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Comparison status on Disaster Preparedness for Natural Hazards in Afghanistan and Slovakia

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Abstract

In this paper assessed the comparison status of disaster management, especially in the framework of preparedness in Afghanistan and Slovakia .

Whereas Afghanistan and Slovakia faces a number of disasters of natural origin, such as floods , earthquakes, landslides, avalanches, drought. The scope of this paper is limited to disaster management ,basic disaster management guideline in Afghanistan and Slovakia .Disasters caused by natural hazards may sever environmental consequences also have played a major hindrance in socio-economic development and poverty reduction in Afghanistan. Slovakia is confronting to a severalty of natural disasters has significant impacts on various sectors such as agricultural , Socio-Economics and human live , health and environment . The Disaster Management in Slovakia incomparable with Afghanistan ,because in Slovakia the operation of the Disaster management developed in water management and other sector ,has developed institution carry out mitigation measures through engineering structures and developed early warning systems, have developed mechanism for rescue, relief, and short-term recovery, inversely in Afghanistan has not succeeded in developing institutions in the framework of preparedness for natural hazards .In Slovakia the potential damage caused by natural disaster such as flood, land sliding, events is expected to increase, on the one hand because of climate change, and on the other hand because of human activities in flood-prone areas, e.g. close to the coast, without knowing the risk of flooding, so it costs more to protect them against flooding. At present there is not so good targeted, concerted and coordinated approach at EU level towards risk management, while the potential risk to human health and life, the environment and economic assets is considerable .

Key words: disaster, Disaster risk reduction, Hazard, Preparedness, Risk, vulnerability

Introduction

Natural disasters are caused by quick and great changes in the geophysical system (lithosphere, hydrosphere, biosphere or atmosphere); and they most seldom occur as , floods, landslides, debris flows, avalanches, drought, and earthquakes. With the global population increasing at a rate of 80 million/year, there is an unrestrained addition of settlements in the regions level to natural hazards, increasing their helplessness to disasters., weather-related disasters have resulted in an eight times increase in

economic losses over the past four decades. Less developed countries and also in Europe countries, which crowd more than two thirds of the world's population, endure 95% of the losses from disasters. Sufficient and broad disaster management is the only way of dealing with disasters. Disaster management involves policies, administrative decisions, and operational activities related to different stages of disaster. With useful disaster management strategies, it is likely to pass up or reduce the impact of disasters. The main purpose of disaster management is to increase preparedness, present early warning, observe the hazard in real time, evaluate the damage, and categorize relief activities. Avoidance of disasters caused by natural phenomena is exceedingly challenging in terms of knowledge, technology, and resources. Divided disaster management into four phases: mitigation, preparedness, response, and recovery, and each involves a great deal of attempt and skills.

Underdeveloped countries are hard pressed to provide basic requirements such as water, food, roads, education, and health to the population with no or only some resources left to prepare for disaster control.

In the frame work disaster preparedness Afghanistan compared with Slovakia is no exclusion. Hard pressed for economic resources and quick population growth joint with political and security issues at domestic, regional, and international level, disaster management has received the least priority in the Afghanistan . The impact of flood disasters in Afghanistan can be judged by the fact that 21691 people were killed and 1328587 human beings affected in the period from 1972-2007 due to flood .Since 1990 -2008 in Afghanistan, there have been about 9 major earthquakes resulting to about 8385 deaths. Landslides and avalanches have also made their mark on the lives and properties of Afghans. Since 2002-2007,due to land sliding a total of 178 peoples have been killed.

In the period 1994 - 2001 about 138 flash floods occurred on the Slovak Republic territory . Unusual and great storm hit a part of east Slovakia in July 1998.The consequent flash floods in small mountainous basins affected 10850 people in 75 villages. The flood took 47 human lives, 756 people became homeless, and 3618 people had to be evacuated, 2059 houses were flooded, 279 houses were destroyed and over 5300 farm animals perished. The total flood damages were estimated to be exceeding 20 mil. Euros.

This paper assesses Afghanistan's and Slovakia comparison preparedness for effective response to disasters caused by natural hazards. Unfortunately, Afghanistan's formulated plans for disaster preparedness are virtually existence on the paper : the emphasis is rather on mitigation through structural measures or relief as and when the need arises. Plans, including response through prior evacuation from threatened locations, timely and effective search and rescue, and long-term relief and rehabilitation, are not practical. In Slovakia have been formulated plans just for flood disaster and partly for land sliding and avalanches . At present there is no targeted, concerted and coordinated approach at all Slovak level towards flood risk management, although some Slovak instruments make a partial contribution to flood prevention, protection and mitigation.

This paper includes information on related aspects in the broad context of disaster management. Since in Slovak the flash flood in1998 , several disaster management plans have been formulated and institutions established; however, most of them are in their infancy, and their long-term impact and effectiveness are yet to be evaluated. Nevertheless, they do reflect a renewed focus on disaster preparedness in Slovakia and are included in this paper.

Since 2003 in Afghanistan the disaster preparedness plan on national and provincial and district level have been formulated and institutions established but the action regarding to mitigation, nothing. So for Afghanistan and Slovak countries, natural hazards such as flood, avalanche, landslide and drought maps and natural hazards risk management plans and preparation of natural hazards map would only have to be developed and updated for all region and rivers basins or sub-basins where there are potential or reasonably predictable significant risks.

Disaster preparedness for Natural Hazards in Slovakia and Afghanistan

Legal basis of disaster preparedness for natural hazards in Afghanistan

In the paramount document of the Republic of Afghanistan, the constitution of the Afghanistan, Disaster preparedness for natural hazards mentioned as a law on Disaster Response, Management and Preparedness and Recovery. The present National Disaster Management Plan is a beginning towards organizing the national resources and capabilities for a coordinated and efficient disaster preparedness and response and will need to be prepared for various level. A national policy on Disaster Management is required to lay down the long term approach beyond the present quick impact national plan. The national disaster management plan reflected the following activities:

1. Prevention of disasters including : Earthquake , landslides , avalanches , flood , drought and sandstorm;
2. Assessment and Mitigation of the causes of disasters including : Earthquake , landslides , avalanches , flood , drought and sandstorm ;
3. Rescue of people during a disaster including Earthquake , landslides , avalanches , flood , drought and sandstorm events ;
4. Reconstruction and people's return to normal life;
5. Conduction community awareness programs and training personnel to be prepared to cope with disasters including Earthquake , landslides , avalanches, flood , drought and sandstorm events ;

For efficient execution of the National Disaster Management Plan, the five Activities mentioned above, have been allocated to the following four stages of the Disaster Cycle:

1. Non Disaster (these disaster include disaster mitigation leading to prevention and risk reduction).
2. Befor Disaster (These activities include preparedness to face likely disasters, dissemination of early warnings).
3. After Disaster (These activities include recovery and rehabilitation programs in disaster affected areas).
4. During Disaster (These activities include quick response, provision of relief, mobilization of search & rescue and damage assessment).

According the constitution, disaster preparedness for natural hazards as a law the hazards in Afghanistan categorized in four broad categories – Geological, Hydro-meteorological, Technological and Biological Hazards. The sub-types of hazards in these four categories are:

1. Geological: Earthquakes;
2. Hydro meteorological Hazards: Floods; Flood induced Landslides and Mudflows; Sandstorms; Extreme Heat; and Cold; Avalanches; Droughts.
3. Technological Hazards: Chemical and Industrial Accidents ; Fires ; Major Building ;Collapse ; Air, Road Accidents
4. Biological Hazards: Epidemics; Pest Attacks

The objectives of the Provincial Disaster Management Plan are:

- To plan and implement risk reduction activities in the province.
- To have effective disaster preparedness, and effective emergency response for saving of lives.
- To provide relief and humanitarian assistance.
- To enable faster recovery through comprehensive reconstruction and rehabilitation.
- To conduct trainings and capacity building for effective prevention, mitigation and response for disasters.
- To undertake information, education and communication activities to create awareness among the communities and the general public.

Based on above Plan Objectives the plan and implement risk reduction activities in the province not done yet , and also not have effective disaster preparedness and not effective emergency response for saving of human lives . Unfortunately the Natural Hazards maps of the most susceptible areas have not been prepared for all categories of natural disaster such as avalanches , landslides , floods , flashfloods , drought .In addition to this the absence of such maps , plans and program and the strategy of them cannot be implemented to mitigate natural hazards . As a result, valuable lives and property are being lost every year.

Legal basis of disaster preparedness for Natural hazards in Slovak

A variety of organizations and departments at national level are involved in disaster management. Most of these institutions were geared towards flood disasters, some of them being exclusively dedicated to deal with mitigation and preparedness for landslides and avalanches disasters .legal basis of disaster preparedness for natural hazards in Slovak us under:

1.The Constitution of the Slovak Republic ; 2.The European Federation of Geologists (EFG); 3.The Slovak Water Act (Nr .364/2004) ; 4.The Slovak Flood Protection Act (Nr.666/2004); 5.The water Framework Directive 2000/60/ EC; 6.Directive of the European Parliament and of the Council on the assessment and management of flood risks (2007/??/EC; 7. Bilateral agreements; 8. International water management plan 2006-2015,

The European Federation of Geologists (EFG) well-known panels of experts to provide high quality response to the European Commission and Parliament. Recently, the EFG expert section on natural hazards was approached to provide additional input to the Seventh Framework Program, to be able to identify a strategic research agenda for the natural hazards sector. Key issue to keep in mind is that the better we understand the natural mechanisms and the performance and properties of the subsurface, the better we can set up mitigation measures that can ultimately lead to prevention and full preparedness to these threatening hazards. Extensively improving our understanding of all geological processes will therefore be of great benefit to the European society.

General issues EFG to consider:

- Assimilation of different disciplines should be a driving force in research.
- set up an improved European network of researchers working on the same issues; initiate closer cooperation European Federation of Geologists can assist to build this European research network, using its broad networks of geoscientists
- in (and outside) Europe.

- links with hazard and risk mapping are important in natural hazards research, because the society will then ‘directly’ benefit from the research for improved land use management.
- A lot of natural hazards research has already been done at national geological surveys, at research institutes, at universities, et cetera. The available results and techniques should be inventoried, collected and subsequently harmonized.
- Co-operation and integration with running research projects is recommended (e.g. ESA projects).
- Raise awareness and educate people.

Land slides

Focus on:

- Improve understanding of system and triggering of landslides.
- Get improved close in interaction of different parameters effecting landslides.
- Accepting influence of climate change on slope instability (e.g. increasing rain fall; permafrost thawing)
- Detailed research in cryophilic systems and their effect on slope instabilities.
- Increasing/improving early warning systems (geo-indicators) to detect slope instability at an early stage.
- Integration of different technologies and disciplines in slope stability research.
- Detailed assimilation with remote sensing, for example to use satellite monitoring techniques for ground motion (e.g. global laser scanning and interferometer single aperture radar (InSAR)).

Research in flooding

Focus on:

- Research on geological ground conditions on flood plains and coastal plain areas that are mainly protected by man-made flood defense systems
- Hydro geological research to improve our understanding run-off and water storage capacity/groundwater movements (also useful in water quality and scarcity problems).
- Improving geophysical, engineering geological and geotechnical methods to quickly evaluate the quality of flood defense systems.
- Improving our understanding of fluvial processes, and how they can influence the various options available to mitigate the effects of future flooding.

Research in land subsidence

Focus on:

- In general, investigate into long-term sustainability of defenseless settlements with respect to land subsidence. Integrate with geological maps.
- Research in subsidence activities of the subsurface; consider special focus on regions with flood risk (especially low lands and deltaic areas), as well as collapsible soils, peat, swelling and shrinking clays.
- Research in monitoring land subsidence, possibly by using airborne laser or radar technology, especially in large urban areas at risk of inundation.

- Investigate preventive and mitigation measures to reduce the damage caused by natural and artificial land subsidence.

Risk Mapping

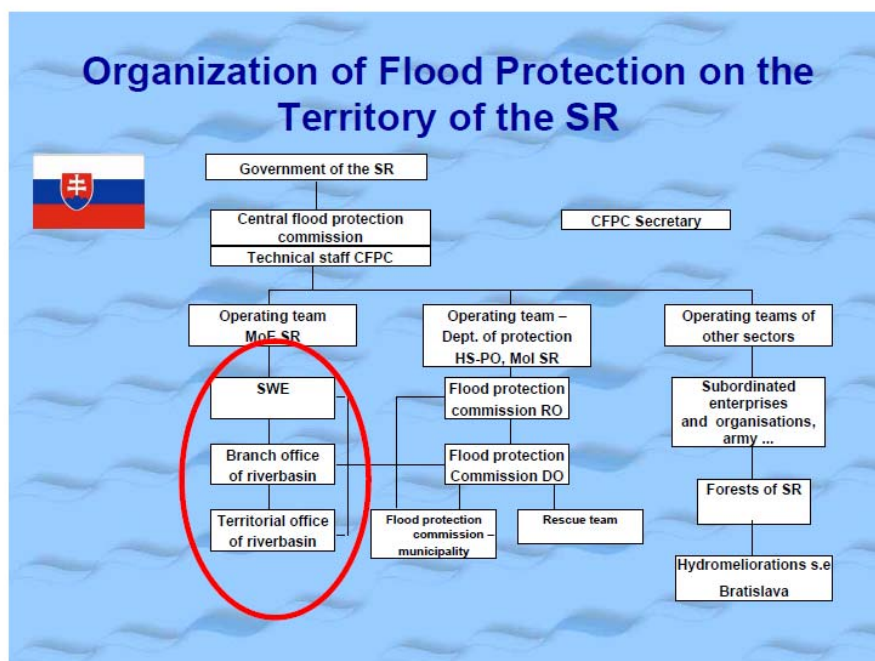
Often regions are helpless to multiple hazards. These should be fully integrated in one hazard and risk mapping system. Geological maps, frequently digitally available at geological surveys, should be fully integrated in hazard maps. They include information on the event of weak soils (important in search of land subsidence and slope instability); locations of faults in the subsurface that are sensitive to earthquakes; they highlight regions with the distribution of alluvial deposits, crucial in determining zoning in flood risk maps; et cetera.

Geographical Information Systems are recommended to be used for hazard and risk mapping purposes, in combination with geostatistical analysis, to create multi-risk maps. A special suggestion, over and over again ignored, is the mapping of old environmental loads and radioactive production activity. These are geological hazards that can cause major health problems

Institutional framework for natural hazards in Slovakia

In the dominant deed of the Republic of Slovakia, the constitution of the Slovak from the middle of the 19th century, nowadays, disaster preparedness for natural hazards as law on Disaster Response, Management and preparedness that belong to the following institution in natural disaster:

- 1) Slovak Hydro meteorological Institute (SHMI),
- 2) Central flood commission in the Slovak republic,
- 3) Military Topography Institute,
- 4) Slovak Environment Agency
- 5) Geology Survey,
- 6) Danube Water Management
- 7) Slovak Academy of Sciences,
- 8) Research Institute of Water Management,
- 9) Universities
- 10) Ministry of Interior,
- 11) Ministry of Defense,
- 12) Ministry of Environment,
- 13) Ministry of Agriculture,
- 13) EC



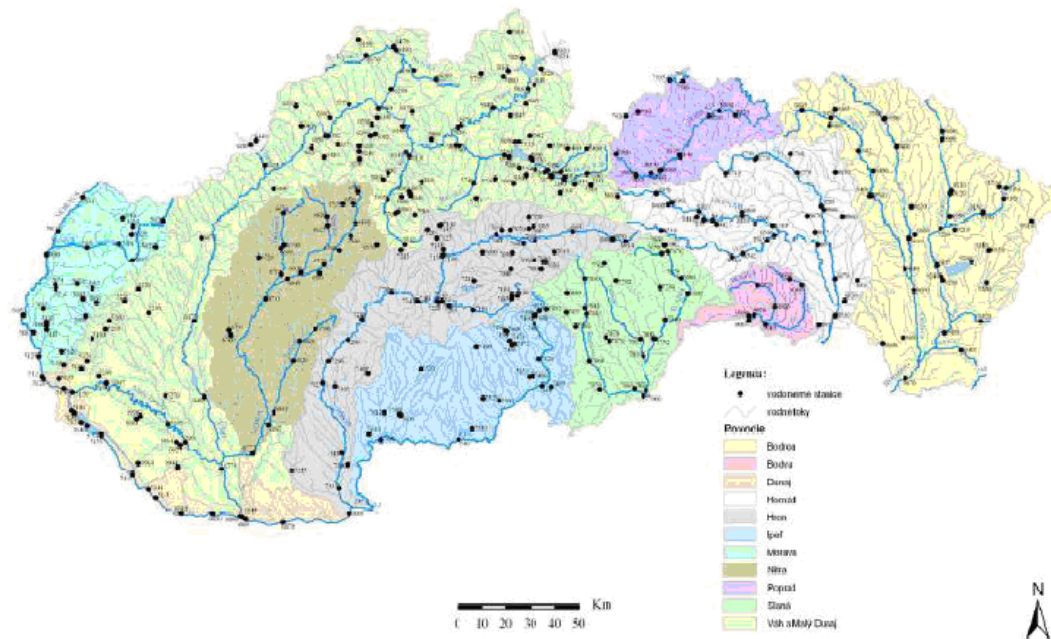
As in Slovak republic the flood disaster hazards a foremost problem among other disaster natural hazards ,so in this paper as a cardinal point to pay attention on flood and flash flood . In legal sense , the water sector and flood protection issues is governed by the water act and the Slovak flood protection act and Directive of the European Parliament and of the Council on the assessment and management of flood risks (2007/??/EC which “ regulates the legal status of water and water estate, the method of organizing and performing of water management tasks and function, Flood risk management plans. Preliminary flood risk assessment and preparation of flood hazards map including inventory and susceptibility flood hazards maps ,the objective of flood protection act and Directive of the European Parliament and of the Council on the assessment and management of flood risks is to reduce and manage flood-related risks to human health, the environment, infrastructure and property.

As a consequence of much flood damages and flash floods, the performance of several current flood-forecasting methods was evaluated. A pressing need to increase the standard of forecasts in the cases of floods striking larger territories, rivers with regulated flows and local flood events (flash floods) has been identified.

In response the Government of Slovak Republic in 2001 has approved The National Program of Flood Protection till 2010. As part of the project “Flood Warning and Forecasting System of Slovakia (POVAPSYS)”, which is aimed at the considerable innovation of the flood warning and forecasting practices, started in 2001..The Installation of a satellite data receiver for the METEOSAT MSG01 is planned. For the substantial increase of the radar monitored territory the replacement of the two outdated radar installations with modern units will be complemented by the installation of a new meteorological radar in Central Slovakia.. The progress of the operational co-operation between the flood forecasting and warning service and flood control bodies in Slovakia will also be encountered.(internet website. 1).

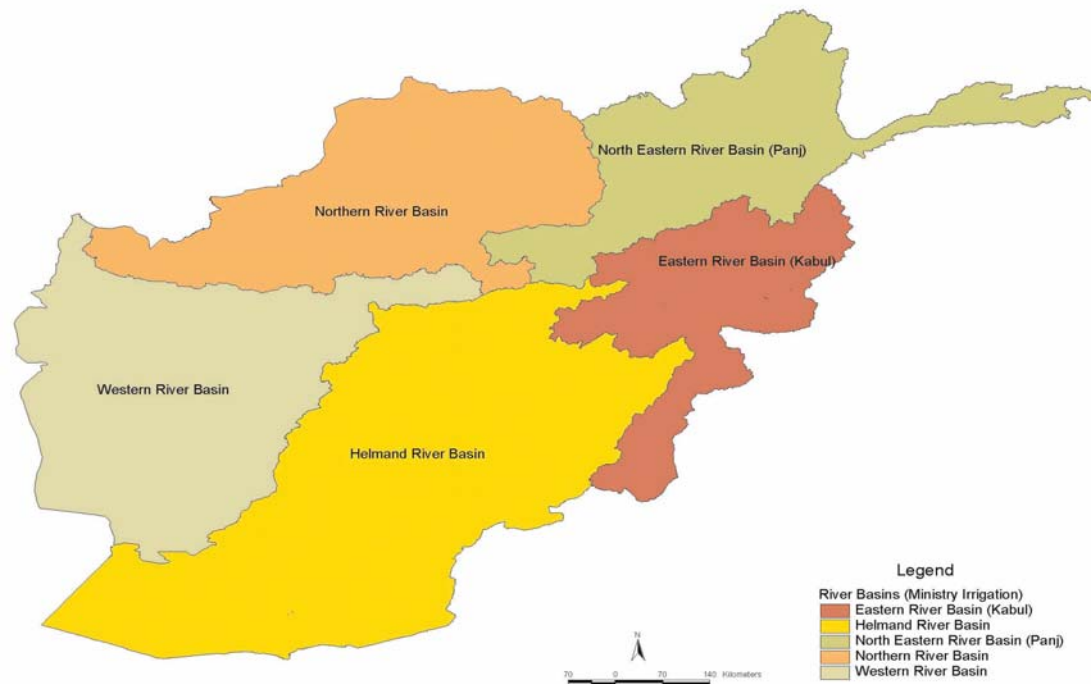
Slovak river network 49775 km(1015 m/km²),river drainage area to Black sea (96% of the SR area) River drainage area to Baltic sea 4%, River under water management

Administrative: 29334 Km (59%) , River basin :4 main river Basins (Danube ,Vah, Hron, bodrog and Hornad) , Included 14 sub Basins, 6 Rive basin Districts: (Danube,Vah,Hron,Bodrog,Hornad ,Poprad and Dunajec) Slovak River Basins
Map 1



Institutional framework for natural hazards in Afghanistan

The Department for Disaster Preparedness (DDP) is the mandated body to coordinate the Disaster Management activities with the National Commission, Line ministries as a Member of the Commission and International Organizations, Provincial & District Commissions on Disaster Management and Media in Afghanistan. which they are as under: Ministry of Rural Rehabilitation and Development ;Ministry of Interior; Ministry of Health; Ministry of Defense; Ministry of Planning; Ministry of Agriculture and Livestock; Ministry of Irrigation and Environment; Ministry of Information and Communication; Ministry of Transport; Ministry of Foreign Affairs; Ministry of Finance; Ministry of Public Works; Afghanistan Red Crescent Society; Afghanistan Television ;UNAMA, UNCHS; UNHCR; UNDP; UNESCO; UNICEF; FAO; WFP; WHO; UNOPS



Roles and Responsibilities

The roles of agencies at National level will be as follows:

The National Commission on Disaster Management: The Commission shall Provide policy directions; it will approve plans for disaster mitigation, preparedness and response prepared by the DDP and the Line Ministries who are members of the commission. It will recommend integration of disaster management with other national development programs. It will adopt measures for disaster prevention, mitigation and rehabilitation. The commission may declare an emergency Situation due to a devastating disaster and end of the situation as and when it deems fit.

Line Ministries: Line Ministries represented at the national commission will prepare and implement disaster management plans for disasters for which they are the primary agencies.. The Regional/Provincial offices of the Line Ministries will assist in implementation of the Disaster management Activities at Provincial Level..

National/International Organizations: The National and International Organizations have a critical role to play in disaster management activities in the country, especially in light of the currently limited capacity. These organizations can provide vital resource inputs for supplementing the efforts of the government.

Provincial & District Commissions on Disaster Management:

The role of the commissions will be to coordinate implementation of disaster management activities in the field by the local offices of the line ministries, national agencies and international organizations .The Provincial Commission will provide regular progress reports of their activities to the DDP.

Media: media has a major role to play in the pre-disaster prevention, mitigation and preparedness activities through appropriate community awareness generation.

. Media will lay a responsible role not only in terms of awareness but also in terms of accurate and informed reporting of events. The media could establish dedicated channels during the aftermath of a calamity to provide specific information about the local people and conditions.

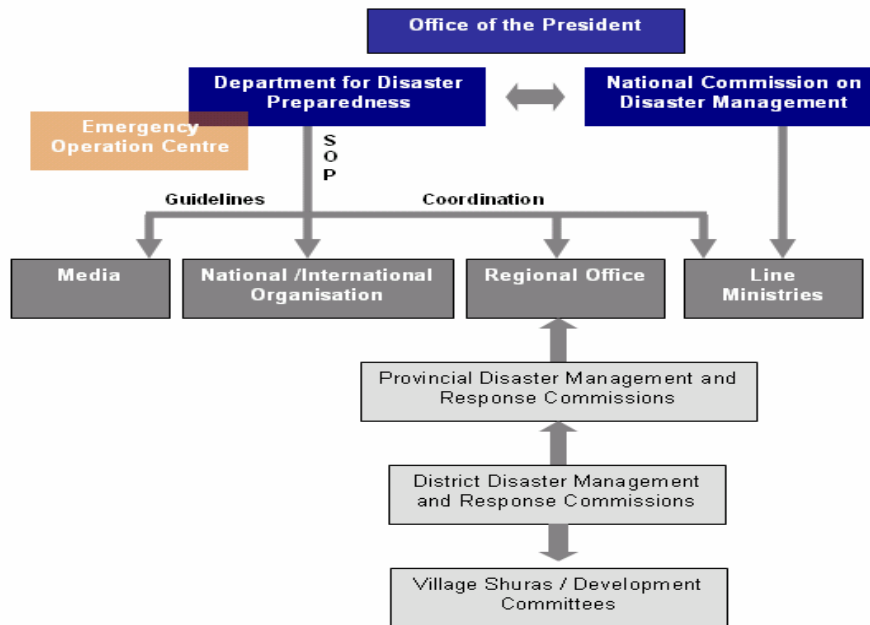


Figure 3 Institutional framework of department for disaster preparedness

Basic disaster management guidelines

Assessment of disaster management situation in Slovakia

The territory of Slovakia naturally from geographic location and geomorphologic characteristics Point of view was often exposed to natural hazards in the past. Since 1990 the periodicity of occurrence of natural hazards such as flood, landslides, and avalanches seems to increase. Most of dangerous natural phenomena in Slovakia occur in mild and moderate scale.

The Slovakia has for river and lakes separately International Water Management plan from 2006-2015, but for ground water and coastal water not yet. There are separate action plans for different categories of disaster in Slovakia , the national Action plan for disaster preparedness acted in different year since 1992 to 2006 , Now the all disaster preparedness project to move a head by ECO ,. The Water Resources Strategy 2000, are sectoral plan and polices that take care of Natural disasters relating to floods and landslides at national level .The building code of 2001, was brought in to mitigate the effects of earthquakes in urban areas and as a measure towards earthquake preparedness .The Government of Slovak Republic in 2001 has approved The National Program of Flood Protection till 2010. As part of the project “Flood Warning and Forecasting System of Slovakia (POVAPSYS)”,. The European Federation of Geologists (EFG) established panels of experts to provide high quality response to the European Commission and Parliament. Recently, the EFG expert panel on natural hazards was approached to provide additional input to the Seventh

Framework Program, to be able to identify a strategic research agenda for the natural hazards sector.

Organization of hazard prevention and public education developed as well and helped to minimize the risk. However, climatic changes increase extremes in precipitation influencing local storms, landslides, erosion and sedimentation.

Assessment of disaster management situation in Afghanistan

Based on the drafted national strategy regarding disaster preparedness and response, all the member ministries of the National Commission for disaster management are expected to prepare disaster management and preparedness plans at sector level. Some of the ministries (e.g., Ministry of Interior and Ministry of Health) have already prepared their plans but not practical and the really data still didn't send it to central office.

The recently approved national plan and strategy is in accordance with the Millennium Development Goals. ANDMA suggested to president to have annual budget and now ANDMA have 250 million Afghani has been allocated for disaster management from the national budget of Afghanistan.

In addition to these are other stakeholders within the Government of Afghanistan A number of international and national NGOS, civil society and academia CSOs and UN Agencies are currently working in the sector.

The Disaster Management Authorities (ANDMA) was established in 1971 as a coordination office to support a multicultural national commission supported by the United Nations Disaster response office (UNDRO).

There are no separate plans for different categories of disaster in Afghanistan The national action plan 2003 is an integrated and comprehensive plan which addresses all the phases of a disaster. Sectoral policies and plans address disaster relating to flood and land slides The water strategic policy was formulated in 2004 but due to problem of poor coordination not approved yet, and the same case national water plan made in 2005 but not approved, Drought policy and strategy is made in 2005 and approved in 2008, the draft action plan for flood mitigation is made in 2006 not updated and not approved.

The National Disaster Management Plan was approved by the Ministerial Advisory Committee in 2004.

However, this plan will need to be followed by more elaborate and long-term interventions, keeping up with the Country's growing capacity. all the member ministries who have the membership of national council for disaster management, are expected to prepare disaster management and preparedness plans at sector level (health, agriculture, municipality and etc.).

Some of the ministries (e.g. interior, health) and international organization prepared their disaster management and preparedness plans and allocated their resources (UNAMA, WHO, WFP, FAO) but unfortunately the coordination between agencies and governmental offices who deals with disaster is very poor and this documentation not approved yet.

Proposals for improvement of disaster management framework in Slovakia

Improve the quality of the information necessary for early and effective flood forecasting by the enlargement and modernization of the monitoring, processing and telecommunication systems of the Slovak Hydro meteorological Institute.

Improvement of the management framework (legal, institutional, financial, information ,planning , operative , control and supervising) disaster management for natural hazards .

The data processing capacity of the existing telecommunication networks will be also increased in order to become consistent with the expected increase of the data transfer volumes (radar, satellite, and other sources).

The existing rainfall runoff models will be upgraded by the use of LAM predictions and consecutive weather radar data. As a result, the upgrading of correctness and accuracy of the flood forecast and warning is predictable.

Hazard mapping as a instrument for disaster management at different categories is important .within the country, a system for distribution hazards maps and making them available to all key actors should be introduced. And also to enter in Internet system to use all who would like to investigate in the field of disaster in Slovakia.

Activities and mechanism of the national Action plan should be mainstreamed in to the activities of the relevant implementing organization working in the field of disaster preparedness.

School and School children , other construction not allowed to build in flood –prone area

It is necessary to emphasize that in the survey, the term “landslide” was used in a general sense to describe all types of gravitational slope movements of earth material, such as creep, slides, lateral spreading, flow or fall. The same term is also used to describe specific types of gravitational movement, sliding and its resulting form landslides.

To take in action the proposal for a directive of the European parliament and of the council on the assessment and management of floods

Improving leadership and creating a National Disaster Risk Management council or a National Emergency Operations Center, backed by appropriate legislative instruments, are urgently needed.

Proposals for improvement of disaster management framework in Afghanistan

The Department for disaster preparedness and institutional capacity to deal with natural hazard and disaster management should be improved.

The Slovakia Agencies which deals with natural hazard and disaster management compare to Afghanistan was improved and necessary to improve more.

The DDP could undertake to make the hazard map. The hazard map of the country due to different kind of disaster is needed to specify the risk area due to disasters. for the national , provincial and district level .and circulated among within the institutional structure of key ministries of the country .

The use of modern technology like GIS and RS can be of vital importance in the preparation of plans. Keeping records of vulnerable areas, monitoring of rescue and relief operations deciding response, managing the data base etc.

To have our own building design code against the earthquake to keep the building and human life safe as much as possible.

The country need to have the microzonation map for seismic activity.

. For the reduction of the disasters that is necessary to include the disaster subject in different schools level of the ministry of education for minimum knowledge which can use in the reduction of different kind of disasters.

The country need to have the good transportation system in all over the country for different season of the year for disaster management.

It is needs to have the disaster office with all emergency tolls at lest in every province of the country.

Coordination of activities between various ministries, NGOs and communities in disaster reduction,

Efficient use of financial and material resources for disaster

Surveying and assessment of high risk areas and preparation of national disaster risk management and contingency plans for the country.

Improved capacity of the Office Disaster preparedness (ODP) as a credible coordination agency and the focal point for multi disaster-related efforts and issues in Afghanistan

Conclusion

Looking at the national environment in terms of disaster preparedness for floods, landslides, avalanches, drought, there is an overall perception on the part of key actors in Slovakia working in the fields of disaster management that natural disasters need to be faced with full preparedness, and they are working towards that end. There is also a consciousness that natural hazards cannot be avoided, but at least their effects can be minimized if timely measures to mitigate them are taken. The key actors also rely that local communities must be involved in disaster preparedness for pre –and post – disaster activities.

Floods already constitute a significant risk to human health, economic activity and the environment in Europe. However, two trends suggest that these risks will increase in the future. Firstly, the magnitude and frequency of floods are likely to increase as a result of climate change (higher intensity of rainfall and rising sea levels). Secondly, there has been a marked rise in the vulnerability due to the increase in the number of people and economic assets located in flood risk zones.

Landslide hazard maps in a general sense are currently available in all of the surveyed Regions. Those maps are usually in Afghanistan inventory maps but in Slovakia .inventory as well as susceptibility maps for national and regional level.

Inadequate policies and a weak legal environment are the biggest impediment to disaster management .development of and effective institutional mechanism has always bee promoted, but without success. Absence of an organization at the highest level that could provide intellectual and administrative leadership is a serious gap in Slovakia

References:

Afghanistan National Disaster Management plan. Department for Disaster Preparedness .Transitional Islamic State of Afghanistan, December 2003

Atlas of Afghanistan, IMS,2004

Catalogue of macroseismically observed earthquakes on the territory of Slovakia (version 1996, in Slovak).Manuscript, Geophys. Inst. Slov. Acad. Sci., Bratislava, 15pp, 1996. Labák, P. and Brouček, I

Commission of the European Communities .Directive of the European Parliament and of the Council on the assessment and management of flood com.2006

Hydro meteorological data resources and technologies for effective flash flood forecasting. Coordinator: Marco Borga, University of Padova, 72 p. Majerčáková, O., Makel', M., Šťastný, P., Kupčo, M. and Rončák, P., 2006: Selected Flash Floods in the Slovak Republic. Slovak Hydro meteorological Institute, 33 p.

Landslides in the West Carpathians. In: Rybář J. *et al.* (eds.), *Proc. 1st European Conference on Landslides*. Prague, Czech Republic. Pp. 45~57. Ondrášik R. 2002.

Quarterly project Report [March –June 2007] Comprehensive Disaster Risk Reduction Project (CDRRP). UNDP.