Managing disaster risk

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Introduction

The European region is exposed to a wide range of natural hazards such as storms, droughts, heat waves, floods, earthquakes, avalanches and landslides that continuously cause human and economic loss.

Despite the European wealth of expertise, knowledge and know-how in disaster risk management (DRM), statistics show that vulnerability to hazards in the region is increasing.

DRM comprises a systematic process of using administrative decisions and organisational and operational skills and capacities to implement policies and strategies, and coping capacities of society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This concept includes all forms of strategies, policies, plans and activities aimed at minimising disaster impacts on individuals and society.

This chapter examines the scientific contribution to understanding these processes and institutions across Europe. These are described in four subchapters, divided up in a similar way to how DRM functions and are often separated conceptually across a disaster management cycle. The disaster management cycle commonly includes four types of measures needed to manage disasters: mitigation and preparedness (before a disaster) and response and recovery (after a disaster).

These measures are broadly aligned with the Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR), which adopts the idea of managing disaster risk as opposed to managing disasters, whereby action is needed to do the following.

- Reduce existing risk: a set of measures, known as 'corrective risk management', similar to the commonly used concept of 'mitigation'.
- Avoid new disaster risk: activities to address and avoid the development of new or increased disaster risk, known as 'prospective risk management', similar to what are often referred to as 'prevention' measures.
- Manage residual risk: activities that strengthen the resilience of individuals and societies to risk that cannot be effectively reduced, including preparedness, response and sometimes recovery activities (those that do not actually avoid new disaster risk by, for example, relocating populations in the aftermath of a disaster) as well as risk transfer and financing activities.

Prevention and mitigation; preparedness and response planning; post-disaster recovery (to new risk); and risk transfer and financing are the major topics of this chapter. The focus in Chapter 5.1 is on studies of disaster mitigation and prevention presenting a range of structural (e.g. building codes and their

enforcement and structural protection measures) and non-structural (e.g. land-use planning and zoning) measures. Critically, all disaster prevention and mitigation measures need to be identified on the basis of risk assessments, and the use of these across Europe is reviewed in this chapter.

Mitigation and prevention measures in Europe are widely considered to be more cost-effective than post-disaster interventions. This is predominantly based on an analysis of the benefits arising from avoided loss. Economic analysis methods have been applied to gain a better understanding of the economic benefits of mitigation and prevention. Yet recognising and appraising the wider co-benefits of investing in mitigation and prevention could make an even more convincing case. This chapter examines some of these broader benefits to society and to the economy.

Human exposure to natural hazard risk is mainly caused by settlement and other economic developments in hazard-prone areas, but this risk can be managed through spatial planning and regulations; national spatial planning policies may involve cooperation with other countries. Within cross-boundary river basins, countries may jointly seek for policies to control flood waters through spatial planning measures. An example are the flood retention areas in the Rhine basin, which aim at storing flood waters upstream in Germany to lower the risk of flooding downstream in the Netherlands.

Disaster preparedness and response addressed in Chapter 5.2 is embedded in complex ethical, legal, social and political contexts, and broad values and principles are needed for emergency response that transcends boundaries.

This necessitates cooperation between regional, national and international communities. The EU Community Mechanism for Civil Protection is developing several tools to support this, including the European Emergency Response Coordination Centre (ERCC) in Brussels as well as a Common Emergency Communication and Information System (CECIS). A key issue for preparedness is how societies can translate these broader values and principles of emergency response into social, organisational and technical innovation.

The professionalism and coordination of preparedness for response by civil protection agencies has significantly advanced in recent years alongside a desire to give citizens increasing responsibility for their own preparedness. There has been a strengthening of the value of citizens themselves in preparedness and response planning, with social groups playing an important role during a disaster to help manage emergency response. Strengthening social cohesion and trust before a disaster can increase the response's effectiveness. Extensive flooding in 2007 in Kingston upon Hull in the United Kingdom, for example, stimulated a range of spontaneous actions by local residents, including assisting with evacuation, giving care and support to vulnerable neighbours, protecting houses against floodwater and giving medical assistance.

Chapter 5.3 presents post-disaster recovery as an opportunity for economic development and regeneration. The recovery process is multidimensional and progresses at different rates for different people, businesses, institutions and places affected by a disaster. Institutional fragmentation and short-term planning can hinder recovery processes and often result in new risks being created. Thus, cross-scale and longer-term risk management strategies are needed in recovery, integrating different stakeholder perspectives and knowledge and coordinating across policy domains.

For earthquake and other types of reconstruction there is not a 'one size fits all' model, but decisions need to be discussed in advance with the citizens, taking into account suggestions and explaining the limits of time, space and budget. Territories are different, available scientific and technologic support evolves and the population's expectations can change through time: a mature civil protection system looks for tailored solutions building on previous experience while exploring new alternatives.

Economic recovery occurs at various scales after a disaster and the economic system will unlikely return to a pre-disaster state, yet measures can be taken to support and accelerate the recovery process. Higher levels of assets give a wider range of options and opportunities following a disaster and can speed recovery, as can access to formal credit and grants. Families, neighbours and social networks can help people to recover their assets.

Accessing financial resources after a disaster is critical to rebuilding and maintaining essential functions. Nonetheless, the policies supporting economic recovery should not focus solely on financing. A mix of policy initiatives is needed to build resilience after a disaster: from the design of early warning systems (EWS) tailored to specific audiences to the development of efficient regulations. Overall, combinations of financial support with other market support and service provision are needed.

People's psychosocial recovery after disasters is a complex, multidimensional process that is also linked to the measures taken before disasters occur, to the social and economic circumstances of those affected, to the actions taken to rebuild and restore assets and to the services provided after disasters. Research demonstrates that people's recovery in the short and medium term can be promoted through a psychosocial approach, with interventions made universally available to reduce suffering and risks of people developing mental disorders. Disasters can undermine development progress and financial and economic stability and well-being, and so a sound risk financing strategy is needed to lessen these impacts and speed up recovery and reconstruction (Chapter 5.4). Risk financing complements regulatory and economic instruments such as prices, taxes, tradable permits and liability. There is ample consensus that insurance can and should play an increasingly important role in mitigating disaster impacts, not only through risk sharing, but also by improving risk identification and modelling, risk awareness and recovery.