NEW!

INTEGRATED RESEARCH ON DISASTER RISK (ISDR)

Over recent decades, our knowledge and understanding of natural hazards has grown dramatically. Today, far more is known about the distribution of natural hazards and the location of high-exposure areas. Scientists can more accurately characterize the possible magnitude of hazard events and better estimate the probability of their occurrence at specific magnitudes; and forecasting capacity has also improved dramatically, especially for weather-related events. Far more is now known about the social dimensions of disaster, e.g. 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 during that same period at a seemingly exponential rate? The situation is particularly dramatic as regards weather-related events where, 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.

The response

The response of ICSU, ISSC and ISDR to this conundrum has been to create a major new international programme – Integrated Research on Disaster Risk (IRDR) – that seeks to address the challenge of natural and human-induced environmental hazards.

The complexity of the task is such that it requires nothing less than the full integration of research expertise from the natural, socio-economic, health and engineering sciences, coupled with socio-economic analysis, understanding the role of communications, and public and political response to reduce the risk. Although the approaches in the sciences vary, IRDR will not only be multi-disciplinary but also approach the issues of natural and human-induced hazards and disasters from several perspectives – from the hazards to the disasters and also from the human exposures and vulnerabilities back to hazards. This coordinated approach takes IRDR beyond approaches that have traditionally been undertaken.

Objectives

The IRDR programme has three research objectives:

- characterization of hazards, vulnerability and risk
- understanding decision-making in complex and changing risk contexts
- reducing risk and curbing losses through knowledge-based actions

Attainment of these three research objectives through successful projects will lead to a better understanding of hazards, vulnerability and risk and an enhanced capacity to model and project risk into the future; to the understanding of the decision-making choices that lead to risk and how they may be influenced; and how this knowledge can better lead to disaster risk reduction.

Three cross-cutting themes support these objectives:

- capacity building, including mapping capacity for disaster reduction and building self-sustaining capacity at various levels for different hazards;
- development of case studies and demonstration projects; and
- assessment, data management and monitoring of hazards, risks and disasters.

IRDR will both generate new information and data and to leave a legacy of coordinated and integrated global data and information sets across hazards and disciplines, with an unprecedented

degree of access. One of the main contributions of the Programme will be to serve as a framework for the development of a range of modern information systems devoted to disaster risk reduction.

The hazards covered

IRDR focuses on natural and human-induced environmental hazards, including all hazards related to hydrometeorological and geophysical trigger events, i.e., earthquakes; volcanoes; flooding; storms (hurricanes, typhoons, etc.); heat waves; droughts and fires; tsunamis; coastal erosion; landslides; aspects of climate change (for example, increases of extreme events); and space weather and impact by near-Earth objects. The effects of human activities on creating or enhancing hazards, including land-use practices, are included.

Building on, and complementing existing research

Arrangements are being sought with existing programmes so as to undertake research with shared outcomes and responsibilities. Collaborating organizations, working through a Consultative Forum, will become significant actors in IRDR.

IRDR has a strong commitment to development – development of science and development of broadly-based capacity. Its partners in this development will include the national and international development aid agencies as well as the national and international science institutions and funding councils. To build capacity truly around the world necessitates the involvement of all countries in a meaningful way.

IRDR – the first three years

The IRDR initiative intends that more penetrating studies be carried out as a first step in the decade-long programme. These studies would

During its first three years, IRDR will focus on building partnerships and undertaking scientific analysis to put in place longer-term projects towards meeting its declared scientific objectives and overall vision, and contributing to the search for fundamental explanations for the current rise in disaster losses. A series of post-disaster, multi-disciplinary 'forensic' investigations be carried out – in-depth, all-encompassing, arms-length, careful and detailed analyses that can not only draw lessons and insights from "failures" or cases where mistakes were made, but also accumulate evidence of good practices from success stories.

In parallel, a global network of long-term hazard research sites will be developed to allow for enduring (decades-long) place-based, longitudinal studies of natural hazard risk, while leading to progressive building of resiliency across that same network. The network will provide a mechanism for reaching out to communities located in the most vulnerable areas and engaging them in the science agenda, as well as providing a context for comparative analysis

The legacy

IRDR's main legacy will be an enhanced capacity around the world to address hazards and make informed decisions on actions to reduce their impacts. This will 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. Through this enhanced capacity and a shift in strategic approaches, there will be a reduction in loss of life, fewer people adversely impacted, and wiser investments and choices made by civil society, when comparable events occur.

Further information

The full text of the Science Plan of the Integrated Research on Disaster Risk can be accessed at:
www.icsu.org/Gestion/img/ICSU_DOC_DOWNLOAD/2121_DD_FILE_Hazard_report.pdf

Contact regarding IRDR

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ICSU
International Council for Science

ISDR
International Strategy for Disaster Reduction

ISSC
international social science council

IRDR
Integrated Research on Disaster Risk

addressing the challenge of natural and human-induced environmental hazards

Issues

Globalization, population growth, widespread poverty, particularly in hazardous areas, and a changing climate will cause the risk associated with natural hazards to be even greater in the future, with more people and communities at risk.

In urban regions, the complex infrastructure that makes life and economic activity possible, the concentration and centralization of economic and political functions, social segregation and complex spatial and functional interrelationships, all contribute to the vulnerability of populations to disruptions caused by hazards.

IRDR Science Plan at:

www.icsu.org/Gestion/img/ICSU DOC DOWNLOAD/2121 DD FILE Hazard report.pdf

Key question:

- Why, despite advances in the natural and social science of hazards and disasters, do losses continue to increase?

Key assessments:

- Although there are many existing or already planned activities on natural hazards, an integrated research programme on disaster risk reduction, sustained for a decade or more and integrated across the hazards, disciplines and geographical regions, is an imperative. The value-added nature of IRDR: the close coupling of the natural, socio-economic, health and engineering sciences.

- The focus on risk reduction and the understanding of risk patterns and risk-management decisions and their promotion require consideration of scales from the local through to the international level.

World Conference on Disaster Reduction, Kobe, January 2005

Hyogo Framework for Action (HFA)

Priorities for Action

1. Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.
2. Identify, assess and monitor disaster risks and enhance early warning.
3. Use knowledge, innovation and education to build a culture of safety and resilience at all levels.
4. Reduce the underlying risk factors.
5. Strengthen disaster preparedness for effective response at all levels.

Strong commitment to development

- development of science

- development of broadly-based capacity for disaster mitigation

Sponsors of IRDR

- International Council for Science
- International Social Science Council
- International Strategy for Disaster Reduction

Partners in IRDR

- national and international science institutions
  - national and international development assistance agencies and funding bodies

Research focus of IRDR

- Mitigation – actions taken before or after a hazard event to reduce impacts on people and property
- Preparedness – policies and procedures designed to facilitate an effective response to a hazard event

Scope of IRDR

- Geophysical and hydrometeorological trigger events
- Earthquakes – tsunamis – volcanoes – floods – storms (hurricanes, cyclones, typhoons) – heat waves – droughts – wild-fires – landslides – coastal erosion – climate change (increases in extreme events)
- Space weather and impact by near-Earth objects
- Effects of human activities on creating or enhancing disasters, including land-use practices

NOT technological disasters, warfare

IRDR Objective 1:

Characterization of hazards, vulnerability and risk

1.1: Identifying hazards and vulnerabilities leading to risks

1.2: Forecasting hazards and assessing risks

1.3: Dynamic modelling of risk

IRDR Objective 2:

Effective decision-making in complex and changing risk contexts

2.1: Identifying relevant decision-making systems and their interactions

2.2: Understanding decision-making in the context of environmental hazards

2.3: Improving the quality of decision-making practice

IRDR Objective 3:

Reducing risk and curbing losses through knowledge-based actions

3.1: Vulnerability assessments

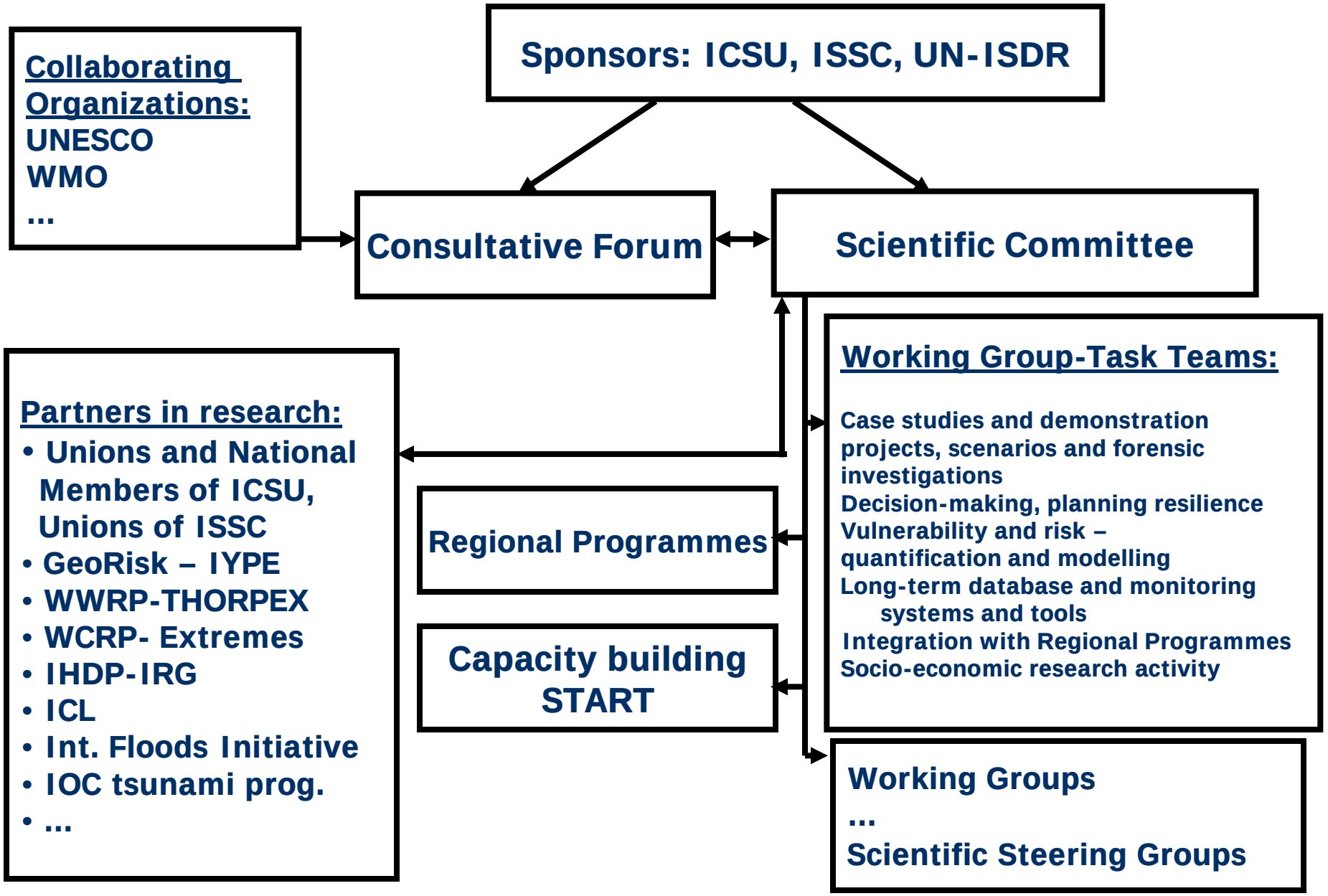
3.2: Effective approaches to risk reduction

IRDR Cross-cutting themes:

- Capacity building
- Case studies and demonstration projects
- Assessment, data management and monitoring

Mechanisms for guidance and oversight of IRDR

- Scientific Committee
- Consultative Forum


Collaborating Organizations:
UNESCO
WMO
...
Sponsors: ICSU, ISSC, UN-ISDR
Consultative Forum
Scientific Committee
Partners in research:
• Unions and National Members of ICSU, Unions of ISSC
• GeoRisk – IYPE
• WWRP-THORPEX
• WCRP- Extremes
• IHDP-IRG
• ICL
• Int. Floods Initiative
• IOC tsunami prog.
• ...
Regional Programmes
Capacity building START
Working Group-Task Teams:
Case studies and demonstration projects, scenarios and forensic investigations
Decision-making, planning resilience
Vulnerability and risk – quantification and modelling
Long-term database and monitoring systems and tools
Integration with Regional Programmes
Socio-economic research activity
Working Groups
...
Scientific Steering Groups

The value-added

- an integrated approach to research on disaster risk
- through international, multidisciplinary collaborative research

The legacy of IRDR

- An enhanced capacity around the world to address hazards and make informed decisions on actions to reduce their impacts.

- Societies to shift focus from response-recovery towards prevention-mitigation, building resilience and reducing risks, learning from experience and avoiding past mistakes.

- Coordinated and integrated global data and information sets across hazards and disciplines, with unprecedented degree of access.

Overall outcome of IRDR

- When comparable events occur in future, societies benefit from reductions in: loss of life; people adversely impacted; and property and economic loss, through wiser choices and investments made by civil society.

IRDR Science Committee

CARDONA, Omar Darío National University of Colombia, Manizales, Colombia – earthquake engineering and risk mitigation

CHAN Kin Sek, Raymond Civil Engineering and Development Department of Hong Kong, China – civil engineering, landslide mitigation

CUTTER, Susan University of South Carolina, USA – hazards & vulnerability

EISER, Richard University of Sheffield, UK – perception of risk

JOHNSTONE, David Massey University, New Zealand – earth sciences, disaster management

LANG, Michel CEMAGREF, Lyon, France – hydrology, flood risk mitigation

LAVELL, Allan FLACSO, Costa Rica – social and developmental aspects of risk and disasters

McBEAN, Gordon Institute for Catastrophic Loss Reduction, University of Western Ontario, Canada – CHAIR

MODARESSI, Hormoz BRGM, Orléans, France – geohazards, remote sensing

PATEK, Maria Vienna, Austria – avalanches, torrents

RENN, Ortwin University of Stuttgart, Germany – environmental sociology

SPARKS, Steven University of Bristol, UK – volcanology, hazard management

TAKEUCHI, Kuniyoshi ICHARM, Japan – hydrology, civil engineering

VOGEL, Coleen University of the Witswatersrand, South Africa – geography, environmental studies

WIRTZ, Angelika Geo Risks Research, Munich Re, Germany – economic data on disasters

+ ICSU, ISSC, ISDR ex officio

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Thank you for your attention