

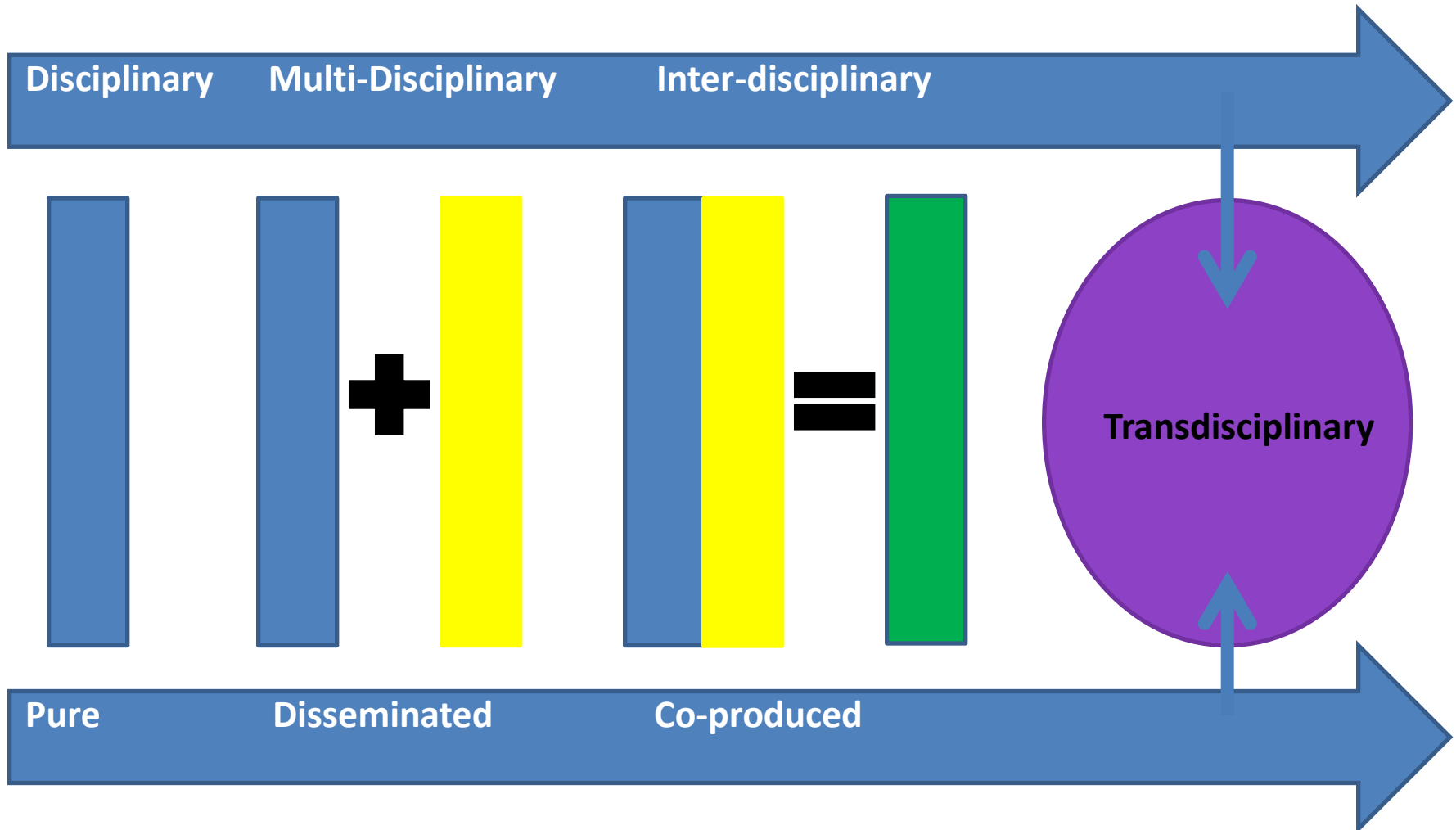
The Role of Integrated Science for Disaster Risk Management Policy and Practice

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How does research progress?



What is integrated research?

Integrated disaster risk research engages multiple disciplines and researchers, scales (local to global), methodological approaches, and stakeholders in the co-production of problem-focused, and policy relevant research related to disaster risk.



Disaster risk science community

- Small community
- Focus on single hazards
- Lack common integrative questions and concepts, inconsistent methodologies; variability in definitions
- Partial integration underway through multiple efforts including IRDR
- No overall systematic assessment of state of knowledge about disaster risk

Result:

Fragmented approach to disaster risk science

Inability to provide holistic solutions to policymakers

Existing barriers: The top 10

- 1. Lack of understanding other science approaches (natural, engineering, social) and methods**
- 2. Scientists not good at translating findings into action; practitioners and policy makers not always understand the nuances of science**
3. Takes time and resources to pull teams together, to develop research networks
4. Geographic disparities between researchers and places studies (hard to translate into local action)
5. Limited engagement with non-academic stakeholders
6. Lack trust and social networks between all stakeholders
- 7. Leadership and willingness to work in a new knowledge environment**
8. Career reward mechanisms and challenges imposed by employers (especially academia)
- 9. Constraints imposed by funding entities (lack of vision, biases of program officers)**
10. Lack good examples of integrated disaster research

General findings on what reduces disaster risk and losses

- ❖ Understand your risk and vulnerabilities
- ❖ Build well (follow building codes) to save lives and property
- ❖ Invest in pre-disaster mitigation and risk reduction
- ❖ Be prepared and practice warning systems and messages
- ❖ Improve risk management governance

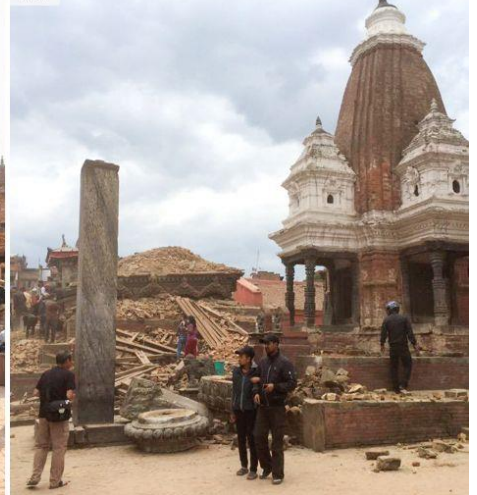
Columbia, SC USA



Before



After



Kathmandu, Nepal

Bangladesh



Need documentation of existing knowledge

What is known with certainty?

What is less well known?

What are the research gaps?

What are the shortcomings in the existing research base (theories, methods, tools)?



Establish a transdisciplinary body of international experts to

- Assess current knowledge on disaster risk
- Assess findings relevant to Sendai targets
- Examine root causes of vulnerability and exposure
- Assess socioeconomic impacts and strategies for reduction in losses
- Transfer knowledge to practice



This year's deadly earthquakes in Nepal killed more than 8,000 people and reduced thousands of buildings to rubble.

Pool knowledge to stem losses from disasters

Public awareness, rigorous risk research and aligned targets will help policy-makers to increase resilience against natural hazards, say Susan L. Cutter and colleagues.

Cutter, S.L., A. Ismail-Zadeh, et al. 2015. Pool knowledge to stem losses from disasters, *Nature* 522 (June 18, 2015): 277-279.

Science inputs into Sendai targets monitoring

Example: “lower average mortality per 100,000 in 2020-2030 compared with 2005-2015”

Quantitative targets

- Poor documentation of disaster losses (national and global scales) → underestimation
- Few systematic and comprehensive loss accounting systems

What to measure?

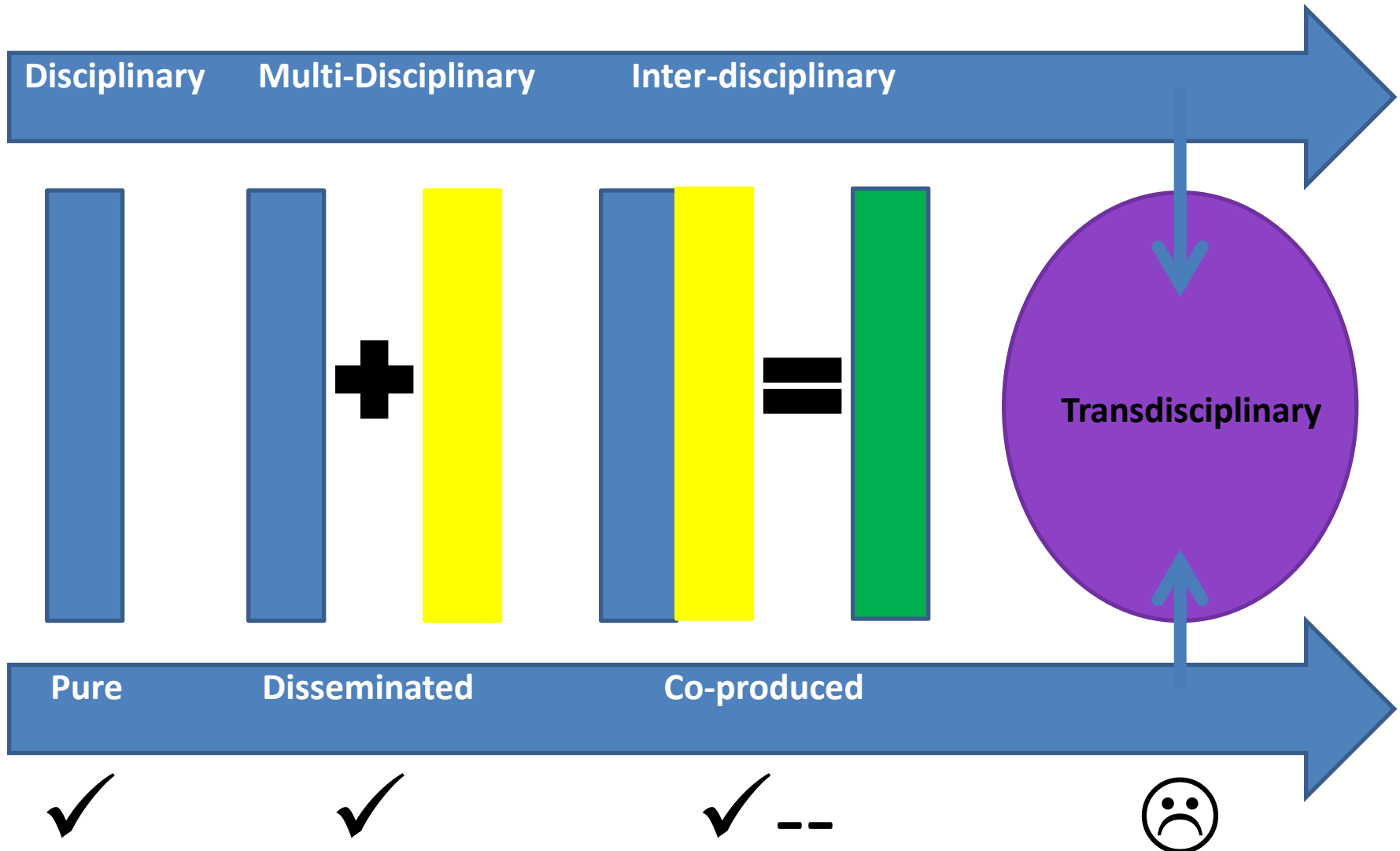
- Absolute values or referent baselines
- Deaths, economic loss, other parameters
- What time frame?
- What spatial unit (subnational, national, global)?



What it means:

- Standardized protocols for definitions and measurement
- Transparency/accountability in measurement
- Curation by meteorological service, statistical bureaus, universities

Where is disaster risk research today?



How to proceed?



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



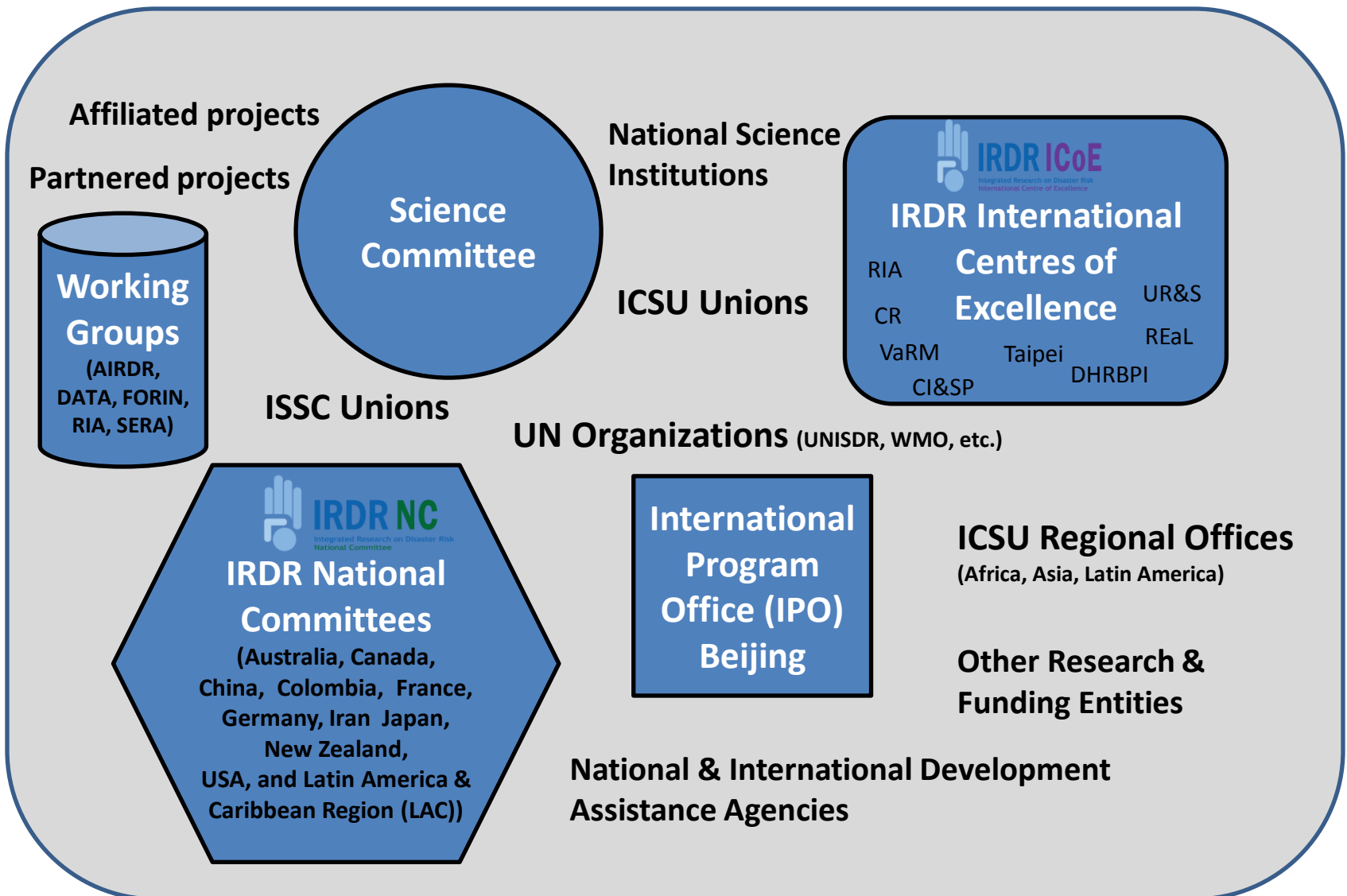
Vision: *to offer “an integrated approach to natural and human-induced environmental hazards through a combination of natural, socio-economic, health and engineering sciences, including socio-economic analysis, understanding the role of communications, and public and political responses to reduce the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



Resources for integrated science

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The *Oxford Research Encyclopedia of Natural Hazard Science* now features **Article Summaries**, concise previews of forthcoming content like *Debris Flow Risk Assessment*, by Matthias Jakob, Kris Holm, and Scott McDougall. Image: Debris flow channel in Ladakh, NW Indian Himalaya, produced in the storms of August 2010. via Wiki Commons

EIC SPOTLIGHT: SUSAN L CUTTER, PH. D FEATURED IN *NATURE*

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In light of the recent earthquakes in the Kathmandu region of Nepal and Hurricane Pam on the island of Vanuatu, ORE Natural Hazard Science editor in chief, Susan L. Cutter, and colleagues offer a proposal for better integration of natural hazard science and policy. Globally, disasters are becoming more frequent and more devastating. International frameworks to prevent and reduce losses of life and livelihood can only work with effective communication between scientists, health experts, policy

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