

## MEASURING RESILIENCE AND RECOVERY

Stephen PLATT

*Chairman, Cambridge Architectural Research, Cambridge, UK*  
*steve.platt@carltd.com*

Martin HUGHES

*Director, Cambridge Architectural Research, Cambridge, UK*  
*martin.hughes@carltd.com*

Daniel BROWN

*International Union for Conservation of Nature, Nairobi, Kenya*  
*daniel\_brown1981@yahoo.co.uk*

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### ABSTRACT

This paper reports attempts to measure and assess resilience and recovery after various recent earthquakes that had huge impacts in their respective countries. The examples are both quantitative and qualitative. The concept of resilience as used in disaster literature has, until recently, been imprecise (Bruneau et al., 2003). This paper reports the latest thinking on what the concept means and how to measure it. It also links resilience to the speed and quality of recovery. Recovery is variously referred to as recovery, reconstruction and long-term development. The research reported here makes no distinction between these. Recovery may involve reinstating things to the same state they were in before the disaster or 'building back better'. The focus of this paper is to measure the speed of recovery with reference to a 'base state' immediately prior to the onset of the disaster.

We used satellite imagery and ground surveys to measure and compare the speed of recovery in Thailand and Pakistan. People were rehoused significantly faster in Thailand than in Pakistan. We used household surveys and key informant interviews in Pakistan to measure recovery of a range of 10 indicators, including access, housing, education, health, administration, environment etc. Finally, we used building control and insurance data in Northridge California to suggest that insured households got rehoused on average 12 months faster than uninsured households. The paper concludes that it is possible to measure speed of recovery, but queries whether speed should be the sole measure of resilience?

### INTRODUCTION

Like sustainability, resilience is both important and imprecise; an amorphous concept that encompasses a society's capacity to bounce back after a disaster, its level of preparedness to confront or deal with a disaster and its ability to recover quickly and successfully.

Resilience is an engineering analogy meaning the ability to spring back and resume an original form after being distorted. In psychology it is defined as an individual's ability to adapt to stress and adversity – that ineffable quality that allows some people to be knocked down by life and come back stronger than ever. (Psychology Today, 2014).

As Zolli and Healy (2012) define it, resilience is the increasingly critical ability to anticipate change, heal when breached, and have the ability to reorganize ... to maintain [a] core purpose, even under radically changed circumstances. Zhou et al. (2010) similarly define disaster resilience as the capacity of hazard-