Assessment of Integrated Research on Disaster Risk (AIRDR)

(WG for Integrated Research on Disaster Risk Programme)

Introduction

The Assessment of Integrated Research on Disaster Risk (AIRDR), under the umbrella of IRDR, is a 3-year effort designed to undertake the first systematic and critical global assessment of integrated research on disaster risk (McBean 2012). We anticipate that this effort will provide a review of the state-of-the-art knowledge about disaster risk and thus serve as a science basis for the post-Hyogo Framework meeting in 2015. Our knowledge on natural hazards and their interaction with human systems is lacking in some important areas and is being challenged by the unforeseen or unknown repercussions of a rapidly changing and increasingly interdependent world—one transformed by technological change, globalization of economic systems, and political and economic instability. In such a highly interdependent world a disaster not only affects the immediate area where it occurs and its regional and national context, but also has cascading impacts that can affect other nations near and far.

How does our present understanding of hazards and disaster risk, the result of research undertaken during the past 10-20 years, help us understand past and present patterns and trends in disasters? How does the research capture substantively and methodologically the new concerns mentioned above? How does our existing scientific knowledge help us to understand disaster risk under conditions where disasters may be increasing in frequency and intensity and where global climate change may influence both the severity and frequency of extreme climate-sensitive hazards (IPCC 2012)?

While there have been major advancements in specialized knowledge on different aspects of disaster risk and disaster context, we are not seeing a concomitant decline in disaster impacts and losses. This is partly due to the silo-nature of research, research that is uni-dimensional, often disciplinary-based, not policy prescriptive, and often not incorporating stakeholders in the research process. It is also a function of the subject matter—disaster risk and disasters are multi-dimensional and multi-faceted and the scientific literature often does not reflect this complexity or the need for knowledge ranging from basic science to local or indigenous knowledge as an input for designing and enacting actionable outcomes (risk reduction). The enormity and complexity of disaster risk requires knowledge from natural sciences, social sciences, health science, law, humanities, and engineering operating in an integrative fashion, not as separate disciplines examining one aspect of the problem. Integrated research is a critical need in order to complement the often highly relevant, but partial results of disciplinary or thematically-based research.

Such a synthesis of perspectives is not easy, but is vital in producing a new understanding of disaster risk and disaster impacts and in fostering tangible and actionable results that will lead to changes in disaster risk management policy and practice.

What is Integrated Research on Disaster Risk?

For the purposes of this assessment, integrated disaster research involves two or more researchers from diverse disciplines and specialties (including professional and practitioners expertise) active in the co-production of novel concepts, theory, methods that leads to new knowledge. It includes a community of researchers spanning traditional academic boundaries (sciences, social sciences, humanities, health, engineering, law, arts, education, business), methodological approaches (quantitative-qualitative, analytical-interpretive, expressive-performance), and real-world experiences. Integrated research examines problem-focused socially-driven research questions, which cannot be adequately addressed by one or a small number of research disciplines, or without collaborative problem solving and real-world engagement of non-academics. Many refer to this as transdisciplinary research (Hadorn et al. 2008) or transdisciplinary action research (Stokols 2006). Integrated research permits a more comprehensive understanding of the construction of a particular disaster situation, context, or problem and also provides policy-relevant information for social interventions designed to reduce risk. An integrated research approach requires diverse epistemologies, theories, and methodologies, with no prior assumptions about the primacy of each in addressing the problem. The notion of integrated research defined here also entails the incorporation of different stakeholders in the co-production of knowledge, especially in the problem formulation and dissemination of research results. Where such participation is involved, we refer to this as "participatory processes of integrated research." Finally, our consideration of integrated research on disaster risk considers the ways and extent to which researchers from northern continents and backgrounds interact with those from southern reaches, promoting richness and synergies in research concepts, methods, and design.

Goals of AIRDR

The goals of AIRDR are to:

(1) provide a baseline of the current state of the science on integrated research on disaster risk to measure the effectiveness of multiple programs;
(2) identify and support a longer-term science agenda for the research community and funding entities;
(3) create a mechanism for substantiating advances in the scientific evidentiary basis for supporting policy and practice.

AIRDR Approach

There are two primary elements in the approach.

(1) Document and critically assess the existing published scientific literature on integrated disaster risk. Questions to be considered include: How has integrated research been constituted and organized? What kinds of research qualify as integrated research on disaster risk?

(2) Identification of strengths, weaknesses, gaps, and opportunities for new knowledge and investments. What is known well within the research community in terms of capacity, technology, tools, methodologies, and translation of findings to actions? What evidence is there to support such strength in understanding? What is less well-known in the research? Where do the shortcomings come from, e.g. perils studied, regional understanding, spatial or temporal coverage of topics? Where are the gaps in our empirical understanding of disaster risk where strategic investments could be made? How do we identify what is not now known through our research but needs to be known? What new opportunities are available for learning from the co-production of knowledge to further enhance integrative research? What barriers impede integrative research and how might these be overcome?

Structure of the Assessment

Organization: The IRDR Scientific Committee will provide the overall guidance for the AIRDR project. There will be a core steering committee (Susan Cutter, Co-Chair; Allan Lavell, Co-Chair; Ian Burton; and Anthony Oliver Smith). The assessment will be organized by regions, with regional writing teams and a coordinating lead author. The Working Group will consist of the core steering committee and the regional coordinating lead author(s), representing the following regions: Latin America and the Caribbean, Africa, Asia, Middle East-North Africa, North America, Europe, and Oceania. The selection of the coordinating lead authors will be based on recommendations from ICSU, UNISDR, ISSC, and the IRDR Scientific Committee. Coordinating lead authors must have some institutional base to help support the regional teams.

Author selection: There will be a broad-based call for researchers who wish to be involved in the assessment process. Nominations (including self-nominations) will be reviewed by the regional coordinating lead authors and vetted by the entire Working Group. Efforts will be made to insure a mix of younger and senior scholars, multiple disciplines and approaches, gender and ethnic balance, and openness to other perspectives.

Literature inclusion and criteria: The assessment will cover the literature published from 1993-2013. Peer-reviewed, published literature will constitute the majority of the materials used in the assessment. Grey literature that is available to wider audiences and which has undergone some type of peer or official review (such as government reports, agency reports) will be included where appropriate. The assessment also will solicit literature from the global research community through announcements (see Workplan) as part of the bibliographic database. In order to be included in the bibliographic database and analysis the paper or report:

1. must conform to our definition of integrated research;
2. be problem focused, emphasizing complexity and interaction of multiple variables of different types;
3. must be cross disciplinary and span scientific academic boundaries either with

multiple authors and/or the use of source materials from a wide range of disciplines or perspectives;

4. have a central research question that is broad enough in scope and oriented towards problems of science and policy (and policy-relevant or policy actionable) which cannot be answered by a single discipline, not a multi-authored paper with independent research questions based on the disciplines of the authoring team;
5. include, where possible non-academic stakeholders in the research or analysis or as targeted users of the knowledge.

Assessment Process: Each regional team will produce a 50 page chapter in English (with later translation into the regional languages). Each regional chapter will evaluate the literature and address the following questions:

1. What is the primary emphasis of the literature/knowledge in the region?
2. What is known with certainty about integrated disaster risk research?
3. What are the primary methods used in the research?
4. What are the seminal works in integrated disaster research, which are the precursors to and/or building blocks of the present research base?
5. What is not known?
6. What needs to be known?
7. How does the existing research base inform policy or practice in the region? Does it have the intention to inform these?

Output: The primary output will be a published monograph. The outline will look as follows:

1. Summary: This chapter contains a separate synthesis of the findings from the regionally-based assessments and will be co-authored by the core steering committee
2. Introduction: This chapter provides the rationale and procedures for how and why the assessment was conducted (co-authored by core steering committee)
3. Latin America and the Caribbean (authors: regional coordinating author(s), plus writing team)
4. Africa (authors: regional coordinating author(s), plus writing team)
5. Asia (authors: regional coordinating author(s), plus writing team)
6. Middle East-North Africa (authors: regional coordinating author (s), plus writing team)
7. North America (authors: regional coordinating author (s), plus writing team)
8. Europe (authors: regional coordinating author(s), plus writing team)
9. Oceania (authors: regional coordinating author, plus writing team)
10. Conclusions (authors: core steering committee)

The Outcome of AIRDR

The most important outcomes of AIRDR are:

(1) A published report on Assessment of Integrated Research on Disaster Risk, with broad dissemination to the research, practitioner, and policy communities.
(2) A long-term scientific research agenda will be identified and developed as reference points for scientific input and financial investment in IRDR research.

Additional outcomes will be generated by AIRDR, including:

(1) An AIRDR Forum to engage the international scientific research community in developing new integrated research as part of the IRDR scientific conferences.
(2) Stimulation of integrated research on disaster risk at national, regional and global levels.
(3) Understanding of the institutional and organizational barriers in different regions and countries that inhibit policy relevant integrated disaster research, and opportunities for reducing such constraints.
(4) Education and engagement of the next generation of researchers and practitioners during the AIRDR development process.

Actions to Date

October 2010	Global integrated assessment idea proposed
October 2011	Formal approval of AIRDR as an IRDR project with the official announcement at the IRDR conference in Beijing
May 2012	Plan of work adopted (Ravello, Italy)
July 2012	Core Committee meeting (Boulder, Colorado) to develop of procedures for conducting the assessment; identification of scientific steering committee (for guidance and review); identify scope of research to be assessed. Participants (I. Burton, T. Oliver-Smith, A. Lavell, S. Cutter, J. Rovins- ex officio)
Sept. 2012	Roll out of regional approach for AIRDR (Kuala Lumpur)

Work plan and Cost Estimation (2012-2015)

1. *Concept presentation at Regional ICSU meetings (September –December 2012)*

The regional approach to AIRDR will first engage the three ICSU regions (Asia, Latin America, and Africa) in the assessment, and then expand out to North America, Europe, Oceania, and Middle East-North Africa. This is conditional on the receipt of resources to undertake such an integrated assessment at the seven regional scales. The AIRDR approach will be presented at the Latin America ICSU regional meeting in Buenos Aires for discussion and concurrence. The approach will also be presented at the SIDA meeting in Kuala Lumpur.

Participants: A. Lavell (Buenos Aires), S. Cutter (Kuala Lumpur)

Cost: no cost to AIRDR budget as trips will be covered by other resources

2. *Bibliographic Project for Regional Writing Teams (October 2012-March 2013)*

A bibliography of English-language journal articles published from 2000-2013 will be

produced that reflects the current state of the science on integrated research on disaster risk. This product will provide some initial support to the regional writing teams, which may lack access to international hazards and disasters journals. The on-line bibliography will be searchable by author and keyword and be available through a web-based interface on a secure web-site for the regional writing teams. This bibliographic effort will be based on searches through disciplinary and interdisciplinary journals using a variety of search engines such as the *Web of Science*. Copies of the articles will be organized by region and made available for downloading to the writing teams. Given the copyright rules, we are unable to broadly share articles on an unprotected web site.
Cost: $50,000

3. *Enhancement of Bibliography Database (October 2012-March 2013)*

The initial database of bibliographic material will be English. Therefore, the regional teams will need to examine local language peer-reviewed journals and reports as a supplement to the bibliography (see next section on regional assessment). To broaden participation in the assessment process, we will solicit input from the broadly-based research community to provide relevant materials for inclusion in the bibliographic data base. Researchers will be asked to submit a copy of the published materials for potential inclusion and will be asked to summarize how the paper or document relates to the definition of integrated research on disaster risk.
Cost: No cost (IPO activity to solicit materials)

4. *AIRDR regional assessments underway (October 2012-September 2014)*

The regional coordinating author(s) will nominate members of the writing teams (6-8 members) and begin to develop a tentative outline of the chapter for presentation in March 2013 at a Working Group Meeting. To help support the writing and management of the regional projects financial resources are required to help defray the personnel costs associated with the compilation of the non-English literature. Stipends will also be provided to writing team members ($2500) as well as the coordinating lead authors ($5000).
Cost: $175,000 (Roughly $25,000 per region: Latin America, Africa, Asia, Middle East-North Africa, North America, Europe, Oceania)

5. *Working Group Kickoff Meeting (March-April 2013)*

A 2-day meeting of the Working Group (regional coordinating authors plus the core steering committee) will take place in March 2013 to finalize the writing teams and outlines for the assessment. Meeting venues will be determined based on least-cost sites and opportunity.
Cost: $52,500 (~15 people at $3,500 each for travel, lodging, food)

6. *Working Group Meeting (October 2013)*

A second meeting is required to review the first drafts of the chapters (due in September 2013) and assess progress towards completing the assessment. Discussion of cross-cutting themes and the synthesis chapter will also take place as well as the solicitation of names of potential reviewers. Meeting sites will be based on least-cost sites and

opportunity.
Cost: $52,500

7. *Working Group Meeting*: *Assessment review and publication (March 2014-February 2015)*

The final results of the assessment will be peer-reviewed. Reviewers will be provided a small stipend ($500) to insure that the reviews are thorough and done in a timely fashion. The final meeting of the Working Group will make the required editorial changes in the draft based on the reviews (September 2014). They will also finalize the shorter synthesis document aimed at policy makers and other stakeholders that will be co-produced with the larger report.
Cost: $50,500

8. *Dissemination: Translation of Report and Individual Chapters (May 2015-December 2015)*

The post-production of the report will include the translation of the summary synthesis report as well as the specific regional chapters into the United Nations official languages: Arabic, Chinese, French, Russian, and Spanish.
Cost: $50,000 ($10,000 per language)

9. *Capstone Conference (Fall 2015)*

A capstone conference of the IRDR focused on the Assessment with participation of authoring teams and others can be held in conjunction with the bi-annual IRDR Scientific Conference (Beijing 2015) or as an add-on event to the post-Hyogo Framework meetings.
Cost: TBD

Timeline

1. January 2013—coordinating lead authors contacted, selected, and approved
2. March/April 2013—final selection of writing teams and outlines approved by Working Group at meeting
3. September 2013—first drafts of regional chapters due
4. October 2013—meeting of WG to review chapters
5. March 2014—second drafts of regional chapters, first draft of introduction, conclusion, synthesis chapters due
6. May 2014—external reviews of second draft and comments to writing teams
7. July 2014—final drafts due
8. September 2014—Working Group meeting to review final document, stand-alone summary, and dissemination plan
9. October 2014—report sent to publisher
10. Dissemination of findings

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Revised wording of draft resolution presented by IUGG to the 30th ICSU General Assembly

Resolution 1. Science on Disaster Risk

Whereas the first decade of the XXIst century has been marked by a significant number of disasters triggered by natural and human-induced hazards, such as devastating earthquakes (e.g. 2004 Sumatra-Andaman in the Indian Ocean, 2008 Sichuan in China, 2010 Haiti, and 2011 Great East Japan), which triggered tsunamis and landslides; floods (e.g. in western and central Europe in 2002, China in 2007; Taiwan and Philippines in 2009; Pakistan in 2010; and Australia in 2010); cyclones and hurricanes (e.g. Katrina in 2005; and Nargis in 2008); and some others, resulting in tragic loss of life, property and a nuclear emergency;

The International Council for Science (ICSU)

Considering the rapidly increasing vulnerability to natural and human-induced hazards at global, regional, and local levels; and
the continuous increase of fatalities, the number of people affected, and property damage caused by natural events;
Realizing that disaster risk reduction (prevention, mitigation and preparedness), including warning systems, needs long term planning; and
that reducing the impact of disasters should be addressed with higher priority from global background to local levels;
Noting that the economic impact of disasters exceeds the cost of mitigation by orders of magnitude;
that existing scientific knowledge and technology for disaster risk assessment and mitigation could provide impetus to more effective preventive measures and recovery processes; and
that the reduction of predictive uncertainty is one of the most important scientific agenda items in natural hazard and disaster risk reduction;

Recommends that the ICSU-ISSC-UNISDR Integrated Research on Disaster Risk (IRDR) Programme together with existing relevant institutions to start a negotiation on setting up a process of assessing and synthesizing the policy-relevant results of peer reviewed published research on:
- the understanding of the natural phenomena and the social vulnerability associated with disasters;
- the capability of predictive systems to disseminate timely and accurate information needed for policy and decision making;
- methodologies and approaches for reducing vulnerability and increasing resilience of societies; and
- the overall ability of societies to reduce risk (prevent, mitigate and prepare for the increasing impact of natural events).
The assessment would contribute to enhance the knowledge of disaster risk at global, regional, and local levels and the awareness of the people living with risk. The assessment should be undertaken by a high-level body of experts on disaster risk reduction to be established by governments.

Extract from Annotated Agenda for EB108

3.2 Proposed resolution from IUGG

At the 30th ICSU General Assembly (FAO, Rome, Italy, 27-30 September 2011) the delegation of the International Union for Geodesy and Geophysics (IUGG) submitted a resolution calling for ICSU's involvement, through the Integrated Research on Disaster Risk (IRDR) programme, in the setting up of an intergovernmental platform akin to the Intergovernmental Panel on Climate Change (IPCC) for the assessment of disaster risk. The draft resolution was declared non-receivable from a procedural standpoint.

A second attempt was made by the Union, with a revised wording (see document EB108/3.2.1), but this text was also declared non-receivable by the Resolutions Committee, which felt that, although the subject of disaster risk had been raised during the Assembly (a presentation on IRDR by its Executive Director), there had been no specific discussion on an assessment process – something that would potentially represent a very substantial commitment by ICSU and others.

IUGG expressed its disappointment that the Assembly would not be considering its proposed resolution, the subject of which it felt was an urgent issue that could not wait until the next GA. There was some discussion on the receivability of the resolution, a motion from the floor, duly seconded, to receive it, and a brief presentation on the subject by IUGG. Finally, a suggestion by the Chair that the substance of the resolution proposed by IUGG be referred to the ICSU Executive Board was accepted by the Assembly.

At its 107th session, the Board duly addressed the IUGG text. It decided to invite the Integrated Research on Disaster Risk (IRDR) programme to give its advice on the matter, which it would consider at its next meeting.

The IUGG resolution text was duly presented to the IRDR Scientific Committee at its Seventh Meeting in Ravello, Italy, on 9-11 May 2012, and the views of the Committee sought. Several members of the Committee felt that an intergovernmental panel/platform of the sort proposed would serve as an important interface between the scientific community and policymakers. It was recognized, however, that its establishment would be, of necessity, long and complicated, require one or more UN Member States as active champion(s), and an appropriate UN specialized organization or body as a channel. It would also be a costly endeavour, and one that may not enjoy wide political support at a time of economic stringency. There would be need for some kind of scoping exercise.

It was also underlined that IRDR is already developing its own assessment initiative. Entitled 'Assessment of Integrated Research on Disaster Risk' (AIRDR), this project seeks to provide a baseline of the current state of the science in integrated research on disaster risk to measure the effectiveness of multiple programmes; to identify and support a longer-term science agenda for the research community and funding entities; and to provide the scientific basis to support policy and practice. It will not involve an intergovernmental process, however.

IRDR did contribute to the work of the IPCC as it sought to explore the links between climate change and the frequency and severity of certain natural hazard events through the commissioning of a Special Report for Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX). The report is a comprehensive assessment of the role of climate change in altering characteristics of extreme events; and it assesses experience with a wide range of options used by institutions, organizations, and communities to reduce exposure and vulnerability, and improve resilience, to climate extremes. Numerous experts serving on the IRDR Planning Group, Scientific Committee, National Committees and Working Group Chairs were involved in creating and developing SREX, which was approved and accepted by the IPCC on 18 November 2011 in Kampala, Uganda.

The Board may recall that the recently established Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) had a long gestation period. Careful negotiations preceded the first intergovernmental and multi-stakeholder meeting convened by the Executive Director of UNEP in 2008, with the inaugural IPBES Plenary only taking place in Bonn, Germany, in late January 2013. ICSU, working with DIVERSITAS and IHDP, did take an active role in this process.