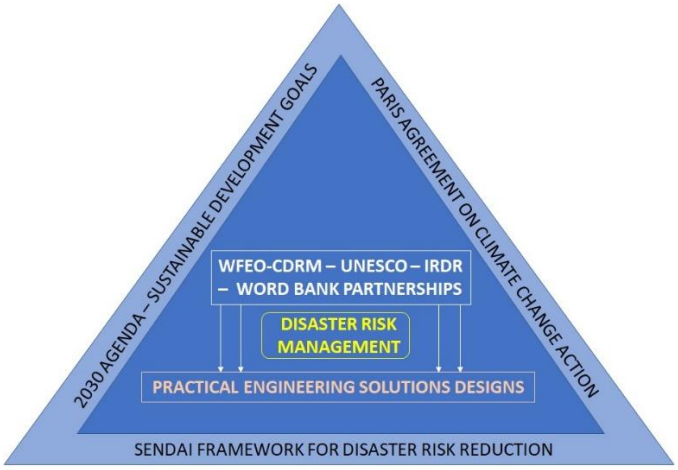
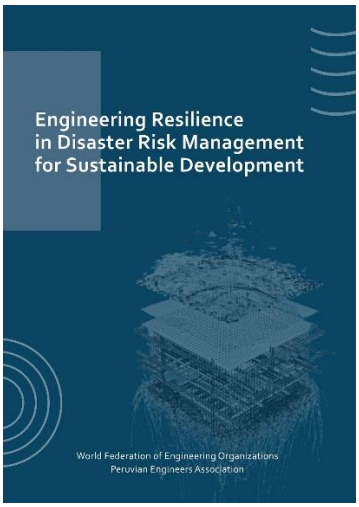
Engineering Initiatives in Disaster Risk Management: WFEO's Committee on DRM, UNESCO, IRDR & World Bank

In the last three decades, several global programs have been aimed to reduce the impact of natural hazards. Despite the progress achieved, disasters continue occurring, and sustained effort to reduce them and their sequels is maintained. The World Federation of Engineering Organizations (WFEO) contributes effectively, through engineering, to advance in all the SDGs, as it has been shown in the WFEO-UNESCO Information Meeting to Member States in Paris, October 27 2022.

In the framework of the three mail global agreements (figure below), the WFEO Committee on Disaster Risk Management (CDRM) is strengthening ties with the UNESCO Disaster Risk Reduction Unit, the Integrated Research on Disaster Risk (IRDR) joint program by the International Science Council (ISC) and the United Nations Disaster Risk Reduction office (UNDRR), and with the Global Program for Disaster Risk Analytics at GFDRR-World Bank. These partnerships facilitate not only the technical exchange among specialists, but more important a strong support and wider diffusion to communities on the best practices in engineering to reduce risk and avoid disasters.

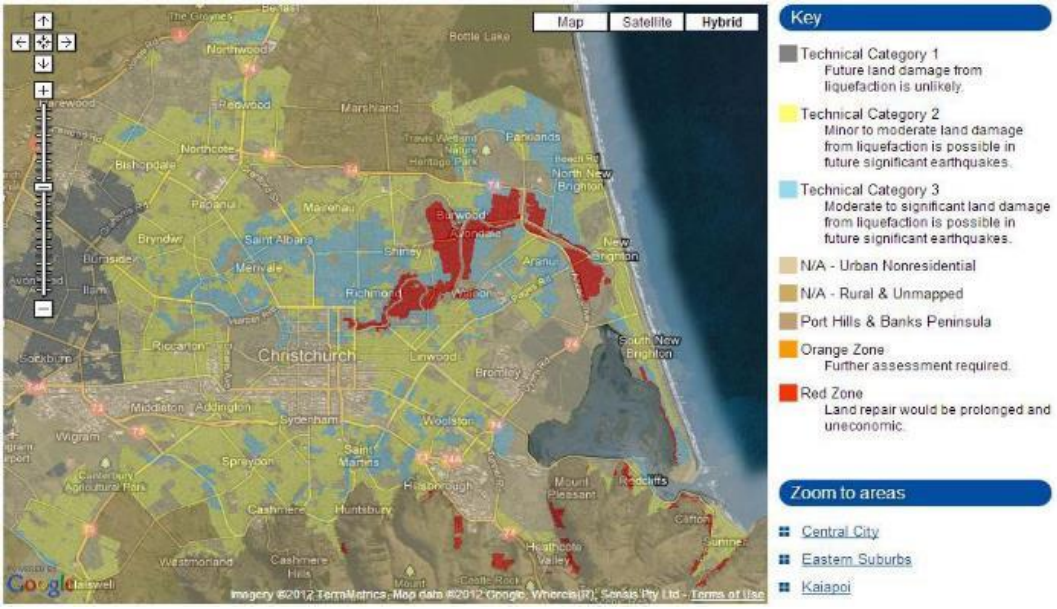




This year, the CDRM has released the booklet *Engineering Resilience in Disaster Risk Management for Sustainable Development* http://www.wfeo.org/wp-content/uploads/stc-disaster_risk/2022/Engineering_Resilience_in_DRM_for_Sustainable_Development.pdf. In its nearly 70 pages, one can find precise messages about best practices, based on successful case studies in different countries. Subsequently CDRM organized a series of webinars that allowed discussions and recommendations that are summarized herein.

***On land use planning**:* Engineering inputs should be incorporated into the land use planning since an early stage and after a region has been impacted by a hazardous event.

The example below depicts the new land use and forbidden zones enforced by laws after the 2010 Canterbury earthquakes in New Zealand.



National government released land zoning decision on June 23, 2011 with offer to buy >7,000 residential properties in the "red zones." Lawsuits forced national government to extend offers to vacant land and insured commercial properties within the "red zones." (Contribution by Laurie Johnson).

***On infrastructure systems**:* Resilience of critical infrastructure should be ensured since its design. To warrant its performance, the different components of infrastructure resilience need to be understood. The ownership and regulatory systems influence the investment and responsibilities, so they have to be clear in contractual conditions.

The multiple interdependencies among infrastructure components should be taken in account; see how physical infrastructure (water, energy, communications and transportation networks) enable the other elements of societal infrastructure to function.

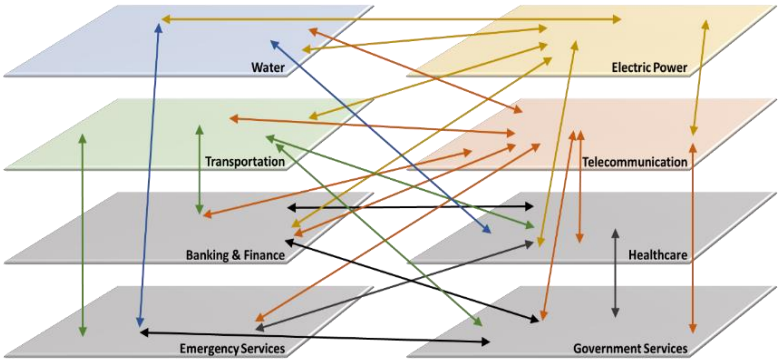
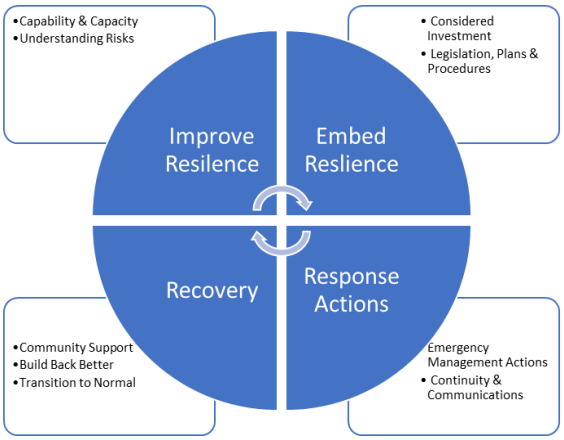


Image: S. Schauer

***On data and information management**:* New sources of data and information facilitate more comprehensive analysis of the disaster risk and therefore, enables new management techniques and innovation solutions to reduce or mitigate disaster risks. Standardization of data and methods has a good potential to enable wider dissemination of common and reliable solutions and enable wider adoption for collective sustainable development and reduced disaster risk.

Satellites equipped with new devices allow observation and real-time monitoring of earth processes as well as a huge amount of data whose processing support directly the SDGs. Image: Fang Chen.

On institutional frameworks*:* A robust and healthy institutional framework allows the optimal operation of DRM systems. The process to institutionalize DRM throughout a country requires consistent investment over many years. During times of response to natural and other disaster events, ensuring and retaining public trust is essential. Although the general components of the DRM system need to be centralized, there are benefits to DRM activities being decentralized and emphasizing that local authorities are primarily responsible for building resilience. Img: M. Lind.



Capacity Building is maybe the most delicate issue in DRM. The rapid evolution of technology and engineering tends to widen the gap between developed and developing countries. Our role, as global institution is to fill this gap serving as a bridge for knowledge and expertise transit. To strengthen capacity building, it is recommended to make country-scale vulnerability atlases identifying areas susceptible to be affected by different natural hazards. All stakeholders should be aware and use updated engineering codes of practice. For an adequate response, people should be trained about *"Dos and Don'ts"* during the disaster. The risk-awareness and involvement in its management should start from childhood; afterwards, the active participation in DRM activities is perceived to be normal to everyone.

Contact: José Macharé O.
WFEO-CDRM Chair
jmachare@uni.edu.pe