Establishment of the Disaster Risk Reduction Unit in UNESCO and UNESCO's Contribution to Global Resilience

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Abstract

The occurrence of catastrophes has increased considerably in recent decades. Climate change, urban pressure and lack of disaster preparedness are increasingly transforming natural hazards into disasters, causing multiple losses. In the last decades, Disaster Risk Reduction (DRR) has captured significant attention as the main approach to reduce vulnerabilities and exposure and improve preparedness to protect regional, national and local development. One of the main international agreements adopted to strengthen and enhance society's resilience is the Sendai Framework for Disaster Risk Reduction (2015–2030), which emphasises the need for more inclusive, multi-hazard DRR processes and its synergies with climate change, health, and sustainable development. Within this framework, UNESCO enhances preparedness and builds resilience at all levels through multi-hazard, multi-discipline, and multi-stakeholder DRR mechanisms, supporting the Member States particularly on eight thematics. Likewise, UNESCO has been a catalyst for international, interdisciplinary cooperation in many aspects of disaster risk reduction and mitigation. The organisation has supported activities of international DRR programmes, such as International Consortium on Landslides (ICL), as part of its global contributions to this and other international agreements.

Keywords

DRR • Disasters • Resilience • Multi-hazard • Multi-stakeholder • Multi-discipline approach

1 The Impact of Natural Hazards

Floods, hurricanes, earthquakes, volcanoes, cyclones, landslides and wildfires have shaped the Earth's landscape for millennia, interacting with human settlements since the dawn of civilization (Chaudhary and Piracha 2021). Such encounters have had considerable impact on human life and property, disturbing and altering the livelihoods of populations worldwide (UNESCO and UNICEF 2012).

The occurrence of disasters has increased significantly over the last six decades (Chaudhary and Piracha 2021). Climate Change (CC), urban pressure and the lack of disaster preparedness are increasingly transforming natural hazards into catastrophes, causing multiple losses. It is estimated that around 85% of the world's population has been distressed by at least one natural hazard in the past 30 years (Chaudhary and Piracha 2021). Since the 1990s, there has been a fluctuating trend of increasing direct socio-economic impacts due to disaster events, exacerbated in developing countries where 90% of the casualties occur (Chaudhary and Piracha 2021; Academy of Disaster Reduction and Emergency Management et al. 2020). Worldwide, from 2000 to 2019, disasters have caused US$1.23 trillion in damages, claimed 1.23 million lives and affected over 4 billion people (UNDRR 2020).

With an increasing frequency and magnitude of extreme meteorological events as a result of climate change, losses associated with disasters are on the rise (UNDRR 2019). In the last few years, risks associated with climate extremes have been amplified by the COVID-19 pandemic, creating compound impacts and diminishing resilience to future disturbances (Walton et al. 2021). From the start of the pandemic through August 2021, extreme weather events

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have affected 139.2 million people and claimed 17,242 lives in 433 disaster events (Walton et al. 2021). The vulnerability of poorer populations to extreme hydro-meteorological events has been aggravated, with their recovery after a disaster becoming more difficult given the pandemic economic impact (Walton et al. 2021).

2 Disaster Risk Reduction and the Sendai Framework

Over the past decades, Disaster Risk Reduction (DRR) has captured significant attention as the main approach to improve resilience and protect socio-economic development at different levels (Van Niekerk and Terblanché-Greeff 2017). Advances in DRR research have demonstrated the critical need to move from disaster response to the identification, evaluation and ranking of vulnerabilities and risks and their unequal distribution among populations (Aitsi-Selmi et al. 2015).

In 2015, a voluntary pathway was established to ensure that DRR policy reflects the complexity and evolving understanding of disaster risks in the twenty-first century (Aitsi-Selmi et al. 2015), the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030. This agreement constitutes a long-term international compromise that aims to protect lives, livelihoods and infrastructure along with cultural and natural heritage from man-made and natural hazards over 15 years (Kelman 2015; Wahlström 2015). This major ambition was adopted at the UN Third World Conference on Disaster Reduction (WCDR) held in Sendai, Japan and endorsed by the UN General Assembly in June 2015, following the Hyogo Framework for Action 2005–2015 (UNDRR 2019). Nevertheless, and unlike the Hyogo Framework, SFDRR places greater emphasis on the need for a more inclusive and all-hazards DRR process that incorporates both bottom-up and top-down actions, local knowledge and expertise, with attention to the synergies between DRR, climate change, health, and sustainable development (Aitsi-Selmi et al. 2015). Likewise, SFDRR recognizes the importance of a people-centred approach in the designing and implementation of DRR policies and plans at all levels, in accordance with its seven global targets and four priorities of action (Stough and Kang 2015).

- Priority 1: Understanding disaster risk
- Priority 2: Strengthening disaster risk governance to manage disaster risk
- Priority 3: Investing in disaster risk reduction for resilience
- Priority 4: Enhancing disaster preparedness for effective response and to Build Back Better in recovery, rehabilitation, and reconstruction.

3 UNESCO and the Establishment of the Disaster Risk Reduction Unit

UNESCO operates at the interface between natural and social sciences, education, culture and communication, playing a vital role in building a global culture of resilience.

The organisation has been strongly involved in DRR since the 1960s with studies on earthquakes and oceanography, expanding since then its fields of action to other hazard categories, adaptation and mitigation activities. The scientific and technical work in DRR is essentially promoted by UNESCO's International and Intergovernmental Science Programmes, namely the International Geoscience and Geoparks Programme (IGGP) (UNESCO n.d.), the Man and Biosphere Programme (MAB) (UNESCO n.d.), the Intergovernmental Oceanographic Commission (IOC) (IOC-UNESCO n.d.) and the International Hydrological Programme (IHP) (UNESCO n.d.).

At the end of 2021, and following an increase in requests for support from national governments, UNESCO Member States approved the creation of an independent DRR unit under the Assistant Director-General for Natural Sciences in the context of the recent approval of the Program and Budget for 2022–2025. This cross-sectoral unit aims to coordinate UNESCO's work on DRR and with the above-mentioned programs and mainstream the topic in the organization and UN entities.

4 UNESCO's Approach on Disaster Risk Reduction

Following the SFDRR premises, UNESCO enhances preparedness and builds resilience at all levels through multi-hazard, multi-discipline, and multi-stakeholder DRR mechanisms, supporting the Member States particularly on (1) Science, Technology and Innovation (STI) for Resilience; (2) Early Warning Systems (EWS); (3) Built Environment; (4) School Safety (5) Disaster Risk Reduction for Culture and Sites; (6) Ecosystem-based Disaster Risk Reduction (Eco-DRR); (7) Post-disaster Response; and (8) Risk Governance and Social Resilience (UNESCO n.d.).

Through a multi-disciplinary approach, UNESCO builds capacities and fosters partnerships to support a holistic understanding of climate crises and natural hazards and thus scientific and technical disaster prevention, preparation, response and recovery. UNESCO makes the most of its comparative advantage by combining its expertise in earth, ocean, water and ecological sciences with its mandate in education, social sciences, communication, information and heritage preservation towards achieving resilient societies. Under its responsibilities, UNESCO supports countries in DRR capacity-building, working in close collaboration with

governments, the private sector and the overall UN system to support Member States with their commitments and aspirations contained in the Nationally Determined Contributions (NDCs) and the UNFCCC Paris Agreement.

In addition, UNESCO adopts a multi-hazard and multi-stakeholder engagement approach to the challenges of disaster risks and climate change adaptation and mitigation. Multi-hazard approach is necessary as one hazard may have cascading effects such as earthquake to tsunami, storm to flood, warming climate to glacier melting. UNESCO is in a good position as it covers both weather and geo-related hazards, giving DRR policy/technical directions based on scientific evidence. Multi-stakeholder approach allows academics, civil society, the private and public sectors to collaborate in establishing risk prevention plans and strategies. The engagement of different stakeholders and organisations working at different scales of governance leads to more coordinated and integrated DRR actions and projects. In this regard, UNESCO supports the creation of spaces for the empowerment and active participation of all-level stakeholders in DRR processes.

5 UNESCO's Contribution to Major Global Challenges

As mentioned, UNESCO's contribution to DRR focuses on eight thematics.

Science Technology and Information (STI)—UNESCO's take on STI involves the enhancement and application of citizen science, participatory research, local and indigenous knowledge and development, and advanced Information and Communication Technologies (ICTs) to enhance local disaster preparedness and readiness. In Eastern Africa for example, UNESCO developed a mobile AI Chatbot to facilitate risk communication between citizens and public sectors before, during and after the occurrence of hazardous events. More than 700 public servants were trained for this AI tool between 2020 and 2021.

Early Warning Systems (EWS)—Significant efforts have been undertaken by UNESCO to strengthen EWS development, particularly in countries with significant challenges and vulnerabilities. In Ghana (2019), Morocco and Croatia (2021) for instance, UNESCO supported the donation and instalment of equipment for seismic monitoring provided by the Japanese company Challenge. Likewise, in 2020, 19 countries received expert support from the organisation to strengthen their early warning systems for tsunamis, floods and earthquakes.

Built Environment—UNESCO supports its Member States in strengthening capacities and construction-policy sectors to increase the safety of their built environment and thus reduce the socio-economic impact of disastrous events. The project "Capacity Building for Disaster Risk Reduction in the Built Environment in Latin America and the Caribbean" is the latest UNESCO project concerning this issue. The three-year initiative also known as BERLAC, started in 2020 and has six target countries (Cuba, Dominican Republic, Guatemala, Mexico, Peru and Haiti) and four components: (1) secure safer new buildings, (2) school facilities safety, (3) strengthen existing buildings, and (4) develop risk-informed policymaking.

School Safety—UNESCO is actively engaged in empowering schools and their communities to enhance school safety. To do so, UNESCO deploys a multi-hazard school safety assessment methodology known as VISUS (Visual Inspection for defining Safety Upgrading Strategies), developed in close collaboration with the University of Udine (Italy). The methodology has been successfully tested in seven countries, assessing the safety of more than 500,000 students and educational staff. In 2022, UNESCO is planning to evaluate the safety of 100 school buildings in the Dominican Republic, using the same methodology.

DRR for Culture and Sites—Acknowledging the value and importance of safeguarding cultural heritage, UNESCO and the Caribbean Disaster Emergency Management Agency (CDEMA) conducted in 2020 a regional workshop to raise awareness and foster synergies on disaster resilience in the Caribbean culture sector. UNESCO is currently supporting the incorporation of the workshop results into national/local DRR policies and plans for the culture sector and selected World Heritage sites in the region.

Eco-DRR—UNESCO promotes the conservation and sustainable management of natural ecosystems to prevent and mitigate natural hazards and climate change impacts. Currently, UNESCO is involved in the EU-funded OPERANDUM project, which aims to reduce hydro-meteorological risks in European rural territories through nature-based solutions (NbS).

Post-disaster Response—UNESCO assists Member States in post-disaster response to assess damage and losses, and to identify recovery and reconstruction needs. In the last years and after earthquake events, UNESCO dispatched engineers and seismologists to Turkey, Philippines and Iran for carrying out post-earthquake field investigations and drawing lessons towards better preparedness, response, and recovery.

Risk Governance and Social Resilience—UNESCO promotes civil society engagement in the management of disaster risk, encouraging the formation of youth networks that will contribute for the mainstreaming of DRR in their communities and governments. In recent years, and with the support of UN agencies and regional organisations, UNESCO has established youth platforms in Asia (U-INSPIRE in 2019), Africa (AYAB-DRR in 2020) and the Caribbean (CARIDIMA in 2021). Furthermore, during 2020, 31 countries were supported technically by UNESCO in updating national policy preparedness frameworks, prioritising small island developing states (SIDS) and African countries.

6 UNESCO's Partnership with ICL

ICL was founded in 2002 during the UNESCO-Kyoto University Joint Symposium on "Landslide Risk Mitigation and Protection of Cultural and Natural Heritage" as an activity of International Geoscience Programme project 425 "IGCP-425 Landslide hazard assessment and mitigation for cultural heritage sites and other locations of high societal value." The first session of the Board of Representatives (BOR) of ICL was organised at UNESCO Headquarters on 19–21 November 2002. Initial members of ICL agreed to launch the International Programme on Landslides (IPL) and adopted eight coordinating projects and 14 member projects of IPL. Since its establishment, UNESCO has continuously supported ICL/IPL activities (Sassa 2005; Sassa et al. 2022), such as the UNITWIN (University Twinning and Networking) Cooperation Programme on Landslide risk mitigation for society and the environment (ICL 2015), the World Landslide Forum, the IPL Awards for Success and the Journal of the International Consortium on Landslides (ICL 2012).

During the Third UN World Conference on Disaster Risk Reduction (WCDRR) in March 2015, ICL took the initiative of organising together with IPL, the Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT), UNESCO and others the Working Session "Underlying Risk Factors". As an outcome of the session, the "ISDR-ICL Sendai Partnerships 2015–2025 for global promotion of understanding and reducing landslide disaster risk" was signed by a number of key international organisations, including UNESCO (Fig. 1) (Sassa 2015). These partnerships have been mobilized to pursue prevention, provide practical solutions, education, communication and public outreach to understand and reduce landslide disaster risk.

UNESCO appreciates the continuous commitment of ICL global partners on long-term reduction of landslides disaster risk, which has been translated into the establishment of the Kyoto Landslide Commitment (KLC) 2020, which was launched on 5 November with 90 signatory organisations including UNESCO. The continuity of the Sendai Partnership 2015–2025 through the KLC2020 will allow greater significant outcomes in the development of resilient sustainable societies in many landslides' prone areas. This framework could not have come at a better time, considering the intensification of landslide risks due to climate change and global warming.

Fig. 1 The signers from the first 16 signatory organisations with ICL officers after the signing of the ISDR-ICL Sendai Partnerships 2015–2025 document (Sassa 2015)

UNESCO is committed to the promotion and implementation of the ISDR-ICL Sendai Partnerships 2015–2025 and KLC2020. In this context and in line with its mandate, UNESCO's DRR unit will continue to support the development of global, regional and national multi-hazard EWS, the improvement of the scientific basis for developing technologies and tools for landslide multi-risk identification and management, the enhancement of schools and communities preparedness and response, the provision of policy and technical assistance to strength capacity for floods and landslide monitoring and forecasting, the increase in research, partnerships and international scientific cooperation, and the collaboration with international partners, sectors, UNESCO field offices, UNESCO chairs and Category II Centres in the topic.

References

Academy of Disaster Reduction, Emergency Management, Ministry of Emergency Management - Ministry of Education, National Disaster Reduction Center of China, Ministry of Emergency Management, Information institute of the Ministry of Emergency Management, (2020) 2019 Global Natural Disaster Assessment Report. Academy of Disaster Reduction, Emergency Management, Beijing, 88 p

Aitsi-Selmi A, Egawa S, Sasaki H, Wannous C, Murray V (2015) The Sendai framework for disaster risk reduction: renewing the global commitment to people's resilience, health, and well-being. Int J Disaster Risk Sci 6:164–176. https://doi.org/10.1007/s13753-015-0050-9

Chaudhary MT, Piracha A (2021) Natural disasters—origins, impacts management. Encyclopedia 1:1101–1131. https://doi.org/10.3390/encyclopedia10400842021

ICL (2015) UNITWIN programme. http://icl.iplhq.org/category/icl/unitwin-programme-icl

IOC-UNESCO (n.d.) Intergovernmental Oceanographic Commission of UNESCO. https://ioc.unesco.org/. Accessed on 18 Mar 2022

ICL (2012) ICL leaflet 2012. http://icl.iplhq.org/category/icl/leaflet-and-publications/

Kelman I (2015) Climate change and the Sendai framework for disaster risk reduction. Int J Disaster Risk Sci 6:117–127. https://doi.org/10.1007/s13753-015-0046-5

Van Niekerk D, Terblanché-Greeff A (2017) Handbook of anticipation, Poli R (ed). Cham: Springer (ISBN_978-3-319-91553-1), 1733 p. https://doi.org/10.1007/978-3-319-31737-3_90-1

Sassa K (2005) ICL history and activities. In: Sassa K, Fukuoka H, Wang F, Wang G (eds) Landslides—risk analysis and sustainable disaster management. Springer, pp 3–21

Sassa K (2015) ISDR-ICL Sendai partnership 2015–2025 for global promotion of understanding and reducing landslide disaster risk. Landslides 12(4):631–640

Sassa K, Canuti P, Boborwsky P, Casagli N (2022). International consortium on landslides: from IDNDR, IGCP, UNITWIN, WCDRR 2 & 3 to Kyoto landslide commitment 2020. Progress in Landslide Research and Technology, vol 1, No 1 (in press)

Stough LM, Kang D (2015) The Sendai framework for disaster risk reduction and persons with disabilities. Int J Disaster Risk Sci 6:140–149. https://doi.org/10.1007/s13753-015-0051-8

UNDRR (2020) The human cost of disasters: an overview of the last 20 years (2000–2019). UNDRR, Geneva, p 17p

UNDRR (2019) Global assessment report on disaster risk reduction 2019. UNDRR, Geneva (ISBN_978-92-f1-004180-5), 425 p

UNESCO (n.d.) Hydrology (IHP). https://en.unesco.org/themes/water-security/hydrology. Accessed on 18 Mar 2022

UNESCO (n.d.) Disaster risk reduction. https://en.unesco.org/disaster-risk-reduction. Accessed on 18 Mar 2022

UNESCO, UNICEF (2012) Disaster risk reduction in school curricula: case studies from thirty countries. https://www.google.com.pe/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwimkrSr3ODxAhUI. Accessed on 20 Mar 2022

UNESCO (n.d.) International geoscience and geoparks programme (IGGP). https://en.unesco.org/international-geoscience-and-geoparks-programme. Accessed on 18 Mar 2022

UNESCO (n.d.) Man and the biosphere (MAB). Programme. https://en.unesco.org/mab. Accessed on 18 Mar 2022

Wahlström M (2015) New Sendai framework strengthens focus on reducing disaster risk. Int J Disaster Risk Sci 6:200–201. https://doi.org/10.1007/s13753-015-0057-2

Walton D, Arrighi J, van Aalst M, Claudet M (2021) The compound impact of extreme weather events and COVID-19. IFRC, Geneva, p 34p

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