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# Maximising synergies between disaster risk reduction and climate change adaptation: Potential enablers for improved planning outcomes

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ABSTRACT

Recent extreme weather events worldwide have highlighted the vulnerability of many urban settlements to future climatic change. These events are expected to increase in frequency and intensity under climate change scenarios. Although the climatic change may be unavoidable, effective planning and response can reduce its impacts. Drawing on empirical data from a 3-year multi-sectoral study of climate change adaptation for human settlements in the South East Queensland region, Australia, this paper draws on multi-sectoral perspectives to propose enablers for maximising synergies between disaster risk reduction and climate change adaptation to achieve improved planning outcomes. Multi-sectoral perspectives are discussed under four groups of identified enablers: spatial planning; cross-sectoral planning; social/community planning; and strategic/long term planning. Based on the findings, a framework is proposed to guide planning systems to maximise synergies between the fields of disaster risk reduction and climate change adaptation to minimise the vulnerability of communities to extreme weather events in highly urbanised areas.



## 1. Introduction

Climate risks in urbanised areas are increasing with significant impacts on urban populations, economies and ecosystems, including extreme weather events leading to disasters (Revi and Satterthwaite, 2014; Wamsler, 2014). Urban planning and management (hereafter referred to as planning) plays a critical role in reducing climate risks through both spatial and strategic plan making and plan implementation (Berke and Campanella, 2006; Olshansky and Chang, 2009; Olshansky, 2006). Typically, planning policies have focused on minimising risks through prohibiting development in high risk areas and applying appropriate development controls (Harman et al., 2013; Wamsler, 2014). However, economic damages associated with disasters caused by extreme weather events have increased over time due to both social vulnerabilities and changes to physical hazards

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(Adger et al., 2005; Crompton and McAneney, 2008). As climate change is likely to escalate the frequency and intensity of extreme weather events (IPCC, 2014) increased pressure is being added to planning systems to implement more holistic measures to address future climate risks.

This paper argues that one lens through which planning can improve its ability to deal with forecast climate change impacts is by maximising synergies between strategies seeking disaster risk reduction and climate change adaptation. Arguments are based on empirical findings from the South East Queensland Climate Adaptation Research Initiative (SEQCARI), a three-year multi-sectoral study of climate change adaptation options for the South East Queensland (SEQ) region in Australia. Section 2 introduces the latest discussions on the interconnected fields of disaster risk reduction and climate change adaptation, followed by two key emerging concepts: betterment and post-disaster planning in the pre-disaster phase. Section 3 reports on the research approach and methodology along with a typology of enablers for maximising synergies between disaster risk reduction and climate change adaptation based on multi-sectoral stakeholders' perspectives identified by the SEQCARI project. These enablers are described in Section 4 and form the basis for the proposal of a framework for planning systems to reduce current and future vulnerability of highly urbanised areas to extreme weather events presented in Section 5.

## 2. Conceptual underpinnings: (re) connecting disaster risk reduction and climate change adaptation

There is an increasing understanding that climate change adaptation and disaster risk reduction are interconnected fields that deserve investigations seeking their overlaps and synergies (Birkmann and von Teichman, 2010; Gero et al., 2011; Howes et al., 2014; McBean and Ajibade, 2009; Schipper, 2009; Schipper and Pelling, 2006; Solecki et al., 2011). In the last decade there has been an increasing demand to integrate these two fields, especially within the international development arena, yet progress has been slow and examples of effective integration, especially at the national and local levels, remain limited (Birkmann and von Teichman, 2010; Gero et al., 2011; Mitchell et al., 2010). Despite calls for exploiting the synergies and identifying signs of convergence, there is very little guidance on how to integrate disaster risk reduction and climate change adaptation, as the relationship between both fields remains unclear. For example, Birkmann and von Teichman (2010) note how on the one hand it is argued that climate change adaptation needs to be mainstreamed into disaster risk reduction, while on the other disaster risk reduction is seen as a sector or cross-cutting theme within adaptation. In addition, both fields have different theoretical and cultural origins and are supported by different sets of institutions, methodologies and policy frameworks (Mitchell et al., 2010; Schipper, 2009; Tearfund, 2008).

Nevertheless, recent studies have identified some of the synergies as well as key challenges to the integration of these two fields (Birkmann and von Teichman, 2010; Mercer, 2010; Mitchell et al., 2010; Tearfund, 2008). Birkmann and von Teichman (2010) reviewed the literature and noted that the integration of the two fields is subject to challenges related to mismatch of temporal, spatial and functional scales as well as mismatches in norms and knowledge. These mismatches result in missed opportunities for integration and effective long term vulnerability reduction. For example, the recovery phase provides a window of opportunity for implementing long term disaster risk reduction measures yet this opportunity is often neglected and remains unused. In addition, the opportunity to rebuild in an adaptive way and to consider future climate change is in most cases not considered, as recovery tends to focus on building back as quickly as possible to pre-disaster conditions (Birkmann and von Teichman, 2010).

Integrating disaster risk reduction and climate change adaptation will demand 'greater collaboration between communities of policy makers, practitioners and researchers' (Howes et al., 2014:3). Additionally, Howes et al. (2014) suggest that integration could be interpreted as joined-up government efforts focused on elimitating policy trade-offs, improving use of resources and improving exchange of ideas and cooperation between stakeholders (Pollit, 2003 cited in Howes et al., 2014). In parallel, Wamsler (2014) argues that such integration can only occur, at least from a planning and theoretical perspective, if both fields are considered cross-cutting issues embedded in planning systems through a series of seven mainstreaming strategies. Such strategies should target three realms: (i) the implementation of specific programmes aimed at reducing climate and disaster risk; (ii) the modification of intra- and inter-organisational operational procedures such as management, policy and working structures to improve coordination in the implementation of programmes and reduce spill-over effects; and (iii) education and training of practitioners and policy makers on disaster risk reduction and climate change adaptation (Wamsler, 2009).

Despite the long history the disaster risk reduction community has in addressing hazards and vulnerability (Solecki et al., 2011), there is limited research available that can inform urban and regional planners to better address disaster risk reduction (Blanco et al., 2009a; Olshansky et al., 2012; Wamsler, 2014; Wamsler et al., 2013). In parallel, there is limited empirical analysis of effective climate change adaptation strategies that can be implemented through spatial and/or strategic planning (Hurlimann and March, 2012; Wamsler, 2014; Wamsler et al., 2013; Wise et al., 2014). Nevertheless, the core business of planning systems has to deal with a legacy of past decisions that potentially place many people as well as private and public assets at an increased risk of harm from current and future extreme weather events (Burby et al., 2000; Hurlimann and March, 2012; McDonald et al., 2010; Stevens et al., 2010a; Wamsler, 2014). For example, the impact of Hurricane Katrina on New Orleans is an exemplar of the vulnerability of communities falsely protected by hard infrastructure devices, such as coastal defence structures (Colten and Giancarlo, 2011; Heazle et al., 2013). Additionally, using the example of Melbourne's peri-urban area that was savaged by the 2009 Black Saturday fires, Buxton et al. (2011:11) highlight that despite the risks there has been continuous development in areas of 'increased and extreme bushfire threat from climate change'.