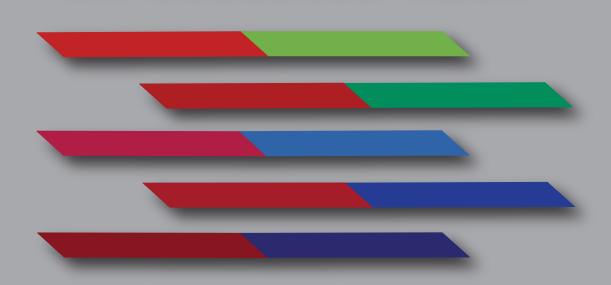
Integrated Research on Disaster Risk



STRATEGIC PLAN 2013 - 2017



About

IRDR (Integrated Research on Disaster Risk) is a decade-long research programme co-sponsored by the International Council for Science (ICSU), the International Social Science Council (ISSC), and the United Nations International Strategy for Disaster Reduction (UNISDR). It is a global, multi-disciplinary approach to dealing with the challenges brought by natural disasters, mitigating their impacts, and improving related policy-making mechanisms.

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BACKGROUND

Global Impacts of Disasters

Over recent decades, our knowledge and understanding of natural hazards has grown dramatically. Far more is known today about the distribution of natural hazards and the location of high-exposure areas. Scientists can more accurately characterise the possible magnitude of hazard events and better estimate the probability of their occurrence at specific magnitudes. Forecasting capacity has also dramatically improved, especially for weather-related events. Far more is now known about the social dimensions of disasters, for instance, human exposure and vulnerability (and lack of resistance and resilience) to natural hazards and places where poverty and multiple stresses shape the character and distribution of losses.

So why is it that, despite this growth in knowledge, losses associated with environmental hazards have also risen at a seemingly exponential rate? The frequency of recorded disasters has been rising rapidly: 100 per decade during the period 1900-1940; 650 per decade in the 1960s; 2000 per decade in the 1980s (ICSU 2008); and reaching almost 4800 per decade in the 1990s to more than 7,200 in the 2000s (IFRC 2000, 2010). Hundreds of thousands of people are killed and millions injured, affected or displaced each year because of disasters, and the amount of property damage has been doubling about every seven years over the past 40 years (ICSU 2008, pg. 9), with dramatic increases seen in the 2000s. For instance, Japan's 2011 catastrophic earthquake, tsunami and nuclear event resulted in US\$210 billion in property losses; in 2005 Hurricane Katrina's impact on the United States resulted in US\$125 billion in losses; the 2008 Sichuan earthquake in China resulted in an overall US\$85 billion in losses; while Hurricane Sandy's effects on both the Caribbean and the United States in 2012 resulted in US\$50 billion in overall losses (Munich Re 2012).

The situation is particularly dramatic with regards to weather-related events, such as hurricanes, cyclones and other major storms, floods, landslides, wildfires and drought. In the 1990s, about three-quarters of all disasters were triggered by weather-related events. While death rates and numbers have dropped due to more extended and effective early-warning systems and preparedness plans, material and livelihood losses, as well as numbers of affected persons, have grown considerably. Since 1997, there has been a several-fold increase in weather-related economic losses (ICSU 2008, pg. 9).

Integrated Research on Disaster Risk (IRDR): addressing the challenge of natural and human-induced environmental hazards

The International Council for Science (ICSU), in both its Priority Area Assessment on Environment and its Relation to Sustainable Development (2003) and Foresight Analysis (2004), identified natural and human-induced hazards as an important emerging field for research and a priority area for the Council.

In light of the above, the ICSU Executive Board appointed a Scoping Group to consider the establishment of a research programme on natural and human-induced environmental hazards. The Scoping Group reported to the ICSU 28th General Assembly that research was needed on how to translate research findings about natural hazards and human behaviour into policies that are effective in minimising the human and economic costs of hazards. The Group's recommendation, endorsed by the ICSU General Assembly, called for the development of a new programme that would be based on ongoing efforts in the geo- and biological sciences, and that also expands beyond these fields.

A multi-disciplinary Planning Group was convened and, after two years of consultations, its findings were presented at the ISCU's 29th General Assembly in October 2008. The ICSU membership unanimously decided that a new, major, interdisciplinary programme, entitled Integrated Research on Disaster Risk (IRDR), be established and that a Scientific Committee (SC) be set up for its governance. In November 2008 and May 2009 respectively, both the International Social Science Council (ISSC) and the United Nations International Strategy for Disaster Reduction (UNISDR) agreed to join the ICSU in co-sponsoring the IRDR programme.

IRDR is a decade-long international and interdisciplinary research programme created to address the major challenges of natural and human-induced environmental hazards. The complexity of the task is such that it requires the full integration of research expertise from the natural, socio-economic, health and engineering sciences, as well as policy-making coupled with an understanding of the role of communications, and public and political responses to reduce the risk.

Although the approaches in the sciences vary, the IRDR programme approaches the issues of natural and human-induced hazards and disasters from several perspectives: from the hazards to the disasters, and from the human exposures and vulnerabilities back to the hazards. This coordinated and

multi-dimensional approach takes the IRDR programme beyond approaches that have traditionally been undertaken.

Part of the IRDR's value is in filling the gaps and bringing together some of the as yet unconnected initiatives. The coupling of the natural sciences' examination of hazards with the socio-economic analysis of vulnerability and mechanisms for engaging policy decision-making processes is a major value added.

The main purposes of the programme are to:

- Characterise hazards, vulnerability, and risk by identifying hazards and vulnerability leading to risks, and forecasting, assessing, and dynamic modeling
- Understanding decision-making in complex and changing risk contexts by identifying decision-making systems, their contexts, and their interactions, and improving the quality of decision-making practice.
- Reducing risk and curbing losses through knowledge-based actions through vulnerability assessments, and the analysis of effective approaches to risk reduction.

IRDR addresses technological events, epidemics and other health-related events only where they are consequences of natural events.

Mission

The IRDR mission is to develop trans-disciplinary, multi-sectorial alliances for in-depth, practical disaster risk reduction research studies, and the implementation of effective evidence-based disaster risk policies and practices.

Vision

Guided by the ICSU's (2008, pg. 18) Science Plan for Integrated Research on Disaster Risk, the IRDR programme "envisages an integrated approach to natural and human-induced environmental hazards through a combination of natural, socio-economic, health and engineering sciences, including socio-economic analysis, understanding the role of communications, and public and political response to reduce the risk."

Legacy

The legacy of the IRDR programme "would be an enhanced capacity around the world to address hazards and make informed decisions on actions to reduce their impacts. This would include a shift in focus from response–recovery towards prevention–mitigation strategies, and the building of resilience and reduction of risk, and learning from experience and avoidance of past mistakes" (ICSU 2008, pg. 18). Through this enhanced capacity and a shift in strategic approaches, in future, societies would become more resilient thus safer, benefitting from a reduction in related loss of life, with fewer people adversely impacted, and wiser investments and choices made by civil society, governments and businesses when natural events occur.

An important part of the legacy would be the repository of coordinated and integrated global data and information sets across hazards and disciplines that would be of continuing availability and value to communities at all levels, from local to global.

STRATEGIC GOALS AND ACTIVITIES

Strategic Goals and Activities of the IRDR Programme, 2013-2017

The vision of the IRDR programme is being pursued through the principal goals and strategic activities proposed in the IRDR Science Plan (ICSU 2008) and in the IRDR Strategic Plan (2013-2017), as detailed in the table below. The successful implementation of these actions will depend on the support of the implementation of this plan and active collaboration, cooperation and partnership with organizations that have similar existing research activities, and policy- and decision-making processes.

Attainment of these goals will lead to a better understanding of hazards, vulnerability and risk; the enhanced capacity to model and project risk into the future; greater understanding of the decision-making choices that lead to risk and how they may be influenced; and how this knowledge can effectively lead to disaster risk reduction.

The overall global benefits of the IRDR programme are dependent on the recognition of the value of risk reduction activities, which are likely to come through evidence-based case studies and successful demonstration projects; assessments, data management and monitoring of hazards, risks and disasters; and capacity building, including mapping capacity for disaster risk reduction and building self-sustaining capacity at various levels for different hazards.

Goals

- Promote integrated research, advocacy and awareness-raising.
 - This goal is concerned with developing and promoting integration and collaboration within the disaster risk reduction community to avoid unnecessary duplication and to maximise research outcomes.
- 1.1. Promote original knowledge generation and transfer through integrated approaches in research, education and policy-making in the academic sector and in collaboration with public and private sectors and civil society organisations.
- 1.2. Implement the Assessment of Integrated Research on Disaster Risk (AIRDR) project to provide a baseline of the current state of the science in integrated research on disaster risk to measure effectiveness of multiple programmes, use it to identify and support a

Goals

long-term science agenda for the research community and funding entities, and to provide scientific evidentiary basis in support of policy and practice.

- 1.3. Advance capacity building for young scientists and future endeavours to develop international science leadership in the field of disaster risk reduction.
- 1.4. Ensure disaster risk reduction research programmes and policies are integrated across disciplines, and contribute to enhancing policy-making and capacity building for the effective reduction of disaster risk.

2. Characterisation of hazards, vulnerability, and risk.

This goal looks at identifying hazards and vulnerability leading to risks from natural hazards on global, regional and local scales; the development of the capability to forecast hazard events and assess risks; and dynamic modeling of risk. It also addresses the gaps in knowledge, methodologies and types of information that are preventing the effective application of science to averting disasters and reducing risk.

- 2.1 Develop and implement the Disaster Loss Data (DATA) project to identify what data and quality are needed to improve integrated disaster risk management by bringing together loss data stakeholders.
- 2.2 Integrate knowledge about the natural processes, incremental decisions, historically derived national and international structural and institutional forces, and social and cultural practices, beliefs and perceptions that shape the resilience and vulnerability of communities, in order to bring about a paradigm and cultural shift in the ways disasters and their underlying root causes are understood and risks managed.
- 2.3 Develop an understanding of how emerging communication and other technologies and the globalisation of the world economy influence resilience, vulnerability, risks and hazards.

Goals

- 3. Understanding decision-making in complex and changing risk contexts.
 - This goal focuses on understanding effective decision-making in the context of risk management what it is and how it can be improved. It looks at identifying relevant decision-making systems and their interactions; understanding decision-making in the context of environmental hazards; and improving the quality of decision-making practices.
- 3.1 Develop the Risk Interpretation and Action (RIA) project to promote the study of how and why people's interpretations of the risks of various natural hazards relate to their actual choices and behaviour.
- 3.2 Understand decision-making processes and how these shape resilience and vulnerability and contribute to hazards becoming disasters and/or mitigate their effects.
- 3.3 Clarify the key concepts and theoretical assumptions concerning the processes underlying interpretation of risk and decision-making under uncertainty.
- 3.4 Promote better integration of social and behavioural sciences in disaster risk research, especially in regard to decision-making, and make such knowledge more accessible to a range of disciplines and to practitioners in the field of natural hazards.
- 4. Reducing risk and curbing losses through knowledge-based actions.

 This goal brings together the outcomes of Goals 2 and 3. It will be accomplished through the implementation of vulnerability assessments and effective approaches to risk reduction.
- 4.1 Develop and implement the Forensic Disaster Investigations (FORIN) project to promote methodologies and case studies (10) globally to identify and address the root causes of disasters.
- 4.2 Identify and work with international organisations to develop and implement global standard indicators and other measures of disaster risk and the effectiveness of disaster risk reduction at national and regional levels.

Goals

5. Networking and network building.

This goal focuses on the development, strengthening of and collaboration within the IRDR network at global, regional and national levels.

- 5.1 Ensure that the implementation of the IRDR programme is well integrated with co-sponsors' main programmes (ICSU, ISSC, UNISDR), to both benefit from their contribution and leverage their support to advance IRDR objectives, including, but not limited to, UNISDR's Global Assessment Report on Disaster Risk Reduction, ICSU's Future Earth and the ISSC's World Social Sciences Forum.
- 5.2 Strengthen and establish at least three IRDR Regional Committees (RCs) and National Committees (NCs) per year.
- 5.3 Strengthen and establish IRDR International Centres of Excellence (ICoE).
- 5.4 Support SC members and their bi-annual meetings, including the recruitment of new SC members.
- 5.5 Host and organise an IRDR conference every two years.

6. Research Support

This goal focuses on enhancing the support for research and the utilisation of findings.

- 6.1 Develop IRDR researchers and research institutions database to facilitate the promotion of interdisciplinary and policy-oriented science.
- 6.2 Facilitate the coordination of interdisciplinary science through the development and maintenance of an events calendar for IRDR-related and similar events.
- 6.3 To leverage political commitment from existing international mechanisms to ensure that integrated disaster risk reduction research programmes have access to priority funding from development as well as humanitarian, public and private funding sources.
- 6.4 Develop and strengthen the IRDR IPO and staff capacity and process, including enhancing IRDR communications and networking to facilitate information sharing and closer collaboration among IRDR partners.

IMPLEMENTATION

Implementation of the IRDR Programme

To support the above goals and objectives the IRDR will conduct this programme through the following implementation mechanisms.

Research Working Groups

Ad hoc Working Groups that focus on different aspects of disaster risk reduction will assist the overall IRDR programme meet the above research, advocacy and networking objectives. The Working Groups bring together diverse disciplines and formulate new methods to address the shortcomings of current studies on natural hazards.

Assessment of Integrated Research on Disaster Risk (AIRDR) Working Group

Assessment of Integrated Research on Disaster Risk (AIRDR) undertakes the first systematic and critical global assessment of research on disaster risk. The goals of AIRDR are to provide a baseline of the current state of the science in integrated research on disaster risk to measure the effectiveness of multiple programmes, use it to identify and support a longer-term science agenda for the research community and funding entities, and to provide scientific evidentiary basis in support of policy and practice.

Disaster Loss Data (DATA) Working Group

The Disaster Loss Data (DATA) Working Group is meant to study issues related to the collection, storage, and dissemination of disaster loss data. The DATA Working Group has identified needs for:

- Education of users regarding data biases and issues of social loss data;
- Comparable and accessible human disaster loss data to support research and policy;
- Identification of existing loss database projects (from national to regional to global);
- Increased downscaling of loss data to sub-national geographies for policy makers; and
- Definition of a loss and creation of a methodology for assessing loss.

To meet these needs, DATA intends to establish an overall framework for disaster loss data for all providers, establish nodes and networks for databases, conduct sensitivity testing among existing databases, and create mechanisms for archiving loss data.

Forensic Investigations of Disasters (FORIN) Working Group

In its initial phase, the Forensic Investigations of Disasters (FORIN) Working Group developed a framework to guide investigations across regions and hazards. This framework is intended to act as a standardised but flexible template for conducting such investigations.

This approach for studying natural hazards aims to uncover the root causes of the disasters through in-depth investigations that go beyond the typical reports and case studies conducted after disasters. Thoroughly analyzing cases, including both success stories and failures, will help build an understanding of how natural hazards do—or do not—become disasters. FORIN has identified a diverse range of objectives:

- Policy: conduct analyses with inputs from multiple disciplines, stakeholders, and policy makers in order to guide policy and encourage coherence across all key disciplines.
- Management: focus attention on the link between research findings and improved policy formulation and application in practice, and develop and maintain a bank of high-quality case studies publicly available through the IRDR website, http://www.irdrinternational.org/.
- Scientific research: advance methodological diversity and implement science-based results, and build a strong interdisciplinary capacity of young researchers.
- Development: substantiate that generic causes have local manifestations, promote a 'learning culture' among all stakeholders, and foster wider dialogue between analytical researchers and implementing practitioners, building a common discourse in the process.
- Disaster risk reduction: promote sustainable risk management and risk reduction through science-based research, relate the research to the Hyogo Framework of Action (HFA), provide wider emphasis on reducing human consequences, and develop case studies that illustrate 'risk-drivers.'

Risk Interpretation and Action (RIA) Working Group

The focus of the Risk Interpretation and Action (RIA) Working Group is on the question of how people—both decision-makers and ordinary citizens—make decisions, individually and collectively, in the face of risk. There are several broad fields of work that are relevant to this question, but many of these have progressed somewhat independently of each other, typically within the framework of

single academic disciplines. This has led to a number of discontinuities in how the issue of risk reduction is conceptualized, as well as gaps in the areas where research activity (and funding) is presently concentrated. The result is a number of unanswered questions that involve diverse fields:

- How can risk reduction policies and practices be generalised across hazards or to combinations of hazards, as well as across cultures?
- How much emphasis should be placed on risk forecasting versus communication?
- Why and when do local citizens' evaluations of risk diverge from scientific forecasts?
- How do people's decisions, perhaps due to social norms and perceived or actual constraints on their freedom of choice, diverge from their evaluations of such risks?
- Within policy and planning, what priority is given to protection and restoration of existing infra structure, rather than redesign for greater resilience or prevention?

To answer these questions fully, the RIA Working Group hopes to advance interdisciplinary research on human decision-making and how it relates to hazards, and encourage organisations to support this area of disaster risk research.

Societal and Economic Research and Applications (SERA) Working Group

In partnership with the World Weather Research Programme (WWRP) of the World Meteorological Organisation (WMO), the IRDR established a working group on Societal and Economic Research and Applications (SERA). SERA is co-chaired by representatives from the IRDR and WWRP, with additional membership from each programme and suitable expertise.

The primary purpose of the SERA working group is to advance the science of the social and economic applications of weather-related information and services. This will be accomplished in part through the development, review and promotion of societal and economic-related demonstration projects focused on high-impact weather and information. Close collaboration and joint efforts are to be developed with the other IRDR working groups.

IRDR National Committees (NCs) and Regional Committees (RCs)

IRDR National Committees (NCs) and Regional Committees (RCs) support and supplement the IRDR's research initiatives, and help to establish or further develop crucial links between national disaster risk reduction programmes and activities within the IRDR international framework. First, NCs and RCs are encouraged as mechanisms to mainstream integrated research into disaster risk reduction efforts at national, regional and institutionalised bases to enhance the coordination and cooperation among multi-stakeholders for the sustainability of integrated research, and to improve the capacity of countries and regions in the field of disaster risk reduction.

Second, these Committees serve as focal points to promote IRDR-related research initiatives of host countries, and to enhance the links between national and international disaster risk research programmes and activities. In particular, close collaboration and integration with national DRR platforms and national climate change adaptation committees, where appropriate, should be encouraged.

Third, the Committees will partner with the IRDR Science Committee (SC), the International Programme Office (IPO) and IRDR partners in pursuit of IRDR objectives, the identification of research priority, the development of the research plan, and the implementation of programmes and other activities to achieve IRDR goals.

In support of the IRDR programme, the NCs and RCs will undertake the following activities:

- Foster and support participation in IRDR on the part of institutions and individual scientists.
- Serve as the national or regional focal points for IRDR.
- Foster networking and collaboration among domestic, regional and international disaster risk reduction science and technology activities.
- Improve scientific knowledge and enhance the integration of science in disaster risk reduction planning, policies and programmes domestically, regionally and internationally.
- Support efforts to update and report on national and regional disaster risk reduction activities aligned with the HFA's strategic priorities, with emphasis on the science and technology activi ties and engage in the discussions for the post-2015 regime on disaster risk reduction, and contribute to the national or regional discussions for other relevant global negotiations (climate change adaptation, earth systems, etc.).

- Provide scientific advice to policy-makers, taking into consideration national and regional disaster risk reduction initiatives.
- Assist in fundraising for IRDR activities and projects.

IRDR International Centres of Excellence (ICoE)

IRDR International Centres of Excellence (ICoE) are established to provide regional and research foci for IRDR. Each ICoE research programme embodies an integrated approach to disaster risk reduction that directly contributes to the IRDR Science Plan (ICSU 2008) and its objectives as well as this IRDR Strategic Plan (2013 – 2017).

Each ICoE will collaborate to provide global contributions towards achieving the IRDR legacy and, in particular, enable regional scientific activities through geographically-focused contributions based on more localised inputs and by being visible centres of research to motivate participation in the IRDR programme.

In order to comply with the objectives of the IRDR Science Plan (ICSU 2008) and its own objectives, ICoEs are broadly mandated to:

- Conduct integrated research on disaster risk at local, regional, and global scales, meeting the objectives of each Working Group.
- Provide specifically-designed technical cooperation on disaster risk and reduction management for policy and decision-making.
- Provide technical support for formulating regional, national or local disaster risk reduction programmes based on integrated research.
- Promote IRDR research by conducting regular trainings, workshops or other activities for disas ter managers, decision-makers, and junior researchers.
- Facilitate and participate in IRDR events.
- Contribute to disaster risk researchers' network or platform.

GUIDANCE AND OVERSIGHT

In support of the IRDR Strategic Plan (2013-2017), the research programme is guided by the following mechanisms:

Co-Sponsors

The IRDR is jointly sponsored by the International Council for Science (ICSU), the International Social Science Council (ISSC) and the United Nations International Strategy for Disaster Reduction (UNISDR), hereafter referred to as the Co-Sponsors. The Co-Sponsors establish the governance arrangements for the IRDR, appoints the Chair and Members of the IRDR Scientific Committee (SC) and the Executive Director of the International Programme Office (IPO), receive and approve reports from these officers, and assist in promoting the programme and mobilising resources for it.

Scientific Committee (SC)

The Scientific Committee (SC) is the IRDR's principal governing body set up by and on behalf of the Co-Sponsors. Its responsibilities are to define, develop and prioritise plans for IRDR, to guide its programming, budgeting and implementation, to establish a mechanism for oversight of programme activities, and to disseminate and publicise its results. The SC approves plans for the inclusion of projects and initiatives under the IRDR umbrella, and assures liaison and facilitates cooperation with relevant national, regional and international programmes, organizations and institutions actively involved in natural hazards and disaster risk management. The SC also adopts and applies guidelines for the establishment of IRDR-designated NCs, RCs and ICoEs, and strives to mobilise funds for implementation of the overall IRDR programme and activities related to the Committee and its Working Groups.

International Programme Office (IPO)

The execution of IRDR programme promotion, coordination and related functions is undertaken by the IRDR International Programme Office (IPO). The Secretariat is composed of an Executive Director and a number of supporting scientific and administrative personnel, all of whom are formally employed by the IPO's host institution.

The IPO is located in Beijing, China, hosted by the Institute of Remote Sensing and Digital Earth (RADI), Chinese Academy of Sciences (CAS). Operational funds are provided by the China Association of Science and Technology (CAST).

ANNEX 1

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List of Acronyms

AIRDR Assessment of Integrated Research on Disaster Risk Working Group

CAS Chinese Academy of Science

CAST China Association of Science and Technology

DATA Disaster Loss Data Working Group

FORIN Forensic Investigations of Disasters Working Group

HFA Hyogo Framework for Action *
ICoE International Centre of Excellence
ICSU International Council for Science
IPO International Programme Office

IRDR Integrated Research on Disaster Risk
ISSC International Social Science Council

NC National Committee

RADI Institute of Remote Sensing and Digital Earth of CAS

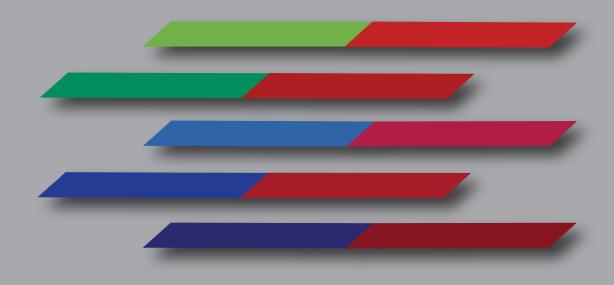
RC Regional Committee

RIA Risk Interpretation and Action Working Group

SERA Societal and Economic Research and Applications Working Group UNISDR United Nations International Strategy for Disaster Reduction

WMO World Meteorological Organisation
WWRP World Weather Research Programme

^{*} Full title: Hyogo Framework for Action (2005-2015): Building the Resilience of Nations and Communities to Disasters





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