

Science for Environment Policy

Responding to floods in Europe: new framework assesses effectiveness of Flood Emergency Management Systems

A new framework has been developed to assess how effective Flood Emergency Management Systems (FEMS) are in Europe. Examining FEMS in five European countries, this study highlights the strengths and weaknesses of existing systems and makes recommendations for improving their effectiveness, particularly in relation to institutional learning, community preparedness and recovery.

Climate change is expected to increase the frequency and severity of floods and society must be able to respond to this evolving threat. To achieve this, FEMS, which are designed to ensure that emergency professionals are prepared for floods, should include assessments of risk to underscore flood-specific emergency planning, promote inter-agency working, professional training, facilitate community preparedness and support immediate recovery activities, such as restoring essential services and supplies. Whilst FEMS are embedded within broader legal and policy frameworks for integrated emergency management and civil contingencies, the pressing challenges posed by floods provide a strong case for examining FEMS in isolation.

This study, partly conducted under the EU STAR-FLOOD¹ project, presents a new framework to assess and monitor the effectiveness of FEMS in European countries from legal and public-administration perspectives. To build the framework, the researchers conducted an appraisal of existing international academic and grey literature published since 1970, relating to emergency and disaster-management systems for any type of hazard at international, national and subnational levels. This informed the identification of **seven key indicators** that could be used to evaluate the performance of processes and actions in emergency flood management:

1. *Planning*: development of an emergency plan to establish priorities, actions and decision-making in the event of a flood emergency;
2. *Institutional learning*: procedures to be in place to promote learning at frequent intervals (e.g. post-event reviews and inquiries, opportunities for knowledge exchange across responding agencies);
3. *Exercising emergency arrangements*: planning and operational procedures should be tested at multiple scales;
4. *Joined-up working*: distribution of responsibilities within and between emergency actors must be clearly defined, effectively coordinated and collaborative;
5. *Community preparedness*: should be supported by emergency professionals (e.g. raising risk awareness and direction on what to do when a flood occurs);
6. *Provision of resources*: (financial, human resources, equipment, and decision-support tools) needs to be ensured and arrangements need to be established for sourcing and allocating additional resources as required;
7. *Recovery-based activities*: arrangements should be in place to support evacuation, for temporary housing, restoration of essential services, help for businesses to function, dealing with physical damage and management of environmental impacts, such as pollution and contamination.

To put this framework into use, the researchers outlined key benchmarks against which a country's performance can be scored; for this, they used a scale of one to five (absent/minimal, emerging, moderate, significant and outstanding).

The researchers then collected information from a variety of sources to evaluate the extent to which benchmarks are achieved in five European countries: France, the Netherlands, Poland, Sweden and the UK (specifically England). The information was drawn from the analysis of emergency-management policy documents and legislation, as well as stakeholder interviews and workshops with key practitioners and policymakers involved in emergency management and flood-risk management more broadly (for example, government departments, municipal and local authorities, and emergency responders).

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1. STAR-FLOOD (STrengthening And Redesigning European FLOOD risk practices Towards appropriate and resilient flood risk governance arrangements) was supported by the European Commission under the Seventh Framework Programme. http://cordis.europa.eu/result/rcn/153561_en.html

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Of the five countries, England's FEMS were found to be the most effective, with all seven indicators achieving significant or outstanding ratings. In the absence of statutory rights to flood protection, a diversified approach to FEMS has existed for over 65 years in England; thus, flood emergency management has served as a crucial strategy for minimising the consequences of flood events. Dedicated policy for flood emergency management is seen, with multi-agency flood plans as a standard component of common practice. Moreover, formal legal mechanisms underpin effective integrated working between emergency responders (e.g. duties to cooperate, and formation of Local Resilience Forums) and certain responders are actively involved in activities to enhance community preparedness for floods.

In Sweden, given the low distribution of flood risk, flood protection management is organised at the local or municipal level on a relatively ad hoc basis by those municipalities affected by flooding, rather than being established at the national scale. Whilst this is considered to be an efficient strategy and provides the necessary flexibility for municipalities to adapt to local risks, there is a risk that some areas may be neglected. Moreover, the lack of national arrangements and supportive mechanisms may make it difficult for certain municipalities to mobilise the necessary resources, according to the researchers.

In France, emergency management has evolved over the past few decades and has been integrated into local disaster-management planning and policies, in line with broader initiatives towards decentralised governance. 'Professionalisation' of the public is one of the major aims of the French FEMS, where voluntary fire brigades play a key role. Municipalities can optionally call in voluntary civil-protection reserves to assist in response activities. Efforts to enhance community preparedness are becoming nationally more consistent. However, recovery guidance and regulation varies regionally and this is an area for improvement identified by the researchers.

In the Netherlands, historically, there has been a strong tradition of flood defence and protection, with a statutory right to be protected by the state from floods. Nonetheless, recent efforts have sought to diversify the range of strategies implemented, in order to manage flood risk more holistically and address the country's increased vulnerability to flooding under climate change. However, certain aspects of flood emergency management (i.e., institutional learning, community engagement, and recovery) are less well developed. Moreover, the organisational structure requires some improvement, the researchers say.

In contrast to the other countries, the FEMS in Poland is still emerging in several aspects, particularly with regard to institutional learning, community preparedness and recovery-based activities. The occurrence of significant flood events (1997) has prompted establishment of the crisis-management institutional framework and efforts to improve the effectiveness of FEMS, yet gaps are seen between policy and practice. The researchers identify small-scale examples of good practice, such as the 'flood leaders' initiative in Wroclaw, but say these are yet to be scaled-up and implemented nationwide.

Although the researchers found that all countries had different approaches to flood-risk management, shaped by diverse political and administrative cultures and socio-economic conditions, they have produced some common recommendations to improve the effectiveness of FEMS:

- Specific provisions for flood emergency management could prove beneficial in countries where flood risk is projected to increase. Lessons could be learned from the multi-agency flood-planning groups and subgroups within Local Resilience Forums, as seen in England, which provide further clarity on roles and responsibilities at times of flood emergencies;
- National guidance could be provided for flooding in countries with a low risk of flooding, or where flood-risk areas are widely distributed, to help deliver consistent support and establish good practice at the local level;
- Specific training for flood emergencies is necessary to test planning, responsive procedures and communication systems, as well as helping to raise community awareness of flood risks;
- Efforts to encourage community preparedness require better communication of flood risks and need to be situated alongside wider efforts to normalise adaptation within society.



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