

PROPOSAL FOR A MODEL OF EFFECTIVE REACTION TO NATURAL DISASTERS IN THE TERRITORY OF SLOVAKIA

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Abstract: Forecasting of natural disasters is more complicated than other crisis events. It requires full use of special forces and means, which are intended to solution of them. Crisis managers and many authorities or institutions are involved to process of solution crisis events. They are exposed to psychical pressure because phase of reaction must be made promptly and effective. Authors are focused on issues of risk and crisis management in the public sector in their research activities at University of Žilina. Aim of this article is to propose well-functioning effective reaction to natural disasters in Slovakia conditions. This model is proposed by schematic drawing illustrating of activities in phase of reaction. Model is based by international experiences and various laws or ordinances of many ministries by Slovakia crisis management system. This article points to possibility optimization of decision-making processes at all crisis management level, in particular to improve the local government level.

UDC Classification: D73, H12, K32

Keywords: natural disasters, model, reaction

Introduction

Natural disasters have specific status in whole crisis management system. They can interference a lot people and they can adverse effect on considerably large territory. Their implications have negative impacts not only by human and nature but also on material and cultural value, which are located on seriously threatened territory. Functionality and relative stability of Slovak economy may be endangered and disturbed during extensive natural disasters. Phase of reaction has importance within to minimise negative consequences. Decision-making processes are getting to the forefront at central government level and local government level. The aim of this processes is their real optimization.

Literature review

As Ishikawa (2006) writes crisis events caused by natural factors is also related to the Theory of Chaos. Butterfly wing effect points to moving butterfly wings on one side of the planet can cause a hurricane on the other side planet over time. In essence, there are relatively non-serious events that can trigger crisis events, and those that follow. A prerequisite for effective crisis management are understanding of public sector, its purpose, culture and the ongoing processes within it. Reaction to crisis has to be realistic and especially functional. Crisis managers and other authorities apply different strategies and methods for stop further deterioration. Mitigating the negative consequences of crisis events requires a commitment to a functional approach to their solution. Throughout the world, a number of basic activities are known to help them. According to Drenman (2015), the structures of the responding organizations (centralization, decentralization and policy of presidency) need to be created and adapted. The importance of collecting and evaluating information and facilitating communication has its foundation in crisis events solutions. There must be exist mechanisms available to the crisis managers to manage networks in times of crisis (establishment of a coordination center, horizontal coordination mechanisms and monitoring of performance indicators).

In order to design an effective and especially effective model of reaction to natural disasters, it is necessary to know and understand the patterns and relationships of valid in complex crisis management models.

There are several models and concepts of crisis management in the world. According to OECD Risk Management Expert Baubion (2013), crisis management consists of three basic phases, and those are crisis preparedness (before the crisis), reaction to damage (during the crisis), and feedback (after the crisis).

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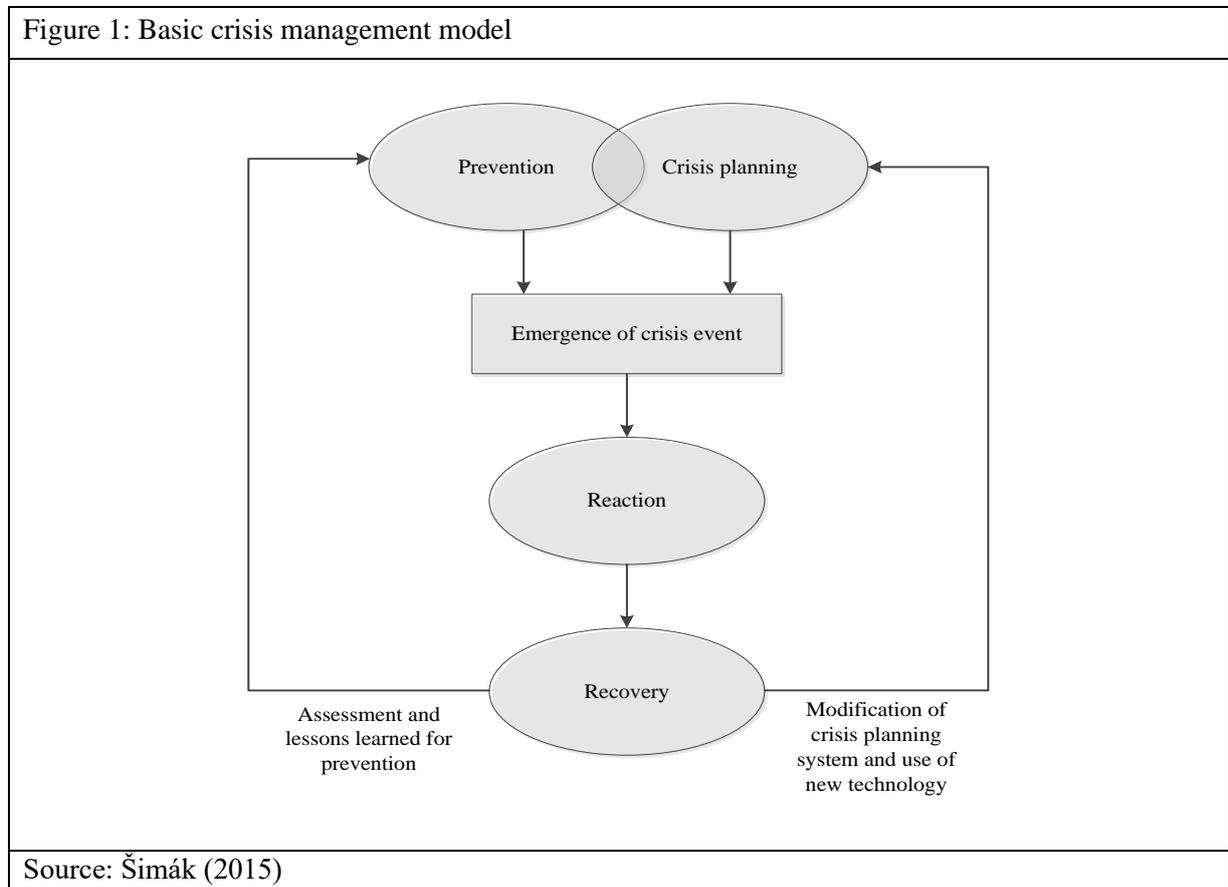
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Crisis management is one of the basic tasks in North Atlantic Organization (NATO). Marinov (2011) has developed a Strategic Crisis Management Concept within NATO to make an adequate reaction to emerging crisis events of a natural or military nature. The model assesses the actual situation and develops a comprehensive reaction through the six-phase crisis management process: indications and warning, assessment, reaction, planning, execution transition. This model enables of crisis staffs and committees within the NATO institutions to coordinate their work and provide information to the North Atlantic Council. Phases of time and organization are not exactly given. They can overlap each other and their length depends on the particular situation.

The new relational model of crisis management is based on a holistic approach. This model presents crisis management as a continuous discipline using clusters and non-linear elements. Prevention and preparation for crisis events are just as important as activities that need to be carried out in the reaction phase. Feedback has important role in implementing new elements in the preparation and management of future crises. Non-linear structure of model should not be perceived as successive steps. Individual elements of model are set of interconnected ensembles of crisis management (Jaques, 2007).

In poorer parts of the world, crisis management models are tailored to the financial, material and personal capabilities of the countries. For these countries, a favorable model is available to allow a smooth transition from the general crisis management to risk management. The main objective is sustainable development. Hamani et al (2013) writes the model of crisis management in African countries is a form of integration of local government and community located in a threatened area. The main objective of the model is to improve the resilience and cooperation of the civilian population in response the natural disasters. Model provides relevant standardized information for each type of dangers, for example floods, earthquakes and landslides. The overall efficiency of the model is conditioned by rigorous territorial analysis.

According to Šimák (2015), two crisis management models exist in the Slovakia conditions. The basic model consists of four crisis management processes – prevention, crisis planning, reaction and recovery.



In Figure 1 can to see basic crisis management model. These particular time-bound and content-bound phases contain individual linkages and sequences. General principles are apply in them. Between prevention and crisis planning is based on the principle whose importance is important in the preparatory period (relative peace conditions). In the case of greater complexity and effectiveness in the prevention phase, the crisis planning phase may be less extensive. The reaction phase is characterized by the pressure on the crisis managers. This pressure can be caused, in particular, by the lack of time and the absence of the forces and means necessary to resolve the crisis. The final phase of basic crisis management model is a recovery. In practice, it usually takes place in several stages. Recovery provides the opportunity to implement new organizational, administrative and technological elements for the prevention and crisis planning phase. Efforts are an overall improvement in crisis management (Šimák, 2015).

The second crisis management model is much more practical to resolve specific crisis events. Apart from the type of crisis events, it also takes in to account their strength and environment in which it takes place. This model is based on the basic model. Extended model can adapt and solve many specific problems. The most important step is to identify and assess all actual risks and threats. Subsequently, crises and crisis scenario prognoses are processed. The primary objective of prevention is to prevent the emergence of adverse effects of crisis events through various measures and activities. A separate and no less significant phase of crisis management is crisis planning in which crisis plans and emergency plans are being processed. As Sanseverino-Godfrin (2016) writes protection of society has created preconditions for a link between the prevention of serious natural hazards and urban planning documents.

According to Ostrowska (2014), risk monitoring is a process that verifies the value of crisis factors and their acceptability levels. Phase of reaction by emerging crisis events is followed in the case of non-effective prevention and crisis planning. First of all, it is necessary warning the population and to notify specific persons by activating the warning and notifying network. As Sullivan et al (2011) points out, these networks ultimately support the rescue work and they are elemental part of reaction. Technical means for warning and notification may be of a different character. Ministry of the Interior of the Slovak Republic Ordinance no. 388 (2006) about the details of ensuring the technical and operational conditions of the civil protection information system regulates the scope of warning and information centers.

Warning the population and notification persons in the Slovakia conditions is technically ensured by a network of sirens, radio and television broadcasts, domestic radios, local information means of municipalities and cities, automated notification systems and public electronic communications networks. Reaction to crisis events is directly linked to the implementation of the necessary measures. This important phase is carried out by components of the Integrated Rescue System and by the constituents of legal persons and businesses owning premises in which the crisis events arises. Activities of the institutions of crisis management systém are included in Act no. 42 (1994) about civil protection of population.

The last phase in the basic and practical model is recovery. Tasks and activities fall within the responsibility of a statutory representative of an institution that has been affected by the negative consequences of the crisis events. Also recovery can be carried out by forces and means that have participated in rescue services. As Cutter et al (2013) writes, it is important to focus attention on the overall vulnerability analysis and structural causes of the emergence of crisis events. Natural disasters, even of a lesser extent, can have a significant impact on population and nature over a long period. Feedback has a great importance in all crisis management models. It represents a means of improving quality of crisis management at various levels (Šimák, 2015).

If we have to propose model of effective and efficient reaction, we need to know the organizations and activities of the crisis management institutions in Slovakia and abroad. In Slovakia, Integrated Rescue System was established in 2002 as a result of experience of the European Union. The main purpose is quality raising of the rescue activities. According to Act no. 129 (2002) the Integrated Rescue System provides fast use and coordination of forces and means of rescue systems in case of danger of crisis events formation or during of crisis events. As in Slovakia, also in Czech Republic, the Integrated

Rescue System is established. Its organization and tasks are detail described in Act no. 239 (2000) about Integrated Rescue System. In Germany and Austria, the individual Provinces are responsible for solution of crisis events. Each Provinces has special offices and special crisis management legislation (International CEP Handbook, 2009). Protection of Sweden population and their property is ensured by the Sweden Fire Rescue Service (International CEP Handbook, 2009). Several experts consider crisis management in Sweden is one of the most advanced and most efficient crisis management system in the world (Šimák, 2015). Edwards (1998) describes the independent FEMA agency (Federal Emergency Management Agency). FEMA agency provides an immediate response to crisis events in United States of America. Specific example is the Russian Federation. Russian Ministry of Emergencies has a significant status. The main task of this ministry is to organize rescue services to crisis events in the territory of Russian Federation.

Some states have signed agreements on mutual cooperation and assistance in sending rescue teams to other states. Slovakia Contractual System for solution of crisis events has signed and ratified with sevel countries, for example Czech Republic, Poland, Hungary, Austria, Slovenia, Ukraine, Croatia, Montenegro and Russian Federation. Agreements and Memorandums of cooperation are also signed with United Nations Organization and European Union (Slovakia Contractual System, 2018).

Data and methodology

Aim of this article is to propose of an effective reaction to natural disasters in the territory of Slovakia. This model should be implemented and validated in the Slovakia conditions. It is necessary further specified with the tasks of the competent authorities and institutions in the whole crisis management system with an emphasis on local government level.

The methodology is based on analysis of crisis management models in countries and organizations in the world. The basis for analysis are the six crisis management systems and reaction for crisis events in the surrounding countries, including United States of America and Russian Federation. Inspiration for the creation of the reaction model in Slovakia is the rescue services of developed countries. Analyzing crisis management legislation and analyzing competencies at local government level is very important for crisis management reaction. Consistent analysis and synthesis on basis of information obtained and evaluated determined the subsequent proces modeling. This method has justification especially in the process of summarizing and evaluating the collected facts and legislative documentation in the field of crisis management.

Results and Discussion

It is not possible to prevent the occurrence of crisis events despite consistent preventive measures and extensive crisis planning, including natural disasters (flood, fire, earthquake, gales, landslides, etc...). It is essential to correctly identify one or more causes of the crisis events in an effective reaction. Nature is the most frequently cause of these events which can be start up by action of one of the four basic elements (earth, fire, water, air) or their combination. Existence of geological and geographic conditions and bear in mind weather conditions create predictions for crisis events forecasting only to limited extent. Also causes of their occurrence may be anthropogenic character. Negative effects of human factor on nature (inappropriate treatment of nature, uncontrollable felling of trees in existing forests, uncontrollable exploitation of natural resources) can result in crisis events emerging. This sphere is even more problematic in crisis events forecasting, considering to unpredictability of human behavior.

Adoption effective measures to natural disasters solution requires knowledge of the various relationships and patterns between individual institutions and organizations in Slovakia crisis management system. The complexly organizational structure has precisely defined roles for all elements and entities. This structure has serious importance in the reaction phase. Figure 2 shows the model of reaction to natural disasters in the territory of Slovakia. Differentiation institutions and activities these institutions is very important across the reaction system. Definition and determination of the all involved persons responsibility is essential to assumptions made of coordinate reaction. All entities must understand their position and function in the crisis management system.

Figure 2: Model of reaction to natural disasters in the territory of Slovakia

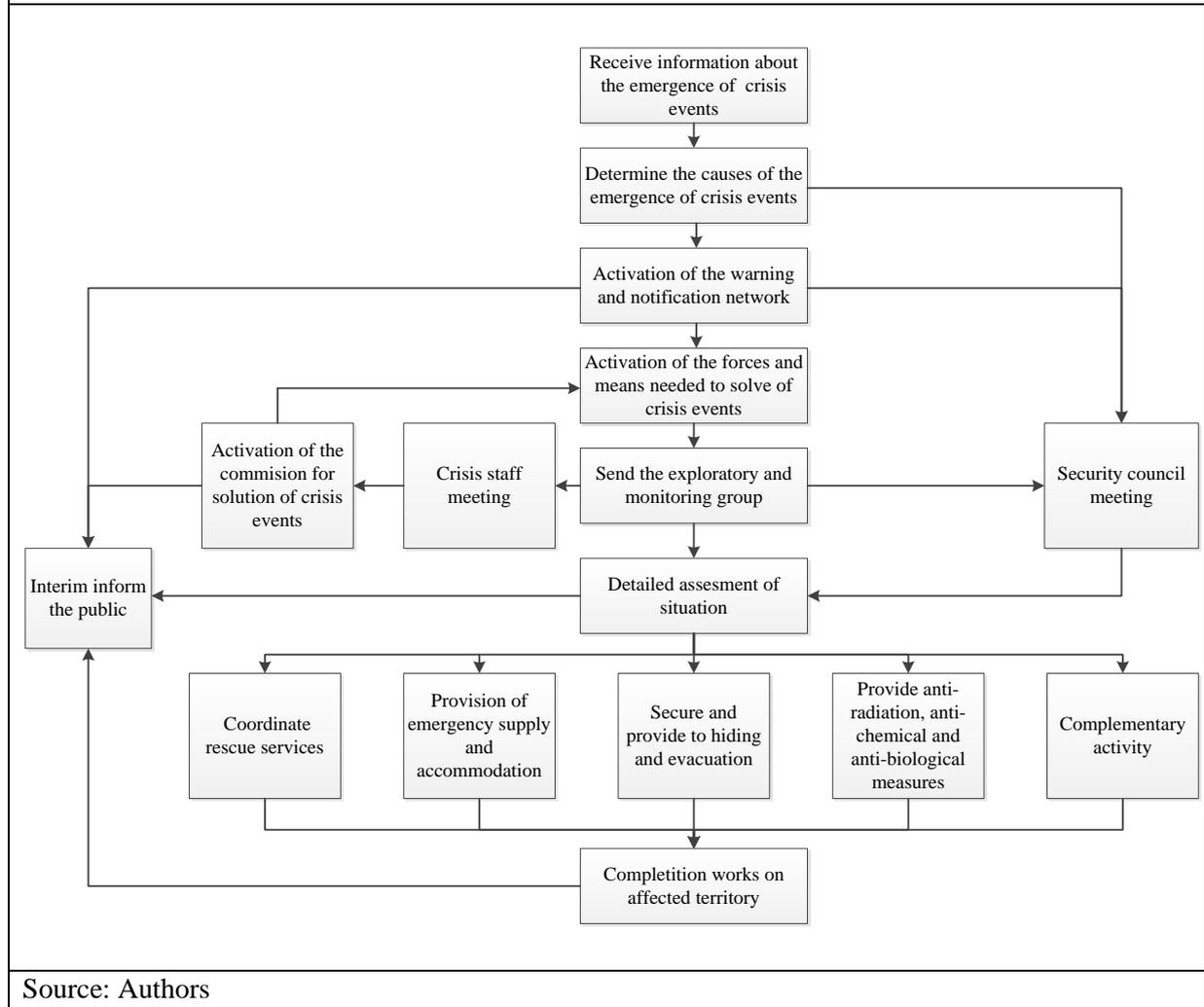


Figure 2 shows detail reaction phase in the Slovakia conditions which begins receive information about emergence of crisis events. Receive and record important information are the responsibility of Integrated Rescue System Coordination Center or responsibility of local government level authorities. It is necessary to determine the causes of emergence of natural disasters. They are characterized in the previous text. The Security Council must be urgently convened at different levels by territorial competence (state, regional and district). According to Constitutional Act no. 227 (2002) about state security in time of war, war status, exceptional status and emergency status, as amended, the Security Council tasks are defined. The Security Council evaluates security situation, prepares proposals for measures to safeguard safety and imposes obligations on other state competent authorities or legal and natural persons within their territorial competence.

Warning the population and notification rescue forces are carried out by activation of the warning and notification network. This network needs to be regularly examined and maintained in operation. Activation of the forces and means necessary to resolve crisis event is inevitable to distinguish how these activities are carried out. Integrated Rescue System, legal persons and natural persons dispose forces and means (executive elements of Integrated Rescue System, work obligation and providing physical means). Followed by send the exploratory and monitoring group to place where crisis events was originated. Preliminary exploration and monitoring carried out by land or air way. Furthermore, Mobile Analytical Detection Group is part of exploratory and monitoring group. Important tasks these groups are characterized by Ministry of the Interior of the Slovak Republic Ordinance no. 523 (2006) about details to rescue services secure organizing of civil protection forces.

Crisis Staff meeting is extremely important and several times repeating activity throughout all reaction phase. Status, establishment and composition of Crisis Staffs are detail described in Act no. 387 (2002) about state management in crisis situations outside by war time and war status. Crisis Staffs are not established but they create by actual situation at different levels (state, regional, district and local). Commision for solution of crisis events are part of Crisis Staff. These Commision are activated by crisis events character. Detailed assesment of situation may be followed already after Security Council meeting or evaluation of information from exploratory and monitoring group. Aim of this phase is correct determine tasks and activities. The main purposes are minimise of loss life and minimise damage to property and environment. According to Act no. 42 (1994) about civil protection of population, the tasks of solution of natural disasters include:

- coordinate rescue services,
- provision of emergency supply and accommodation,
- secure and provide to hiding and evacuation,
- provide anti-radiation, anti-chemical and anti-biological measures,
- complementary activity.

The final step is completion work on affected territory and subsequent withdrawal of forces and means those who participated in rescue services. Interim inform the public on affected territory is one the most important phases in all proposed model. This phase occurs not only during all reaction phase but also after the end of reaction. It is significant to differentiation between true information and distorted or degenerated information. Media and designated concrete persons for communication with media must inform to public objectively and factually. Fear and panic of civil population be limited. Improve of provide information to public (for example about evacuation information) must be need in risk areas. Resource of information systém and its means have substantiation on affected territory. According to Ministry of the Interior of the Slovak Republic Ordinance no. 599 (2006) about details of the related expenditure with civil protection from state budget is possible to make a claim on expenditure for rescue services. These financial compensations are make after rescue services.

Conclusion

Quality improvement and ensuring of crisis management in the public sector require existence strong relations at horizontal and vertical level. Slovakia has established relatively coherent and comprehensive crisis management systém for solution natural disasters. Crisis management authorities are responsible for preparedness and reaction for crisis events. Decision-making processes must be better coordinated. Effective reaction is directly proportional to the qualitative and quantitative staff resources. The main aim of proposal for model of reaction to natural disasters in the territory of Slovakia is analysis and next optimizing information flows in the future.

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