

# Chapter 7

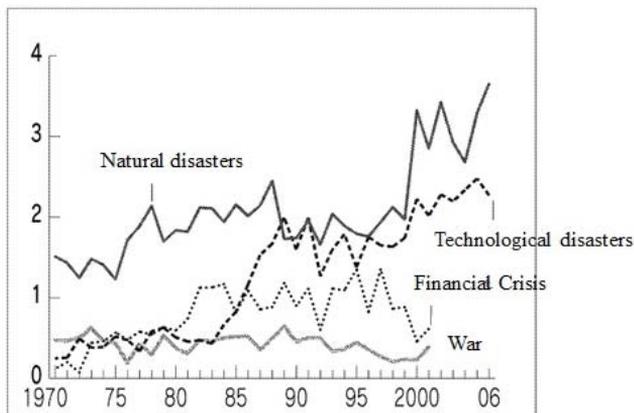
## Resilience and Social Capital

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### 1. The increasing frequency of disasters and the need for resilience

Typhoon Haiyan, one of the strongest storms ever recorded, swept across the central Philippines with gusts of up to 200mph (320km/h) on November 8, 2013. It has been estimated that the cost of reconstruction become almost US\$6 billion. Recent studies have confirmed that over the last two decades there has been an upward trend in the number of such disasters, both in terms of their economic cost and the number of individuals affected by those disasters (Sawada et al. 2011; Hoyois et al. 2007) (see Figure 1).

**Figure 1: Frequency of Natural and Man-made Disasters, 1960s-2006**



Source: Sawada et al. 2011, 11

Definitions vary as to what constitutes a disaster. The EM-DAT database, put together by the Center for Research on the Epidemiology of Disasters (CRED), includes natural disasters (e.g. geophysical, meteorological and climatological natural disasters) and technological disasters (e.g. the nuclear power plant accident in Fukushima, chemical

spills and transportation accidents). Sawada et al. (2011) also include disasters such as financial crises and wars. Technological disasters, financial crises and wars can all be referred to as 'man-made disasters'. The most vulnerable members of the population, such as the poor, children, the elderly, women and minorities, are usually hit hardest by disasters (Steinberg 2000; Cutter and Emrich 2006; Cutter and Finch 2008). As the frequency of disasters increases rapidly, the need to build social resilience becomes more and more important. There is already evidence that certain neighborhoods in disaster-hit regions recover more quickly than others (Edgington 2010). This chapter focuses on how countries or societies can be resilient to external shocks, such as natural disasters, with particular regard to social capital. The chapter begins with an examination of the concept of resilience.

## **2. Natural disasters and resilience**

In 2005, the World Conference on Disaster Reduction adopted the Hyogo Framework for Action (UNISDR 2005). It focused on building the resilience of nations and communities to disasters. There is growing interest in resilience in the context of post-2015 studies (e.g. UNDP 2013; World Bank 2013; Mitchell et al. 2013) as well as from academics in such fields as psychology, economics, environmental science and civil engineering (Norman 1971; Anthony 1987; Okada 2005; Norris et al. 2008; Longstaff et al. 2010; Guillaumont 2009). The term 'resilience' has been used in different contexts and with slightly different meanings. For example, in the civil engineering field, resilience refers to how quickly physical structures such as buildings and expressways can be returned to their pre-disaster condition. In disaster relief operations, the term refers to how civilian life can be restored. In psychology, it refers to an individual's ability to overcome trauma. In business, it refers to a business continuity plan.

However, even if people use the same terms, their emphasis varies: some people emphasize the role of community (Aldrich 2012; Tatsuki 2007) while others emphasize physical toughening (Dacy and Kunreuther 1969; Fujii 2011). The differences found in proposals on how to achieve an ideal state probably come from different views of the concept of resilience. According to Aldrich (2012), the word resilience derives from

the Latin *resilire*, which means ‘to recoil or leap back’.<sup>1</sup> *The Oxford English Dictionary (OED)* defines resilience as: 1) the ability of a substance or object to spring back into shape, elasticity; and 2) the capacity to recover quickly from difficulties; toughness. Hence, there are two important components in the definition of resilience. One is capacity/ability, and the other is outcome/state based on capacity. Almost every definition of resilience includes the factor of capacity. For instance, Norris et al. (2008, 129) define resilience as the “capacity for successful adaptation in the face of disturbance, stress, or adversity”. In reviewing several definitions, the main difference lies in the level of outcome. In the case of the *OED*, the outcome is a return to the original shape. The resilience framework (Figure 2) of the United States Multidisciplinary Center for Earthquake Engineering Research (MCEER) is very similar to that of the *OED* in terms of outcome. MCEER defines resilience as the capacity to cope with external shocks and bounce back to the previous state. In the MCEER framework, resilience is a measure of how vulnerability can be minimized (the triangle in Figure 2). To achieve this, the following four ‘Rs’ are crucial: robustness (inherent strength), redundancy (system properties that allow alternative options), resourcefulness (the capacity to mobilize needed resources) and rapidity (the speed with which disruption can be overcome).<sup>2</sup> Based on the MCEER resilience framework, Hayashi (2012) proposed three steps to strengthen resilience. These are: 1) evaluating the risk in a specific context, 2) preparing for a huge risk and 3) recovering as quickly as possible.

By contrast, the United Nations definition of resilience aims to restore basic functions, but not necessarily to restore the pre-disaster state:

The ability of a system, community or society exposed to hazards to

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1. The genesis of research on resilience differs depending on the academic discipline. In psychology, it dates back to risk studies in the 1970s. Garmezy Norman (1971) studied children with schizophrenic mothers and children with mothers with mental problems (but not schizophrenia). He found that, even when facing this risk, some children were highly adaptive and healthy. This high adaptability was the genesis of resilience studies in psychology. Later, E. James Antony (1987) used the term ‘invulnerability’ to explore this high adaptability. Psychological resilience has three aspects: competence to endure even under stress; ability to recover from traumatic shock; and ability to overcome inequality, which tends to correlate strongly with risk factors.

2. The Department of Homeland Security (DHS) defines resilience under the following three ‘Rs’: robustness (maintaining critical operations and functions in the face of crisis); resourcefulness (preparing for, responding to and managing a crisis as it unfolds); and rapid recovery (returning to and/or reconstituting normal operations as quickly and efficiently as possible) (McCreight 2010).

resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions. (UNISDR 2009)

Here, resilience is defined as the ability of social units (e.g., government, local administrations, organizations and communities) to mitigate disasters and carry out recovery activities in ways that minimize social disruption, while also mitigating the effects of future disasters.

The MCEER definition is very clear about the ideal state to be restored; however, this can be difficult to achieve. Although damaged infrastructure can be rebuilt, it is usually impossible to bring societies or communities back to their original state. Deaths caused by disasters in the community or within families comprise an absolute loss. Human losses are unrecoverable, and cannot be compensated afterwards through any means. Even if the population or economy recovers, the community is no longer the same. For disaster-hit areas, therefore in principle, all activities after a disaster go towards recreating new societies, rather than returning the society to its pre-disaster state.<sup>3</sup>

In this regard, this paper uses the resilience framework (Figure 2), but the vertical axis is not 'quality of infrastructure' but 'functioning of society'. Furthermore, the post-disaster period is divided into two stages: the recovery phase and the reconstruction phase. As discussed above, the capacity of the community is central to the dynamism required to recreate a disaster-hit area. In addition to this engine, there is the need for a direction in which it is to move. This constitutes recovery and reconstruction. This framework includes a reconstruction phase because consideration should also be extended beyond recovery to reconstruction.

The recovery phase is the short-term period directly after a disaster. This period could last from several months to several years depending on the magnitude of the disaster. Recovery essentially restores the basic functions of society in the best possible way under the circumstances (McCreight 2010). Those who have left the disaster area may then return

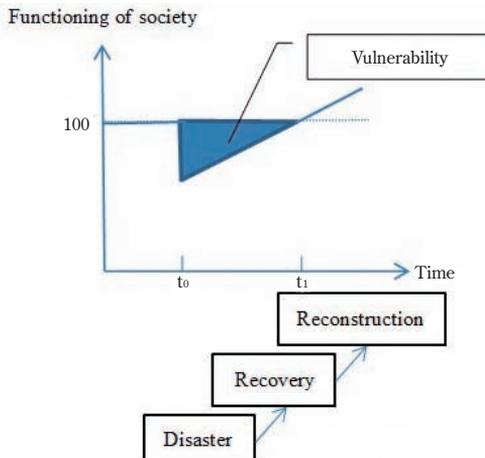
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3. McCreight (2010: 2) also stated: 'Resilience must be understood to embrace far more than smart mitigation practices, robust emergency response, and effective recovery operations ... It means painting a realistic picture of what is required for much more than mere community survival. It must also depict what a fully restored community with essential minimums looks like.'

to live in the area again. One of the important indicators of recovery is population growth. Population recovery is an essential part of disaster recovery (Aldrich 2012; Weil 2010; Davis and Weinstein 2002; Edgington 2010). Vale and Campanella (2005: 12) state that “the numerical resilience of the population may be a reasonable proxy for recovery. For cities that have lost huge percentages of their populations, the restoration of the city as a place of habitation itself is a significant achievement.”

However, the reconstruction phase is not simply about restoring basic functions, but about recreating a new and vibrant society. The reconstruction phase is crucial to sustaining recovery and putting economic activities back on track. The core of the reconstruction phase is job creation. Jobs give people an income to spend, and local retailers can start to sell merchandise. As a result, more people return, new residents move in, get jobs and become members of the community. Therefore, population recovery and employment are important cogs in the machine of reconstruction. The reconstruction phase is a mid- to long-term process. However, reconstruction itself is a very difficult task.<sup>4</sup>

**Figure 2: Resilience Framework**



Modified based on MCEER 2013

4. For example, the Lisbon earthquake of 1755 destroyed the city, which was at the time in the middle of the Age of Discovery. The death toll reached 60,000, and the economy didn't return to its pre-earthquake level.

### **3. Building resilience: the role of social capital in recovery and reconstruction**

How, then, can a country or a society be resilient to external shocks? It is known that certain neighbourhoods in disaster-hit regions recover more quickly than others (Edgington 2010). What, then, are the factors that make the difference, rendering a certain country or society resilient? Social capital, the structure of social relationships, contributes to recovery and reconstruction through the networks and resources available to people as a result of their connections to others. In many cases after disasters, it was observed that tight bonds between relatives and neighbors led to collective action on the part of the community and the efficient allocation of the necessary resources, catalyzing communication to access assistance. A growing number of studies in economics and sociology have discussed the effect of social capital (Shimada forthcoming; Putnam 2000; Putnam et al. 1993; Coleman 1988; Knack and Keefer 1997; Narayan and Pritchett 1997; Sato 2001; Cabinet Office of the Government of Japan 2003, 2005).

As discussed, the important factors of recovery and reconstruction are population recovery and jobs. These two cogs are strengthened by social capital, and the three cogs need to mesh together in the mechanism. Once external shocks hit societies, it can be difficult for governments to provide all the necessary support. Therefore, mutual help within communities is critical in the recovery phase. This mutual help can include physical help (tools, living space and food), or information sharing, financial aid, etc. Information sharing is important in allowing victims to ascertain where support is being provided, and it can provide an important means for governments and non-governmental organizations (NGOs) to reach vulnerable people (e.g. the elderly and disabled) in disaster-affected areas. During the chaotic first phase, matching those in need to the necessary services can be a difficult task. Information provided by the social network in the area may therefore be useful in making this operation more effective. In addition, for those who may have been forced to leave because of a disaster, information on how other community members move can affect their decision on whether to return to the original community or settle down in a new area.

Furthermore, even soon after disasters in the recovery phase, urgently needed information and knowledge on how to address the situation is

usually shared among community members, which enables these members to use scarce resources more efficiently. Stronger social capital encourages more people to participate in community actions. People's collective actions allow them to overcome difficulties that they may be unable to address alone. This is critical in the recovery process. For instance, Nakagawa and Shaw (2004) studied the Mano area of Nagata ward, Kobe after the Great Hanshin Earthquake, and the old town of Buji, Gujarat, in India. They found that the work of NGOs was critical in connecting people to recovery work. They also reported that NGOs or voluntary town organizations catalyzed the interaction between bureaucracy and people, thereby fostering trust and facilitating a smoother recovery. This kind of social capital helps people to participate in the community, and to remain in the community or return to their original area. On the other hand, if people move to other places and are isolated from the network, they will feel more inclined to move to a completely new area.

In the following reconstruction phase, the central issues are often chronic problems that the community faced even before the disaster, but which have been amplified by the disaster. Social capital promotes job matching, thereby reducing the asymmetry of information, which is common in labor markets. In post-disaster situations, it can be difficult to match actual jobs with the labor available. For employers, it may not be easy to find somebody suitable due to the difficulties in obtaining references, since it is difficult to get accurate information on job applicants' capacity or human capital. Studying the United States labor market, Granovetter (1974) found that social networks raised the efficiency of the job matching process, and sped up the job search for workers. Put more simply, information in the form of personal recommendations can address the asymmetry of information and catalyze job matching.

Social capital also creates jobs by promoting small and medium sized enterprises, with social capital helping to reduce transaction costs, as Coase (1937) pointed out. According to Stiglitz (2000), these transaction costs include informational costs as well (Shimada 2013a). If people can trust their business counterparts, then they can avoid certain negotiations and paperwork. This is particularly important because in many cases after disasters, business relationships may have deteriorated and each company needs to find new business partners and clients.

#### 4. Conclusion

Until the 1990s, vulnerability was the main concept used to address disaster prevention. There were a number of serious natural disasters in South America, and recovery was difficult. The cause of these difficulties was thought to be social vulnerabilities such as poverty, lack of training, limited access, and education. The image of the vulnerable is that of being a powerless and passive poor, an image that is not positive. By contrast with the concept of vulnerability, the idea of resilience gives these people and communities a more positive role.<sup>5</sup> As this paper has discussed, along with population recovery and jobs, social capital is a key factor in making resilient societies. As natural disasters have been increasing, the international community needs to work collectively to make societies more resilient for the future.

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5. Although their emphases are different, this does not necessarily mean that the concepts of vulnerability and resilience are mutually exclusive (Mitchell et al. 2013; Room 2000; Wood 2003).

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