

ICoE – Spatial Decision Support for DRR – annual report (2018-2019)

ITC – University of Twente (contact: Victor Jetten, Richard Sliuzas)

Sendai as a main focus at ITC

In the course of this year we have created an internal network of professor chairs that cover all aspects of Disasters (fig 1). ITC is facing a research Evaluation in 2 years' time and the Sendai framework and several SDGs (water and food security, urbanization, sustainable land management) have for been selected as focus areas for our research. Bringing together our activities in Disaster Risk Reduction so that we cover the entire field from drivers of hazards, risk, resilience and vulnerability, planning and governance and reconstruction. We aim to play a stronger role in policy and projects, and also improve our education and capacity development, by presenting DRR as an integrated 'wicked' problem, instead of a series of specialisms.

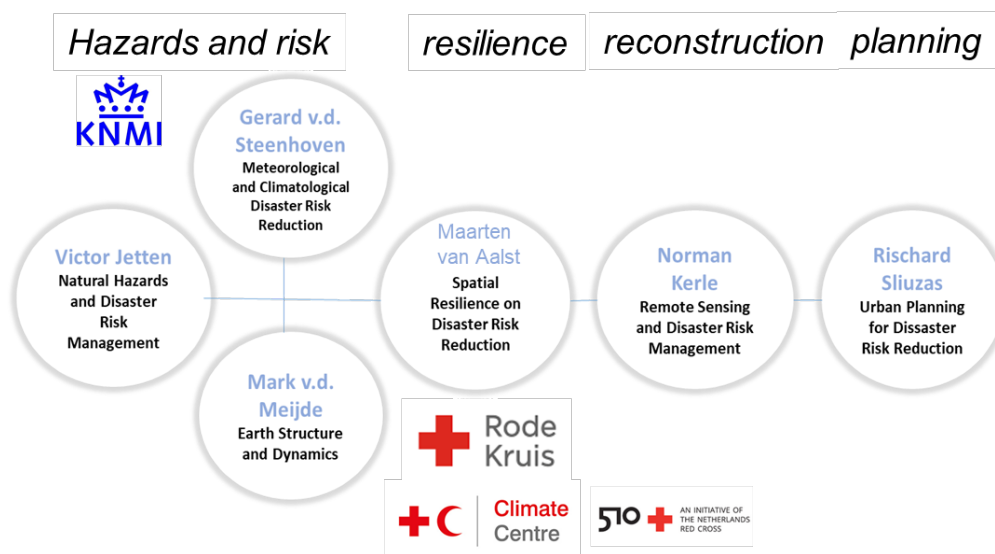


Figure 1. Disaster Risk Reduction scientific nodes and chairs at ITC.

Sendai - Priority 1 and 2. Understanding disaster risk

The focus of the ITC ICoE is informed decision support for DRR. Technically we support this with "RiskChanges : a spatial decision support system for analyzing changing hydro-meteorological risk" (coordinator Cees van Westen). After an initial construction phase in an EU Marie Curie project, this system has now become operational with the help of the Asian Institute of Technology. The system produces risk maps for future scenarios of changing hazards, changing vulnerability and adaptation measures. It includes a full potential damage and cost assessment. The system is free of use.

The focus of the hazard analysis is an open source integrated model for hydro-meteorological hazards (openLISEM, coordinator Victor Jetten). It simulates the consequences of extreme rainfall events including landslides, erosion, debris and mudflows, runoff, river flow and flash floods, simultaneously. The approach is to look at hazards from "a victims point of view": e.g. an inhabitant of a Caribbean island is subjected to all these hazards at the same time, and the effects cannot be modelled one by one as they continuously interact.

Sendai - Priority 3. Investing in disaster risk reduction for resilience Netherlands Red Cross

In te course of 2018 the link with the Netherlands Red Cross has been strengthened (Jeten is advisor to the Princes Margriet fund for Disaster Prevention) and as a result with the Red Cross Red Crescent

Climate Center. The director of this center, Maarten van Aalst has a 0.4 FTE position as professor at ITC. He is one of the editors of the IPCC reports, and has a large network in the humanitarian and policy domain. The Princess Margriet chair Spatial Resilience for Disaster Risk Reduction has three focus points: Forecast based financing, Extreme event attribution, and Risk and resilience analysis across scales. This research is aimed at evaluating and strengthening Netherlands Red Cross activities.

The ITC is also cooperating with 510Global, the Red Cross supported initiative to provide maps in disaster areas. We help organizing mapathons with students, and also are engaged in the quality control cycle (coordinator Rob Lemmens).

Sendai - Global target 7: Early Warning

A strong cooperation is ongoing with the KNMI (the Dutch meteo services) with the director having a chair in risk assessment and early warning. This has led to a Dutch Science Foundation funded research in Indonesia, into early warning systems for landslides, with Indonesian partners (and Indonesian 3 PhDs and 2 Postdocs). While early warning for floods is relative well known, landslides need a different approach, : linking weather forecast via water balance modelling to slope stability forecasting (coordinator Victor Jetten).

The ITC also remains active in the Caribbean, with MSc and PhD research in to the consequences of hurricane Maria on Dominica (ITC and World Bank funded), varying from integrated hazard modelling, to damage assessment to houses and infrastructure. A WMO early warning project (CREWS) is foreseen, but slightly delayed. The KNMI is involved and possibly the ITC as well.

In terms of food security and early warning for drought, the ITC has completed a large project in Kenya (MAMASE: <http://mamase.org/>), looking at sustainable management of land for food and water security, including sustainable modes of financing, in a context of multiple competing land uses in the Mara river basin in Kenya (funded by the Dutch Embassy).

Sendai – Priority 4: Build back better

This theme is the subject of 2 FP7 funded projects (coordinator Norman Kerle): RECONASS (Reconstruction and Recovery Planning: Rapid and Continuously Updated Construction Damage, and Related Needs Assessment), and INACHUS (Technological and Methodological Solutions for Integrated Wide Area Situation Awareness and Survivor Localization to Support Search and Rescue Teams). Reconstruction research also includes PhD research in te Philippines on the consequences of Typhoon Haiyan, with high res remote sensing imagery and drone images for automatic building damage detection.

Sendai – Priority 4. Enhancing disaster preparedness

In Nov 2018 Richard Sliuzas became professor of Urban Planning for Disaster Risk Reduction. The focus of his research is integrating disaster risk information in urban planning, looking at feasible, plausible and possible scenarios of future development, with full stakeholder involvement and collaborative planning. This includes the complexity of formal strategies and planning on the one hand, and numerous individual or collective informal actions on the other. He is currently coordinator of the Resilience and Risks Management Strategies thematic group of the Association of European Schools of Planning (AESOP) and a member of the Global Human Settlement working group.

Activities: workshops organized at ITC

- 22 Nov 2018: Symposium & World Café: Cities, Climate Change and Spatial Decision Support. for the inauguration of prof Richard Sliuzas. With contributions from IRDR, UN-Habitat, Red Cross, KNMI.
- 12 Dec 2018: Mapathon “Making and using ‘open maps’ in Dar es Salaam” 13 Sep 2019: Symposium “Resilience In The Face of Rising Risks” for the inauguration of prof Maarten van Aalst. With contributions from the World Bank, European Space Office, Red Cross Climate Center, UN office for DRR, and the Climate Envoy of the Netherlands.

Networking activities

- Participation in the UNDRR Global Platform on DRR in Geneva (12-17 May 2019), including the Science and Technology forum, IRDR SC meeting and Global Platform event (UNDRR Urban Planning Advisory Group – UPAG)
- Participation in the International Conference on Climate Action in Heidelberg (20-23 May 2019).
- In 2019, ITC has become a scientific advisor of the NASA-SERVIR network, with a focus on the Bangkok Hub for the use of Geoinformation for Disaster Management and Food Security.

New Projects (2018-2019)

Tajikistan (2019-2020). UNDP project on “Multi-Hazard Risk Assessment at District Level for Tajikistan”. The main objective of this project was to assess the vulnerability of communities and infrastructure to natural hazards, determine their degree of exposure to future hazardous events for six major hazards

BILEWS (2018-2020). A Blueprint for Indonesian Landslide Early Warning System. Bilateral NWO-RISTODIKTI funded research project.