanches, flooding, washout of the river banks, occurrence of gullies, mudflows.

General Description of the Region

Kvemo Kartli region incorporates several municipalities; Gardabani, Dmanisi, Bolnisi, Tetriskaro, Marneuli and Tsalka municipalities. With a total area of 6.8 thousand km2. The geological structure of the region is characterized as a highly seismic zone. The area is characterized with lowlands as well as Alpine zones (i.e. Tsalka). The region is characterized by the flooding and erosion of riverbanks, landslides, rock falls. Therefore, the potential hazards in the region are very diverse. Based on the interviews and meeting with the representatives of the local municipalities' the number of hazards occurring in 2010 was average. The estimated forecast of the potential hazards for 2011 could be deemed as high according to the recent geological, hydrogeology surveys conducted this year.

The DRR Focus Group Survey: Methodology and Results

Rationale and Methodology for the Selection of the Target Groups

The rationale for the selection of the villages included in the focus group survey was developed during the the first phase of inception (March-April) period. ICCN and Alliances KK developed cooperative relations with local government bodies of the three municipalities of Kvemo Kartli region: Damnisi, Tetritskaro and Tsalka. With the assitance and support of the Gamgeoba's, ICCN collected information on DRR in the region. The first task was to identify the main actors in DRR from the government perspective.

Key actors:

- Kvemo Kartli Regional Administration Unit on Emergency Managment (Rustavi)
- Fire and Emergency Municipal Departments (EMD's)
- Village Representatives

[1] An animal disease that can be transmitted to humans.

Key informants:

- Kvemo Kartli Regional Administration Unit on Emergency Management
- Fire and Emergency Municipal Department
- Village Representatives
- Gamgebeli/Chair of Municipality Councils (Sakrebulo) (from three municipalities)
- Villagers/ communities

Preliminary Survey

To pinpoint the optimum location for carrying out the Focus Group Survey on actual risks and threats in the region a preliminary survey was conducted among village representatives (from 66 villages, 80% of local representatives responded to the questionaire). From this data the most vulnerable villages in the municipalities; 12 targeted villages, were identified as the locations for the Focus Group Research. The situation as reflected in these villages will be discussed in report.

Focus Group Survey

The Focus Group discussion method was chosen as the most appropriate in the existing situation. This method is participatory, the facilitator helps participants to articulate their attitudes, emotions, fears, abilities, hopes, needs with regard to the discussion issue which is in this case DRR. For each community two different types of Focus Groups were held; one for municipality representatives including members of the EMD's and for the general population. This is reflected in Table 3 below. The results can also be identified by gender as well.

Table 3. Focus Groups for Each Community

Municipalities	Dmanisi	Tetritskaro	Tsalka
FGs	Villages/ethnicity		
	Irganchai/Az	Tsintskaro/Geo:Ajarians and Svans	Darakovo/Ar
	Amamlo/Az	Jorjiashvili/Geo	Gantiadi/geo"Ajarians and Svans
	Gomareti/Geo	Matsevani/Geo	Beshtasheni/ Geo: Adjarians
		Iraga/Geo/Gr	Bareti/geo: Svans, Kushi/ar.
	Dmanisi Reps/mixed	Tetritskaro Reps/mixed	Tsalka Reps/mixed
Total Number of FGs	7	9	11
Total Number of Interviewed men	50	59	70
Total Number of Interviewed women	23	34	48
total	284		

Key Informant Interviews

In addition to the Focus Groups our team key informant interviews were held with representatives of the municipalities i.e. Gamgebeli's and Head's of the Sakrebulo.

Table 4 Key Informants Outside in addition to the Focus Groups for the DRR Survey:

	Key Informant	Date	Organization/Specialization	Location and link to Project
KI1	Bakur Mgeladze	08/06/11	Head of Dmanisi council	Dmanisi
KI2	Tengiz Mirotadze	08/06/11	Dmanisi Gamgebeli	Dmanisi
KI3	Giorgi Daushvili	16/06/11	Tetritskaro Gamgebeli	Tetritskaro
KI4	Giorgi Mestvirishvili	16/06/11	Head of Tetritskaro municipality council	Tetritskaro
KI5	David Machitadze	14/06/11	Head of Tsalka council	Tsalka
KI6	Revaz Shavlokhashvili	7/06/11	Tsalka Gamgebeli	Tsalka
KI7	Zviad Khachirashvili		Head of Emergency Management Department of the Governor admin. Kvemo Kartli	Rustavi

The information presented below is based on key informant interviews and Focus Groupsheld with representatives of the municipalities of Dmanisi, Tsalka and Tetritskaro during June 2011.

Tsalka Municipality

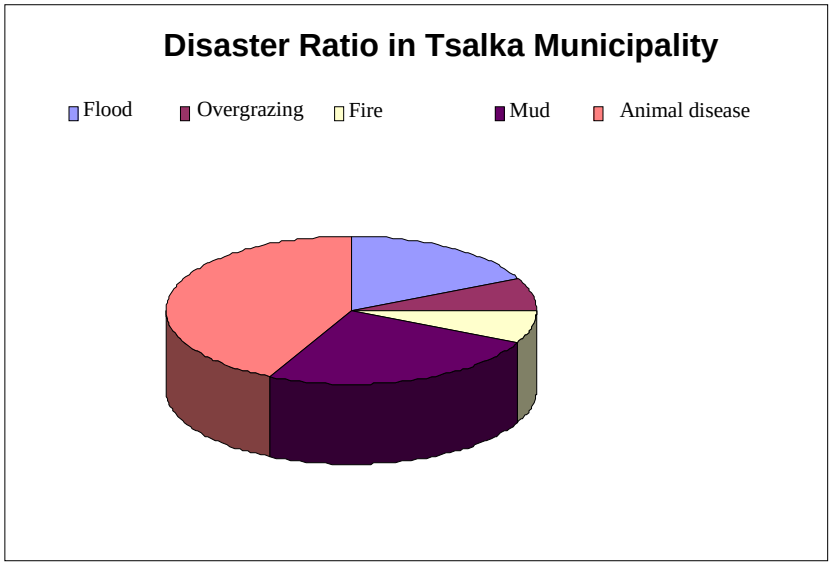
The villages selected from the preliminary survey were Darakovo, Gantiadi, Beshtasheni and Bareti. The table shows the summary of the municipal respondents' answers for Tsalka region. The most significant disasters in the area are ***animal diseases, over grazing, and flood***.

Table 5 Summary of Municipal Respondents Answers Hazards in Tsalka Municipality

Tsalka Region	Hazard	Risk
1	Forest Fires	Low
2	Earthquake	Low
3	Landslide	Low
4	Flood	Low
5	River Bank Erosion	Average
6	Drought	High
7	Animal Diseases	High
8	Sevier Winters	Low
9	Grazing	High
10	Wind Storms	Low
11	Hail	Low
12	Other	
12.1	Mudflow	High
12.2	Land erosion	High
12.3	Red wolf attack	Low

* Interviews were considering the period of **2009-2010-2011**

Figure 1. Disaster Ratio in Tsalka Municipalty



Tsalka region is characterized with rains that cause a natural hazard in the region, which is mostly related to the changes of the river direction and flooding of the agricultural lands. The area is also affected by hail, which has negative impact on livestock. The villages Tiakilisa, Darakovi, Gantiadi, Sakdrioni and Sameba are affected by floods due to the heavy rains in the area however; this problem is not of a large scale and could not be considered as significant. Tbeti Village regularly floods which has very negative impact on pastures. Tsalka region has problems with grazing. The area is mostly used by livestock from Kakheti for summer grazing. Which might tend to overgrazing. According to the interviews conducted with municipalities in Tsalka the flooding is not as major hazard in this region as overgrazing. The most critical in terms of flooding is Khrami hydropower Station near Bediani Village. The other problem is animal diseases, which causes many problems to population through the loss to production of meat and milk. The other problem in the region is erosion and overgrazing. The flooding from the river Ktsia is also common in the area. During the last few years, the potential threat to the villages was from wolves as well. In 2010, there was drought. The most common disaster happening in the village Beshtasheni in Tsalka region is flood. The river in the village very often floods. The diseases in the area are also very common mostly anthrax and brucellosis. The diseases are spread in the region because there is route for pasturing and cattle no proper preventive measures are in place. Kushi Village had a fire was in 2010 and a flood although the damage was not significant.

Dmanisi Municipality

The villages selected from the preliminary survey for were; Gomareti, Amamlo, Irganchai. Based on the information of the local representatives the most common disasters in the region are ***animal disease, drought and floods.*** The table shows the summary of the municipal respondents' answers for Tsalka region.

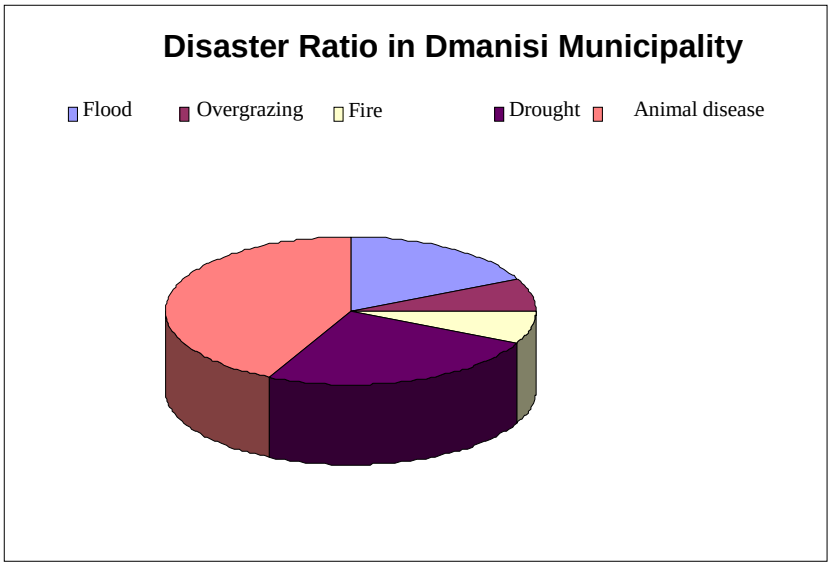
Table 6. Summary of Municipal Respondants Answers Hazards in Dmanisi Municipality

Dmanisi Region	**Hazard**	**Risk**
1	Forest Fires	Low
2	Earthquake	Low

3	Landslide	Average
4	Flood	High
5	River Bank Erosion	High
6	Drought	High
7	Animal Diseases	High
8	Sevier Winters	Low
9	Grazing	Average
10	Wind Storms	Low
11	Hail	Average
12.1	Mudflow	
12.2	Rock fall	High
12.3	Land erosion	

* Interviews were considering period of **2009-2010-2011**

Figure 2 Disaster Ratio in Dmanisi Municipalty



During our survey period the the villge was floded from the river "Akhchai Karachai". The river runs through the entire village approximaty 4 km. Based on the information of the local population the river was more than 1.5 meter higher than usual. The village is located 1600 from the sea level and mostly is populated by ethnic Azerbaijanians. The pastures of the village are eroded. In addition to this pasturelands are overgrazed and not in a good condition for the live stock. The most common disaster problem related to Gomarteti Village is fire, the frequency of the fires are very low therefore no significant impact imposed by fire. The main problem in the village is flood. In addition, animal diseases are very frequent in the village. In Bareti Village the most common problems that the villagers face is floods and drought. The village faces floods every year. Animal diseases are also a problem in the village. The most common hazards in the area are hailstorms and rains.

Our survey team interviewed Dmanisi municipality and Sakrebulo representatives they were asked question: Which is the two most common natural disasters occurring in your region? Their response was wind and hailstorm. They do not consider flood as the biggest problem in the area. Another problem, which is rock fall, is mostly in the area to Gomareti Village**.**

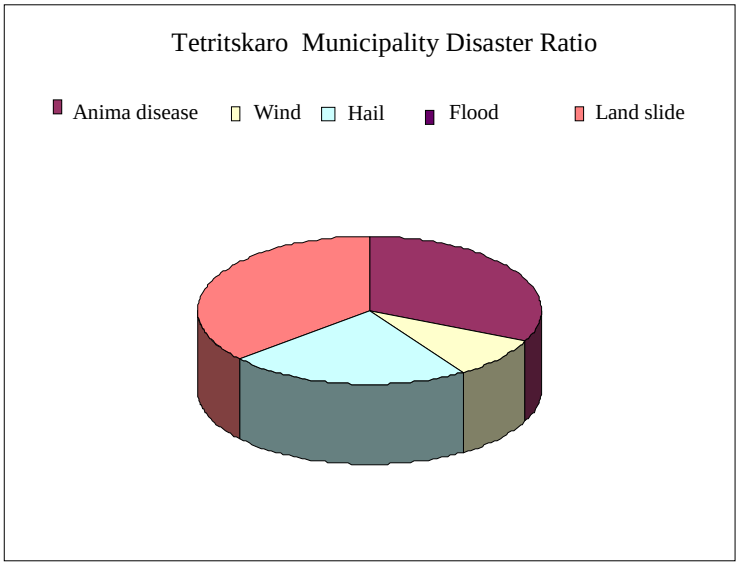
The villages selected from the preliminary survey were Tsintskaro, Jorjiashvili, Matsevani and Iraga. The table shows the summary of the respondants for Tetritskaro region. The most significant disasters in the area are ***landslides, animal diseases and hail.***

Table 7. Municipal Respondents Answers for Hazards in Tetritskaro Municipality

Tetritskaro Region	**Hazard**	**Risk**
1	Forest Fires	Low
2	Earthquake	Low
3	Landslide	Average
4	Flood	Average
5	River Bank Erosion	High
6	Drought	High
7	Animal Diseases	High
8	Severe Winters	Low
9	Grazing	High
10	Wind storms	Average
11	Hail	Low
12	Other	N/A

* Questionnaires were considering period of **2009-2010-2011**

Figure 3 Disaster Ratio in Tetritskaro Municipality



Based on the interviews with Tetritskaro Municipality representative the biggest problem is landslides. Currently due to the heavy rains, the main road to Tsalka as well as secondary roads are in a very bad situation due to the landslides. During the interviews in Jorjiashvili Village the biggest problem for villagers were landslide, flood and animal diseases, Based on their opinion grazing is not the major problem since the population does not have too much cattle. They express their concerns with respect to the winds, which is also common in the village. Hazard for the village is hail because hail and heavy rain cause landslides. This is the biggest threat to their

village. The most common problem for the village Tsintskaro is landslide. Landslides usually happen after heavy rains. Another problem is drought and animal disease. The animal disease like Anthrax and Brucellosis is the biggest problem for villagers. Grazing is also a problem for the villagers. Hail another problem which comes every year and creates problem for the population. When they were asked what is the most critical problems with respect to the hazards? The response was animal disease and problem not having potable water.

Focus Group Results for the Focus Villages: in Dmanisi, Tsalka and Tetritskaro Municipalities

Data and Methodology

The Focus Group surveys were carried out during June 2011. 27 Focus Groups were interviewed in Dmanisi, Tsalka and Tetritskaro municipalities (see Table 3) comprised of members of the local populations of the focus villages. Male and Female Focus Groups were held at the same time. The number of the members in the groups varied by municipality and by gender. Male focus groups tended to be bigger than female focus groups which can perhaps be ascribed to the fact that in the areas in which they survey took place is remote rural areas and men traditionally lead decision making. Although gender issues have no significant impact on the scope of the work.

Summary of the questionnaire

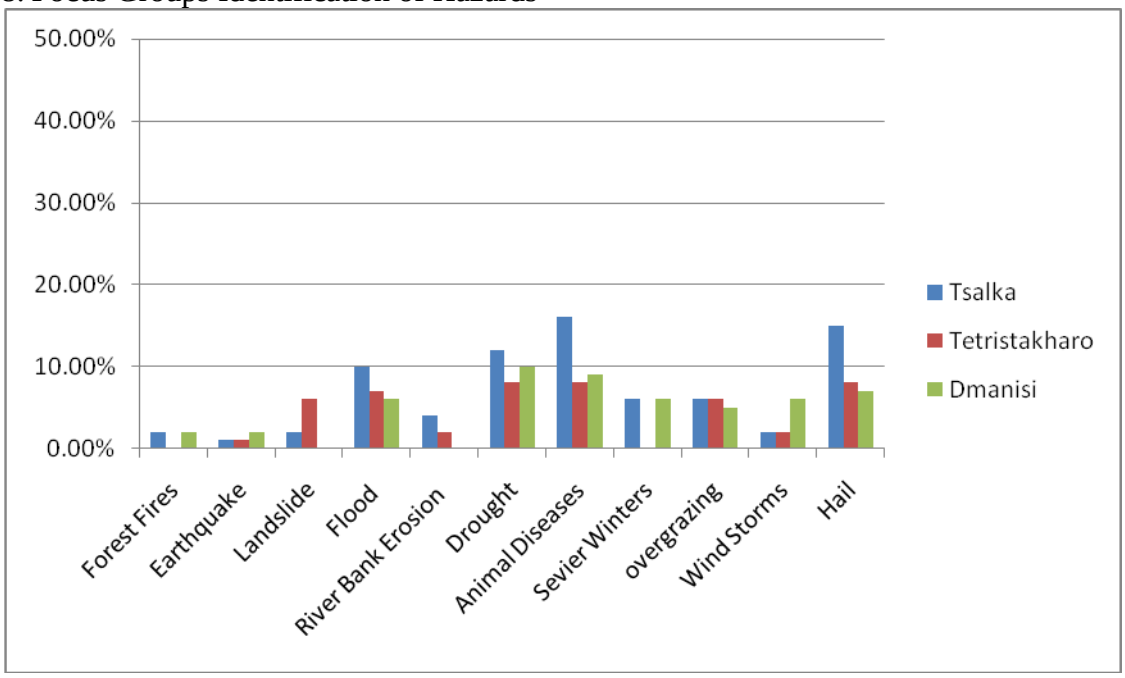
The questionnaire is constructed to obtain both qualitative and quantitative data. It can be found in Annex 3. It consists of the following sections:

1. Table of the Recent Hazards;
2. Explanation/Causes of Common Disasters;
3. Affect of Disasters on Livelihoods;
4. Access to Markets;
5. Recovery Time and Assistance;
6. Planning and Coordination;
7. Community Participation/Brainstorming

Question 1: What are the major hazards happening in your region? When was it last? How bad was it? (Please rank in order of importance low 1 and high 5)?

The data shows that animal disease, drought, hail and flood are the most significant compared to other natural hazards. This fact remains true while looking at the outcomes of the municipality separately. In addition, the answers slightly differ from the interviews above with municipality representatives. Some of the disasters happening in the municipalities are regarded as less of a priority i.e. fires, earthquakes. In spite of having average data with respect to overgrazing it should be mentioned that population is very concerned about problems associated with livestock movement. Based on the interviews conducted with them they consider that it is crucial to have proper regulation of the cattle pasturing routes. In addition, they consider that if cattle movement is properly regulated it will cause reduction of the diseases associated with cattle pasturing routes.

Table 8. Focus Groups Identification of Hazards



Question 2: Explanation/Causes of Common Disasters. Most frequent disasters happening in your community? If possible, please explain why you think they are so common?

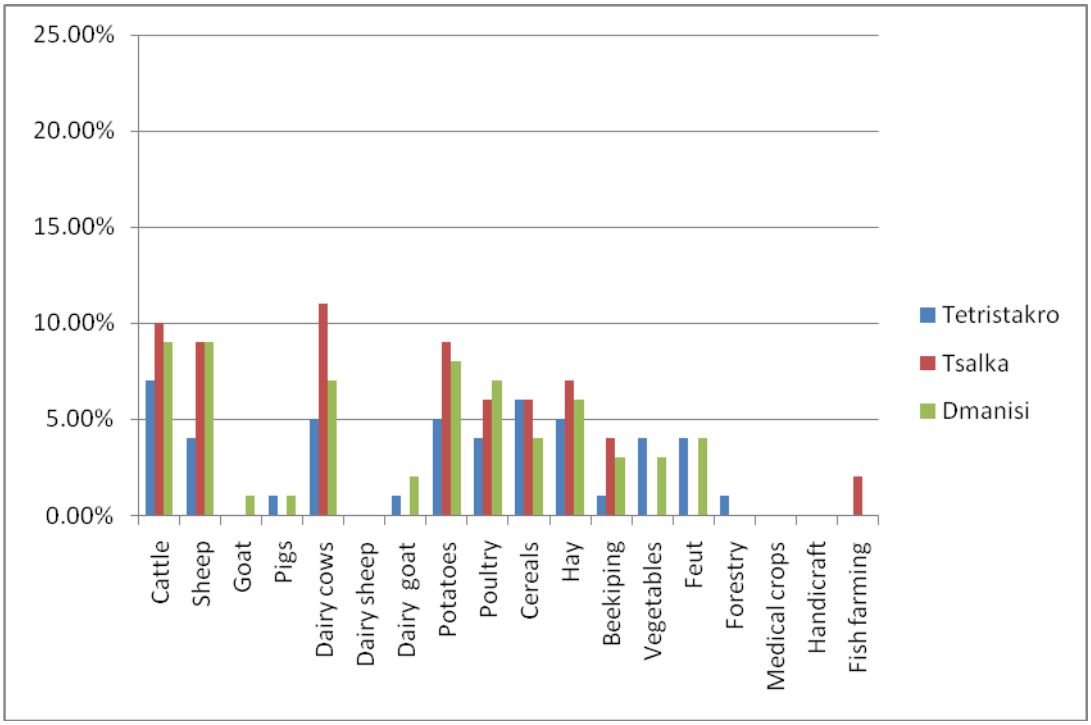
As already mentioned the main problem for the communities is animal disease. Focus groups consider that one of the reasons for spreading of the disease are the routes for cattle grazing. These routes are uncontrolled and therefore diseases are spread. There are no proper veterinary services or control of the cattle. The veterinary services are expensive and the population cannot afford to vaccinate cattle.

Based on the FG questionnaire drought had been caused by climate change and they do not have potable water and irrigation systems in the villages. After the break up the Soviet Union all irrigation systems were damaged and not now operating.

Focus Groups consider that hail and landslides is caused by heavy rains. Focus Groups consider that if they have special equipment, which spreads clouds that will not cause any problem and no more heavy rains will be in the region.

Question 3: Affect of disaster on livelihoods. How does disaster affect your livelihoods? Which livelihoods are worst affected?

Table 9. Worst affected livelihoods



Based on the questionnaire the majority of the impact is on livestock and dairy production

Question 4: Access to Markets. Has disaster ever affected your ability to market your products? What affect has the disaster had on your ability to get your goods to market?

The response from the Focus Groups was that they could not access markets because the roads were destroyed and the access to the market was not available. In addition, some of the Focus Group members stated that their product was destroyed and therefore there was nothing to be taken to the market.

Question 5: Recovery Time and Assistance. How long after disaster, did it take to recover back to pre-existing condition? Why do you think that it took that long? If no recovery was made why?

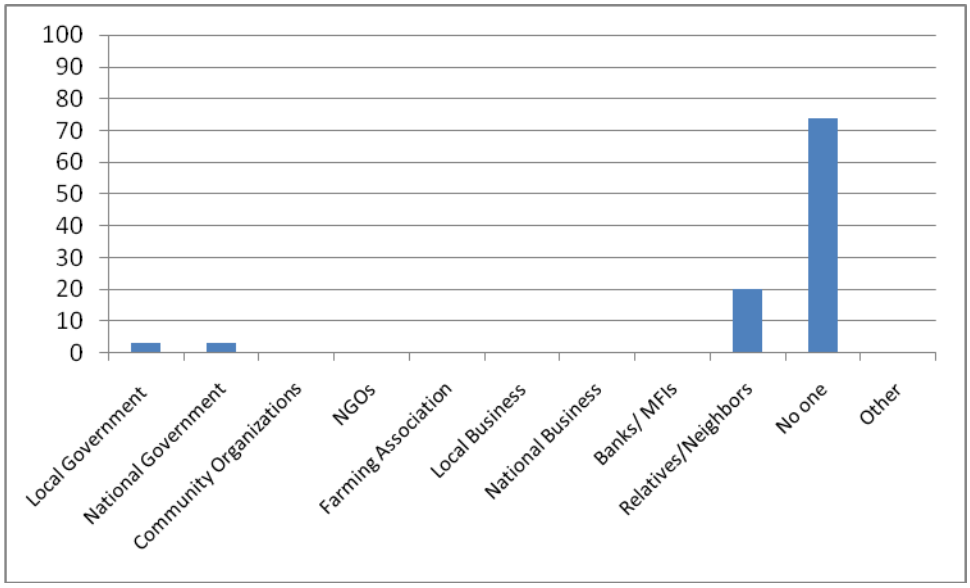
ICCN team introduced ranking to Focus Groups in a following way:

Less than a week
About a 4 weeks
Between 1 and 3 month
Between 4 and 8 moth
About a year
Over a year
Never
No attempt made at recovery

The majority of the answers are *Never* and *No attempt made at recovery*. On the question if no recovery was made why? The answer is not enough funding, not having vaccinations, or the technologies to dissolve clouds.

Question 6: Planning and Coordination: the questions included institutional setting including state NGO sector (local government, National government, community organizations, NGO's farming associations, local businesses, national businesses, banks, relatives/neighbors, no one, other.

Table 10. Who helps after a disaster?



The Focus Groups responded that although the government makes damage calculations and estimations in reality they do not help and no actions to mitigate damages or hazards are done from their side. Interviewing them it is obvious that majority of the Focus Group members consider that Local and National governments are responsible for disasters. They have responded that no assistance has been received from them. The municipal committee created during disasters never assisted them and in their opinion this committee is not even involved in any disaster prevention activities. The Focus Groups do not know if any national or local plans on disaster management exist.

Question 7: Community Participation/Brainstorming.
What do you think would be the most helpful to prevent disasters happening?

Tetritskaro municipality: Focus Group participants think that landslide and hail can be prevented by rehabilitating the irrigation systems and rehabilitating of the system against hail, which existed during the soviet times. In addition, they consider that cattle routes can be changed by creating special barriers and organize movement of the cattle in order to avoid spread of the diseases.

Dmanisi Municipality: preventive measures for vaccination should be done. Although the Anthrax vaccination is free sometimes people still have to pay for it. There are no veterinary services in the villages. Focus Groups responded that by establishing veterinary services which will be free of charge they can prevent many animal diseases. In addition, preventive measures can be taken

towards rehabilitation and the cleaning of the irrigation channels. Rehabilitation of the roads and bridges and installing nets on Dmanisi Gomareti Road will protect from stone and rock fall.

Tsalka Municipality: Taking preventive measures towards vaccination and having controlled pasture management is very important in order not to spread diseases. Rehabilitation of the irrigation systems is also very important since it will prevent crop damage from drought and the population will have water. In addition, rehabilitation and installing of the systems against hail is very important preventive measure.

The Governance of Disaster Management in the Three Municipalities

The information in this chapter was obtained from the interviews with Municipality Representatives e.g. representatives of the Gamgebeli and Sakrebulo.

During the surveys, the ICNN team was trying to identify the roles and responsibilities of the institutions participating in the disaster management issues. Disaster mitigation and management issues are spread between central and local governments but based on the interviewers it is apparent that local municipalities conduct initial disaster elimination and management locally. (See Annex 1&2, the diagram describes the coordination and cooperation among different state bodies).

It is clear that some of the municipalities (Tsalka) do not have a clear strategy or plans on how to deal with disasters in addition there is no equipment in place, which will help to eliminate the problem. All this miscommunication and mismanagement causes problems for the population. The representative of the region is responsible for coordination of the disaster. The department of statistics together with the local representation of the Ministry of Agriculture calculates the damage.

Usually when a disaster happens according to the legislation the special disaster management commission is created locally. The Head of the Municipality conducts the coordination of the disaster. The commission consists of the representatives of the financial department and infrastructure department. The commission has an emergency plan. This is a requirement of the legislation, however at this stage no relevant equipment or specialist equipment is in place. The commission conducts meetings every month and discusses about potential hazards or problems in the region. There are also fire and emergency divisions (EMD's) in the regions however, they are newly created; they are in fact the old Municipal Fire Departments with new responsibilities and do not have enough equipment at this stage. Potentially these EMD's have responsibility to deal with disasters. (Annex 1. Chart of the Disaster Management by State Institutions in Georgia and Annex 2 Organization of EMD's from National to Municipal Level.)

Findings and Recommendations

The document analyzed the interviews with the local municipality representatives and Focus Groups in order to come up with findings for future actions that could be used for identifying disasters in the region and identifying how these disasters can be prevented.

Based on interviews we would like to rank the most critical disasters in Kvemo Kartli Region:

1) Animal disease
2) Hail
3) Flood
4) Drought

- It would be advisable to cooperate with local government on an awareness raising campaign regarding natural hazards.

- In order to assist population it would be recommended to utilize the Business Environmental Audit Tool (BEAT) that can be used to assist businesses in hazard mitigation. The purpose of the BEAT document will be to make agribusinesses aware of how to mitigate their potential effect on the environment and any potential hazards, which may affect their operations.

- Develop or modify existing local level emergency response plans and train relevant local government representatives on how to act during disasters.

- Develop strategies with respect to the cattle grazing routes how to prevent overgrazing and spread of the animal disease. Based on the survey and strategy build/rehabilitate the grazing route facilities e.g. watering and disinfection points and corrals.

- Another issue could be the establishment of the geological forecasting systems in the region in order to find out about potential hazards (landslides mudflows).

- Assist municipalities in rehabilitating of the water and irrigation systems in order to prevent drought. Survey and identify water supply sources and develop plans how to rehabilitate these systems.

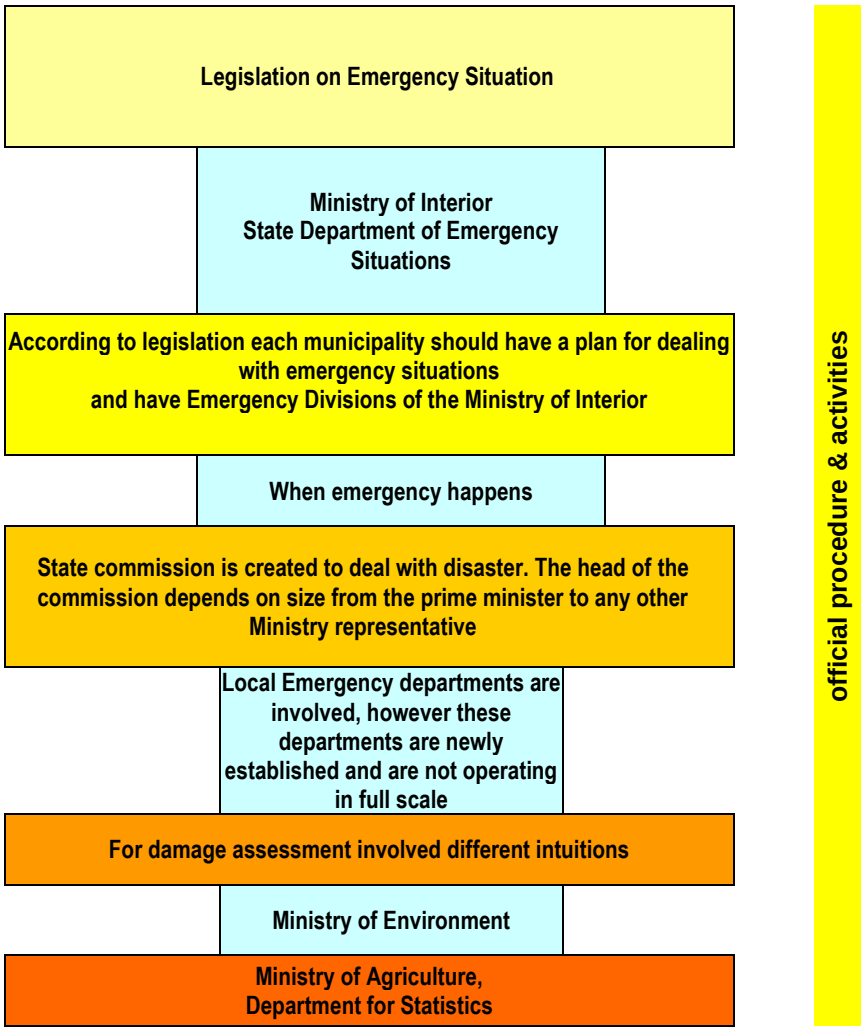
- Increase public awareness with respect to animal diseases and establish mandatory and free vaccination systems that could be easily accessible for population.

References

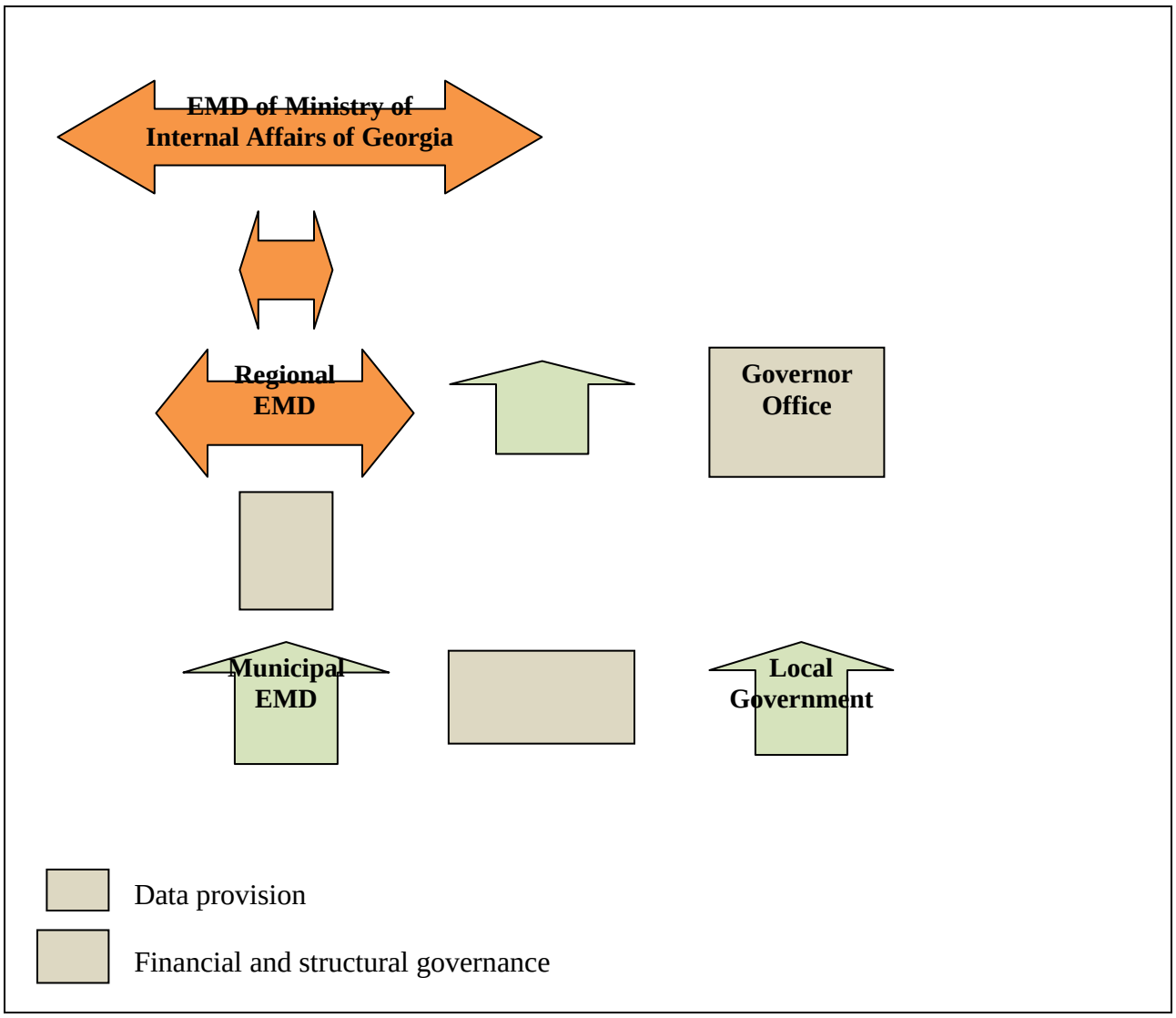
1. Ministry of Environmental Protection & National Agency for Hazards.
2. *The Results of the Natural Disaster and Geological Processes in Kvemo Kartli Region in 2009 and Forecast for 2010* http://www.global-financial-crisis.org
3. Kvemo-Kartli Department of Emergency Situations
4. The Law of Georgia on Emergency Situation 2007
5. " *Disaster Risk Mitigation*" 2008 – www.greenalt.ge

Annex: 1

Current Chart of the Disaster Management by State Institutions in Georgia



Annex 2



- **Emergency Management Department of the Ministry of Internal Affairs** : Responsible for policy surrounding DRR. Receives data from municipal and regional offices but does not govern them directly.
- **Regional Emergency Management Department** of the Office of the Governor of Kvemo Kartli, located in Rustavi and under resourced , a new building will be built in Koda Village from 2012 and be equipped with fire engines and ambulance for responding to emergencies across Kvemo Kartli.
- **Municipal Emergency Management Departments :** are under the control of the municipal councils they are under resourced but their mandate is to respond to local emergencies. They do not have any responsibilities to the regional and central level apart from data provision

Annex 3

FG Questionnaire

1. Table of Recent Hazards

1.1: When was the last (fill in the disaster)? How bad was it (1 – very minimal damage to 5 – so bad everyone was affected)?

	Disaster type	Month /Year	Severity	Area Affected	Month /Year	Severity	Area Affected	Month /Year	Severity	Area Affected
1	Forest Fire		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
2	Earthquake		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
3	Landslides		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
4	Floods		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
5	River Erosion		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
6	Drought		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
7	Livestock diseases		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
8	Sever Winter		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
9	Over Grazing		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
10	Strong Wind		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
11	Hail Storm		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
10	Other: _____		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	
11	Other: _____		1 2 3 4 5			1 2 3 4 5			1 2 3 4 5	

2. Explanation/Causes of Common Disasters
2.1: Clearly, (2 common disasters from chart above) happen very frequently in your community. If possible, please explain why you think they are so common?
Disaster 1:
Explanation:
Disaster 2:
Explanation:

3. Affect of Disasters on Livelihoods			
*3.1: How does **Disaster 1** Affect your livelihoods?*			
3.2: Which livelihoods are worst affected? Check all that apply from section 1 above: 1 is least affected, 5 is severely affected. E.g. Yes affected and 3 for severity. Cross out livelihoods which are not in the village.	**Livelihood**	**Affected**	**Severity**
	Cattle	☐ Yes ☐ No	1 2 3 4 5
	Sheep	☐ Yes ☐ No	1 2 3 4 5
	Goats	☐ Yes ☐ No	1 2 3 4 5
	Pigs	☐ Yes ☐ No	1 2 3 4 5
	Dairy (cow)	☐ Yes ☐ No	1 2 3 4 5
	Dairy (sheep)	☐ Yes ☐ No	1 2 3 4 5
	Dairy (goat)	☐ Yes ☐ No	1 2 3 4 5
	Potatoes	☐ Yes ☐ No	1 2 3 4 5
	Poultry	☐ Yes ☐ No	1 2 3 4 5
	Cereals	☐ Yes ☐ No	1 2 3 4 5
	Forage production	☐ Yes ☐ No	1 2 3 4 5
	Beekeeping	☐ Yes ☐ No	1 2 3 4 5
	Vegetables	☐ Yes	1 2 3 4 5

		☐ No	
	Fruit	☐ Yes ☐ No	1 2 3 4 5
	Forestry	☐ Yes ☐ No	1 2 3 4 5
	Medicinal crops	☐ Yes ☐ No	1 2 3 4 5
	Handicrafts	☐ Yes ☐ No	1 2 3 4 5
	Fish farming	☐ Yes ☐ No	1 2 3 4 5

Comments:

*3.3: How does **Disaster 2** Affect your livelihoods?*

Comments:

	Livelihood	**Affected**	**Severity**
3.4: Which livelihoods are worst affected? Check all that apply from section 1 above: 1 is least affected, 5 is severely affected.	Cattle	☐ Yes ☐ No	1 2 3 4 5
	Sheep	☐ Yes ☐ No	1 2 3 4 5
	Goats	☐ Yes ☐ No	1 2 3 4 5
	Pigs	☐ Yes ☐ No	1 2 3 4 5
	Dairy (cow)	☐ Yes ☐ No	1 2 3 4 5
	Dairy (sheep)	☐ Yes ☐ No	1 2 3 4 5
	Dairy (goat)	☐ Yes ☐ No	1 2 3 4 5
	Potatoes	☐ Yes ☐ No	1 2 3 4 5
	Poultry	☐ Yes ☐ No	1 2 3 4 5
	Cereals	☐ Yes ☐ No	1 2 3 4 5
	Forage production	☐ Yes ☐ No	1 2 3 4 5
	Beekeeping	☐ Yes ☐ No	1 2 3 4 5
	Vegetables	☐ Yes ☐ No	1 2 3 4 5
	Fruit	☐ Yes ☐ No	1 2 3 4 5
	Forestry	☐ Yes ☐ No	1 2 3 4 5
	Medicinal crops	☐ Yes ☐ No	1 2 3 4 5
	Handicrafts	☐ Yes ☐ No	1 2 3 4 5
	Fish farming	☐ Yes ☐ No	1 2 3 4 5

Comments:

4. Access to Markets

4.1: Has a disaster ever affected your ability to market your produce?	☐ Yes ☐ No Type of disaster: When?
4.2: What affect has the disaster had on your ability to get your goods to market? Mark all that apply and write down any additional reasons.	**Can't access the market at all because the route was unsafe or destroyed** ☐ yes **We heard the market was destroyed, so we didn't take our produce** ☐ yes **Produce was destroyed, so there was nothing to take to market** ☐ yes **Other: _____** ☐ yes **Other: _____** ☐ yes

5. Recovery Time and Assistance

*5.1: How long after **Disaster 1** did it take for things to get back to pre-disaster level (normal)?*	Less than a week ☐ About 4 weeks ☐ Between 1 and 3 months ☐ Between 4 and 8 months ☐ About a year ☐ Over a year ☐ Never ☐ No attempt made at recovery ☐ Other: _____ ☐

5.2: Why do you think it took that long? If no recovery was made, why?

Explanation:

6. Planning and Coordination			
6.1: Who helps after a disaster?			
Body		**Details**	
Local Government	☐		
National Government	☐		
Community Organizations	☐		
NGOs	☐		
Farming Association	☐		
Local Business	☐		
National Business	☐		
Banks/ MFIs	☐		
Relatives/Neighbors	☐		
No one	☐		
Other	☐		
6.2: In these types of local disasters, who is responsible for disaster coordination in your opinion?		Local Government	☐
		National Government	☐
		Other: _____	☐
		Other: _____	☐
6.3: Who should be responsible for disaster coordination?		Local Government	☐
		National Government	☐
		Other: _____	☐
		Other: _____	☐
6.4: Have you ever received any disaster assistance from any of these bodies?		☐ yes ☐ no Details:	

6.5: Do you have a disaster committee or other community institutions that helps after a disaster?	☐ yes ☐ no Details:
6.6: Has this committee engaged in any preventative measures or awareness-raising? (e.g. flood protection, soil erosion, drought)	☐ yes ☐ no Details:
6.7: Are you aware of the existence of a national regional and/or local disaster plan? If yes, who wrote it?	☐ yes ☐ no Details:

7. Community Participation/Brainstorming

What do you think would be the most helpful thing that could be done to prevent these two disasters from happening?

Who should do this?	Local Gov't	☐	**Comments:**
	National Gov't	☐	
	Our community	☐	
	NGOs	☐	
	Business	☐	
	Other: _____	☐	
	Other: _____	☐	
	Other: _____	☐	
What should your community's role be in disaster prevention, preparedness and response be?			

Annex 4: A Summary of the Outbreak of Anthrax in Dmanisi, Tetritskaro and Tsalka Municipalities.

Twenty six cattle died due to contracting Anthrax in Tsalka and Tetritskaro municipalities in July and August 2011. Tbilisi Veterinary Laboratory have subsequently confirmed that the animals deaths were caused by Anthrax. Twenty four carcasses have been burned and buried however two carcasses were slaughtered and their meat sold into the food chain. Ten days of quarantine were imposed in Khaishi and Tsintskaro villages on 20th of July 2011 during which time access into these villages were controlled by the police. 10, 750 heads of livestock have been vaccinated in Tsalka and Tetritskaro Municipalities since the outbreaks began.

Two local residents of Tsalka, a father and son, became infected by Anthrax after slaughtering an infected animal and the processing of its meat. Eight people have become infected in Tetritskaro municipality villages: six cases in Khaishi, where one of the infected men has died due to medical treatment being administered too late, and two cases in Tsintskaro; one of whom became infected at the time of the slaughtering of an infected sheep and the processing of its meat, another one became infected whilst vaccinating cattle. Tsalka, Dmanisi and Tetritskaro municipalities and one employee of the Food National Agency per municipality are coordinating measures to contain and control the disease.

*** *Reference: Case Study of Anthrax Disease Outbreak. IAAD 2011*

News concerning anthrax in the project area (From the local media and internet sources)

20. 07. 2011 / Anthrax case in Tetritskaro
Social Healthcare / Tetritskaro

The National Disease Control Center is asking the population to be careful when eating meat because anthrax cases have been increasing this month. A 65 years old man from Tetritskaro died last night.

21. 07. 2011 / Another case of anthrax in Tetritskaro
Social Healthcare / Tetritskaro

Cases of anthrax are increasing. Currently a 24 year old man from Tetritskaro is being treated at the Tbilisi Infectious Disease Hospital. The young man became infected 6 days ago. The infected man is undergoing medical treatment. Doctors stated that condition of the patient is stable.

21. 07. 2011 / Increase vaccinations took place in Tetritskaro villages
Social Healthcare / Tetritskaro

Increased Vaccinations are being carried out in Tetritskaro villages. Cattle are being vaccinated against anthrax by the Tetritskaro Municipality Office of the National Agency for Food Safety. The reason for increased vaccination was death of local resident Revaz Chkadua who died from anthrax. The man supposedly became infected at the time of slaughtering of a bull.

28. 07. 2011 / Anthrax case in Bolnisi
Social Healthcare / Bolnisi

A 46 year old man from Bolnisi was transferred to the Tbilisi Infectious Disease Center with the skin form of anthrax. He purchased infected meat from Marneuli market.

28. 07. 2011 / Condition of an anthrax infected patient is stable
Social Healthcare / Dmanisi

Two infected patients are being treated at the Tbilisi Infectious Disease Hospital. One of the infected men is from Dmanisi.

08.08. 2011 / Condition of an anthrax infected man in Tsalka is stable
Social Healthcare / Tsalka

A middle aged man from Tsalka has become infected after slaughtering his own cow. The disease has spread to the neck and face of the man.
The patient contacted a medical facility quite late and it has complicated his condition.
After appropriate medical treatment doctors consider the patient's condition to be stable.

10. 08. 2011 / Four people have become infected by anthrax in Marneuli
Social Healthcare / Marneuli

The head of the Marneuli Social Healthcare Center is looking for ways to prevent and control the spread of anthrax.
"Four cases of anthrax in humans have been observed in Marneuli. I would like to mention that none of our Meat Selling Points have accepted infected meat brought from Dmanisi. The only way to become infected by Anthrax is contact with an infected animal or its meat. We ask the population not to slaughter an infected animal in order to avoid the infection and to please contact the Veterinary Service because this is a very dangerous disease" – The Head of the Social Healthcare Center of the Marneuli Municipality, Eter Laferadze said.