

Short Executive Summary

Tasks led by policymakers

Facilitate and promote collaborative processes to collect input from practitioners, scientists, the private sector and citizens

Collaboration among different groups and sectors of society is key to reducing disaster risk. Working across disciplines and sectors facilitates the design, implementation and evaluation of evidence-based policies. Trust and long-term partnerships are necessary to overcome the differences in responsibilities, interests, languages and experiences that often hinder collaboration.

- Design mechanisms to facilitate bottom-up approaches: open to new types of leaderships the arena of decision-making and collaboration for the implementation and evaluation of DRR measures.
- Collaborate with scientists and practitioners in the monitoring and evaluation of non-structural and new approaches to preventing, mitigating and adapting to risk. Take advantage of the post-disaster phase to fund new endeavours that are in line with the vision and medium-term strategies of the territory.
- Engage in discussions with other governance levels, within the country and internationally, to promote more complete assessment of progress on reducing risk, which requires indirect and intangible impacts to be properly addressed. It is important to consider impacts on health, ecosystem services and cultural heritage. DRM communities should work on important challenges that hinder sustainability: the mitigation of and adaptation to climate change, ecosystem degradation and the loss of biodiversity.
- Work to ensure that a precautionary approach guides policy debates: the benefits of prevention and mitigation action may be difficult to define in the short term. Devote efforts to tackling the full spectrum of damage and losses.

Develop a policy framework to collect, store and reuse data and information, including good practices and lessons learned during response and recovery processes

Information gathered about past events helps to identify the failures in communication and in response protocols, the barriers in governance, the lack of awareness and the gaps in knowledge and data. Data from disasters commonly serve to guide response and recovery efforts and ensure that those who should be compensated are, but they are also a means of learning from past events. Data and lessons learned from past disasters are useful in evaluating measures implemented to reduce risk and in improving the models that predict future disasters. For the latter, baseline data and other contextual information should be stored and shared too. Despite the benefits that can be gained from them, data and lessons learned are not collected in a uniform manner and are stored by different governance levels and institutions, often unavailable to other organisations and stakeholders.

- Design mechanisms to help knowledge flow across different governance levels, particularly from the local level to the national, while scientific support is enabled to reach local and regional levels more easily.
- Establish frameworks for data collection at the most local level possible, as well as for retrieval and sharing of data among governance levels after an event. The frameworks should take into account the databases that already exist on DRM, mainly sector-specific, alongside others that are related to the specific context, as necessary to understand the baseline situation before the event. The databases can be national or international, but the frameworks should be wide enough to consider different types of damage and loss, so that they can collect and use data constantly. The frameworks should carefully regulate which non-public organisations can take part in these activities and how, ensuring that data are accessible and of the required quality for different purposes.

- Develop mechanisms for damage and loss data to be shared by the private sector, without compromising or violating privacy.
- Engage with practitioners and scientists to understand the uncertainty around the results obtained from analysis and forecasts. These dialogues will facilitate sharing of tacit knowledge.

Ensure proper monitoring and evaluation of the corrective measures planned and implemented

Disasters should be exploited as an opportunity to learn, to think about the changes that are needed and to propose potential new lines of action. By analysing the measures taken and their efficacy and confronting the need for change, we help the system to move towards a long-term view by tackling the underlying drivers of risk (exposure and vulnerability, capacity). The costs of response, recovery and reconstruction should be reported for accountability and compared with those of prevention and mitigation to support decision-making. As managing disaster requires an all-society approach, the required collaborations need to be carefully planned, to detect which capabilities need to be developed while sharing existing capacities.

- Monitoring and evaluation of policies and programmes implemented should be specially reinforced, particularly after an event, engaging diverse stakeholders. These evaluations are an opportunity to make changes at the levels of projects, organisations and risk management culture. This type of action can increase accountability and transparency, reinforcing trust.
- Develop frameworks to identify and properly assess capabilities and capacity needs, and their development, to mitigate and prevent risk. In doing so, consider the institutions already engaged in DRM by law and explore how these can cooperate with other groups and organisations, such as the private sector and citizens (individually and through civil society organisations). The roles and responsibilities of the diverse stakeholders and groups must be clarified and power imbalances addressed.
- Introduce innovative funding mechanisms to encourage and enable alignment and joint investment between various public sector agencies and public-private partnerships. Those partnerships serve to cover the different dimensions of assets and the relations between them. Moreover, sectors are usually divided into various subsectors, which should work together to ensure resilience.

Tasks led by practitioners

Provide feedback to ensure that tacit knowledge is endorsed by policymakers

Data and lessons are not collected in a uniform manner and are stored by different governance levels and institutions, often unavailable for purposes other than particular response or recovery actions. Civil protection groups, critical infrastructure or industry operators, and other civil society groups actively engaged in the most immediate relief and recovery operations after disasters have vast experience of disaster impacts and risk, which should be applied to many phases of DRM (prevention, mitigation and preparedness).

- Practitioners should take a more active role in the policy arena and in particular in the prevention and mitigation of disaster risk. Practitioners should channel impact data and lessons learned from response and recovery to groups in charge of risk assessments and planning and monitoring of measures to reduce disaster risk.
- Support decision-makers in the preparation of a comprehensive framework for impact assessment. Propose procedures to collect disaster impact data across sectors and governance levels for different purposes. Work closely with scientists in the collection and analysis of data after an event.

Be creative and perseverant in your tasks, embracing innovation

The past events described show the lack of preparedness of our societies to face high-impact but low-probability events. The many links between sectors and assets, at all governance levels, call for indirect impacts to be addressed. Likewise, intangible impacts should not be overlooked. The report presents innovative approaches to the collection and sharing of loss and damage data that should be further developed using new technologies, such as remote sensing techniques, sensors, apps and artificial intelligence.

- Practitioners should think outside the box when drafting preparedness actions, including training and exercises, to be ready for the next event, not for those that have already occurred. Pay particular attention to thinking of more complex scenarios, including cascading effects and compound events. Simulation exercises should be carried out together with key actors, such as operators and representatives of critical infrastructures, important industrial sites, economic activities, and natural spaces or natural resources.
- Update contingency plans and other initiatives based on the lessons learned from simulation exercises. Address impacts beyond those that are direct and tangible. Work with operators of industries and infrastructures, business representatives and nature conservation groups to learn together and reinforce prevention, mitigation and adaptation measures.

Help the scientific community with data and feedback

As stated above, practitioners are closely engaged in relief and recovery efforts, for which data are collected and analysed. At the same time, practitioners have traditionally engaged with various stakeholders, so they can serve as bridge between various groups and sectors in relation to the collection, storage and analysis of loss and damage data.

- Support the knowledge flow among different administrative levels and share your tacit knowledge with other groups, in particular with scientists. Properly document lessons learned and experiences, enabling others to compare, share and test them.
- Work to collect detailed data on response and first recovery stages and ensure that they are available later for other purposes.
- Work with scientists to help the private sector and citizens to participate in the implementation of innovative approaches to reducing risk, and in particular to the collection and analysis of information on impacts.

Tasks led by scientists

Continue research efforts on disaster risk dimensions and management

Methodologies for analysing impact have been developed mainly for direct and tangible damage and losses, and have reached different levels of sophistication depending on the asset and the hazard under consideration. Intangible impacts are commonly overlooked, in part because it is difficult to fully account for the value of some assets and to quantify the loss or the damage suffered. These types of assets, however, can represent an important part of our social life and well-being, so they should be covered by disaster management. In a globalised and complex world, interdependencies among sectors and compound events indicate the need to increase our understanding of the drivers of risk to assets (exposure, vulnerability and capacity).

- Efforts should be devoted to improving the methods used to capture indirect losses and intangible impacts.

To this end, the scope of impact analysis should be widened to accommodate cascading effects or to study compound events, considering the links of the asset studied with others, in time and space.

- Engage in activities beyond risk analysis, such as risk identification, risk transfer, scenario building and strategic foresight. The groups engaged in risk analysis need to be engaged in these exercises.
- Risk treatment requires special attention. The costs and effects of mitigation measures should be studied after an event, paying attention to the causes and drivers that increased disaster risk. At the same time, propose measures to prevent and mitigate losses and damage that could be put into practice by citizens and the private sector. Here, the DRM community and climate change adaptation groups can easily collaborate.
- Methodologies for measuring the value of assets should be further developed and adapted to measure loss in value.
- Research should be devoted to studying the socioeconomic processes and factors that lead to impacts on the various assets presented in the report, particularly at individual and community levels. There are few studies on this topic in Europe.
- Further develop new techniques and methods to collect and analyse the vast amount of impact data. Demonstrate the added value that they create to policymakers through examples and good practices.

Acquire additional knowledge by interacting with other communities

Disaster risk knowledge is fragmented among groups and disciplines, so scientists should make an effort to involve people from those groups and working in those disciplines in their assessments. Reducing risk is an all-society task, so societal learning should be supported.

- Efforts are still required to ensure that the various scientific groups and disciplines obtain relevant results. A good starting point would be for different disciplines to work together to propose impact metrics to be monitored (in time and space) after an event, which would be the same as those to be used in forecasting risk. These could be used to draw up and update a framework for impact assessment. Support policymakers in that endeavour, pointing out the opportunities to be grasped and the challenges to be overcome.
- Facilitate a culture of learning with other stakeholders, and in particular with practitioners and groups working in the field, by testing new tools and approaches in various contexts. Go beyond the traditional role of giving advice and transferring information.

Make sure the knowledge is useful and used

The science–policy interface on DRM has been reinforced at some levels of governance, but still sometimes expertise is kept within particular institutions and organisations and knowledge is not properly shared for the co-development, co-implementation and co-evaluation of DRM actions.

- Work to synthesise research results and define problems for non-expert audiences.
- Together with practitioners, present the gaps in knowledge regarding propagation of effects within sectors and assets in particular areas of interest. During relief and response phases, support practitioners to assess scenarios.
- Work with practitioners to make sure that models and tools for analysing impacts are available and endorsed by them.

- Collaborate with practitioners on reaching citizens, before and after an event, through educational programmes and communication campaigns. Carry out research on how to mobilise different groups that are traditionally not engaged in DRM.

Tasks led by citizens

Raise your voice for a more resilient future.

DRR is an all-society task. Each individual should encourage others to speak and participate in collective learning and action.

- Discuss DRR with family, friends and neighbours, and invite them to participate more actively by volunteering, attending events at which policies and programmes are presented to communities, speaking up when plans and projects are open for public comments, and reward political groups that have worked to reduce disaster risk, among other ways.

Be active to reduce disaster risk at local level.

Citizens, as key players in managing risk, can exploit new governance models and technology to contribute to current societal efforts of reducing disaster risk, in particular in their neighbourhood and municipality.

- Become aware of the responsibilities and benefits of managing disaster risk. Be well informed and be engaged in workshops, training or discussions at the local level. Engage in DRM activities, through organisations on the ground (such as religious groups, community groups or local environmental protection groups) or specific projects that might be run by various institutions
- Invest in individual and communal protection measures and evaluate the measures taken.
- Facilitate the work of responders during an emergency, and avoid passing on information that could be misleading or confusing.

Engage with other stakeholders in DRM activities.

The input of citizens is necessary for measures be planned and implemented more effectively at community, regional and national level. The path towards learning and thus improving the whole DRM system depends on the willingness of individuals to share their risk perceptions, experiences and preferences. Likewise, the private sector already has responsibilities in place for DRM; data and information from various sources could help with companies' internal actions to manage disaster risk. There are some areas where new business developments and partnerships could be created.

- Contribute to damage data collection efforts, through platforms, social media and apps. Be open to sharing both tangible and intangible impacts to make the identification and analysis of impacts more comprehensive.
- Cooperate with policymakers on creating a vision for the territory, especially in the post-event period. Keep in mind that some changes may be required in the landscape and functioning of the area to build back better and exploit new opportunities.

- Participate in a DRM learning culture, in particular engaging in discussions with scientists and practitioners to define and value intangible assets, before any event.
- Various activities represent a business opportunity that could be exploited by small and new businesses, for example related to the framework(s) for collecting, retrieving and sharing loss and damage data and to the implementation and evaluation of new prevention and mitigation projects at the local level.

It is worth mentioning that all four communities need to join in a discussion of important but ambiguous terms, such as 'resilience', 'impact' and 'affected people'.

