
THE ROLE OF KNOWLEDGE IN DISASTER RISK REDUCTION

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Abstract: Scientific research results and operational knowledge gained from lessons learnt, exercises, training, peer reviews and other assessment tools need to be better exploited in the Disaster risk management cycle to mitigate risks and vulnerabilities and to improve response in case of disaster.

Disaster risk reduction policy and practice require knowledge for informed decision making and coordinated action. Although the knowledge production and implementation processes are critical for disaster risk reduction, these issues are seldom systematically addressed in-depth in disaster studies and policy programs.

While efforts and improvements have been made with regard to data and information, only limited resources are committed to improving knowledge management structures and integrating knowledge systems at different spatial levels. The recently adopted Sendai Framework for Disaster Risk Reduction 2015–2030 addresses *knowledge-related issues* and provides the opportunity to highlight the *critical role of knowledge in disaster risk reduction*.

This paper presents insights into potential conceptualizations of knowledge that would advance disaster research and policy. We use recent cases from disaster in Skopje to illustrate challenges and pathways to disaster risk reduction. We suggest furthering strengthening efforts that improve our understanding of the connections between disaster risk, knowledge, and learning. A better integration of multiple scales, different societal actors, various knowledge sources, and diverse disciplines into disaster risk research will increase its relevance for decision-makers in policy and practice. Well-targeted incentives and political backing will improve the coherence, coordination, and sharing of knowledge among various actors.

In this paper authors point to the importance of promoting *the collection, analysis, management, and use of relevant data and practical information at national and local levels*, as well as to ensure its dissemination, taking into account the needs of different categories of users. This is reasonable since many countries systematically collect disaster-related facts, data and information. Depending on the agency or institution, the collection ranges from hazard type to risk exposure and disaster damage. Thus, knowledge is scattered among various actors with limited coherence, coordination and sharing. That's way developing countries suffer major losses due to disasters. Reducing disaster losses is a fundamental goal for most governments.

However, lack of disaster knowledge, awareness and involvement indicates a failure of the system. There is a need to incorporate Disaster Risk Reduction into government and temporary learning space curricula. Through preparedness activity learning how to save lives and investing for tomorrow. Capability building among institution who is dealing with disasters is utmost necessary.

Keywords: knowledge, risk, disaster

1. INTRODUCTION

The aftermath of several disasters across the Macedonia demonstrates the need among citizens to be better informed in emergency planning and preparation techniques. Recently happened natural disasters approve that more of the residents did not know the importance of preparedness activities. In the flash flood in August 2016 large part of the community was completely unprepared for emergencies; we can say that also the population was “not prepared at all”.

It is true that we will never know when a disaster will strike or how large it will be. Protection and Rescue Directorate has undertaken several large research studies focused on barriers to personal preparedness, yet the outcome of that research is not evident in these public service announcements. The examination of specific public communication needs is required to successfully employ tactics to create personal preparedness. Also according with article 35 of Protection and Rescue Law, Mayor of the local government unit has precisely stated competencies, so in the activity of protection and rescue in the area of local government, the mayor proposes plan for protection and rescue and to monitor the situation regarding the implementation of decisions taken by the Council of the unit of local government to prevent the appearance and elimination of consequences of natural disasters..

According to Article 39 of the Law on Protection and Rescue, in order to protect and rescue of people and material goods from natural disasters, the obligation of each municipality to prepare a *Plan for*

protection and rescue and *Risk Assessment*. Purpose of risk assessment is a qualitative and quantitative analysis of data on the potential dangers of the occurrence of natural disasters, forecasting the possible future course and consequences that may be caused by the same, with proposed preventive and other measures for protection and rescue.

2. THE INTEGRATION OF KNOWLEDGE IN DISASTER

Developing countries suffer major losses due to disasters. Reducing disaster losses is a fundamental goal for most governments.

The Sendai Framework's implementation is guided by several principles, and Paragraph 19 directly refers to knowledge: "Disaster risk reduction requires a multi-hazard approach and inclusive risk-informed decision-making based on the open exchange and dissemination of disaggregated data, including by sex, age and disability, as well as on the easily accessible, up-to-date, comprehensible, science-based, non-sensitive risk information, complemented by traditional knowledge" (UNISDR 2015b, p. 9).

These two disciplines of communication and emergency management are undeniably integrated yet the relationship hides in the shadows rather than becoming a centerpiece for media creation. Broadly broken down into two lines of thought (rhetoric and social science), "Communication studies examine the symbolic transmission of meaning in a variety of contexts" (Richardson & Byers, 2007, p.2).

The integration of knowledge and involvement is not a new concept. Peattie and Peattie (2003) concluded that better education and involvement (along with interaction and understanding) are required for the development of effective campaigns.

According to Senge (1990, p. 19), learning organizations are "organizations in which people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together". The basic rationale for such organizations is that in situations of rapid change only those organizations that are flexible, adaptive, and productive will excel. For this to happen, Senge argues, organizations need to discover how to tap people's commitment and capacity to learn at all levels. Top-down activities that lack incentives and possibilities for integrating diverse societal actors will inevitably disregard valuable experience and expertise.

However, an evaluated and reflected understanding based on a lessons-identified approach is critical to further improving Disaster Risk Reduction towards applied knowledge. Organizations in the Disaster Risk Reduction domain must increase their efforts to identify lessons learned and move from single-loop to double- and triple-loop learning (Argyris and Schön 1978).

Hallahan's Issues Processes model provides the basis for measuring the relationship between knowledge, involvement, and emergency preparedness. According to the Issues Processes Model, the study of issue dynamics must "extend beyond abstract models of effective interaction between organizations and publics" to useable information that can be strategically applied to actual communication campaigns (Hallahan, 2001, p.33).

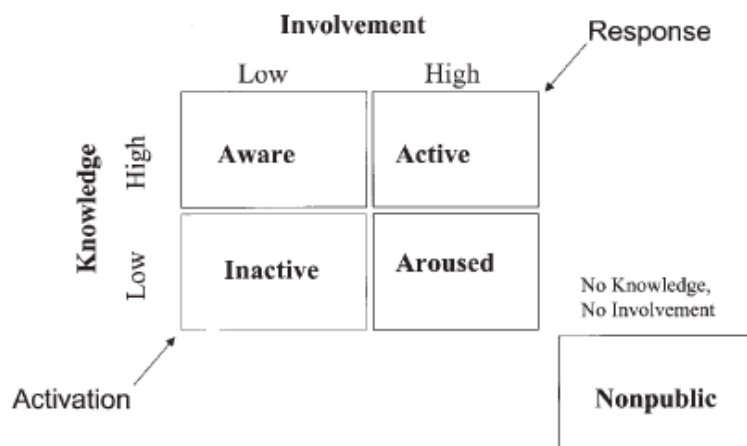


FIGURE 1. Five publics model (Hallahan, 2001).

Research applies competitive intelligence based on past and current practices to develop clearer principles and strategies for practical application by the organizations and stakeholders. “The theoretical knowledge that forms the basis of emergency management lies not in these technical skills but in social science research and a deeper understanding of the nature of disaster and the reaction of people and organizations to crisis” (Canton, 2007, p.38).

3. KNOWLEDGE AND EMERGENCY PREPAREDNESS

Knowledge was measured in the construct of self-perception. This proved to be a very important finding. Self-perception of knowledge may not equate to actual knowledge and may have the opposite effect of false confidence in abilities. This was demonstrated by the contrary findings of perception and actual preparedness. The research of those participants who self-reported knowledge of emergencies had surprising and important implications. The relationship between knowledge of emergencies and having an active emergency plan was negatively correlated. Those with low on knowledge were more likely to have an active emergency plan.

If we have in mind our legislation where some of the competences are delegated in the National Strategy for Protection and Rescue in this Strategy the main elements are: planning and preparation activities for implementation of measures for protection and rescue; establishing strategic medium-term goals for protection and rescue; research and legal and development projects, organizing events, activities and procedures of preventive and operational nature that are implemented by the country, local government, trade associations, enterprises, institutions and agencies and civil society organizations.

And also under article 9 of the Law on Protection and Rescue, the Government, the Municipal Council and the City Council adopted an annual program for protection and rescue, including general procedures for implementing the National Strategy for Protection and Rescue.¹⁵² Then there is an obligation for preparedness for disaster on local level.

The term planning of protection and rescue means conscious mental analytical human activity, aimed at designing, programming, budgeting, scheduling and process the measures, activities and standard operating procedures, which are performed various forecasts according to the usual methodological procedures, analytical assessments, science research, layout of forces and materiel and other activities with the primary goal to ensure production quality and realistic plans. To achieve this goal, it is necessary to perform many activities of all competent / relevant stakeholders in order to provide the most optimal solutions in terms of creating real conditions for conducting timely preparations for the successful implementation of protection and rescue.

While this statement seems straightforward at first glance, the problem of who should collect, disaggregate, and disseminate the data is less so. Additionally, there are some details on the “how” that requires further explanation and discussion, a process that (Glantz, 2015) accurately referred to as “lessons learned about lessons learned”.

Basically, planning governing specific tasks to the participants in the implementation of protection and rescue, where the entire process is based on realistic assumptions about the possible threat and realistic estimates of their options for dealing with the consequences is carried out promptly and in an ongoing / continuous process who monitor the development and current developments in the environment for which it applies, thus providing practical applicability of anticipated developments and solutions

Learning includes the processes of generating, acquiring, and sharing knowledge, as well as incorporating the newly acquired knowledge into future activities. Especially after disaster occurrence, it would be appropriate to reconsider existing data, information, and knowledge, preferably within larger spatial and temporal scales to capture feedback loops (López-Peláez and Pigeon, 2011).

For instance, United Nation International Strategy for Disaster Risk advises to “promote and improve dialogue and cooperation among scientific and technological communities, other relevant stakeholders and policymakers in order to facilitate a science-policy interface for effective decision-making in disaster risk management” (UNISDR 2015b, p.11). An effective implementation of this advice, however, requires a certain understanding of knowledge production processes, of the existence of different types of knowledge, and of the causes hindering the transfer and use of information. Therefore, it would be useful to present potential means and provide actual opportunities for bridging gaps between bottom-up and top-down actions, between local and scientific knowledge, and between issue domains such as DRR and climate change adaptation. Research in this direction exists and propositions have been made (Kasperson and Berberian 2011; Gaillard and Mercer 2013; Kelman et al.2015).

¹⁵² Protection and Rescue Law , „Official Gazette, No 93/12”

When it comes to the threat of Macedonia from disasters, it is important to efforts to prevent them. Because Republic of Macedonia is in a continuous effort to consolidate national legislation with international law in order to obtain a more effective and efficient protection of the population in the country Seeking to some special extras or conditions by which you can examine the planning and implementation of measures and activities for protection and rescue, with emphasis on the professional development of staff, our interest is directed primarily towards knowledge for emergency preparedness at the local level for planning successfully dealing with disasters.

Many of us assume that knowledge management is about capturing best practices and experiences people have and store it in a database with a hope that it will be useful later. In fact this is not true and many of us spend more than ten percent of our time in searching for a piece of information we know resides somewhere. Knowledge management is all about getting the right knowledge, in the right place, at the right time.

4. CONCLUSION

The value of science and knowledge-based approaches to emergency management is priceless. The final principles require an incorporation of the public is determining best fit practices. The four phases of emergency management all require this consideration and yet rarely do actually incorporate the public. This is potentially because little is known about the specific public each emergency manager must plan for.

Why is so important to use Science in Disaster Risk Management? According with Disaster Risk Management Knowledge there is three 3 types of needs: Networks are fragmented: Overlapping initiatives, than *Science needs testing to allow further developments and transfer* and the third one *Knowledge is fragmented: Research results are not exploited. Science doesn't reach policy and operation.*

We can highlights that legislation, risk assessment, planning processes and institutional and technical capacities that focus on disaster risk reduction without addressing social vulnerability and resilience are incomplete and insufficient.

The role of knowledge and practices can help implementing organisations to improve disaster preparedness activities has grown; notwithstanding this evidence, the marginalisation of local knowledge and practices by mainstream literature and institutions involved with disaster management.

Disaster risk reduction knowledge system is composed of different knowledge types, practices and beliefs, values, and worldviews. Such systems change constantly under the influence of power relations and cross-scale linkages both within and outside the community. As such, knowledge and practices need to be understood as adaptive responses to internal and external changes which result in disaster preparedness at local level. In order to identify knowledge on disaster preparedness, one should focus on four key aspects: people's ability to observe their surroundings, people's anticipation of environmental indicators, people's adaptation strategies, and people's ability to communicate about natural hazards within the community and between generations. Overall, the ability a community has to prepare itself for disaster preparedness, needs to be understood within the broader context of livelihood security and sustainability and building up community resilience in the long term.

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