Introduction

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Firstly, we wish to acknowledge the efforts of the contributors to this special edition of the NZAIA Impact Connector. These are very demanding times for everyone and yet they've delivered a diverse and very engaging set of articles.

Thank you all.

With this edition of Impact Connector, we're focusing on risk and impact assessment. Risk assessment and impact assessment are disciplines that have evolved in parallel and have an intriguing and overlapping relationship. Indeed, debate continues about whether they are, in fact, distinctly different or not.

We won't resolve the debate here, and it's not our intention to do so. We can and will, however, refer you an excellent early treatise by Andrews (1) on the subject and Martina Zelenakova's paper (2) on the integration of risk assessment with the environmental impact assessment (EIA) process. From these you can explore the relationship between the disciplines.

This edition of Impact Connector serves as an introduction to risk assessment and offers new and innovative ways of understanding and responding to risk. It also describes case studies where a variety of methods were applied to understand the risk from natural hazards and climate change. We don't explore public health risk or many other sub-domains of risk assessment and, intentionally, the focus has been on risks presented by natural hazards.

We begin with an engaging piece from Jack Krohn of the Victorian State Government in Australia that challenges our overuse of jargon and offers a perspective on the application of impact and risk assessment from Australia. This sets the scene well for our other papers.

We then hear from Rob Bell, who after many years leading a critically important research programme on natural hazards and risk with NIWA, provides justification for an adaptive approach to responding to uncertainty. Both risk assessment and impact assessment can incorporate this paradigm when specifying approaches to mitigate risk

and impact over time.

Then Matt de Boer of the New Zealand Climate Commission, and formerly with Northland Regional Council (NRC), gives his perspective on how risk assessment helps inform an understanding of the impacts of climate change and how he and his former team at NRC approached climate risk assessment and adaptation planning in Northland Region of New Zealand.

Damon Coppola then writes about values-based impact assessment and emergency management, an approach where risks to what is valued by communities, including their vision of development, must be analysed and communicated clearly in order to engage communities effectively in addressing the potential impacts.

One of the toughest challenges in risk assessment is quantifying and communicating uncertainty. Bapon Fakhruddin and John Handmer of Tonkin & Taylor and RMIT University, respectively, give us an engaging example of how they've addressed this in the context of flood risk management.

John Kreft and Mark Easton have been establishing a very clever platform for monitoring rockfall risk for Waka Kotahi – The New Zealand National Transport Agency. It was the ambition of Waka Kotahi to have a near real-time impact-based forecasting system for rockfall risk along its state highway road corridors, and this paper describes how this was achieved.

Some of you will be familiar with how the insurance sectors assesses risk and seeks to understand the losses associated with likely future events. We're fortunate to have Ryan Crompton & Paul Somerville of Risk Frontiers contribute an interesting paper on their work to 'normalise' the losses associated with historic natural hazards in New Zealand.

Bapon's second contribution is with his colleague, Richard Reinan-Hill, and they describe how they have achieved seamless forecasting of weather and climate impacts. This important work sets a precedent for future impact-based forecasting and early warning systems.

Finally, we offer a short story about how key data gaps were addressed in a comprehensive multi-hazard risk assessment completed for the State Government of Uttarakhand in Northern India. This study is typical of projects invested in by the World Bank and other international development agencies as they invest in strengthening capacity for disaster risk reduction.

So, quite the variety. Enjoy!

Tom & Rajan

References

(1) Andrews, R.N.L (1990). “Environmental impact assessment and risk assessment: learning from each other” in Environmental Impact Assessment Theory and Practice (ed Wathern, P.), Routledge Press.

(2) Zelenakova, Martina (2017) Risk Analysis within Environmental Impact Assessment: A review. Proceedings of the 17th International Multidisciplinary Scientific GeoConference (SGEM2017)