

PREFACE

Context

The current report focuses on the immediate consequences of a disaster, on its wider impacts and on the various assets to be protected.

The report *Science for Disaster Risk Management 2020: acting today, protecting tomorrow* is the second in the Science for Disaster Risk Management series, aiming to present knowledge on disaster risk management (DRM) and outline challenges. The current report looks at the different phases of DRM, focusing on the immediate consequences of a disaster, on its wider impacts and on the various assets to be protected. Studying the impacts helps in managing risk after a disaster, guiding the response and facilitating recovery, and in preparing measures to prevent, mitigate and prepare for future events, by supporting risk prediction and the planning of measures to manage risk.

Following the recommendations of the previous Science for DRM report, published in 2017, the report *Science for Disaster Risk Management 2020* shares knowledge on prevention, mitigation and adaptation strategies and approaches, moving from the identification of problems to the presentation of solutions. To that end, the report describes several examples and cases, showing what the DRM community has learned from disastrous events while pointing out where the gaps in our knowledge are. While the problems are global, the solutions are context dependent, and therefore the report proposes approaches to DRM from a European perspective.

Tackling the impacts on assets at risk, the report deals with hazards of different natures, highlighting the many links existing between hazards and vulnerabilities to support robust and effective action. The various chapters and subchapters provide specific recommendations for the target audience, four groups of stakeholders that can actively contribute to reducing disaster risk: policymakers, practitioners (such as civil protection groups, critical infrastructure operators and organised civil groups directly engaged in disaster response), scientists and citizens. All the input provided is finally brought together in the conclusions to provide guidance to the stakeholders on working together across sectors, disciplines and organisations to strengthen the study of disaster impacts and thus manage disaster risk.

Science for Disaster Risk Management 2020 contributes to the Sendai science and technology roadmap, and it is aligned with other global frameworks and with the aspirations of the new European Commission. During its production, the coronavirus disease 2019 (COVID-19) outbreak became a pandemic, affecting business and the daily lives of European citizens to a huge extent. The report has been adapted to provide the most up-to-date knowledge and guidance for the 2020 context.

Process

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More than 300 participants have been engaged over the past 2 years in the preparation of the report. They have been divided into four groups whose work is interrelated: an advisory group, several teams of authors, a group of independent external reviewers and the editorial board. Because of the interconnected nature of impacts on particular assets, different groups and disciplines have been called on to work together on the analysis.

Structure

The report covers the disaster risk management cycle bridging science and its application, trying to better understand, communicate and manage risk.

The report *Science for Disaster Risk Management 2017: Knowing better and losing less* covered the DRM cycle from a scientific perspective, using the concept of a bridge from science to application and covering three main areas: understanding risk, communicating risk and managing risk. The current report follows a similar logic.

The first chapter sets out the policy context, at global and EU levels, including the most recent frameworks for COVID-19 recovery. The different actors are introduced, paying particular attention to the role played by and the advances made by the scientific community in managing disaster risk.

Chapter 2 describes the tools, policies and actors that are relevant for the three phases of an integrated DRM cycle: risk assessment, risk management planning and implementing risk management measures. This integrated approach ensures that all relevant stakeholders are engaged and therefore that policies and actions are well founded on evidence.

Chapter 3 is the core content of the report, addressing the various impacts that affect five key assets for society: population, economic sectors, critical infrastructures, ecosystem services and cultural heritage. The first subchapter defines the core concepts and discusses the purpose and limitations of the study of impacts after a disaster. The authors then identify, for the asset under consideration, which impacts commonly occur after a disaster and review methodologies for analysing these impacts. Past events are used to illustrate the links between the impacts and the characteristics of the asset, as well as lessons that can be learned from the management of risk after the events. Five representative disasters are described and analysed in more detail in Chapter 3, showing the consequences for different assets. These include the earthquakes in Central Italy in 2016–2017, the Fukushima Daiichi accident in 2011, the volcanic eruption of Eyjafjallajökull in 2010, the forest fires in Portugal in 2017 and the COVID-19 emergency we are still facing.

Focusing on the idea of an integrated DRM cycle, Chapter 4 analyses how different governance levels, stakeholders and groups interact and connect both before and after a disaster. This chapter includes an overview of the role of culture in disaster management, with a particular focus on disaster education and training.

Chapter 5 explores the potential synergies between the EU's experiences of and practice on DRM and those of countries outside the EU. Sharing lessons learned supports learning and innovation and improves DRM systems. The last chapter contains the main conclusions of the whole volume and the recommendations for the target audience of policymakers, practitioners, scientists and citizens.

Acknowledgements

The report could not have been produced without the contribution of each of the participants listed in the annex at the end of this document. We would like to thank them for the time and effort they devoted to producing the content and supporting the project, leaving their comfort zones and engaging fruitfully with others.