United Nations Educational, Scientific and Cultural Organization (UNESCO)— UNESCO's Contribution to the Implementation of UNISDR's Global Initiative and ICL

Giuseppe Arduino, Rouhban Badaoui, Soichiro Yasukawa,
Alexandros Makarigakis, Irina Pavlova, Hiroaki Shirai, and Qunli Han

Abstract

UNESCO operates at the interface between natural and social sciences, education, culture and communication, playing a vital role in constructing a global culture of resilient communities. UNESCO assists countries to build their capacities in managing disaster and climate risk and with their ability to cope with disasters. The Organization provides a forum for governments to work together and it provides essential scientific and practical advice in disaster risk reduction. UNESCO's programmes in relation to the International Strategy for Disaster Reduction (ISDR) cut across all of its areas of competence (education, natural and social sciences, culture and communication). Working alone or in collaboration with both UN Agencies and other scientific entities, UNESCO has been a catalyst for international, inter-disciplinary cooperation in many aspects of disaster risk reduction and mitigation. Since the establishment of ICL in 2002, UNESCO has continuously supported ICL's activities as a part of its contributions to ISDR, namely the Hyogo and now Sendai Frameworks for action.

Keywords

UNESCO • Hyogo framework • Sendai framework

UNESCO Disaster Risk Reduction Activities

UNESCO has been strongly involved in disaster risk reduction (DRR) since the 1960s, with studies on earthquakes and oceanography. Its programme has since expanded into other categories of hazards and many areas, as it

pursues multidisciplinary actions to study natural hazards and mitigate their effect.

In the 1990–2000s, UNESCO kept supporting natural hazard-related studies and mitigation activities during the International Decade for Natural Disaster Reduction (IDNDR) proclaimed by the United Nations (Clayson 1991).

UNESCO promotes scientific exchange and collaborative efforts in order to establish effective early warning systems for different hazards such as tsunamis, landslides, volcanoes, earthquakes, floods and droughts. UNESCO helps Member States to collectively achieve effective early warning and hazard-monitoring, helps coordination between existing research centers and educates communities at risk about preparedness measures, including setting up warning and emergency response Standard Operating Procedures and community drill exercises. UNESCO promotes community-based approaches in the development of response plans and awareness campaigns, which strongly involve educational institutions and local community actors.

G. Arduino (✉) · A. Makarigakis · H. Shirai
Division of Water Sciences, Natural Sciences Sector, UNESCO, 7,
Place de Fontenoy, 75352 Paris 07 SP, France
e-mail: g.arduino@unesco.org

R. Badaoui
Natural Sciences Sector, UNESCO, 7, Place de Fontenoy, 75352
Paris 07 SP, France

S. Yasukawa · I. Pavlova · Q. Han
Division of Ecological and Earth Sciences, Natural Sciences
Sector, UNESCO, 7, Place de Fontenoy, 75352 Paris 07 SP,
France
e-mail: s.yasukawa@unesco.org

The scientific and technical work in disaster reduction is essentially promoted by four of the Organization's International and Intergovernmental Science Programmes, namely the International Geoscience and Geoparks Programme (IGGP) (UNESCO 2016d), the Man and Biosphere (MAB) Programme (UNESCO 2016e), the programmes of the Intergovernmental Oceanographic Commission (IOC) (IOC-UNESCO 2013) and the International Hydrological Programme (IHP) (UNESCO 2016c). A cross-sectoral group working on Disaster Risk Reduction serves to coordinate the organization's work on DRR (UNESCO 2016b).

Each Programme focuses on particular hazards. IGGP deals mostly, but not exclusively, with geohazards (including earthquakes, volcanic eruptions, landslides), and contributes to multihazard approaches, the IHP and MAB specialize in hydro-meteorological hazards, such as floods, drought and desertification, IOC's activities concentrate on tsunamis and storm surges. UNESCO promotes multi-hazard assessments of disaster risks to identify hotspots and aid decision-making for policy and planning, and recognizes the need to understand exposure and vulnerability as key components of risk assessments. In addition, UNESCO actively contributes to understanding and measuring natural hazard resilience, in an effort to build safer and more resilient communities.

Through these undertakings, UNESCO also contributes to the three global observing systems, the Global Ocean Observing System (GOOS) hosted in IOC (GOOS 2016), the Global Climate Observing System (GCOS) (GCOS 2016) and the Global Terrestrial Observing System (GTOS) (GTOS 2011). These are joint initiatives of UNESCO, IOC, Food and Agriculture Organization (FAO), World Meteorological Organization (WMO), United Nations Environment Programme (UNEP) and the International Council for Science (ICSU).

UNESCO advocates for accessible, safe and inclusive educational facilities by promoting school safety assessments and providing Member States with practical information on the risks their schools are exposed to (using a multi-hazard approach), as well as on priority areas for intervention and an estimation of the investments needed for upgrading school facilities. (UNESCO 2016g). Furthermore, UNESCO's Education Sector promotes a variety of materials on information, education and public awareness and the inclusion of disaster risk reduction in formal and informal education.

Through its Culture Sector, UNESCO participates in the operations undertaken to safeguard the cultural heritage, monuments and other works of art which are at risk. Finally, in the framework of the Management of Social Transformations (MOST) Programme and other major activities falling under Social and Human Sciences Sector, approaches to the social aspects and perception of risks and risk prevention and preparedness are facilitated and exchanges

encouraged between scientists, community leaders and policy makers (UNESCO 2016f).

UNESCO's Contribution to the Hyogo Framework for Action and Sendai Framework for Disaster Risk Reduction

From 18 to 22 January 2005 in Kobe (Hyogo, Japan), the World Conference on Disaster Reduction took stock of progress in disaster risk reduction accomplished since the Yokohama Conference of 1994 and made plans for the next ten years, encapsulated in the Hyogo Framework of Action 2005–2015 (UNISDR 2005a) and the Hyogo Declaration (UNISDR 2005b).

The Hyogo Declaration and Framework for Action include many of UNESCO's concerns in the field of disaster reduction: capacity-building, research on natural hazards, interdisciplinary approaches, and integration of disaster reduction into developmental plans. In cooperation with the Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UNISDR), and other members of the Inter-Agency Task force on Disaster Reduction, UNESCO committed to playing an active part in the follow-up to the World Conference on Disaster Reduction held in Kobe.

In its contribution to the implementation of the Hyogo Framework for Action, UNESCO sought to promote a better understanding of the distribution in time and space of natural hazards such as earthquakes, landslides, volcanic eruptions, floods, tsunamis and of their intensity, to help set up reliable early warning systems, to encourage rational land-use plans, to secure the adoption of suitable building design, to protect educational buildings and cultural monuments, to strengthen environmental protection for the prevention of natural disasters, to enhance preparedness and public awareness through education and training, and to foster post-disaster investigation, recovery and rehabilitation, notably for educational buildings and cultural sites (UNESCO 2016b).

UNESCO's work is based on a multidisciplinary approach. Nearly half of all DRR-related activities were focused on multihazards. UNESCO has established tsunami, flood and drought early warning systems and set up earthquake and landslide monitoring systems. It has provided technical assistance and trainings in all hazards worldwide (Fig. 1).

According to multiple country indicators, such as disaster risk and vulnerability indexes (WorldRisk Index), populations in Asia and Pacific and Latin America and the Caribbean regions are the most exposed to natural hazards. Due to the high number of disaster occurrences and their severe impact in these regions, much of UNESCO's risk reduction efforts were carried out in Asia and Latin America.

Almost half of the activities implemented during the 2005–2015 Hyogo Framework for Action included a raising

Fig. 1 Distribution of DRR projects by hazards with their budgets for the 2005–2015 period, based on UNESCO reporting system

awareness component. Networking was the focus of at least a quarter of UNESCO's work, whereas research, technical support and education activities were presented in more than 20% of the projects in DRR. Supporting the establishment of a DRR-related policies component was included in one out of 6 activities implemented, while technical training was provided in 15% of DRR-related projects worldwide.

The main beneficiary of UNESCO's projects was the general public, as they were involved in more than 90% of DRR projects. Policy-makers were the primary beneficiaries of at least 80% of the activities implemented. The scientific community was integrated in nearly half of the activities, while 35% of all DRR projects included collaboration with international, regional, and local NGOs. UNESCO cooperated with other UN agencies in one out of three projects implemented. The private sector was involved in less than 10% of DRR projects.

At the 3rd World Conference on Disaster Risk Reduction (WCDRR), which was convened by the UN ISDR and hosted by Japan in Sendai from 14 to 18 March 2015, UNESCO committed to operating in line with the "Sendai Framework for Disaster Risk Reduction 2015–2030" (UN 2015a) and in accordance with its four Priorities for Action:

- 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.

As outcomes of numerous WCDRR working sessions in which UNESCO was actively participating, the Organization committed to a number of initiatives. UNESCO supports the establishment of the international partnership of Science and Technology to support the implementation of the Sendai

Framework for Disaster Risk Reduction 2015–2030 by mobilising relevant institutions, networks and initiatives. UNESCO, on behalf of the Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector, committed to providing tools and technical support to interested Governments for school safety implementation according to the three pillars of the Worldwide Initiative for Safe Schools. Among various actions on Education and Knowledge in Building a Culture of Resilience, UNESCO will work further to strengthen the link between Disaster Risk Reduction Education with Education for Sustainable Development and Climate Change Education. Regarding the Integrated Water Resource Management, UNESCO committed to strengthening education and capacity building in order to help Member States better cope with the hydrological extremes of floods and droughts. UNESCO agreed to highlight the need to further enhance our understanding of climate-related mega disasters, their underlying factors and impact on livelihoods, and to identify ways to adapt and respond to these disasters in the future. UNESCO actively participated in the working session on Resilient Cultural Heritage, which provided a vision for the protection and safeguarding of cultural heritage in disasters and conflicts and promoted its recognition as an important element of community resilience and local development. UNESCO is among other UN agencies which continue and enhance the collaborative initiative between member states and UN agencies to develop a strategy for effective measures for building resilience (UN 2015b).

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 UNESCO project "IGCP-425 Landslide hazard assessment and mitigation for cultural heritage sites and

other locations of high societal value". Over the past fifteen years since its establishment, UNESCO has continuously supported ICL's activities as a part of the Organization's strategic contribution to ISDR, namely to the Hyogo and now Sendai frameworks for action.

The Kyoto Declaration on "Establishment of an International Consortium on Landslides (ICL)" was signed on 21 January 2002. The First Session of the Board of Representatives (BOR) of ICL was organized 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 the establishment of ICL in 2002, UNESCO has continuously supported ICL/IPL activities (Sassa et al. 2005).

The UNITWIN (University Twinning and Networking) Cooperation Programme on Landslide Risk Mitigation for Society and the Environment was established by ICL in cooperation with UNESCO and Kyoto University in March 2003. The programme was extended to the UNESCO/KU/ICL Landslide and Water-related Disaster Risk Management for Society and the Environment Cooperation Programme to include water-related disaster and also disaster risk management in 2010 (ICL 2015).

In 2005, a Letter of Intent to promote further joint global activities on disaster reduction and risk prevention was signed by heads of seven global stakeholders, namely UNESCO, WMO, FAO, UNISDR, UNU, ICSU, and WFEO. Based on this Letter of Intent, ICL, UNESCO, WMO, FAO, UNISDR, UNEP, UNU, and Kyoto University jointly organized the Round Table Discussion on 18–20 January 2006 in Tokyo, Japan. The 2006 Tokyo Action Plan, adopted as a result of the Round Table Discussion, aimed at promoting further joint global activities in disaster risk reduction and risk prevention through "Strengthening research and learning on landslides and related earth system disasters for global risk preparedness". This Action Plan has developed IPL into a new global International Programme on Landslides.

Further cooperation between UNESCO and ICL on the implementation of the 2006 Tokyo Action Plan on Landslides was formalized in August 2006 by a Memorandum of Understanding. Furthermore, ICL was approved to be a NGO having operational relations with UNESCO in April 2007. It was reclassified as an Organization having a consultative status and partnership with UNESCO in March 2012.

UNESCO actively participated in, and supported the organization of, the First (Tokyo in 2008), Second (Rome in 2011) and Third (Beijing in 2014) World Landslide Forums. Experts, scholars and officials from across the world attended Forums.

The initiative of identifying World Centres of Excellence (WCoE) on Landslide Risk Reduction was introduced in the 2006 Tokyo Action Plan by the IPL Global Promotion Committee. WCoEs are identified at the World Landslide

Forum organized every 3 years within eligible organizations, such as universities, institutions, NGOs, government ministries and local governments, contributing to "Risk Reduction for Landslides and Related Earth System Disasters" (ICL 2012). Fifteen World Centres of Excellence (WCoEs) for 2014–2017 were identified at the Third World Landslide Forum in June 2014 at Beijing, China. Certificates of WCoEs were awarded from Ms. Irina Bokova, the Director-General of UNESCO to each leader of WCoEs in Beijing (Fig. 2) (Sassa 2015a).

UNESCO supports the publication of *Landslides: Journal of the International Consortium on Landslides*. The Journal is the core project of the IPL, managed by the IPL Global Promotion Committee (ICL 2012). UNESCO contributes to the Editorial and Advisory Boards. Through its various communication networks, UNESCO ensures wide dissemination of this journal. UNESCO circulates journal issues via IHP national committees, in particular in the Asia Pacific regions.

Among other activities, UNESCO is involved in the evaluation of the IPL Awards for Success. This award is given at each World Landslide Forum for up to three successful projects implemented within IPL, based on an evaluation of the previous three years' activities. UNESCO has chaired the evaluation committee of the IPL Awards for Success since 2011 (ICL 2012).

Way Forward with ICL

During the Third UN World Conference on Disaster Risk Reduction (WCDRR) in March 2015, ICL took the initiative of organizing, 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 this Working 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 organizations, including UNESCO (Fig. 3) (Sassa 2015b).

These Partnerships, a sound global platform, will be mobilized in the coming decade to pursue prevention, and to provide practical solutions, education, communication, and public outreach to reduce landslide disaster risk. Partners have agreed on a number of initial fields of cooperation in research and capacity building, coupled with social and financial investment. These common interests will focus on new initiatives to study research frontiers in understanding landslide disaster risk, on development of people-centered early warning technologies for landslides, hazard and vulnerability mapping, and international teaching tools, as well as open communication of these results with society.

UNESCO is committed to the promotion and implementation of the "Sendai Partnerships 2015–2025 for Global Promotion of Understanding and Reducing Landslide

Fig. 2 (Top) A certificate of the World Centre of Excellence on Landslide Risk Reduction (WCoE) 2014–2017 was conferred by Director-General of UNESCO, Irina Bokova on Dwikirta Karnawati, Gadjah Mada University, Indonesia, leader of one of 15 identified WCoEs for 2014–2017. (Bottom) An IPL Award for Success was given to the IPL project leader (Ogbonnaya Igwe) from the Department of Geology, University of Nigeria. S. Diop received the US\$3000 award from Director-General of UNESCO on behalf of O. Igwe (Sassa 2015a)

Fig. 3 The signers from the first 16 signatory organizations with ICL officers after the signing of the ISDR-ICL Sendai Partnerships 2015–2025 document (Sassa 2015b)

Disaster Risk". In this context and according to its mandate in DRR, UNESCO will continue to support the development of global, regional and national multi-hazard early warning systems to natural hazards, including landslides; improve the scientific basis to develop technologies and tools to cope with landslides as part of multi-risk identification and management; strengthen capacity for floods and landslide monitoring and forecasting; enhance the capacity of schools and local communities to prepare for and respond to environmental and other threats and disasters; provide policy support and technical assistance for capacity enforcement in landslide disaster risk reduction; enhance research, partnerships and international scientific cooperation on landslide disaster risk reduction; and collaborate with international partners and cross sectors, UNESCO field Offices, UNESCO Category 2 Centres and UNESCO Chairs on the topic of landslide disaster risk reduction.

An action plan of the Sendai Partnerships will be discussed during the 16th Board of Representatives of ICL and 12th IPL Global Promotion Committee, which will be held at the UNESCO Headquarters in Paris on 15–18 November 2016. The action plan would be adopted at the forth World Landslide Forum to be held in 2017 in Slovenia with continuous support of UNESCO.

References

- Clayson A (1991) Standing up to natural disasters. UNESCO contributions to the International Decade for Natural Disaster Reduction 1990–2000. UNESCO, 51 pp
- GCOS (2016) GCOS-Global Climate Observing System. Available at: <http://www.wmo.int/pages/prog/gcos/>. Accessed 3 Aug 2016
- GOOS (2016) The Global Ocean Observing System. Available at: <http://www.ioc-goos.org/>. Accessed 3 Aug 2016
- GTOS (2011) GTOS-Global Terrestrial Observing System. Available at: <http://www.fao.org/gtos/>. Accessed 3 Aug 2016
- ICL (2012) ICL Leaflet 2012. Available at: <http://icl.iplhq.org/category/icl/leaflet-and-publications/>. Accessed 3 Aug 2016
- ICL (2015) UNITWIN Programme. Available at: <http://icl.iplhq.org/category/icl/unitwin-programme-icl/>. Accessed 3 Aug 2016
- IOC-UNESCO (2013) Intergovernmental Oceanographic Commission. Available at: <http://www.ioc-unesco.org/>. Accessed 8 Aug 2016
- Sassa K (2015a) The Third World Landslide Forum, Beijing 2014. Landslides 12(1):177–192
- Sassa K (2015b) ISDR-ICL Sendai Partnership 2015–2025 for global promotion of understanding and reducing landslide disaster risk. Landslides 12(4):631–640
- Sassa K, Fukuoka H, Wang F, Wang G (eds) (2005) Landslides—risk analysis and sustainable disaster management. In: Proceedings of the 1st General Assembly of the International Consortium on Landslides. Springer, 385 pp
- UN (2015a) Sendai framework for disaster risk reduction 2015–2030. Available at: <http://www.unisdr.org/we/inform/publications/43291>. Accessed 8 Aug 2016
- UN (2015b) Proceedings of the 3rd UN World conference on Disaster Risk Reduction. Available at: <http://www.unisdr.org/we/inform/publications/45069>. Accessed 8 Aug 2016
- UNESCO (2016a) Contributing to the implementation of the hyogo framework for action 2005–2015. Available at: <http://www.unesco.org/new/en/natural-sciences/priority-areas/sids/disaster-preparedness/>. Accessed 8 Aug 2016
- UNESCO (2016b) Disaster risk reduction. Available at: <http://www.unesco.org/new/en/natural-sciences/special-themes/disaster-risk-reduction/>. Accessed 8 Aug 2016
- UNESCO (2016c) Hydrology (IHP). Available at: <http://en.unesco.org/themes/water-security/hydrology>. Accessed 8 Aug 2016
- UNESCO (2016d) International Geoscience and Geoparks Programme (IGGP). Available at: <http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/international-geoscience-and-geoparks-programme/>. Accessed 8 Aug 2016
- UNESCO (2016e) Man and the Biosphere Programme. Available at: <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/>. Accessed 8 Aug 2016
- UNESCO (2016f) Management of Social Transformations (MOST) Programme. Available at: <http://www.unesco.org/new/en/social-and-human-sciences/themes/most-programme/>. Accessed 8 Aug 2016
- UNESCO (2016g) School safety. Available at: <http://www.unesco.org/new/en/natural-sciences/special-themes/disaster-risk-reduction/school-safety/>. Accessed 8 Aug 2016
- UNISDR (2005a) Hyogo framework for action 2005–2015. Building the resilience of nations and communities to disasters. Available at: <http://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf>. Accessed 8 Aug 2016
- UNISDR (2005b) Hyogo declaration. Available at: <http://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-declaration-english.pdf>. Accessed 8 Aug 2016

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.