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7th International Conference on Building Resilience; Using scientific knowledge to inform policy and practice in disaster risk reduction, ICBR2017, 27 – 29 November 2017, Bangkok, Thailand

Editorial: Using scientific knowledge to inform policy and practice in disaster risk reduction

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Peer-review under responsibility of the scientific committee of the 7th International Conference on Building Resilience.

1. Introduction

This volume includes selected papers presented at the 7th International Conference on Building Resilience: Using scientific knowledge to inform policy and practice in disaster risk reduction. The event was held from 27-29 November 2017 at Swissotel Le Concorde, Bangkok, Thailand.

The conference was organised by: Global Disaster Resilience Centre, University of Huddersfield, UK; Naresuan University, Thailand; Chiang Mai University University; Thailand; and, the Asian Disaster Preparedness Center, Thailand.

The conference was organised in association with: Federation of Sri Lankan Local Government Authorities, Sri Lanka; United Nations International Strategy for Disaster Reduction (UNISDR); International Journal of Disaster Resilience in the Built Environment; and, Advancing Skill Creation to Enhance Transformation (ASCENT), an EU Erasmus+ project.

Partners of the conference included: University of Central Lancashire, UK; Tallinn University of Technology, Estonia; Vilnius Gediminas Technical University, Lithuania; Mid Sweden University, Sweden; Lund University, Sweden; University of Moratuwa, Sri Lanka; University of Colombo, Sri Lanka; University of Ruhuna, Sri Lanka; University of Dhaka, Bangladesh; BRAC University, Bangladesh; Patuakhali Science and Technology University, Bangladesh; Western Sydney University, Australia; the International Institute of Infrastructure Resilience and Reconstruction; and University of Peradeniya, Sri Lanka.

The conference incorporated keynote addresses by: Professor Sujeeva Setunge, Deputy Dean, research and innovation, School of Engineering, RMIT University in Melbourne, Australia; Professor Mo Hamza; Professor of Risk Management and Societal Safety, Lund University, Sweden; Professor Virginia Murray; Public Health

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Consultant in Global Disaster Risk Reduction, Public Health England; Dr. Harkunti P. Rahayu, Chair of IABI, Association of Disaster Expert Indonesia & School of Architecture, Planning and Policy Development, Institute of Technology Bandung, and Research Center for Disaster Mitigation, Indonesia, and Dr. Peeranan Towashiraporn, Director, Asian Disaster Preparedness Center.

2. Conference themes

The Third World Conference on Disaster Risk Reduction (WCDRR) was attended by over 6,500 participants, including 2,800 government representatives from 187 governments. The public forum had 143,000 visitors over the five days of the conference, making it one of the largest United Nations (UN) gatherings ever held in Japan. The host city, Sendai, had experienced a vibrant recovery following the massive 2011 earthquake and tsunami that triggered a nuclear accident at the Fukushima Daiichi Nuclear Power Plant. The city appeared to offer an ideal location for a conference devoted to updating the landmark disaster resilience agreement reached in 2005 in Hyogo, Japan.

The Hyogo Framework for Action (HFA) was itself crafted in the wake of the devastation of the Indian Ocean tsunami, which claimed 227,000 lives. The HFA has since produced some important successes, including a contribution to the reduction in the number of people directly affected by natural disasters in Asia – where most such disasters occur – by almost one billion. Nevertheless, its shortcomings were also well-documented and speakers in Sendai acknowledged that over the past decade, disasters had continued to take a heavy toll, killing more than 700,000 people, injuring 1.4 million and leaving some 23 million homeless as a result. Since 2005, more than 1.5 billion people were in some way touched by disaster and worldwide economic losses topped $1.3 trillion.

The overriding objective of the week was to finalise a post-2015 framework that the UN Member States would adopt by the time the conference concluded. The final plenary and closing of the WCDRR had to be postponed several times, as the lengthy negotiation continued, but just before midnight on 18th March, delegates at the WCDRR adopted a new framework.

The Sendai Framework for Disaster Risk Reduction charts the global course over the next 15 years. During the consultations and negotiations that led to its finalisation, strong calls were made to develop practical, evidence based guidance to support implementation, ensure engagement and ownership of action by all stakeholders, and strengthen accountability in disaster risk reduction.

As members of the scientific community, among those objectives and priorities, we had hoped that there would be strong recognition of science and also identification of a need to strengthen the relevance and use of science for DRR from the global to local scales. Reducing disaster risk is an issue cutting across different sectors, which requires trans-disciplinary and trans-boundary approaches with the support of the natural and social sciences, including for natural hazards and applied fields such as health, agriculture, economics, environment, engineering and technology. Science can and should play an important role in reducing risk and building the resilience of nations and communities to disasters.

In the HFA, science was called for only in general terms: “Use knowledge, innovation and education to build a culture of safety and resilience at all levels”. But the SFDRR has an enhanced role for science and knowledge, including explicit mention of coproduction. Science is called to action repeatedly in the text, be it in DRR education and training, post-disaster reviews, research into disaster scenarios or early warning systems. Modelling and early warning are especially emphasised, but there is also recognition of wider social processes, including culture. There is also renewed emphasis on training and, within this, on integrated approaches.

The increased prominence of science within the SFDRR is, at least in part, due to the unswerving efforts of the Science and Technology Major Group, which has been developing an international partnership to mobilise science for action on DRR and resilience building, working with the UNISDR Science and Technical Advisory Group (STAG). The Science and Technology Major Group brought together in Sendai nearly 400 delegates from a wide range of organisations and networks active across all disciplines and sectors.

Within the SFDRR, the role of academia, scientific and research entities and networks is specifically recognised, and they are encouraged to:

[…] focus on the disaster risk factors and scenarios, including emerging disaster risks, in the medium and long term; increase research for regional, national and local application; support action by local communities and authorities; and support the interface between policy and science for decision-making.

This conference brought together the full diversity of the science community, policy makers, practitioners and researchers from all geographical regions, at local, national, regional and international levels to share state of the art research, and discuss how the science community will best support the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030.

The conference also considered ways to support integration of Sendai with the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC), and the 2030 Agenda for Sustainable Development (Sustainable Development Goals).

The themes of the conference included, but were not limited to the priorities of the Sendai Framework for Disaster Risk Reduction 2015 – 2030:

- Understanding disaster risk
- Strengthening disaster risk governance to manage disaster risk
- Investing in disaster risk reduction for resilience
- Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

Many of the submissions also focused on one or more of the many cross-cutting themes in the Sendai Framework, such as: Accountability, Multi-stakeholder approach, inclusion and empowerment of stakeholders, Peer review among countries, Land use and urban planning, Ecosystems-based disaster risk reduction, National and local platforms for DRR, Health systems and DRR, Finance, Insurance and risk transfer, Standards, Social protection, Cultural heritage, and Tourism.

All papers published in this Procedia were subjected to double blind peer review by members of the international scientific committee.

The Conference was held in Bangkok, Thailand. Although Thailand is rarely impacted by typhoon winds, the remnants of storms crossing Vietnam, Cambodia, and Laos from the east generate heavy precipitation in Thailand on a near-annual basis. Thailand is a flood-prone country. Because flooding is a regular occurrence and the population and number of exposed properties continue to grow, losses will continue to rise unless effective resilience building can be enacted. Business is concentrated around the Chao Phraya River, which runs through the country's central plains to the capital, Bangkok, before emptying into the sea. The river's basin is home to 40% of Thailand's citizens, employs 78% of its workforce, and generates 66% of its GDP. Flooding in this area in 2011 was some of the most severe in modern history; its impact not only devastated a major city, but propagated through manufacturing supply chains around the world. The interconnected and global nature of disaster risk was clearly exposed by this disaster.

It is our hope that Thailand will benefit greatly from the research and activities associated with the Conference, and that the country provided an appropriate backdrop for tackling challenging questions about how to build disaster resilient communities around the world.

3. ASCENT - Advancing Skill Creation to ENhance Transformation

The conference incorporated a meeting of the ASCENT project, as well as ASCENT training to build research capacity in disaster resilience. ASCENT is funded by the European Union and aims to strengthen research and innovation capacity for the development of societal resilience to disasters. The project is supporting training, skills, leadership development, international collaboration and university-industry partnerships. It is strengthening the ability of higher education to respond to research needs in disaster resilience. It is also empowering individuals and organisations with the skills, competencies and credentials needed to continue to pursue research, and to lead research at institutions, aimed at reducing the impact of disasters.

ASCENT is co-funded by an EU Erasmus+ programme grant, is running for three years and is led by the University of Huddersfield's Global Disaster Resilience Centre, based in the UK. They are joined by a consortium

of 13 European and Asian higher education institutions from the Bangladesh, Estonia, Lithuania, Sri Lanka, Sweden, Thailand and the UK.

Over three years, the ASCENT consortium is identifying research and innovative capacity needs across Asian higher education institutions in Bangladesh, Sri Lanka and Thailand to tackle the development of societal resilience to disasters. It is developing research infrastructure, preparing researchers to undertake advanced, world-class and innovative, multi- and interdisciplinary research, and increasing international cooperation among higher education. It is also exploring, promoting and initiating opportunities for fruitful university / industry partnerships. In doing so, ASCENT is providing a vital link between the research and the public, helping to reinforce the connection between education and society.

The project was inspired by the Sendai Framework for Action 2015-2030, signed by 187 UN member states in March 2015, as a 15-year, voluntary, non-binding agreement which recognises that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government, the private sector and other stakeholders. The Framework identifies that international, regional, sub-regional and transboundary cooperation remains pivotal in supporting the efforts of States, their national and local authorities, as well as communities and businesses, to reduce disaster risk.

The results of several ASCENT project activities, as well as the work of many of the ASCENT consortium, were presented at this 7th International Conference on Building Resilience, and published in this issue of Procedia Engineering.

Further information about ASCENT can be found at: www.ascent.disaster-resilience.net.

4. Organising and scientific committees

The conference chairs, Professor Dilanthi Amaratunga and Professor Richard Haigh, from the Global Disaster Resilience Centre, University of Huddersfield, UK, would like to take this opportunity to express our sincere appreciation to the organising and scientific committees.

Conference co-chairs
Associate Professor Dr. Sarintip Tantanee, Naresuan University, Thailand
Assistant Professor Dr. Liwa Pardthaisong, Chiang Mai University, Thailand

Publication and technical directors
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Dr. Kaushal Keraminiyage, Global Disaster Resilience Centre, University of Huddersfield, UK

Conference theme leaders
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Strengthening disaster risk governance to manage disaster risk
Professor Richard Haigh, Global Disaster Resilience Centre, University of Huddersfield, UK

Understanding disaster risk
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Dr. Yamuna Kaluarachchi, London South Bank University, UK

5. The International Conference on Building Resilience series

The International Conference on Building Resilience series was established in 2006 by Professors Dilanthi Amaratunga and Richard Haigh, now at the Global Disaster Resilience Centre at the University of Huddersfield in the UK.

The first conference was held in 2008 at Heritance Kandalama near Dambulla in Sri Lanka. Since then, the conference has been held in Sri Lanka (2011, 2013), the UK (2014), Australia (2015) and New Zealand (2016).

These conferences brought together major international networks to address global challenges and advance research agendas. 2017 was the first time the conference has been held in Thailand.