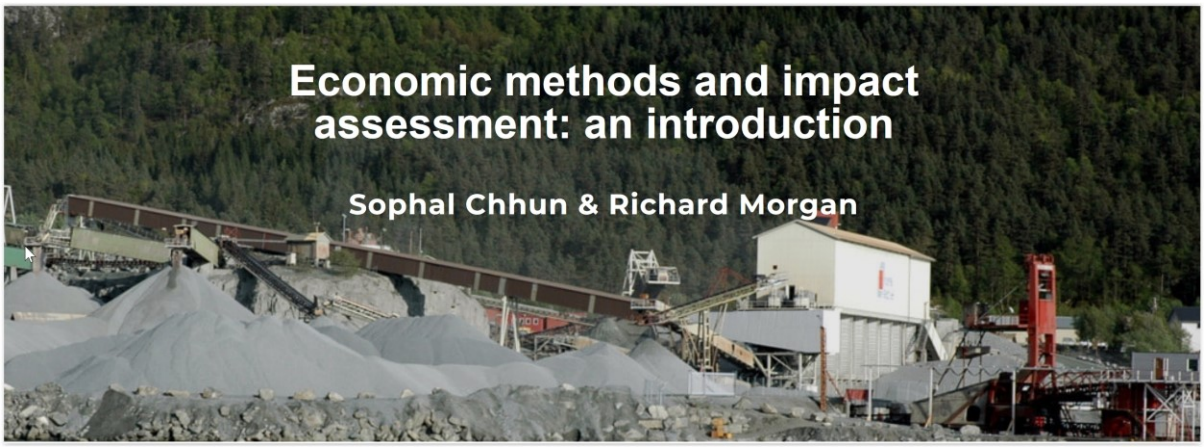

Introduction

This issue of *Impact Connector* focuses on the use of economic methods and instruments to inform decision making and policy settings within the impact assessment context, to support sustainable development. Among the various economic methods so far developed, economic valuation of the environment, or environmental valuation, has been increasingly used to inform and justify decision-making about resource development. This is a response to traditional cost benefit analyses lacking information about certain values, especially those related to intangible ecosystem services. This leads to such services being perversely treated as having "no value" or at least being given less weight relative to tangible values, such as marketed goods when trade-offs between these values are considered (TEEB, 2010). Economic impact assessment (EcIA) is another method that has emerged, to be used as part of, or in parallel to, conventional impact assessment (IA) in a decision-making process. At a project level, EcIA quantifies, among other things, the socio-economic impacts of proposals such as value added or the contribution to GDP and employment. At a policy level, EcIA can be used in parallel with other IAs to provide quantified costs/benefits of the policy - for example, as part of a 'section 32' report under the RMA in New Zealand.

Despite broad application, there is still lively debate about the relative merits and perceived methodological weaknesses of various economic methods, and how methods and practices can be improved.

Based on "over a decade's experience in applied freshwater economics for local government's regional sector" **Emma Moran** (EM Consulting) examines the application of economic analyses to improve policy making in resource development. The article puts forward pragmatic ideas for more effective economic analyses that will be consistent with the forthcoming environmental and planning legislation, and will help policy makers more effectively avoid the unintended consequences of their decisions.

The editors asked **Prof. Murray Patterson** (Massey University) to reflect on the economic valuation of ecosystem services, a topic for which he has established an international reputation, and comment on the use of such methods in impact assessment. His article provides an excellent primer on the origin and approaches to the challenge of economic valuation of ecosystem services, before considering some of the key issues facing

practitioners wanting to assign monetary value to such services, and includes an updated table of ecosystem service unit values for New Zealand land and nearshore ecosystems. Prof Patterson also includes an overview of his work with iwi/hapu to examine the ecosystem services concept in the context of Te Ao Maori, and recognises that cultural and spiritual values, while important components of ecosystem services, should not be subject to economic valuation, but incorporated into decision-making in other ways. The final section of the article makes recommendations for impact assessment practice.

Economic impact assessment is well established in Queensland, Australia, and complements their environmental impact assessment processes. **Dr Galina Williams** uses the mining sector to analyse current EcIA practice. Specifically, she uses a technique called data envelopment analysis (DEA) to compare regions where mining projects were approved to other regions to assess whether EcIA was leading to greater efficiencies in resource use, and identify how practice could be improved to improve resource use efficiency. Dr Williams suggests the current focus in EcIA on employment and income growth should be expanded to include wider socio-economic indicators, to provide a better picture of potential impacts when designing regional economic policies.

In addition to valuation methods and EcIA, it is important to recognise the potential contribution of economic instruments to incentivise behaviour changes. These can be used to promote positive environmental impacts (e.g. payment for ecosystem services), discourage activities that have adverse environmental impacts (e.g. pollution taxes), internalise adverse impacts, or make the polluters responsible for their impacts (e.g. NZ ETS). These instruments provide an important toolkit that may be of use in developing impact mitigation measures, particularly with regard to policy development. It is not practical to cover such a large topic in this issue of the NZAIA Impact Connector – we can only refer you to some excellent works on the topics, including Smith et al. (2013), Hayes et al (2022), Yeldan (2019), Metcalf (2021), and Diaz-Rainey & Tulloch (2018). However, we did want to provi.de a practical example of the use of an economic instrument to promote better environmental outcomes, and it comes from the dairy industry.

Michael Hide, General Manager for Sustainable Dairying, describes Fonterra's policy on economic incentives for promoting sustainable farming practices in New Zealand. Interestingly, while the financial incentives underpin the first two levels of the programme, the reward for achieving the third level, sustained better environmental practices, is a non-monetary one: the status of being recognised as a top performing dairy operation.

The editors would like to thank the contributors to this issue and trust that our readers are informed and stimulated by reading this issue of NZAIA's *Impact Connector*. Using economic methods in impact assessment can be challenging, so we hope these examples of the application of economic methods and instruments help to overcome some of the challenges.

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