



A discussion of resilience and sustainability: Land use planning recovery from the Canterbury earthquake sequence, New Zealand

W.S.A. Saunders*, J.S. Becker

Joint Centre for Disaster Research, GNS Science, PO Box 30368, Lower Hutt, New Zealand

ARTICLE INFO

Article history:

Received 13 June 2014

Received in revised form

16 January 2015

Accepted 18 January 2015

Keywords:

Sustainability

Resilience

Land use planning

Earthquakes

Christchurch

ABSTRACT

The term 'resilience' is increasingly being used in a multitude of contexts. Seemingly the latest 'buzz' word, it can mean many things to many people, in many different situations. In the natural hazard context, the terms 'sustainable planning', and 'resilience planning' are now being used, often interchangeably. But from a natural hazard perspective, is a resilient community a sustainable one? In order to be sustainable, does a community need to be resilient? The purpose of this paper is to answer these two questions, and stimulate discussion on how the two terms are being used. The paper provides an overview of resilience and sustainability within a land use planning and natural hazard context, and discusses how they are interrelated. The New Zealand legislative requirements for resilience and sustainability are outlined, followed by the presentation of an example from the earthquake impacted city of Christchurch, New Zealand. This example outlines the planning response to the earthquakes, and the sustainable and resilient planning options being implemented. The discussion shows that a resilient community should also be a sustainable community, in order to meet legislative requirements, and – more importantly – to ensure the needs of future generations are met, economically, socially, culturally, and environmentally.

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

The term 'resilience' is increasingly being used in a multitude of contexts, from physical, psychological, ecological, social, city, community to individual resilience [23,29,33,44,66]. 'Resilience' is also now being used in a land use planning context with the term 'resilience planning' bandied about, often interchangeably with sustainability [61,6,24,26]. But questions remain over what resilience actually means for land-use planning, and the relationship that such a concept actually has with sustainability. Is a resilient community a sustainable one? In order to be sustainable, does a community need to be resilient?

The purpose of this paper is to stimulate discussion on how the two terms are being used, and to provide examples of their usage in a land use recovery context from natural hazard events. First, the paper will provide an overview of the terms 'sustainability' and 'resilience' to ascertain the similarities and differences between the two terms. The overview will also cover how these terms are used in the New Zealand legislative setting. Second, the paper will provide some discussion and thought about the relationship between sustainability and resilience. Third, recovery

can provide a useful framing of the relationship between sustainability and natural hazards, and assist in setting the context for sustainability and resilience. Exploring the roles of recovery, prevent planning and insurance as drivers for resilience and sustainability, this paper will draw upon a case study of the 2010–11 Canterbury earthquakes in order to prompt discussion around two questions: Is a resilient community a sustainable one? And, in order to be sustainable, does a community need to be resilient?

2. Sustainability and resilience

2.1. Overview of sustainability

While the term 'sustainable development' has many definitions and is the subject of much debate e.g. [1,5,6,10,28,31,34,45], the widely accepted definition is from the Brundtland Commission, which has defined it as "... meets the needs of current generations without compromising the ability of future generations to meet their own needs" [8, p. 23]. Much of the debate around this definition includes the term being too vague, therefore reconciling the different dimensions of sustainable development remains elusive, with a tendency for economic considerations to override other considerations e.g. [31,53,63]. This brings into question whether sustainable development, or sustainability, is the objective [53].

* Corresponding author.

E-mail address: w.saunders@gns.cri.nz (W.S.A. Saunders).

For example, Robinson [53] states that:

... development is seen as synonymous with growth, and therefore that sustainable development means ameliorating, but not challenging, continued economic growth. On this view, the preferred term 'sustainability' focuses attention where it should be placed, on the ability of humans to continue to live within environmental constraints.

More recently in 2014, suggested guiding principles for the Hyogo Framework for Action included that "The sustainability of development depends on its ability to prevent new risk creation and the reduction of existing risk" [60, p. 4]. Sustainability is integral to managing natural hazard risks, and recovery from natural hazard events.

Three key elements underpin the concept of sustainable development: economic, environmental, and social well-beings [10,31,6]. The interaction and reconciliation of these three well-beings is critical to the pursuit of sustainable development. A healthy economy provides for people's health, wealth, and happiness. A healthy, productive and diverse environment supports life and improves living standards. And social (or human) well-being is key to providing an acceptable standard of living [45,50]. In New Zealand, cultural well-being also requires consideration under legislation. Trade-offs between the well-beings is often required, and political will is a key input into the success of sustainable development. Reconciling these often contending dimensions lies at the heart of the sustainability challenge.

Sustainable recovery from a natural hazard event ensures that existing risks are reduced and any new risks are managed. The term 'holistic disaster recovery' from natural hazard events is used within the context of 'sustainable redevelopment' [40], to mean that sustainability principles are incorporated into the

redevelopment of an area. After an event, communities are suddenly more aware of the risks they face from hazards, and decision makers have more political will and support to address complex problems and encourage innovative ideas to promote sustainability [40].

2.2. Overview of resilience

The term 'resilience' has become so popular in recent times it is now referred as the 'buzzword' of the decade [35,41]. With individuals and communities seeking to become resilient to adversities such as natural disasters, it has become important to define resilience, as it can mean many things to many people. Associated with this definition should be key indicators to measure resilient within society, and to assist in determining whether it is sustainable or not.

In the past, resilience has often been described as the ability to 'bounce back' after a disaster [33,39,48]. This implies a short term phenomena, whereby resilience mostly relates to the immediate response and recovery phases of a disaster. More recent literature suggests that resilience is not just about 'bouncing back' but is more of an 'adaptive capacity' held by individuals and/or communities [29,44]. Within a disaster context, Paton and Johnston [46] have defined resilience as the ability to adapt to the demands, challenges and changes encountered during and after a disaster. Having an adaptive capacity means that individuals, communities and institutions are able to readily adapt to adverse circumstances when dealing with the impact of a disaster. The adaptation that occurs during the recovery from a disaster may mean that they do not 'bounce back' to their former state as such, but evolve to deal with the changing circumstances. To adapt and evolve people need to draw upon personal, collective and institutional competencies and resources [47]. Such competencies and resources can be



Fig. 1. Measures that contribute to resilience in the floodplain context [2,51].

Download English Version:

<https://daneshyari.com/en/article/7473005>

Download Persian Version:

<https://daneshyari.com/article/7473005>

[Daneshyari.com](https://daneshyari.com)