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## Funding mechanisms for disaster recovery: can we afford to build back better?

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### Abstract

This paper will present findings from a longitudinal case study of the reconstruction of horizontal infrastructure networks in Christchurch, New Zealand, following the major earthquakes of 2010–2011. This involved exploring the role of governance in recovery and in particular, how funding mechanisms shape decisions for managing disaster risk. National policy on the funding of recovery that was geared towards direct replacement of existing infrastructure had a pivotal role in influencing design standards for infrastructure reconstruction. An outcome of this national policy, combined with constrained local financial resources, is that it was difficult to maximise the opportunity presented by a disaster to resolve the shortcomings of the existing infrastructure systems. This raises critical questions: whether it is appropriate to attempt to improve infrastructure in recovery and how local governments (or asset owners in general) may be better incentivised to invest proactively to reduce future disaster risk. Special (yet limited) betterment funds were made available for the Christchurch reconstruction and similarly for post-flood reconstruction that was in progress at the same time in Queensland, Australia (which will also be explored in the paper). However, recent recovery funding reviews conducted in New Zealand and Australia have identified a need to investigate incentives to increase proactive investment to limit damage. This paper explores this proposition and presents some of the challenges faced with respect to building back better in Christchurch's reconstruction and the subsequent lessons for developing future funding mechanisms for disaster recovery. It demonstrates the need for clearer terms of engagement between central government and local government, and how insurance mechanisms could play a more effective role.

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## 1. Introduction

Available funding is a critical element of any large construction project or programme. However, factors associated with speed, flexibility and multiple actors have a distinct impact on budgeting in the context of reconstruction [1]. It is often posited that post-disaster recovery is an opportunity to ‘build back better’, which (put simply) means to rebuild in a way that reduces disaster risk and provide for future needs of the community. Yet, limited availability of funding can constrain such aspirations. Even in a country like New Zealand, which had high levels of insurance to cover the costs of earthquakes that occurred in Christchurch over 2010 to 2011<sup>†</sup>, both central and local government were somewhat unprepared for the extent of damage that occurred in Christchurch. The subsequent level of spending required to rebuild invoked high levels of scrutiny from those providing the funds.

This paper presents findings of a case study that followed the post-earthquake reconstruction process in Christchurch, New Zealand, as the process advanced over time. The study focused on the decision making associated with rebuilding the city’s publically owned infrastructure networks and how the concept of ‘build back better’ manifested in reconstruction decisions. The study centred on the role of Stronger Christchurch Infrastructure Rebuild Team (SCIRT), a temporary organisation that was formed to deliver the reconstruction of Christchurch City Council’s (the local council, hereafter ‘the Council’) water supply, wastewater, stormwater and road networks (collectively referred to here as ‘horizontal infrastructure’) for a contract sum of approximately \$NZ2.3 Billion. SCIRT’s goal was to create ‘resilient infrastructure that gives people security and confidence in the future of Christchurch’ [2, p. 15], which is helpful to consider as we explore what solutions were deemed eligible for funding.

The authors recognise that rebuilding horizontal infrastructure is just one amongst many initiatives required to rebuild a city and its communities, but it is nonetheless worthwhile to examine this aspect of a city’s recovery process. Funding mechanisms proved to be a key factor in shaping what changes or improvements could be incorporated into the reconstruction, which will be investigated in this paper through exploration of the interactions between the regulatory framework, the capacity of local governments and infrastructure design standards.

This paper begins with a brief review of literature that highlights the challenges in funding post-disaster infrastructure reconstruction. The research methodology is then explained in further detail. This is followed by an analysis of the funding mechanisms in the Christchurch case study, with some comparisons to post-flood reconstruction in Queensland, Australia, which was underway at the same time. The purpose is to demonstrate the impact of funding mechanisms on reconstruction decisions.

## 2. Funding infrastructure reconstruction

In efforts to reduce ongoing impact of a disaster on affected communities, time pressures are significant and budget approval and procurement times need to be shortened to reduce lead-in periods to physical reconstruction. Flexibility is required to initially manage the immediate needs for funding emergency response then to transition into the longer-term reconstruction process. Multiple actors with different budget mechanisms may be involved; this can become particularly challenging when non-governmental organisations want to engage in the reconstruction. This can be problematic when actors have limited direct experience working in the country or their mandates do not necessarily align with the needs of the community [3]. Involvement of external organisations was not a primary issue in Christchurch as the government (both local and central) self-funded the infrastructure reconstruction (with some external support through insurance cover). However, multiple actors were part of the process and the reconstruction programme required the flexibility to respond to a changing funding context.

In the Global Facility for Disaster Reduction and Recovery’s guidance for post-disaster recovery, Sagara and Ishiwatari [4] recommend that budget-sharing mechanisms for recovery between local and central governments need to be established in advance, as negotiations after a disaster will only delay reconstruction. While this was directed towards developing countries (presumably because they typically have less developed disaster risk management

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<sup>†</sup> The February 2011 earthquake was one of the most costly disasters for the global insurance industry on record [25].

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