Innovative tools in crisis management ï Dependency of their success to enhance societal resilience from laws, policies, and institutional structures

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ABSTRACT: Changing hazards and vulnerabilities constantly require adaptations and developments in crisis management. Opportunities for improving crisis management capabilities, by new technical and non-technical solutions are strongly influenced by context factors such as laws, policies, or institutional set-ups. They have influence on whether or not new solutions are implemented in crisis management, and can moreover determine, if the solution actually improves crisis management performances, once it has been implemented, or if it even promotes negative secondary effects. Resilience of a society is thus strongly dependent on these factors. A general assessment of the current legal and political framework of EU crisis management has been completed, while relevant laws, policies, institutional set-ups, and their interrelations are now being analysed in depth, regarding the implementation of specific tools in crisis management. This work is conducted in the framework of the EU-FP7 project ñ*DRIVing Innovation in Crisis Management and European Resilience*ò (DRIVER), which aims firstly, at the development of a European test-bed enabling the benchmarking of new crisis management solutions, and secondly at the actual development of a portfolio of tools that improves crisis management at Member State and EU level.

Keywords: Crisis management, resilience, governance, innovation, technology.

1. INTRODUCTION

Natural and man-made hazards, their variances and broad range of possible impacts on society, critical infrastructures, environment or economy, perpetually induce new challenges for crisis management. These challenges must be met by constant improvements and adaptations of the crisis management process, to ideally be able to cope with complex disasters in the best possible way at any time. New technical and non-technical solutions play a crucial role in this regard, providing strong opportunities for improving crisis management capabilities and thus societal resilience, while also bearing risks of negative secondary effects, induced e.g. by an enhanced complexity and dependency. New technical solutions in crisis management can concern all fields of crisis management, while especially new communication and mapping technologies are currently of high interest, as they provide essential opportunities to cover information demands. New non-technical solutions include for example training concepts, optimized management of spontaneous volunteers, or improved communication strategies.

Improving crisis management means improving resilience, here understood as the totality of the resilience of civil population and the effectiveness of professional crisis management, plus the interplay of the two. While there are many different definitions, understandings and concepts of resilience, it has e.g. been defined as ñThe ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functionsò (UNISDR 2009). Whether new solutions are implemented in crisis management, if they actually strengthen resilience, as opposed to rather triggering negative secondary impacts or providing no real added-value, strongly depends on conditions such as relevant laws, policies, or institutional set-ups.

2. PROJECT BACKGROUND & OBJECTIVES

The Aftermath Crisis Management System-of-Systems Demonstration Programme, funded under the 7th Framework Programme of the EU Commission, consists of two phases: the phase I, a preparatory activity that was performed amongst others by the project ñ*Aftermath Crisis Management System-of-Systems ï phase I* (ACRIMAS)[1]. ACRIMAS analyzed the European and UN Crisis Management landscape as well as current requirements and gaps. Further, solutions have been proposed ready for demonstration as well as a demonstration concept for the phase II, the actual demonstration activity.

The phase II project ñ*DRIVing Innovation in Crisis Management and European Resilience*ò (DRIVER, started in May 2014) aims firstly, at the development of a European test-bed enabling the benchmarking of new crisis management solutions, and secondly at the actual development of a portfolio of tools that improves crisis management at Member State and EU level. The DRIVER project is thus based on findings (amongst others) of the ACRIMAS project.

As part of ACRIMAS, an analysis of the basic legal and political framework of EU crisis management has been conducted, including the identification of challenges on Member State as well as EU level.

[1] www.acrimas.eu

A more in depth analysis of relevant laws, policies, and institutional structures, and their correlations with regard to the implementation of new solutions in crisis management is part of the DRIVER project as well as a herein embedded dissertation. The non-technological environment of potential tools is investigated, in order to define requirements for the experiments conducted in DRIVER, but also to provide evidence based recommendations for all actors involved in crisis management.

Focusing on specific tools, which might be implemented in crisis management, the influence of laws, policies, and institutional structures on the implementation and diffusion of these tools is investigated. At the same time, also possible negative secondary impacts from new tools such as an increased interconnectedness and dependency of infrastructures, and the capability of laws, policies and institutional structures to minimize these negative impacts, is targeted.

The results will feed into recommendations, and will be part of the portfolio of tools to improve crisis management at EU and Member State level, regarding specific requirements of laws, policies, or institutional structures to be considered or adapted when implementing specific tools in crisis management. They can thus also serve as guidance for involved institutions, such as governmental institutions, first responders, and technology companies or other institutions offering new crisis management tools.

3. METHODS

For the general framework on EU level that was investigated within ACRIMAS, main instruments, laws and regulations, relevant institutions and their roles and responsibilities have been described. For the Member State level, four case study countries were selected, aiming to cover important factors, such as governmental structures and their different characteristics, which have strong influence on the political and legal setup: a) Germany, b) Italy, c) Sweden, and d) Greece. The description resulting from a literature analysis was complemented by interviews conducted with relevant experts and stakeholders in the field of (aftermath) crisis management (Vollmer et al. 2012).

For the current analysis within DRIVER, which is referred to specific crisis management tools, an intensive literature/ internet research will be conducted to derive a foundation of the basic relationships between new solutions in crisis management, resilience, and non-technological context factors such as laws, policies, and institutional set-ups.

In order to reveal further relevant issues and possible intervention points, expert interviews are an essential source of information. The interviews (DRIVER/ dissertation) shall be conducted with stakeholders from governmental institutions (policy, law), companies providing technology for crisis management as well as (possible) clients of new solutions (first responders).

In the DRIVER project, quantitative and qualitative performance indicators will be developed, in order to measure different factors and assess the added value of new solutions in crisis management. Relevant non-technological factors (different laws, policies, and institutional structures) shall thereby also feed into the development. The data collected with the performance indicators will be analysed with respect to the influence of these non-technological context factors on the performance results.

4. (EXPECTED) RESULTS

The investigation of the general legal and political framework of aftermath crisis management in the EU and the EU Member States within ACRIMAS has provided important insights into the institutional and political set-up, laws and regulations relevant in disaster response and recovery in the EU, including anticipated trends. Identified challenges in this regard include on EU level: The need for stronger intra EU coordination, especially concerning the division of responsibilities between the European External Action Service and the Commission. A basic challenge for EU cooperation is the fact that the political views regarding the future role of the EU in aftermath crisis management and also the ability to contribute differ among the Member States. On Member State level, an important field is coordination, which includes, amongst others, difficulties due to federal structures (which mirrors somehow the situation on EU level), different levels of equipment, infrastructure and knowledge, unclear chains of command, high levels of bureaucracy, different uses of terminology, and improvable media management. Conflicts of interests that form challenges include a skeptical attitude of Member States towards a strengthening of EU competences, influences of political goals on decisions to provide assistance or not, or insufficient critical reflections on past crisis management actions. Further challenges are financial restraints like the general economic situation of Member States, or the restriction that assistance is offered only under the condition that funding is provided (Vollmer et al. 2012).

Regarding the current analysis of relevant laws, policies, and institutional set-ups with regard to the implementation of specific tools in crisis management, a systematic characterization of these factors will be provided, examining their specific roles, effects, and interrelations. Opportunities for action including possible consequences and interrelations will be presented.

With regard to new technologies, barriers to accept, uptake and apply are seen in e.g. a lack of political interest, inadequate institutional mechanisms, and shortcomings in knowledge availability, technical capacity, standardization and funding (Basher 2013). Institutional barriers to implement new technical solutions can be caused by competition and a lack of communication between sectors or departments (Basher 2013). Shortcomings in knowledge availability or expertise are especially relevant factors when non-experts have to deal with difficult technical information, for example probabilistic forecasts of hazard events. Thus, teaching and learning plays a crucial role to bridge the gap between expert and practitioner. Besides this, also factors such as world views, risk perceptions, or social structures play an important role that needs to be considered for the question, if/ how new technical solutions can successfully be transferred into usable techniques (ibid.).

Results will also be able to serve as guidance for involved institutions ï governmental institutions, companies, first responders ï to improve the implementation of new solutions in crisis management that can help to increase resilience, while at the same time minimizing the risk of negative secondary impacts decreasing resilience. Governmental institutions can thus check whether adaptations of e.g. laws or policies might be helpful, while companies and end-users shall benefit from knowledge on which and how non-technological factors should be considered in order to successfully implement and diffuse new tools in crisis management. The results shall also be able to give guidance on how to mitigate or reduce negative secondary effects with for example relevant laws or policies. While not expecting to derive only clear and exclusive solutions, pros and cons/ risks and opportunities for different alternatives of action will be elaborated and linked to different local backgrounds such as culture or systems of government (e.g. federalist vs. centralistic) in the EU.

5. ADDED VALUE FOR THE POST 2015 FRAMEWORK FOR DISASTER RISK REDUCTION

Laws, policies, and institutional set-ups, which determine crisis management processes either directly, or in terms of their influence on the implementation of tools in crisis management, strongly influence the overall crisis management performance. Thus, resilience is highly dependent on these factors, and a specific elaboration of the roles and interconnectedness of these factors provide a relevant basis for decision making, addressing governmental institutions, first responders, and other crisis management organizations.

The work is thus strongly related to Priority Action 5 ñStrengthen disaster preparedness for effective response at all levelsò of the Hyogo Framework for Action. The conducted work can especially support key activity (a) ñStrengthen policy, technical and institutional capacities in regional, national and local disaster management, including those related to technology, training, and human and material resourcesò. Regarding the outlined work and relevance of such influencing context factors, the topic is also seen as important aspect for future activities, such as in the context of the Post 2015 Framework of Disaster Risk Reduction.

6. CONCLUSIONS AND OUTLOOK: WORK IN PROGRESS

After gaining an overview on the legal and political framework of EU crisis management in Phase I, relevant non-technological context factors (laws, policies, institutional set-ups) are now analysed regarding specific crisis management tools in Phase II. The portfolio of technical and non-technical tools for crisis management developed in DRIVER will thus be complemented by crucial information on context factors, which need to be considered to successfully implement these tools in crisis management processes.

Concerning possible negative secondary impacts of implementing new (technical) solutions, a broad range of studies have already been conducted on the issue of *complexity and dependency from technological systems*, especially in the context of energy supply and interconnected critical infrastructures (e.g. Hellström 2007; Peters et al. 2008). However, these studies are complemented (in the dissertation) by investigations on technology dependency in the context of crisis management (e.g. the execution of a complex crisis management process during a major power or internet outage), and especially the influence of non-technological factors on this issue.

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