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Regional Disaster Management Strategy in Hungary

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ABSTRACT

The disaster management in any country is a process that works at various activities of prevention levels and operational models. An important element of the improvement of the civil protection in the individual countries and of their coordination in joint activities is the improvement of the existing Integrated Disaster Prevention Policy activity. The huge variety of organizational concepts of the systems for disaster prevention, accidents and catastrophes in the different countries, pose a lot of questions related to the improvement of the efficiency. The coordination that could benefit from the good and effective practices and produce a common, integrated and comprehensive European view and concept for the Regional Disaster Prevention Policy. This issue is getting more and more important, the large-scale emergency events and disasters are covering the territories of several regions, and- because of their magnitude and consequences- require the assistance and cooperation of international bodies working in the sphere of civil protection.

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1. Introduction

Since 1981, the losses caused by disasters larger than in the OECD countries, measured by GDP per capita, so that a natural event can break a country's industrial economic development.

Between 2002 and 2011 4130 disaster occurred between the countries of the world, 1,117,527 people died, and 1.195 billion of US dollars in damage. (Global Assessment Report on Disaster Risk Reduction, 2011)

According to GAR 2015, the economic losses of disasters increase annually from \$ 250 billion to \$ 300 billion a year. (Global Assessment Report on Disaster Risk Reduction, 2015)

Accordingly, the role of physically isolated risks decreases, countries in the world are involved in the globalized system, and crises in other areas can be seen as a change in their own economic system.

In 2011, the impact of the earthquake and the tsunami in Japan will decline annually by 1% in economic growth projections. At the same time, it had an impact on the Pacific countries, resulting in a 0.1-0.21% economic recession in China, Malaysia, India, Singapore and the Philippines, which accounted for 0.2-0.5% exports to Japan. The Thai floods in 2011 caused not only the annual \$ 40 billions of direct damage but reduced industrial production by 2.5% in the world. (UNESCAP Asia and Pacific Economic and Social Survey, 2011) Security is an essential element of the economic and social development of all communities, so "the prevention, protection and restoration is the task for of all participants. Disasters can only be successfully managed if the average person takes responsibility for their own safety." (Endrődi, 2012)

2. The Disaster Prevention Policy

The Policy is a professional frame for the strategies, aims, objectives, actions, and a tool to the specialists to

control the efforts in one directions, and to create into a system the theoretical and methodological questions.

The Disaster Prevention Policy of a region is an effort to contribute to the development of a cohesive regional and national strategy for disaster preparedness and prevention. It aims to bridge the gap between regional and local efforts and to encourage the full participation and mutual support of all regional organisations. The objective is that organizations, municipalities in sub region, designated local administrative organisations, the designated local public corporations and NGOs-as members of an informal Regional Disaster Prevention Support Network-effectively use there full capabilities to prevent natural and man-made disasters in the region and implement measures for emergency/restoration, and to secure inhabitants, inhabitants' life, and their assets.

As the first stage in developing Prevention Policy, each participant of the region assesses disaster preparedness and prevention needs and capabilities. They must review natural and technological disaster risks, the existing disaster management, preparedness plans, and identified on-going emergency response activity, coordination structures and procedures. The assessments need to be based on a methodology and standard terminology developed by National Disaster Management and Local government crisis experience.

2.1 Disaster Profile and Vulnerability

The societies and their service infrastructures were more vulnerable the opposite negative effect with a natural and civilizational origin, as consequence, today it is a complex task to assure the high level of protection to the population. (Katai-Urban, Vass, 2014). To depict the frame of the Prevention Policy, we should give a profile of the disaster of the region. The disaster managers and experts need to weigh also, the catastrophic severity of a disaster that might occurrence only at 50 or 100 year intervals against the

periodic flood, inland water, summer bush and forest fire, drought, land fire, or more that will occur in the region.

A statement of the risks is by itself of little value. It must be complemented by an appreciation of the degree of vulnerability to these risks that each territory faces, the level of public awareness, the availability of means to determine and communicate the degree of risk, and finally the local political and administrative environment in which risks are identified and managed. The local and regional authorities and external actors carefully evaluate these considerations, they help us determine, where to place the emphasis and work to be able to leverage available resources to the maximum extent possible toward improving disaster preparedness, mitigation and response.

2.1.1 Risk factors

Disasters are summaries of hazards so, the increased physical, social, economic or environmental vulnerability, may mean an increase in the frequency of disasters. We must determine in the area under investigation that a disaster, an unexpected and often sudden event that causes great damage, destruction and human suffering, extends beyond local capacity and necessitates a national or international request for external assistance.

The international standards of disaster management divides disasters into 2 categories (natural and technological), and further divides into 5 subcategories the natural disasters, (which in turn cover 12 disaster types and more than 30 subtypes). The principal categories and subcategories are shown below.

1. Geophysical: Events originating from solid earth like earthquake, volcano, dry mass movement (rock fall, landslide, avalanche, subsidence)
2. Meteorological: Events caused by short-lived/small to meso-scale atmospheric processes (in the spectrum from minutes to days)
3. Hydrological: Events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up. For example general flood, storm surge/coastal flood.
4. Climatologically: Events caused by long-lived/mezzo - to macro-scale processes (in the spectrum from intrapersonal to multi-decadal climate variability). For example, extreme temperature, extreme winter condition, drought/wildfire
5. Biological: Disaster caused by the exposure of living organisms to germs and toxic substances.
6. Man-made risk factors, nuclear and industrial accident, biological and chemical accident, damage of the critical infrastructure

2.1.2 Vulnerability

Vulnerability is the sensitivity of people, infrastructure, the environment and cultural heritage. If disasters prove the vulnerability of the social system, then any disaster risk policy should include a possible reduction of such vulnerability.

The vulnerability of a region is summarized in the following example from the region of Northern Hungary:

Table 1. The vulnerability of the region.

Vulnerability	Level of Vulnerability	Present and foreseen problem as the analysis
Periodic Melting Flood: winter-spring temperature perception, extreme floods: large rainfalls flash flood, Significant role of development factors (e.g. deforestation, city environment, industry activity)	High	Large area endangered by flood. The periodic flood level and the frequency of extreme flood increase. Potential of protectable dam system is limited.
Spring –summer temperature, perception, frost.	High	Region lowlands is strongly or moderately threatened by inland inundation
Drying climate: reduction of precipitation, increase of temperature (and evaporation potential).	Moderate	There is no useful surface water resource on the plain; the water system relies heavily on groundwater sources, thereby reducing them.

Source: own

2.1.3 Risk reduction

The most important tool for disaster relief, risk mitigation, is a topic that is generally in the humanitarian area rather than in the development area. Risks always exist - and perhaps because of climate change and the economic crisis - they will increase and certainly diversify, but the dangers do not always have to be disastrous. If communities and individuals are clearly aware of the types of dangers they face and how to prepare themselves to face such dangers, the likelihood of injury can be significantly reduced. Reducing disasters can be achieved through increased awareness, accurate knowledge, improved preparedness and the development of early warning mechanisms. In investing in disaster relief and prevention, governmental and non-governmental organizations, in addition to preventing human tragedies, reduce the high human and material costs of restoration and reconstruction.

Disasters cause huge losses in life and property and affect more people in poverty. The economic impact of disasters appears in direct damage (eg infrastructure, plants, housing damage) and indirect damage (eg loss of income, unemployment, market destabilization). The general aim of the disaster management policy and strategy is to provide an adequate and effective mechanism for disaster prevention.

3. Prevention and Mitigation strategy

Prevention / mitigation strategies can reduce or prevent disaster, loss and emergency response and recovery costs that would otherwise arise. Easing is a key element of emergency and disaster prevention, which has so far been relatively under-emphasized despite the cost of growing disasters. With the implementation of the national disaster response strategy, disaster risk mitigation benefits emerge in the economy, in

the lives of individuals and communities and in the functioning of infrastructure.

Prevention and Reduction is a strategy designed to minimize risks to the region and to ensure the normal life of the population, the workplace, and the optimum performance of the services. (Hornycsek, 2010) A regional local reduction strategy is a plan developed by members of the informal regional disaster relief network to reduce and eliminate the risks associated with natural and man-made hazards.

Mitigation strategies focus on:

1. Information, Education, and Planning
2. The Reducing Structure of the Hazard
3. Public Safety
4. Hazardous Technology Reduction
5. Prevention risk mapping
6. Disaster Prevention Support Network development

However, the mitigating strategy cannot be successful if there is no support from the administrative institutions, research institutes, NGOs and the community. This can only be accomplished if all these organizations are given a supervisory right during the strategy. In addition to risk assessment and vulnerability analysis, an applied research and technology transfer, public awareness and training should be explored to address the mitigation strategy.

The main elements of mitigation strategy are:

1. Risk Assessment and Vulnerability Analysis
2. Applied Research and Technology Transfer
3. Public Awareness and Training
4. Institutional Mechanisms
5. Incentives and Resources for Mitigation
6. Land Use Planning and Regulation

a. Promotion of Research and Technology

The aim is to research areas such as risk assessment, systematic study of building typology, identify cost-effective methods, improve seismic safety and apply research results with the regional university. The measures will ensure the availability of adequate funds and the feasibility of the study for State-specific risk mitigation and the follow-up, review and evaluation of research activities.

Studying cost-effective techniques to rebuild existing structures to ensure life security offers multiple opportunities for decision-makers.

b. Capacity Building and Awareness Generation

The aim is to better prepare professionals, policy-makers and the public for different types of threats and related vulnerabilities and allow them to make effective decisions to reduce flood and other risk losses and encourage them to effectively implement actions. The measures include the development of media campaigns, information, education and communication materials, awareness raising of public administrations and the development of campaign materials with the involvement of the Ministry of Education, the Directorate-General for Disaster Management, the Police, the Fire Service and the Ambulance Service. The result, educated local government officials, policymakers, professionals and the public, a social layer that is aware of its weaknesses, thus positively helps to implement mitigation measures. Preparedness reduces losses in disaster and significantly reduces the resources needed for disaster response and response activities.

c. Training and Capacity Building

The aim is to improve the ability of trained professionals, members of the community, specialized groups such as first aid teams, research teams, rescue teams, evacuation teams,

and damage assessment teams. There are very few experts in the field of disaster prevention and planning. Institutional and labour development needs to be focused at all levels. There is a need for the training of architects, engineers and designers in the development of safe residential and infrastructure facilities. Handbooks should be developed to determine the methodologies of new constructions and the subsequent development of the old ones. As published in Endrődi's publication, "a strong legal and enforceable framework is needed with the right incentives and punitive measures", public warning. (Endrődi, 2015).

Strategic elements are incorporated into training programs for special groups such as disaster relief teams, community teachers and directors, doctors and engineers, architects and masonry, builders and contractors, and so on.

The disaster relief teams thus formed can be coaxed into the cross-trainer registration of local governments.

4. Preparedness plan

Preparedness focuses on responding to catastrophe threats or occurrences and typical disaster response issues, thereby identifying emergency resources needs and resources to meet needs. This includes developing disaster recovery plans for the whole of the disaster and developing the resilience of stakeholders, especially the community, through training and simulation exercises. The first objective of the preparedness is to reduce the impact of disasters through appropriate measures and to improve the capacity of those most concerned to achieve the greatest possible benefits. The second is to ensure that continuous development will further improve the Community's capacities and capabilities to enhance resilience and disaster resilience at Community level, thereby helping to reduce vulnerability. The best examples of preparedness activities are the development of local warning and community evacuation plans through community education, local responsiveness and motivation, and development of volunteering intervention capacity. As disasters have an impact on economic and social processes, preparedness and mitigation should emphasize socio-economic rather than physical considerations. If disasters prove the vulnerability of the social system, then any disaster risk policy should include a possible reduction of such vulnerability.

In general, community preparedness depends on four main components:

1. Characteristics of the population (number of children, reckoning etc.)
2. Critical Infrastructure, such as Road, Drinking Water, Communication Network, Health and Hygiene
3. Physical environment
4. Social environment (social groups)

4.1 Components of the Preparedness Plan

Important elements of measuring preparedness are:

1. **Physical security:** how safe are the members of the community in view of the physical danger from such threats? Parameters are essentially trying to measure how effective structural mitigation measures are, for example, the (Resistance of building structures to flood and other impacts, availability and capacity of safe haven places, etc.)
2. **Danger awareness,** that is, the level of awareness of hazards that are likely to be more likely to occur
3. **Organized preparedness,** i.e. community organization against disasters, i.e. Community level committees, working groups, civil protection volunteers and other local volunteers,

trained disaster response teams and community disaster protection plans etc.

4. Infrastructure and Services that try to measure the current status of services and how to restore critical services when they cause confusion

5. Recovery ability, i.e. the ability of members of the community to recover from the danger

6. Physical environment, i.e. environment, against dangers. Groundwater bodies and vegetation status etc.

7. Social capital, i.e. the extent to which there is community networking and cooperation among members of the community (disaster relief support network)

8. Psychological preparedness, that is, how safe and prepared the members of the community are because of these dangers

9. Cultural capital, i.e. cultural wealth, such as the existence, recognition and use of the traditional mechanism to cope with such disasters

10. Household preparedness, i.e. the preparedness of a household member

4.2 Components of Administrative Preparedness

Administrative preparedness is also an important element in reducing disaster response times. The contingency plan is based on the components given below:

1. Ready-to-read reception facilities and facilities
2. Maintain inventory of tools and materials for the response
3. Assign tasks to organizations
4. Training of members of the crisis group, officials of the employees and managers of the relevant departments
5. Specific training of members, officials and volunteers of regional disasters in the local defence committee, seminars and workshops organized by community organizations
6. Training volunteer civil protection teams
7. Increase public awareness
8. Exercising Disaster Regulatory Mechanism
9. Annual updates of the state, regional and Community-level plans

The infrastructural background of the design work and the established strategic tasks should be provided by a local defence committee composed of state, regional and local authorities and members of civil protection. The Emergency Centre of the Local Defence Committee (LPC EOC) should play an important role in managing operations in the area concerned, in central district coordination and in interaction with the national government, and in balancing the response of the conflicting demands during the disaster.

The Centre's normal time activities are as follows:

1. Ensure that warning and communication systems are operational
2. Collect and analyse regional information with dangers, resources, skilled workforce, etc. connection
3. Implementation of regional subordination and community mock drilling
4. Establish organizational units at Community, regional and state level
5. Monitor and evaluate community-level disaster prevention plans (housing estates, schools, hospitals, institutions, business facilities)
6. Create a status report on planned preparedness and mitigation activities
7. Allocation of tasks to different resource organizations and resource management decisions
8. Review and update the response strategy
9. Provision of information to the local government.

The availability of the following databases may assist LPC EOC operation:

1. Resources, Action Plans, Local Government, Regional Disaster Response Plans, and the Local Defence Commission Plans Database, Community Standby Plans are under the umbrella of the Public Safety Officer in the LPC EOC.

2. Maps of vulnerable areas, identified shelter locations, communication links with the state government.

3. Recording of personnel resources, availability of key contact persons.

In the event of disaster and crisis management, more organizational effort is needed on implementation and coordination issues. Therefore, a wide range of management and design training courses is essential for potential officers to prepare actors for specific disaster-related tasks. Educational requirements should include the core activities of emergency management, such as the emergency response functions of the new integrated emergency response system, management skills and special training for search and rescue, first aid, etc. The qualified persons are:

- Disaster Management Officers in line with the new Integrated Disaster Risk Management System Ranking
- It is up to the team leaders and the members of the emergency service
- Rapid reaction teams at central and local level
- Working groups at Community Level Civil Defence Units, including volunteers, civil society organizations and civil protection volunteers, school and college students, scouts and other youth organizations

4.3 Awareness and Community Preparedness Planning

The hazard and risk analysis of the state indicates that the following topics of the disaster should pay particular attention to community awareness:

1. Types of disasters, basic do and not
2. Remedying Disaster Relief Problems
3. Structure and retrofit for disaster-resistant buildings and technology
4. Communicating potentially vulnerable areas in the local defence committee
5. Evacuation systems and community preparedness problems
6. Non-structural mitigation measures

Volunteers and social organizations play a vital role in community awareness of the mass spectrum. The media play an important role in raising awareness and educating people. The local government may use booklets, manuals, manuals, posters and leaflets, etc. in the form of large-scale information communication and education materials.

5. Conclusion

The threat reduction strategies are designed to reduce losses in the event of future hazards. The Regional Disaster Policy Plan aims to protect people's lives and values from potentially devastating threats in order to prepare and mitigate with an effective long-term local disaster management policy. The initiatives in this plan set goals and define the final strategies that will lead to the achievement of goals within a set timeframe. The aim of the municipality for various dangers is to prepare the community during the normal period to defend against disasters, to provide psychological and physical resistance to the dangers, to flexibly manage the changed living conditions, thus reducing the impact of disasters below the critical level. Each of the start-up elements has a special role to play and contributes significantly to the ultimate goal of creating a safer environment.

The plan is based on the conviction that well-defined strategies, goals and goals, identified actors, roles and responsibilities are essential for successful implementation.

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