

Improving Damage
assessments to Enhance
cost-benefit Analyses



Deliverable E.5: Key recommendations for the ongoing activity on improving damage and losses databases at EU level

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Contributions
Authors: Mariano Garcia, Maria José Jimenez; Scira Menoni, Francesco Ballio
Contributors: All project partners

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In this report we wish to provide some key synthetic recommendations that may be useful for anyone wishing to carry out the same work that we have in the Idea project. In particular we wish to provide the European Commission, and in particular the DG-ECHO and the DRKMC led by the JRC in the frontline, with some critical reflections that are the result of the Idea project and of all the work that has been conducted by two civil protection authorities partnering in the project, and the stakeholders that have been involved in the two workshops and through numerous meetings, interviews, consultations. We also provide a reference to the deliverables where more in depth information can be found.

Key recommendations for improving the quality and the reliability of data on damage due to natural hazards are the following:

1. It is clear that without a data coordinator no real advancement is possible in the field of damage data collection and management. The data coordinator must be a person, preferably a small group of people in charge of:
 - a. carrying out directly some types of surveys;
 - b. asking from other authorities and organisations data that are necessary to develop a comprehensive and exhaustive understanding of the overall damage suffered by a region as a consequence of natural hazards;
 - c. making sure that data are of good quality, responding to minimum standards;
 - d. manage the corresponding database. The group in charge of data management must be also the group that manage the digital platform where data are input and that allows for subsequent queries. It makes sense that the data coordinator group will be established within the administration that already collects a large number of data for emergency management or recovery purposes.
2. The data coordination work can be done also in partnership between institutions. As we have done within the Idea project, we may well suggest that research centres that are interested in using the data for studies and analyses, are also involved in the data management, saving time to public administrations that may be understaffed or lacking specific competences. This type of partnership should be regulated by explicit and formal agreements between the parties.
3. The underlying concept of a data coordinator is to centralize the damage data in order to:
 - a. verify and compare its quality across sectors;
 - b. manage it according to predefined standards;
 - c. overcoming the current fragmentation of data which is the main obstacle insofar in getting good, comparable data on damage to different sectors, items, systems. This means

that also the computerized information system be centralized, not in a physical sense, but conceptually. It is key that all actors contribute to the *same information system* and can query in return the same controlled set of data (see Deliverables E2 and E3 for more details). This is not the current situation today.

4. We would like to suggest to overcome the traditional division between direct and indirect damage to develop instead a multi-sectoral understanding of damage, that means getting an understanding of how different sectors are affected by an event, in terms of direct physical damage and costs associated to repairs; of systemic consequences due to outages and service interruptions; of indirect damage and of economic damage to economic sectors, businesses and pre-defined geographic areas (see Deliverable C5). The vision by sector permits to cover the complexity of nowadays events, to have an overview of the damage a given community has suffered, including damage to residential buildings, economic assets, services, critical facilities and infrastructures, agriculture, cultural heritage and environmental ecosystems. This is important to understand what sectors suffer most in what type of event, to guide reconstruction and recovery efforts, to guide also the development of improved modelling tools.

5. As for the data that can be made available for each sector, it is important to be complete: both insurance and public agencies data are necessary because they complement each other most of the times. The specific mix of insurance and public agencies data differs from one country to another, however they both co-exist and sometimes the mix is rather difficult to define.

6. For some sectors, such as in particular lifelines, often data are missing as the services providers or the owners of networks, even though often public or semi-public companies, do not have a tradition of data sharing. In our experience in the Idea project we understood it is possible to interact with such companies and actually it is important to guide them towards improved data sharing mechanisms (see Deliverables A1; F2 and F3). Requests should be based on the illustration of the many benefits such companies have from public administrations, the public nature of the services they provide, the fact that they are often financed by public bodies, including the EU for projects and technical amelioration of their standards and operational capacity.

7. The spatial scale at which data are collected or at which data are relevant needs to be better defined and established, as different arrangements may be possible given different

governmental structures in EU countries. Yet there is the need to make explicit at what scale data have been collected and at what scale they convey what type of information.

8. Regarding the spatial scale, it is important to stress that for further use, also data related to the triggering event need to be provided at the same scale of the data that are collected on damage. So for instance if a building by building damage survey is conducted, a local scale analysis of the hazardous phenomena need to be provided as well.

9. Similarly to the spatial scale, also the temporal scale at which data are collected need to be made explicit. This is a very crucial point that we have discovered during and through the Idea project. Data are generally collected at two different phases: during the emergency, what we may call crisis data, and in the recovery, to establish a compensation and recovery programming. In existing databases and also in the assumptions behind the Sendai indicators, what temporal phase data belong to is not made explicit. We think that in some cases only crisis data will be available (or for some sectors) and/or more consolidated data that have been collected to support recovery and compensation. There is no clear cut neat distinction as the two phases are not so easy to define, however it is important to understand the different nature, the different type of meaning the information conveys in order to use it appropriately. Both can be relevant for our purposes.

10. We must be clear about the scope of the information system and the data coordination we are seeking and proposing within the Idea project: we are focused on damage data that are empirically gathered in the field. Even in cases where the data is provided by other stakeholders (for example lifelines services providers) they come from the field. We are not considering data that is derived from modelling, such as for example economic estimation of losses to given sectors. In our case in fact damage is: physical description of how a given sector and the items that are part of it have been disrupted, affected; estimation of repair and substitution costs. We can also gather information regarding businesses interruption and consequences in terms of costs due to services malfunction. This warning is very important for the interpretation of the totals we are providing. They are mainly referring to costs of repair, restoration, or due to lost activities, lost days of work, etc.

11. At the moment we have explored all sectors in detail. However it must be acknowledged that problems of double counting need to be carefully considered and solutions provided in further research and application activities. In fact for example “cultural heritage”

is a sector that intersects residential buildings, public facilities, etc. This needs to be considered in future evolution of our own work.

12. In the Idea project we have made a huge effort to design the architecture of an information system to collect and manage damage and triggering event associated data. This effort made us aware of very crucial points:

- a. There is no satisfactory tool at the moment that permits to obtain the comprehensive, multisectoral overview of damage at the most appropriate spatial and temporal scales. Existing tools are partial and at the end propose the same fragmentation of the data they treat;
- b. In order to overcome the fragmentation and to provide a unified centralized information system, a rather significant conceptualization effort is required, involving the data providers themselves. We need to be clear about the exact meaning of a given datum if we want to use it correctly;
- c. There is the need to tailor the information system design to the understanding of the complex way data are “formed” and maintained overtime and also of their uses. In this regard only a strong conceptualization of the relationship among entities will permit multiple different queries responding to different purposes of analysis and activities (from modelling to forensic, to compensation, to responding to international indicators such as Sendai)

13. The idea of using data for multiple purposes is fundamental, because it permits cost saving and to engage a larger communities of feeders and users of the databases. It is a winning strategy as the effort of providing and collecting data will be rewarded by a multiplicity of uses. However the objective of creating a multipurpose data management system is challenging as it both requires the agreement of stakeholders to contribute to it and also to design a more complex system than the one that would be required by a single-objective system.