

# Interdisciplinary Perspectives on Disaster Risk Management: Linking Science to Policy and Practice

Susan L. Cutter  
University of South Carolina  
scutter@sc.edu

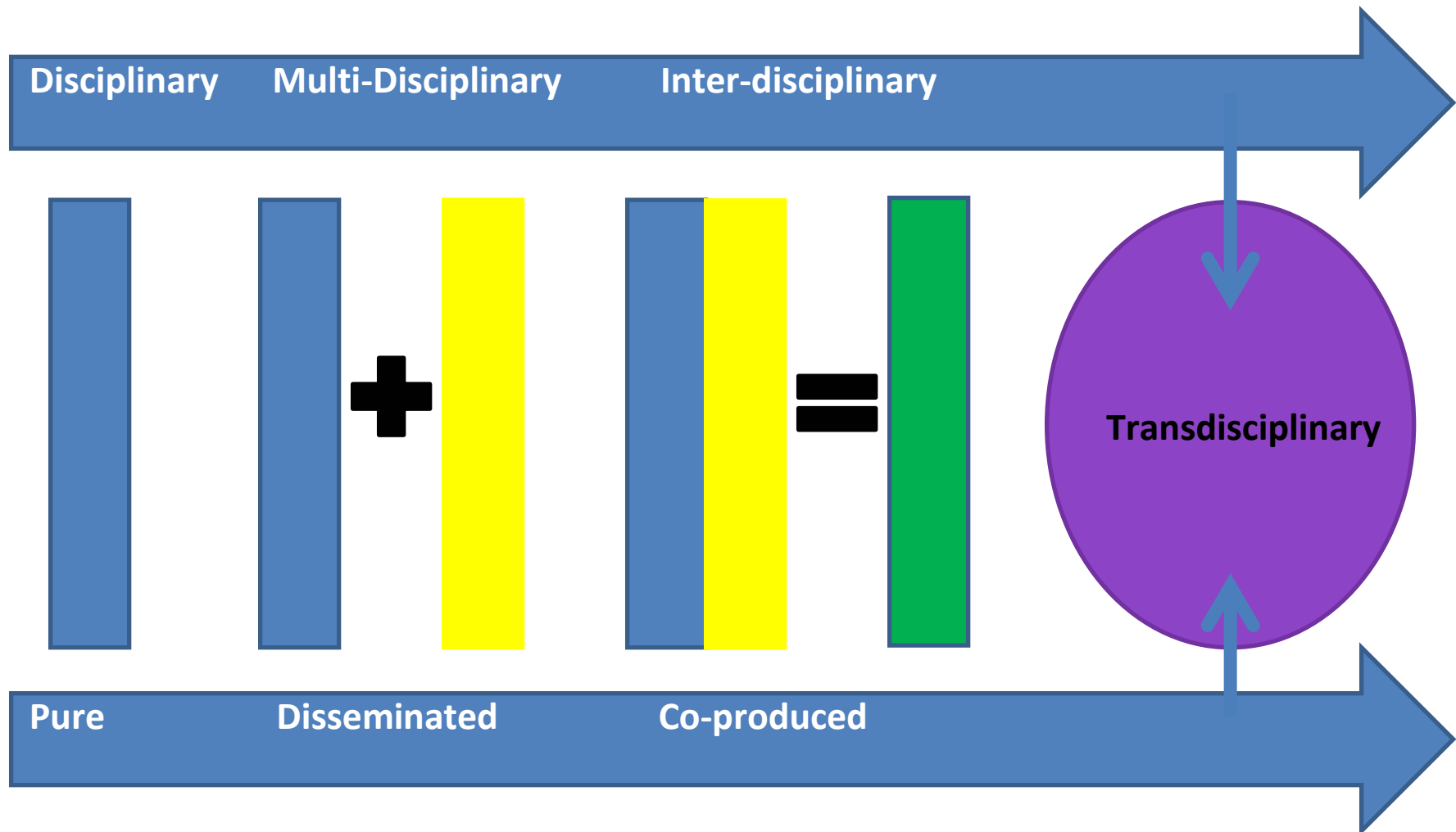


Tokyo Conference on International Study  
for Disaster Risk Reduction and Resilience  
January 14-16, 2015, Tokyo, Japan





# How does research progress?





# What is IRDR?

*A decade-long research program focused on Integrated Research on Disaster Risk*

**Mission: “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.”**

*IRDR, 2015. Annual Report 2014. Beijing: IRDR, p. 2*

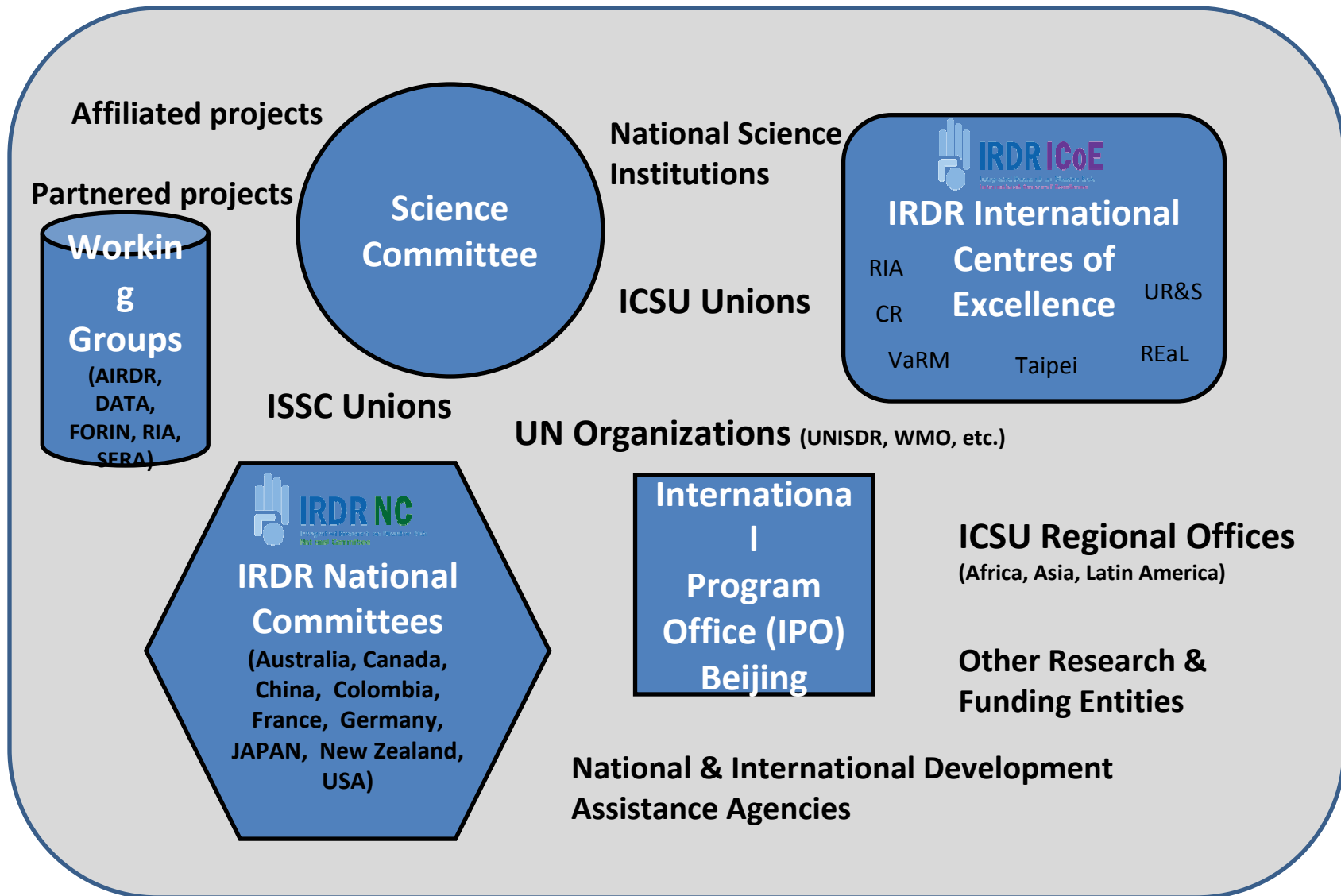
**Vision: to offer “an integrated approach to natural and human-induced environmental hazards through a combination of natural, socio-economic, health and engineering sciences, including socio-economic analysis, understanding the role of communications, and public and political responses to reduce the risk.”**

*--ICSU 2008. A Science Plan for Integrated Research on Disaster Risk: Addressing the challenge of natural and human-induced environmental hazards. Paris: ISCU, p. 18.*



# Who is IRDR?

A community of interested stakeholders from academe, private sector, government, NGOs who are addressing the challenge of managing disaster risk to reduce losses



# What is the integrated research program and how is it implemented?

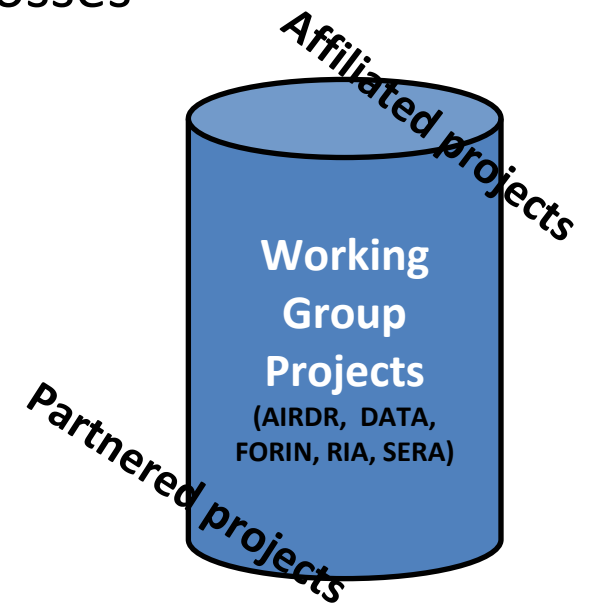


## Research objectives

1. Promote integrated research
2. Characterize hazards, vulnerability, and risk
3. Understand decision-making
4. Reduce risk and curb losses

## Implementation:

Focus on research, capacity-building, networking, and knowledge sharing activities





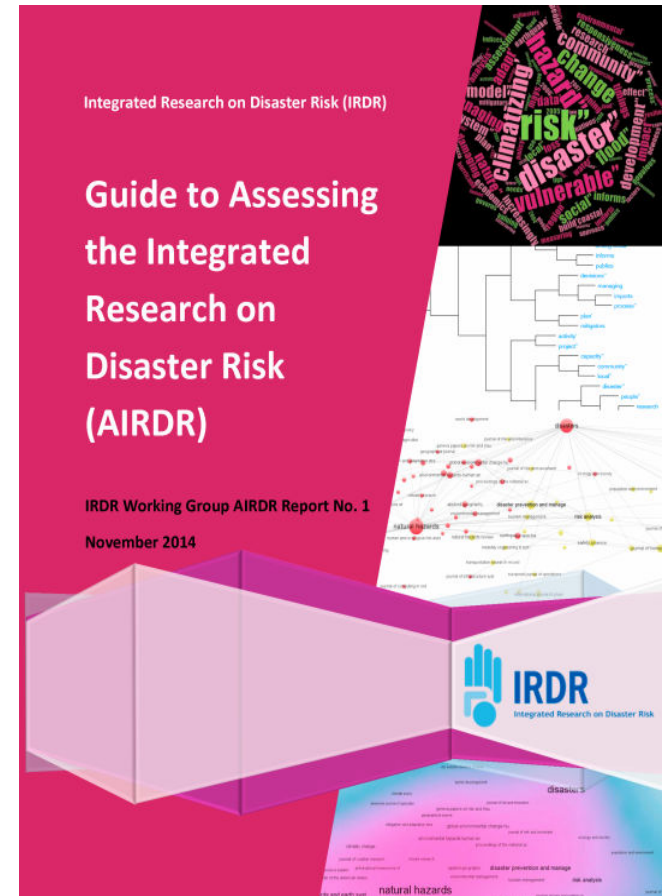
# AIRDR findings:

## *Bibliometric analysis of English-language peer reviewed research publications*

- Disaster risk research remains academic and multi-disciplinary, little stakeholder engagement
- Little evidence that research put into practice or policy-making
- Theory has advanced (vulnerability, resilience, climate adaptation)
- Limited geographic coverage; limited integration

## *ICSU Ad-Hoc Expert Group Synthesis (in progress):*

- Science-driven approaches to disaster risk management help reduce impacts, build resilience, and facilitate post-HFA2 goals
- Periodic assessment of research helps to monitor progress and catalyze policy





# Improving the Infrastructure of Disaster Loss Data

## Disaster Loss Data (DATA) Project

Co-Chairs: Daniele Ehrlich (Italy), Sisi Zlatanova (The Netherlands), Susan Cutter (USA)

Members representing CIESIN (Columbia University, USA), CRED (University of Louvain, Belgium), Swiss Re, EU Joint Research Centre, MunichRe, UNISDR, NCDC/NOAA (USA), National S&T Center for Disaster Reduction (Taiwan), Austrian Government, Delft University (The Netherlands), IFRC, Eclac Cepal, The World Bank, UNDP

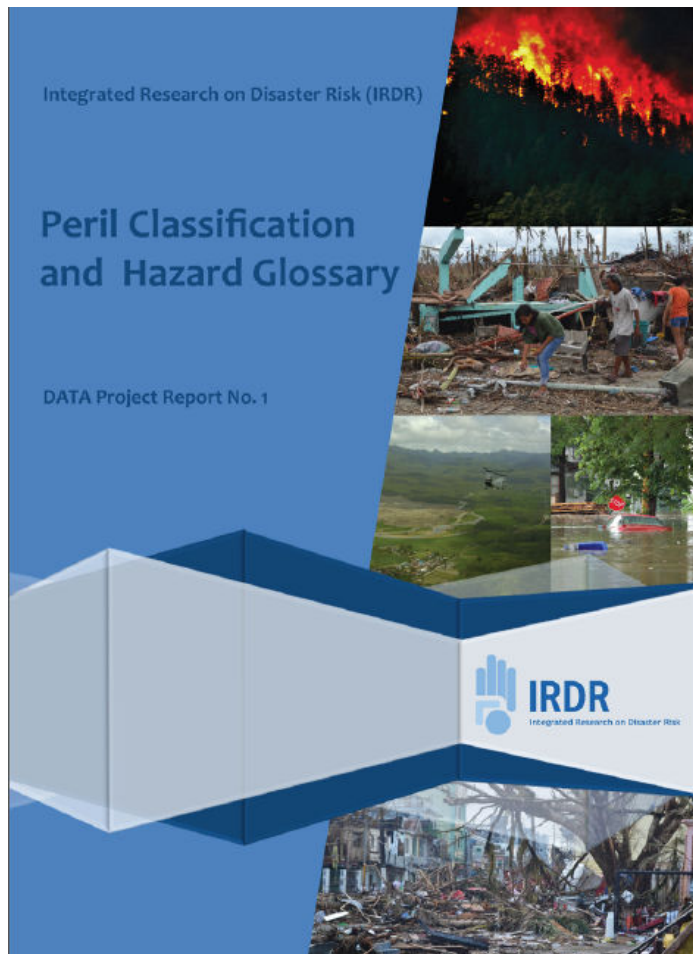
*Vision: to improve the infrastructure of  
disaster loss data globally and locally*

### Goals:

- Identify quality of existing data and data needs for improving integrated disaster risk management
- Bring together loss data stakeholders to identify common issues and develop synergies
- Develop standards/protocols to minimize data uncertainty
- Define “losses” and create transparent methodologies for assessing them
- Advocate for loss data at sub-national geographies
- Educate users on database biases and data interpretation

# DATA activities

Reconcile peril classification across loss databases with implementation



Revision in progress (March 2015)

## Outreach and Consultations:

- WMO technical review
- 2<sup>nd</sup> WMO User Workshop
- EU Data Loss Experts
- UNESCAP
- EM-DAT Technical Advisory Committee
- IRDR China

## Implementation of Peril Classification:

EM-DAT, DesInventar, SHELDUS, EU, UNESCAP

**Forthcoming:** *Guidelines on Measuring Losses from Disasters: Human and Economic Impact Indicators*

# Advancing the Understanding of Risk Perception, Communication, and Decision-making

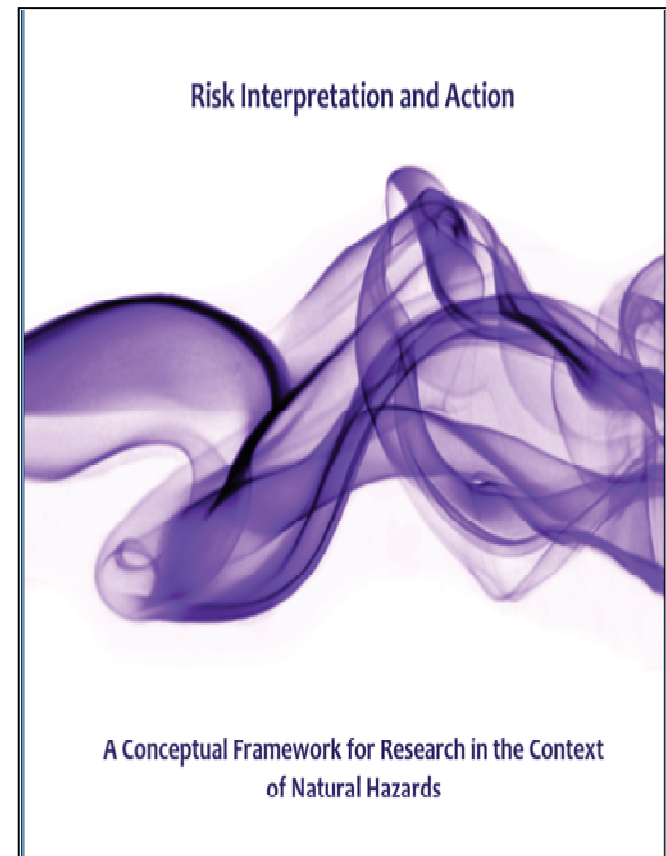
## Risk Interpretation and Action (RIA) Project

Co-Chairs: Ann Bostrom (USA) and Mark Pelling (UK)

**Goal:** build a community of practice on risk perception, communication and decision-making that focuses on better understanding how people make decisions in the face of risk, with special emphasis on disaster risk and resilience building.

Four focus areas:

1. Decision-making for uncertainty
2. Early warning systems
3. Adaptive management and resilience
4. Individual perceptions and risk behavior



# RIA activities

## Publications:



Review Article

### Risk interpretation and action: A conceptual responses to natural hazards

J. Richard Eiser<sup>1</sup>, Ann Bostrom<sup>2</sup>, Ian Burton<sup>3</sup>, David M. Joh Paton<sup>9</sup>, Joop van der Pligt<sup>7</sup>, Mathew P. White<sup>8</sup>

Annals of the New York Academy of Sciences

### Reporting on the Seminar - Risk Interpretation and Action (RIA): Decision Making Under Conditions of Uncertainty

The World Social Science (WSS) fellows on Risk Interpretation and Action (RIA) include the core writing team of this report (alphabetical after leads): Emma E. H. Doyle, Shaohua Khan, Caroline Adler, Ryan C. Alatorre, Simone Alparone, Kuan-Hsiu Eshie, Lili, Wendy Saunders, Todd Scherer, Fabrice Sosa-Rodriguez, and Victoria Street-Davies<sup>10</sup>, which has been written on behalf of the wider group that attended the seminar (in alphabetical order): Clayton Akau<sup>11</sup>, Marie-Ange Baubert<sup>12</sup>, Chung Ting Chan<sup>13</sup>, Katherine De Bruin<sup>14</sup>, Riyad Qatani<sup>15</sup>, Christine Erkens<sup>16</sup>, Hsiang-Chieh Lee<sup>17</sup>, Jodi Moore<sup>18</sup>, Victor O. Okun<sup>19</sup>, David R. Chang<sup>20</sup>, Gode Perleveder<sup>21</sup>, Nathali Ruiz-Rivera<sup>22</sup>, Suzanne Walker<sup>23</sup>, Xiao-Mei, Lun-Yip<sup>24</sup>. The organizers and scientists that also attended the RIA Fellows seminar included (in alphabetical order): Sarah Blawie<sup>25</sup>, Charles Edelman<sup>26</sup>, Richard Eiser<sup>27</sup>, David Johnson<sup>28</sup>, Christine Kenney<sup>29</sup>, Tony Lill<sup>30</sup>, Douglas Paton<sup>31</sup>, Sarah Schweizer<sup>32</sup>, Viv Stavarou<sup>33</sup>.  
<sup>1</sup> Massey University, New Zealand (E.E.H.doyle@massey.ac.nz)  
<sup>2</sup> ETH Zurich, Switzerland (caroline.adler@ethz.ch)  
<sup>3</sup> The City State University, United States (ian.burton@citystate.edu)  
<sup>4</sup> University of Florida, United States (simonea@ufl.edu)

### Disaster Risk Communication: Dialogues for Reducing Disaster Risk

An Integrated Research on Disaster Risk, Risk Interpretation and Action programme Briefing Note



### Risk Interpretation and Action

How do scientists, practitioners and people at risk make decisions, individually and collectively? Social theory, psychology and learning theory have all addressed this question but somewhat independently. This has led to a number of discontinuities in the analysis of risk communication and perception and gaps in research and practitioner activity (and funding). The result is a number of unanswered questions:

## Capacity Building:

- 25 World Social Science (WSS) fellows on Risk Interpretation and Action (RIA)
- Support GAR15 (Pathways for Transformation)
- Establish ICoE-RIA at Kings College, London UK

### Pathways for Transformation:

Disaster risk management to enhance development goals



This photograph depicts key representatives from national government, local authorities, Māori organizations and the Māori community who collaborated in a rapidly nationalized response to address the needs and facilitate recovery of the Christchurch community after the Canterbury earthquakes. The collective are depicted at Rēhua Marae, the Ngāi Tahu tribal urban community centre, which was the initiating centre for the response and operated after the February 22nd earthquake as an emergency welfare and outreach support centre for the entire Christchurch community. Subsequent to the welfare centre being decommissioned, Rēhua has continued to act as a hub for Māori welfare initiatives that address social risk factors associated with poverty. One such is He Toki ki te Rika, a Māori trades training programme that is facilitating youth education and employment in the Canterbury rebuild.

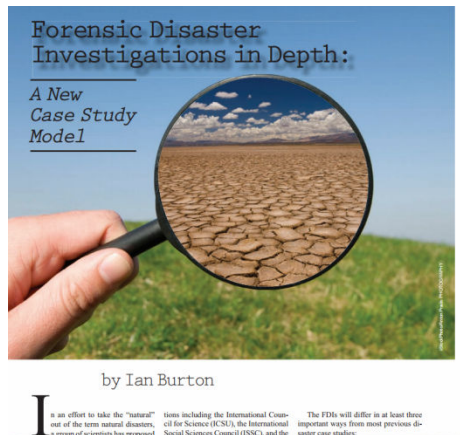
Rēhua marae was also registered as a Ministry of Civil Defence and Emergency Management recovery assistance centre prior to the earthquakes, by the recently deceased 'Upoko' or regional tribal leader Mr Henare Rahitahi Tau ONZM (pictured centre with his walking stick and flanked on his right by the Cabinet Minister for Māori Development the Hon Pita Sharples). Mr Tau was a fierce supporter of 'transformative' Disaster Risk Reduction planning. He had registered all the marae in his region as welfare centres and more recently led a Māori seminar for the 2013 World Social Science Fellows' Forum in New Zealand, which addressed Māori risk interpretation and related decision-making within the context of disasters. Mr Tau passed away on the June 30 2011. It is respectfully suggested that should you decide to use the photo as your cover picture, that you consider including in the report a small memorial acknowledgement of his contribution.

# Uncovering the Root Causes of Disasters

## Forensic Investigations of Disasters (FORIN) Project

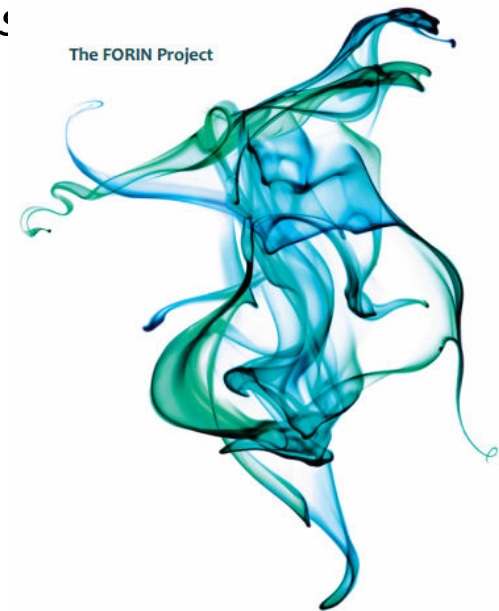
Co-Chairs: Irasema Alcántara-Ayala (Mexico) and Anthony Oliver-Smith (USA)

**Goal:** *to provide a framework for examining the root causes and underlying risk drivers of disaster through comprehensive, in-depth, and integrated investigations that aim to shift disaster management policies.*



The FORIN Methodology:

1. Critical cause analysis
2. Meta-analysis
3. Longitudinal analysis
4. Scenarios of disaster





# FORIN activities

## Capacity Building:

4 Training workshops  
(Taiwan, Mexico, US)

## Completed FORIN case studies:

Typhoon Morakot  
Great East Japan Earthquake Tsunami  
Metro Manila (FORIN and Climate Change)

## Review of FORIN\*:

“it gives power to analysis that conceptualises disasters as intrinsic to development and societal processes more broadly, based on its inter-disciplinary and comprehensiveness.”

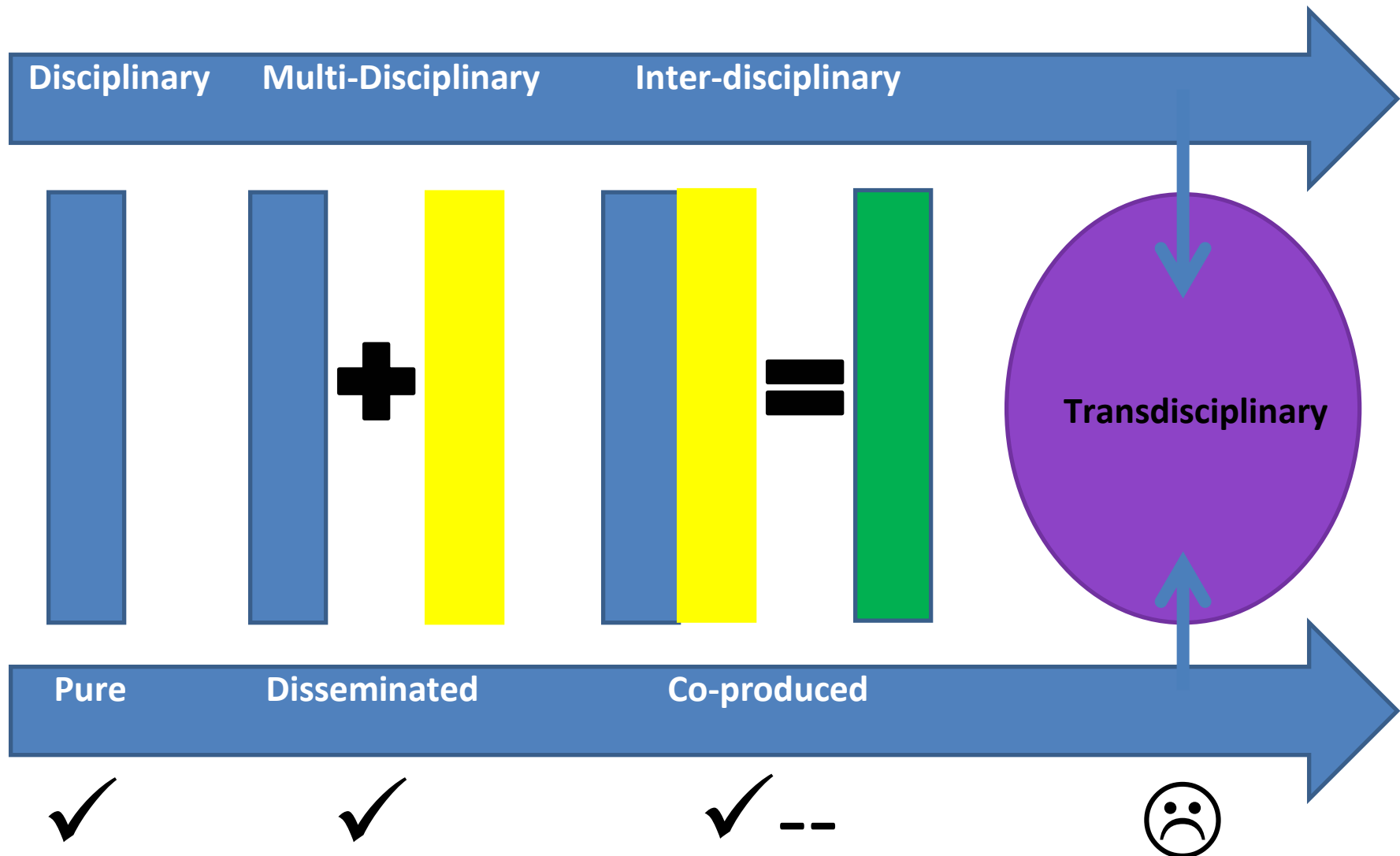
## FORIN's impact:

- Significant recognition of the approach globally
- Provides structured approach to identify true cause of disasters and the actions to reduce or eliminate the risk
- Not fully realized; research takes time and resources that are beyond the scope of existing studies to date

**Next:** An advanced version is now in development (mid-2015)

\*“A review of the FORIN methodology and existing FORIN case studies”, by A. Fraser, S. Patterson, and M. Pelling (2014), for EU FP7 funded PEARL (Preparing For Extreme and Rare Events) project., p. 6. Draft available: <http://www.irdrinternational.org/projects/forin/>

# How does research progress?



# Why has integrated research on disaster risk not progressed further?

- No common synthesis (e.g. lack common integrative questions and concepts, inconsistent methodologies; variability in definitions)
- Scientists not good at translating findings into action; practitioners not always understand the nuances of science
- Takes time and resources to pull teams together, to develop research networks
- Geographic disparities between researchers and places studies (hard to translate into local action)
- Limited engagement with non-academic stakeholders
- Lack trust and social networks between all stakeholders
- Leadership and willingness to work in a new knowledge environment
- Career reward mechanisms and challenges imposed by employers (especially academia)
- Constraints imposed by funding entities (lack of vision, biases of program officers)
- Lack good examples of integrated disaster research



# For further information



<http://www.irdrinternational.org>

**AIRDR** [allanmlavell@gmail.com](mailto:allanmlavell@gmail.com)

[scutter@sc.edu](mailto:scutter@sc.edu)

**DATA** [daniele.ehrlich@jrc.ec.europa.eu](mailto:daniele.ehrlich@jrc.ec.europa.eu)

[s.zlatanova@delft.nl](mailto:s.zlatanova@delft.nl)

**RIA** [abostrom@uw.edu](mailto:abostrom@uw.edu)

[mark.pelling@kd.ac.uk](mailto:mark.pelling@kd.ac.uk)

**FORIN** [irasema@igg.unam.mx](mailto:irasema@igg.unam.mx)

[aros@ufl.edu](mailto:aros@ufl.edu)

Susan Cutter [scutter@sc.edu](mailto:scutter@sc.edu)



<http://webra.cas.sc.edu/hvri/>