European Commission

JRC SCIENTIFIC AND POLICY REPORTS

Surveying the landscape of science/policy interfaces for disaster risk management policy making and operations

Survey results and analysis

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Abstract

Four EU Member States – United Kingdom, Sweden, Finland and Hungary participated in a pilot project to explore the potential of a European partnership to address the key challenges in disaster risk management through providing a platform for integrated and coherent multi-disciplinary scientific advice on a European scale. The preliminary findings of the pilot project indicate that there is scope for a partnership among EU Member States and with the European Commission to address the challenges and opportunities in disaster risk management in a common and coordinated way. This includes sharing of best practices for using science in policy making and sharing scientific knowledge and advice among Member States and with the European Commission. In the four surveyed Member States, scientific input in disaster risk management policy is largely delivered through national risk assessments. It is recommended to extend the pilot project to a larger number of Member States to both confirm these initial findings and to complete the mapping of best practises in using science in policy making and operational practise in disaster risk management in the European Union.

Summary

Unprecedented or pan-European crisis situations require out of the ordinary decision making, both for emergency response and for risk reduction policy. Facts and scientific knowledge are critical for informed decision making, but mechanisms for delivering them are not always well defined – authorities often have to resort to ad-hoc advice.

With the implementation of the new Civil Protection legislation, the Union Civil Protection Mechanism sets out to improve the knowledge base on disaster risks and to facilitate the sharing of knowledge, best practices and information. In the Scientific Seminar on Natural Disasters "Bridging science-based early warning and early action decision making" organized by the UK Met Office and the Joint Research Centre (JRC) and supported by the DG humanitarian Aid & Civil Protection of the European Commission in Brussels on 7-8 November 2012, it was recommended to explore the potential of a European partnership to address the key challenges in disaster risk management through providing a platform for integrated and coherent multi-disciplinary scientific advice on a European scale. Following this, in May 2013, the European Commission presented at the meeting of the Directors-General for Civil Protection a pilot project involving a survey of interested Member States on best practices for evidence-based policy making on risk reduction and decision making during emergencies.

Four EU Member States – United Kingdom, Sweden, Finland and Hungary participated in the pilot project. The pilot project was launched in a kick-off meeting held in Brussels on 14th October 2013 and intermittent and final results of the pilot project were presented respectively at a meeting held in Brussels on 24th June 2014 and at the Second Scientific Seminar on "Natural Disasters: Bridging Science-Based Early Warning and Early Action Decision-Making" held in Brussels during 4 and 5 December 2014.

The preliminary findings of the pilot project indicate that there is scope for a partnership among EU Member States and with the European Commission to address the challenges and opportunities in disaster risk management in a common and coordinated way. This includes sharing of best practices for using science in policy making and sharing scientific knowledge and advice among Member States and with the European Commission. In the four surveyed Member States, scientific input in disaster risk management policy is largely delivered through national risk assessments. Coordination of this input varies amongst the four countries. Scientific input into early warning has transformed from threshold to impact-based alerting shifting the burden of interpretation and analysis to the alert creator i.e. scientific and technical organisations. The four countries have developed differing mechanisms to integrate science advice during emergencies.

It is recommended to extend the pilot project to a larger number of Member States to both confirm these initial findings and to complete the mapping of best practises in using science in policy making and operational practise in disaster risk management in the European Union.

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Introduction

Surveying the landscape of science/policy interfaces for disaster management policy making and operations

In the Scientific Seminar on Natural Disasters "Bridging science-based early warning and early action decision making" organized by the UK Met Office and the Joint Research Centre (JRC) supported by the DG humanitarian Aid & Civil Protection of the European Commission in Brussels on 7-8 November 2012, it was recommended to explore the potential of a European partnership to address the key challenges in disaster risk management through providing a platform for integrated and coherent multi-disciplinary scientific advice on a European scale. In a subsequent meeting of the UK Natural Hazard Partnership (NHP), Directorates General for ECHO and JRC, held on 21 January 2013 in Brussels, it was agreed that there is scope for improving science-based advice for risk reduction and emergency response in the Commission and Member States based on a partnership similar to the UK NHP. However, the critical issues for success are the legal base and the governance of a partnership between science and disaster management policy-making and pull through to operations. Following this, in May 2013, the European Commission presented at the meeting of the Directors-General for Civil Protection a pilot project involving a survey of interested Member States on best practices for evidence-based policy making on risk reduction and decision making during emergencies. The proposal suggested to survey and analyse the landscape of existing bodies providing scientific advice for disaster management policy making and operations in a step-wise approach, restricting it at first to major hazard types in Europe (floods, forest fires and earthquakes) and a few countries. The JRC was tasked to draft the general outline of the table of content of the project and to suggest a roadmap with milestones for the process.

Four EU Member States – United Kingdom, Sweden, Finland and Hungary participated in the pilot project. The pilot project was launched in a kick-off meeting held in Brussels on 14th October 2013 and intermittent results of the pilot project were presented at a meeting held in Brussels on 24th June 2014.

This report analyses the survey results and presents findings and initial recommendations for a way forward, which were presented at the Second Scientific Seminar on "Natural Disasters: Bridging Science-Based Early Warning and Early Action Decision-Making" held in Brussels during 4 and 5 December 2014.

Scope

The scope of the pilot project is to analyse the existing interfaces between science and policy/operations decision-making in a variety of legal contexts and governance structures for managing disaster risks in different countries in the EU. There is a need to survey how existing legislation facilitates the science/policy interface (e.g. Union Civil Protection Mechanism and Flood Directive), if existing governance structures in the EU and Member States explicitly provide mechanisms for science-based advice, and how Member States and European Commission services acquire science-based advice in practice.

The main topics addressed in the survey are:

- **Structures**. Overview of public bodies involved in providing and consuming scientific advice for disaster risk management policy and emergency response.
- **Science input to policy**. Overview of how facts and scientific knowledge contribute to policy making aimed at disaster risk reduction.
- **Science input to development of early warning systems**. Overview of how early warning systems are developed and improved according to the needs of public bodies.
- **Science advice during emergencies.** Overview of how science contributes to operational decision making during emergencies.
- **Communications / Media**. Overview of mechanisms for public communication during emergencies.

Approach

Four countries volunteered to participate in the survey, focusing on three disaster types: earthquakes, floods and forest fires. The surveys are conducted by Member States participating to the Working Group. The countries are listed below.

Country	Status	Comment
United Kingdom	Completed	Extensive survey based on coordinated input of multiple agencies
Sweden	Completed	Extensive survey based on coordinated input of multiple agencies
Finland	Completed	Extensive survey based on coordinated input of multiple agencies
Hungary	Completed	Summary report compiled by Disaster Risk Management Agency

The Joint Research Centre and the UK Met Office jointly analysed the surveys and produced the summary report.

Summary of Survey Results

United Kingdom

The UK has an all hazard approach. With the concept of risk ownership, the UK has stratified risk by natural hazard type, at all levels of government. The bridge between science and operations is explicit through specialized groups and committees, in the overall context of the Natural Hazard Partnership (NHP). Scientific advisors are deployed in receiving organisations to facilitate use of scientific information.

Scientific advice

Structures. The overall responsibility lies with the Cabinet Office, which produces the National Risk Assessment, annually updated with a 5-year perspective. No single government entity is responsible for disaster risk management. Instead, risk management is distributed over government agencies depending on the disaster type. This is implemented through the concepts of Risk Ownership (responsible governmental agency) closely linked to dedicated scientific/technical institutions (delivering monitoring, early warning, and situation reports). During emergencies, all relevant actors are coordinated in pre-established coordination structures: Silver Command (Regional Response Centre) at regional level and COBRA (Cabinet Office Briefing Room) at national level directly under the Prime Minister.

	Scientific & Technical	**Advice (coordination)**	**Policy & Operational**	**Scope**
Policy	Technical agencies	NHP	Cabinet Office (Chief Scientific Advisor): National Risk Assessment	
Early Warning	Technical agencies Impact based models	NHP	Risk Owners: Government Agencies	
Operational	Technical agencies and academics	SAGE STAC	COBRA Silver Command	National Regional
Communication	Technical agencies Impact based advice	NHP Human advisor	Chief Scientific Advisor	

Science input to Policy. The Chief Scientific Advisor signs off the National Risk Assessment (NRA). Individual departmental Chief Science Advisors sign off for individual hazard risks. Risk Owners engage with experts / scientists, often through Scientific Advisory Groups or Subject matter Expert Groups. Two independent groups are asked to review the NRA: the Natural Hazard Partnership (for natural disasters) and the CBRN group (for man-made disasters).

Early Warning System development. Improvement in modeling capability is the responsibility of the warning institution. Based on recommendations of a 2008 review, the UK is transitioning for

all hazards from threshold-based to impact-based warnings. All warnings institutions are investing in the development of hazard impact models. This is coordinated by, and is a prime focus of, the National Hazards Partnership. Key challenges are improvements in observational capability for monitoring of hazards and verification of warnings.

Science advice during emergencies. Predetermined Science Advisory groupings are established at two levels. The subnational level (Silver Command) uses Science and Technical Advisory Cells (STACs); the national level (Gold Command) uses the Scientific Advisory Group for Emergencies (SAGE). The SAGE group plays a role particular in areas where no mature scientific advice is available. A current limitation is that scientific advice is not guaranteed to be available during non-working hours.

Communications / Media. In the *Preparedness Phase* the National Risk Register (NRR) is the publicly available version of the National Risk Assessment. It contains pre-packed advice summarizing hazards and potential impacts, designed for various audiences including for Government and Responders but also for wider public circulation (e.g. maximum 2 pages). In the *Early Warning Phase / Response Phase*, scientific organizations provide direct advice to responders on advance lead times (on secure lines; e.g. European Flood Awareness System). In some cases, human advisors are deployed from scientific organisations to emergency organisations. To the public, only warnings with shorter lead times are disseminated on a wide variety of channels – TV, radio, web, mobile phones and email. Warnings are impact-based, and messages are strictly controlled for a coherent, consistent and effective communication with the public.

Specific aspects for this country

The **Natural Hazard Partnership (NHP)**. Achievements to date:

- Improved cross-working leads to more joined up scientific advice and analysis.
- Provision of single source of daily hazard assessment.
- New level of scientific expert challenge to the UK NRA.
- Provision of pre-packed scientific advice packs for all emergency responders
- Development of novel products and services created from a multidisciplinary Hazard Impact Model framework

Hazard Impact Model. Scientific advice is completely based on impact-based alerts. Hazard impact models are available for all hazard types.

Future priorities.

- Development of interoperable Hazard Impact Model
- Provision of coordinated scientific and technical advice, for NRA, for NRSA (security)
- Development of hazard impact observational resources, traditional and social media

Recommendations for scientific advice at European level

It is considered appropriate to review science policy advice for risk registers at the European level, particularly when considering a harmonised approach and in providing expert scientific advice in reviewing European-level risk registers.

It would be possible to improve European advanced early warning advisories through using science, with a focus on consolidation and enhancement of European information systems linked to national bodies responsible for delivering in country warnings.

The emphasis on using scientific advice in support of European hazard management is best placed towards non-operational activities, given the availability of expert advice cannot be guaranteed. Where it can be made available in an operational situation the priority will be to use scientists in support of national coordination activities such as STAC and SAGE.

Notes

The survey was conducted by UK Met Office in August 2013. The status is still as described and progressing according to plan, notably the deployment of Public Warning Advisors in emergency organisations. Increasingly, to stress the science role of the Met Office, operations are rebranded as science (using “meteorologist” instead of “forecaster”) to emphasize the science-base.

Sweden

Sweden presented an extensive study of the role and management of scientific information. A central coordinating and funding body is the Swedish Civil Contingencies Agency (MSB), which works at all levels of governance. Operational advice is directly provided by competent technical organisations to municipalities, although countries and national agencies may play a supporting role.

Scientific advice

Structures. The system for civil contingency management is based on the principles of parity, proximity and responsibility. There is no lead coordinating agency for crisis management and there is no "crisis law". The Swedish Civil Contingencies Agency provides research, coordination and operations, in support of local agencies. It is the lead agency in peacetime. The county administrative boards have the geographical area of responsibility at the regional level and are responsible for national operations in each county. Municipalities are key actors in the Swedish civil contingency management system and have crisis management boards.

	Scientific & Technical	**Advice (coordination)**	**Policy & Operational**	**Scope**
Policy	Technical agencies 6 reference groups of Academics	MSB MSB Scientific Council Nat. Platform for DRR	MSB (peacetime) Responsible agencies	
Early Warning	Technical agencies Impacty-based	MSB Local		
Operational	Technical agencies		Municipal Crisis Management Board County Administrative Board	Local Regional
Communication	Technical agencies	MSB	Responsible agencies Swedish Radio	

Science input to Policy. MSB has an annual budget of 13.5 m€ for research, mainly dedicated to applied science. Thematic calls are prepared in cooperating with the National Platform for Disaster Risk Reduction. Several mechanisms exist within MSB to absorb new scientific knowledge (e.g. Scientific Council). For the National Risk Assessment, MSB sets up a wide consultation process involving government and scientific actors.

Early Warning System development. No single actor is responsible for all early warning systems and responses. Early warning is impact based. The Meteorological and Hydrological Institute provides warnings for floods and forest fires. The Armed Forces provides warnings for solar storms.

Science advice during emergencies. Municipal or regional boards may ask advice from MSB. MSB has monitoring capabilities and extensive experience and networks of experts for relevant disaster types. The tools for crisis communication among relevant actors are in place. MSB's role is primarily focused on supporting coordination between responsible actors and providing expert support to actors in need of information, expertise, or other forms of non-operational assistance. Most of the coordination tools used by MSB are generic and apply in all types of crises and emergencies.

Communications / Media. Communication is the prime responsibility of the local level. MSB assists, e.g. through a website that is continuously updated. The Swedish Radio plays a key role in facilitating communication and information to the public during emergencies.

Recommendations for scientific advice at European level

In an attempt to shed some light on the relationship between science, policy and decision making, four important aspects have been identified, providing a possible starting point for further discussion. The four aspects are used in the subsequent analysis of the empirical material of the survey.

1) The need for science and different scientific perspectives
2) Data and the process of understanding
3) There is a time and place for each science

1. The need for a broad scientific basis

Scientific support from several different research fields – both natural and social sciences – play an important role in understanding the impact of risks and in developing strategies for management. At the same time the use of different scientific disciplines poses particular challenges, which should be acknowledged.

The natural sciences tend to aspire to "objectively" measure and predict consequences and probability and present "true" facts that humans can act upon, whereas the social sciences are focused more on understanding how humans act and think and how individuals, organizations and other entities operate in relation to their surroundings. The use of these different disciplines thus provide for very different kinds of scientific support and their respective strengths and weaknesses need to be properly understood by decision-makers.

2. "Translating" science into actionable knowledge

The second relevant aspect in this discussion has to do with the distinction between the content (data, information, results, analyses, and predictions) of science and the communication of science. The ability of policy-makers to make sense of a complex crisis situation and take informed decisions about what actions to take, usually requires some understanding of available science. At the same time there is rarely such a thing as the view from science. In many cases decision-makers are faced with clearly contradictory scientific opinions which have to be assessed and if possible reconciled. Decision-makers also need to make sure that science-based messages that are conveyed to the general public are clear (avoid confusion and conflicting messages) and readily understandable. This poses significant demands in terms of the "translation" of scientific data.

Establishing different forms of bridge-building functions and/or “broker functions” within national systems can provide a help towards overcoming some of these barriers. However, these “translating” functions require skilled “institutional design” in order to be successful. The “brokers” in the system – the “scientific advisors” – become critical hubs in the system, who can help “deconflict” opposing views and help forge consensus, but their role also involves a “gate-keeping function” which needs to be recognized.

3. Variations in the need for scientific support

Another interesting issue that deserves to be discussed is whether there are any differences in the need for scientific support across the various phases of crisis management. Is it for example possible that natural sciences and “objective facts” play a greater role in preparing for a crisis and that social sciences can plays a stronger role in the post-crisis evaluation phase, to understand the human dynamics of decision-making unfolding during the event?

Notes

A potential Europe-wide Knowledge Centre can learn from Nordic cooperation mechanisms on societal security: NURFORSK (Nordic Council of Ministers) on societal security (two centres funded over 5 years: natural disasters and infrastructure protection).

Finland

In Finland, research in disaster risk management is done at operational institutes rather than at academic institutes. A critical issue then is to set priorities under reduced funds: maintaining the important operational role may lead to reduced R&D budget.

In 2014 a new working group (TEA) was established to address improved science-based advice for crisis management, specifically to:

- Strengthen horizontal guidance
- Improve knowledge base
- Develop practices for foresight and adoption of new science

Currently, only Finnish institutions are examined, but the scope may be widened to include cooperation with EU countries and institutions (and using EU funding if appropriate).

The principle purpose of the TEA groups is to address 7 reform measures, including the improvement of relevance of research, create networks of research centres to increase efficiency, target funding to multidisciplinary research with clear targets and create stronger R&D institutes. The reform targets structural measures (merger of institutes, cooperation), funding (strategic R&D instruments, assessment, funding from ministries) and implementation (reorganisation, implementation and follow-up).

	Scientific & Technical	**Advice (coordination)**	**Policy & Operational**	**Scope**
Policy	Institutes / universities	TEA working group	Ministries AVI	National Regional
Early Warning	LUOVA: Met/Env/UHel (Seis) Radiation and Nuclear Safety Authority EFAS, Fin Flood Centre (2014)	(same institutes) ELY	Municipalities ELY ERC (2015)	
Operational	Radiation and Nuclear Safety Authority Env Institute Met Institute	(same institutes) ELY	Municipalities ERC (2015) Defence Forces, Coast Guard, Police… ELY	
Communication	Official notification transmission system			

Scientific advice

Structures. The Security Strategy, developed by the Security Committee, describes system and measures in place in Finland regarding security of society and the population. There is no

dedicated emergency management authority. The Prime Minister's office has the overall responsibility; each Ministry has a Head of Preparedness to ensure preparedness for disasters within the Ministry's competence. At Regional level, regional institutions, AVI and ELY, take care of legislative and implementation issues respectively. The center of gravity of disaster risk management lays with the municipalities. The industrial business continuity sector, with global supply chains, as well as civil society organisations are considered in the Strategy. By law, each organisation is responsible for crisis management, and therefore has to develop emergency plans and mechanisms for coordination with other actors.

Science input to Policy. Strong links between scientific and technical institutes and policy ministries ensure scientific input. Recently, a dedicated working group, TEA, started developing a more systematic way for scientific advice for disaster management policy making and operations.

Early Warning System development. Early Warning Systems are being transformed into impact-based systems. For natural disasters, the Early Warning System for Disasters caused by Natural Hazards (LUOVA) was developed with the Meteorological, Environmental institute and University of Helsinki.

Science advice during emergencies. In Finland, the scientific experts are working usually in those organisations that are obliged to participate to the rescue work e.g. Finnish Meteorological Institute, Finnish Environment Institute and the Radiation and Nuclear Safety Authority have very strong research activities in addition to their authority role. In case of emergencies and even in the preparedness phase this scientific expertise is in use.

Communications/Media. The Finnish Meteorological Institute (FMI) disseminate weather related information (heat wave, sub-zero temperatures, heavy rainfall, wind at sea, wind on land, thundery outbreaks, sea level, wave height and traffic weather, forest fire warnings) to the public in different media i.e. TV, Radio, internet, social media. The VIRVE radio network is used for emergency communication. The Official notification transmission system is for public communication.

Recommendations for scientific advice at European level

The TEA working group has a critical role in developing a more systematic way for scientific advice for disaster management policy making and operations. This kind of coordinative work is the only way a small economy such as Finland can get the maximum benefit.

Cooperation between different authorities in Finland is working very smoothly and this is one of Finland's strengths. The mandates are clear and the cooperation is easy. The cooperation is informal which means that it is easy to contact different authorities. Having said this of course the cooperation is structured and is based on agreements.

The greatest challenge is the economic recession that the global economy is facing right now.

Notes

In Finland, research in disaster risk management is done at operational institutes rather than at academic institutes. A critical issue is to set priorities under reduced funds: maintaining the important operational role may lead to reduced R&D budget.

Hungary

The Hungarian crisis management system grew mainly out of the cold war civil defense experience. Central organisation is assured through the National Directorate General for Disaster Management (NDGDM) of the Ministry of the Interior. Scientific organizations in Hungary are involved in crisis management mainly through projects, the results of which can be used directly in risk management. The organizations also take part through the work of experts by direct request or contractual commitments.

The summary is based on the survey response supplemented with information of the NDGDM website[1].

	Scientific & Technical	Advice (coordination)	Policy & Operational	Scope
Policy	Academy of Sciences	NDGDM	NDGDM	National
Early Warning	Meteorological Service Water Authority Geological and Geophysical Institute	NDGDM	NDGDM	
Operational	Experts	NDGDM	NDGDM Local professional organizations	
Communication	Legal thresholds	National contact points	NDGDM	

Scientific advice

Structures. The basic function of the National Directorate General for Disaster Management, Ministry of the Interior (NDGDM), is to protect the population, property and critical infrastructure as well as to insure the safe operation of the national economy. NDGDM is a law enforcement body with a national competence. It has national, county, district and local professional organizations. NDGDM manages the scientific activities of the disaster management system. Members of the Inter-Ministerial Disaster Management Coordination Committee have permanent representation in the Council of Science. The NDGDM also signed a cooperation agreement in 2010 with the Hungarian Academy of Sciences.

Science input to Policy. Some scientific organizations are involved in projects, the results of which can be used directly in risk management. The organizations also take part through the work of experts by direct request or contractual commitments.

The Hungarian risk profile (risk assessment at national level) has been jointly developed by 25 professional / academic institutions and ministries through regularly scheduled meetings of technical working groups, consultations and continuous contacts.

[1] http://www.katasztrofavedelem.hu/index2.php?pageid=szervezet_intro&lang=eng

Early Warning System development. No details were provided on the development of early warning systems. Operational agencies are involved in the early warning process, including the Hungarian Meteorological Service, the Hungarian Water Authority and the Geological and Geophysical Institute of Hungary.

Science advice during emergencies. During emergencies, scientific advice is requested by the NDGDM if needed. Specific arrangements were not illustrated in the survey response.

Communications/Media. Communication to the public is provided through National Contact Points. Alerts are based on thresholds defined legally. All channels are used for communication, including social media.

Recommendations for scientific advice at European level

Hungary did not provide input on recommendations for scientific advice at European level

Findings and recommendations

What is science contributing?

Science input to Policy. Scientific input in disaster risk management policy making is mostly delivered through the national risk assessments. In various degrees, Member States have holistic, multi-disciplinary, integrated processes for collecting and using scientific information. Coordination among institutions and disciplines varies according to the institutional setting: UK has a public-public partnership (the National Hazard Partnership), Sweden similarly but coordinated by the Swedish Contingency Agency (MSB), Finland has set up a coordination group (TEA), and Hungary has strong central coordination by the National Directorate General for Disaster Management (NDGDM).

Some common challenges emerge, including the challenge of **comparing risks of different hazards** (scientific techniques, terminology and metrics vary widely) and the **role of judgment** (interpretation of scientific information requires more than facts, science, and experience, but is harder to measure or account for).

Science input to Early Warning System development. The main trend in development of early warning systems is the shift from threshold-based alerting to impact-based alerting. UK, Sweden and Finland are following this trend. Impact-based alerting allows alert recipients to better understand the threat and therefore prepare and act more effectively. But it shifts the burden of interpretation and analysis to the alert creator i.e. scientific and technical institutions. Issues of liability and responsibility are important and remain challenging.

Science advice during emergencies. The main challenge for using scientific information during emergencies lies in the translation of science to operational information. Similar to impact-based alerting, scientific monitoring and analysis information must be translated into actionable information in the terminology of operational agencies. UK increasingly addresses this through integration of scientists in emergency management authorities and has set up dedicated Committees at local and national level. In Finland, scientists in technical agencies are involved in the crisis management system. Sweden and Hungary have scientific expertise in the central coordination/support agencies.

Many challenges remain and the surveyed countries agree in that it is a responsibility of both scientists and practitioners, who must learn to communicate with each other.

How is science contributing?

Science plays a role both in real-time operational decisions and in long-term preparedness and prevention.

Risk assessment. National risk assessments are informed mainly by scientific evidence on hazard probabilities, impacts and geographic distribution. Challenges relate to the integration of risk assessments across different hazard types, but also to compare risk assessments across countries. Also the role of foresight needs to be carefully considered, i.e. consideration of future threats and challenges.

Monitoring. Traditionally, science has been the basis for monitoring of natural hazards. Monitoring capabilities have increased rapidly with developments in science, computing and information technology. The main challenges put forward relate to maintaining sufficient investment in innovation, necessary to improve early warning effectiveness. A variety of funding mechanisms are and have been used by Member States including: research funding, applied research funding, funding of services, public-public or public-private partnerships (shared mandate and cost).

Shared challenges and opportunities

The surveys identified a number of shared challenges and opportunities to address them.

Funding: Maintaining monitoring services (in-house or under contract) and investing in research are costly. In many cases, underlying scientific data cover an area beyond the country (e.g. shared river catchments and large weather systems) and similar systems are running in neighboring countries. Novel mechanisms for funding basic research (e.g. better uptake and exploitation of EU research results) and shared systems or services are opportunities for cost saving.

Pan-European and Transnational risks: Some risks are shared with neighboring countries and risk management in one country can influence the risk in the next. There is an agreement that pan-European and transnational risks should be tackled in a more coordinated way.

Common resources versus independence: Sharing resources (e.g. monitoring services) among countries may be cost-effective, but some services are strategic and must be run in-country. There is a need to identify services that can be shared.

Partnerships

The preliminary findings of the surveys submitted by the four Member States that participated in the pilot project indicate that there is scope for a partnership among EU Member States and with the European Commission to address the challenges and opportunities in a common and coordinated way. This includes sharing of best practices for using science in policy making and sharing operational scientific advice among Member States and with the European Commission.

The preliminary findings of the pilot project indicate that there is scope for a partnership among EU Member States and with the European Commission to address the challenges and opportunities in disaster risk management in a common and coordinated way. This includes sharing of best practices for using science in policy making and sharing scientific advice among Member States and with the European Commission.

It is recommended to extend the pilot project to a larger number of Member States to both confirm these initial findings and to complete the mapping of best practises in using science in policy making and operational practise in disaster risk management.

Annex 1 – Survey Questionnaire

1.1. Format

To harmonize surveys and analysis results, the JRC is proposing a common high level table of content for each survey.

1.1.1. Introduction [2-4p]

Description of hazard risk(s) in the country

1.1.2. Relevant legislation and political frameworks [2-4p]

1.1.2.1. National legislation

Description of national risk register process.

1.1.3. Actors in risk management [4-10p]

1.1.3.1. Risk ownership

Overview of governmental and non-governmental agencies having a mandate in risk management. Which agency is responsible for prevention, mitigation, preparedness, early warning, or response?

1.1.3.2. Subsidiarity: Regional to national to local level

How are the different levels of government interacting? Who's responsible for which aspects? Are there escalation mechanisms? Where hazards are trans-boundary what exchange mechanisms or regional advice mechanisms are in place?

1.1.3.3. Response coordination mechanisms

In case of an emergency, what are the response mechanisms? Are there clear mandates? Are there overlapping responsibilities? How do scientific organisations or scientific experts contribute?

2.3.3.4 Early Warning mechanisms

Is there harmonization across nations of warning types? What services do different countries provide? Is national services' threshold or impact based? Is there a common multi-hazard warning system/approach? Is there a role for the human advisor, and if so what?

1.1.3.4. Mitigation and preparedness planning mechanisms

How are all actors involved in mitigation and preparedness coordinating their actions? How do scientific organisations or scientific experts contribute? How are complex, multi-

hazard situations accounted for in the preparedness planning process?

1.1.3.5. Accountability

What actors are accountable? What are they accountable for? Can accountability be defined?

1.1.3.6. Science-based advice

How is authoritative science-based advice acquired and used in prevention, mitigation, early warning or response? How is the accountability of scientific advice addressed? Do key actors wish to see current systems evolve, and if so how? Where are there perceived gaps?

2.3.3.8 Communications / Media networks

How do member states communicate with Emergency Responders and with the public? How do Emergency Responders use social media networks to get access to relevant information, and display it?

1.1.4. Historical context and future outlook [2-4p]

Why is the current system in place? Is it evolving towards a clear target?

1.1.5. Findings, recommendations and estimated resources for a Europe-wide Natural Hazard Partnership for scientific advice for disaster management policy making and operations

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