
A Research Agenda for Global Science in Support of Risk-Informed Sustainable Development and Planetary Health

Guidance document for internal use only

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Prepared by the DRR Research Agenda Core Group

‘At no point in human history have we faced such an array of both familiar and unfamiliar risks, interacting in a hyperconnected, rapidly changing world. New risks and correlations are emerging. Decades-old projections about climate change have come true much sooner than expected. With that come changes in the intensity and frequency of hazards. Risk really is systemic, and requires concerted and urgent effort to reduce it in integrated and innovative ways.’ (SRSR, GAR2019)

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1. Purpose

This paper serves as a guiding document for the development of a new disaster risk reduction (DRR) research agenda, which is being led by a Core Group serviced by the IRDR IPO. This guide is intended to frame the DRR research agenda development process by outlining the context, principles, scope and rationale. It also offers themes and questions that the research agenda may respond to, but it is not a fixed outline/structure for the research agenda outcome document itself.

Note that this document is a guide and will be updated and is subject to change.

1.1 The process

The DRR research agenda is being developed through the process set out here.

On the commencement of the IRDR a [science plan](#) (International Council for Science, 2008) was developed to guide the work of the program. As this plan is nearing the end of its intended life, a process was developed to revise and update the plan. At the outset it was decided to expand the process beyond the traditional DRR community. The intention is that a penultimate draft of the new research agenda to replace the original plan will be presented at the conference to mark the conclusion of the first ten years of the IRDR. Note that the timing of this conference is subject to change due to Covid-19.

There are two major steps in this process: i) a guidance document (this internal document) and ii) the research agenda.

Guidance Document. Two groups have been established to support the development of the Agenda: a core group, and a review group. The project Core Group - consisting of representatives of the key sponsors, ISC (Anne-Sophie Stevance) and UNDRR (Irina Zodrow & Marc Gordon), the IRDR ED and SC Chair, and Profs Weisin Li, Mahefasoa Randrianalijaona, Riyanti Djalante, Mark Stafford-Smith, Jana Sillman, Alonso Torres, Juanle Wang, Michael Boyland and Fang Lian, with some ad hoc support from other SC members and contacts. This group has drawn up a timeline and a guide for the process of developing a new research agenda. Not that the guide (this document) is not an outline of the final research agenda. The review group consists of the IRDR SC, IRDR ICoE's and National Committees, as well as a wide range of people from outside the IRDR, including stakeholders identified by UNDRR.

A sub-group of the Core Group is responsible for drafting the documents.

The initial draft of the Guidance Document was circulated to a sub-set of people from these groups for rapid feedback. As far as possible this feedback was incorporated into a revised version of the guiding document. This document was circulated to the core group for their edits and additions. After making the recommended changes, the guiding document is to be used to support the development of the research agenda. It is being circulated to the IRDR SC and community, with a request that it be used as a guide when reviewing drafts of the research agenda. Not that this is a guide, and is not rigidly prescriptive.

Research Agenda. A draft annotated outline of the research agenda will be prepared using the guiding document. This outline will be developed by the core writing group as a zero-order draft for review. To help identify gaps and priorities, it will include a review and synthesis of recent relevant publications, and a survey of the DRR and risk communities including the STAGs (Science & Technology Advisory Groups).

Based on feedback from the review group a first order draft will be prepared. The draft would go to a targeted group for review and feedback. This group

could include the relevant organisations in risk, sustainability and development, policy and commerce; and could draw on a variety of approaches to increase diversity and engagement with production of the new agenda. This could be viewed as a co-design process. Preparation of a second order draft would follow, which would also go to a reviewing group. There would likely be a third order draft for review by the sponsors and funders to be ready for the final Phase 1 IRDR conference.

The first steps with drafting the Agenda are to undertake the literature review, prepare the survey, and produce an annotated outline drawing on the guidance document. Sections of the outline will be written by a writing sub-set of the core group, prior to initial review.

1.2 Guiding principles

The development of the Guidance Document and Research Agenda is informed by the following principles. The Agenda is intended to run to 2030, and needs to be conscious that:

1. Is responsive to the new Global risk, development and planetary health contexts;
2. Takes a systemic and multi-risk perspective, capturing emerging, dynamic, complex and cascading risks, and gives attention to the appropriate response space;
3. Is focused on policy relevance and outcomes;
4. Actively supports coherence across major UN agreements on DRR, climate change, planetary health, SDGs etc.
5. Aims to inform processes to implement and achieve the targets within the Sendai Framework for DRR, the Paris Agreement, and the SDGs, as part of the 2030 resilience agenda;
6. Uses the SDGs for both developing the agenda and for broad framing of the research work;
7. Is based on consultation, and proactively promotes collaboration across disciplines, domains and stakeholder groups – in line with the Sendai principle of transdisciplinary collaboration
8. Recognises DRR as essential to the development process and improved human well-being;
9. Engages with traditional and other forms of knowledge, and where practicable promotes co-production of knowledge;
10. Includes consideration of how research is funded, and how the results could be implemented;
11. Is flexible and adaptable to changing circumstances;

2. Global science and policy context

- ✧ The broad policy context is provided by a risk landscape undergoing rapid and profound changes across DRR, climate change and sustainable development. Disaster impacts and risks remain high and growing. There is increasing concern about and acknowledgement of complex systemic risks: these include

the way the impacts of the 2019/20 Australian bushfires cascaded through most aspects of society, economy and environment; and most recently by the Covid-19 pandemic which is not only a cascading and systemic risk but has forced systemic responses as well.

- ✧ The research context is provided by progress in DRR since 2008 (Science Plan for IRDR) and 2015 (Sendai Framework Priorities and Targets, informed by GAR2019), including examples to highlight the role of science (i.e. social, natural/physical, interdisciplinary), technology, innovation and engineering. (See section 4 below.)
- ✧ Aspects of the context are also found in an assessment of challenges, gaps, emerging risks and growing uncertainties in the course of Sendai Framework implementation, for example:
 - ✧ Coherence with parallel UN frameworks concerned with addressing risks, e.g. the SDGs, Paris Agreement on Climate Change, New Urban Agenda, Addis-Ababa Action Agenda and Agenda for Humanity. DRR has evolved and become a mainstream development issue, for which science is required to work more effectively, innovatively and collaboratively.
 - ✧ Global (e.g. GAR and WEF) and regional risk contexts and DRR priorities, as well as context-specific needs and capacities.
 - ✧ Credible data, integrated knowledge (scientific and traditional), and expertise, and the importance of open science, access and data sharing (see FAIR (findable, accessible, interoperable and reusable) data from GAR Ch. 4, and below).
 - ✧ New technologies, globalization, tele-connectivity
 - ✧ Capacity development across, regions, nations, groups and sectors

3. Rationale for a new DRR research agenda

- ✧ To further clarify the added value, the Research Agenda needs to explain: why do we need to launch a new global DRR research agenda toward 2030 and beyond, rather than by amending the present settings of science networks, platforms and research programmes?
- ✧ The risk context demands the need for a new global research agenda which has a new orientation for risk-informed development [or, for development safety], which responds to specific needs and capacity gaps, and which is inclusive and equitable for all (i.e. “leave no one behind”).
- ✧ This agenda will be expected to help guide the work of scientists, researchers, academics, and technical institutions in both the public and private sectors, to build the evidence base needed for risk-informed decision-making in all geographies, sectors and scales.

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- ✧ The new agenda will help to both identify the needs of stakeholders and be guided itself by those needs. It will also guide the development of research to address those needs, as well as to solve broader issues

4. Vision, aim and time frame of the new DRR research agenda

- ✧ A new vision statement: to be long-sighted, projected beyond 2030, inspiring and strategic, giving a clear idea on the role of research. The vision should be based on the “Principles” above.
- ✧ Following on from the vision, a clear aim of the new research agenda will be articulated
- ✧ The Agenda aims to serve the needs of DRR in the leadup to 2030, but needs to be aware that decisions taken in the decade to 2030 will have influence for many years after that date.

5. Identifying existing research, capacities and gaps

- ✧ An important step in developing a research agenda is to examine existing relevant activity. This will draw on two main sources: a review and synthesis of recent published material; and through a synthesis of existing activities worldwide. Core group members will be asked to identify potentially useful publications, as well as key organisations as part of identifying existing activity and for possible consultation.
- ✧ Targeted consultations for the Agenda could include the IRDR family, the disaster risk science community (key organisations/opportunities to be identified in the guidance doc), the broader risk and sustainability community (key organisations/opportunities to be identified), the policy community (possibly through UNDRR network of NDMOs), global science advice network, the business community (eg UNDRR Arise), the science funding community (eg Belmont Forum). In addition, we have a process of landscape mapping (led by UNESCO-DRR group?) to map the key actors and their respective agendas.

Broader consultations and review could include the relevant organisations in risk, sustainability and development, policy and commerce; and could include a broadly targeted survey to increase diversity and engagement with production of the Agenda. This could be viewed as a co-design process.

- ✧ A table could set out an analysis of existing relevant international research programs and their activities. Detail would be provided in an appendix to the agenda.
- ✧ Key organisations and stakeholders including some organisations that are not directly linked with DRR. Examples of key organisations include:

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1. IRDR and related ISC programmes
 2. STAG and related regional and thematic groups
 3. GRAF
 4. GADRI
 5. RIKS-KAN
 6. WFEO
 7. Belmont forum and other potential funders.
 8. Existing active networks such as the ICL network
 9. Others
- ✧ Summary comments on the existing programmes, platforms and networks, with notes on needs for connection and synergy and the identification of missing expertise and priority areas for concerted science intervention.

6. Key questions for the new research agenda

- a. How far would the new DRR research agenda go beyond the 7 Targets of Sendai Framework? And how to ensure it is coherent and synergistic with other UN 2030 frameworks? [A fundamental basis of the new agenda is coherence across UN agreements – see the principles above.]
- b. To what extent should the new agenda address the underlying drivers of risk, e.g. in relation to poverty and inequality; food and water security; human health; energy solutions; resilient urban setting and communities, climate change related extremes, ecosystem health?.
- c. The agenda would need to address systemic risk and appropriate responses, and other risks due to growing interconnectivity and interdependence across socio-economic systems, as well as physical, biological, environmental, social, and cyber systems. This should also include the issue of physical and socio-economic tipping points within and across systems, and the challenge of avoiding a return to business as usual. However, not all risk is [significantly] systemic, complex or cascading, and the agenda would need to accommodate these differences.
- d. The production and implementation of the agenda will need to find a balance between the top down approach inherent in the use of the SC, ICoEs and NCs, and a bottom up approach drawing on a much broader group potentially for co-production – this was flagged in the initial vision and objectives of the IRDR.
- e. What if any monitoring and review process should be used to keep the

agenda current?

- f. What are the main differences from the existing agenda that the new DRR research agenda should generate? For example:
 - i. Science coherence in support of the global agreements on DRR, climate change and the SDGs
 - ii. Knowledge co-generation and sharing
 - iii. Engagement and interactions between science, policy and society
 - iv. Attentions to new techniques, such as modeling, simulation, metrics, monitoring etc.
 - v. The agenda needs to find ways to encourage scientists to work towards the purpose of this agenda rather than other priorities.
 - vi. Integration of different forms of knowledge (e.g. scientific and traditional)
 - vii. Open science?

7. Strategic areas of cooperation in DRR science and policy

For example:

- g. Data and knowledge: standard, production, open access, sharing and servicing (including warning systems), and how to encourage collaborative data sharing (based on FAIR (findable, accessible, interoperable and reusable) data from GAR Ch. 4).
- h. New and existing technologies – development, application and access: new DRR solutions, as well as sources of new challenges (e.g. in relation to the digital revolution).
- i. Ideally, the issues of data, knowledge and technologies would be framed around processes that help them to be aligned and integrated.
- j. Scientific understanding on increasing risks and uncertainties: including systemic, cascading, emergent, NATECH, rapidly evolving, and multi-dimensional risks.
- k. Science, policy and society engagement, dialogue and action: new dynamics to foster societal awareness and coherence for risk-informed decision making and action across the agenda and Global agreements (DRR, climate change, sustainable development).
- l. Institutional capacity development: strengthening inter-disciplinary and multi-stakeholder science, technology, innovation, and education at all levels and across boundaries, particularly in the global south,

including fostering new generations of DRR professionals.

- m. Collaborative Global and regional governance of transboundary risks: address collective endeavors from different countries and manage transboundary risks coherently.

8. Potential implementation mechanisms

To take account of existing activities and programs, such as:

- n. An international programme as the main mechanism of scientific coordination and planning (membership, governance, programme planning and reporting, deliverables, outreach and resource).
- o. Mechanisms for effective interaction of SFDRR with the Paris Agreement, the SDGs, and other UN 2030 agreements.
- p. Alliances and institutional partnerships for the implementation of the new research agenda. This would need to include implementing organisations from government at all levels from international to ideally regional and local, as well as NGOs and commerce – in addition to scientific organisations and universities. There may be ways to engage civil society and these should be included.
- q. Implementation mechanisms in different regions and at different scales