

Understanding the root causes of natural disasters

June 27 2017, by Florian Roth, Christine Eriksen And Tim Prior



Ishinomaki one year after the 2011 earthquake and tsunami. Credit: schmid91/flickr, CC BY-SA

Every year disasters take lives, cause significant damage, inhibit development and contribute to conflict and forced migration. Unfortunately, the trend is an [upward one](#).

In May 2017, policy-makers and disaster management experts from over 180 countries [gathered in Cancun](#), Mexico, to discuss ways to counter

this trend.

In the middle of the Cancun summit, news arrived that large parts of [Sri Lanka were devastated by floods and landslides](#), killing at least 150 and displacing almost half a million people.

It was a stark reminder of the summit participants' challenging task of paving the way towards reducing disaster losses "significantly" by the year 2030 based on the [Sendai Framework for Disaster Risk Reduction \(DRR\)](#).

Adopted in 2015, the Sendai Framework outlines seven targets and four priorities for action to prevent new, and reduce existing, disaster risks to economic, physical, social, cultural, health or environmental assets and lives of persons, businesses, communities and countries.

Since then, in China, a village in the Sichuan province has been devastated by a landslide and rescuers [are still looking](#) for missing people.

The social root causes of disaster

Disasters occur when people are affected by natural or technical hazards – when lives are lost or property is destroyed. As the Swiss writer [Max Frisch](#) observed in his 1979 book 'Man in the Holocene', "-only human beings can recognise catastrophes, provided they survive them; nature recognises no catastrophes."

[Research](#) conducted in Sri Lanka suggests that while heavy rainfall was the trigger for the flooding, the root causes of the disaster were social, in particular widespread poverty, conflict-induced migration and problematic land-use practices. These characteristics are not homogeneous, meaning different places and people are affected

differently.

The social characteristics of communities are extremely important for hazard managers because they increase peoples' vulnerability to hazards.

A global community that is dedicated to reducing disaster losses over the next decade must address these social root causes of disaster. If not, the lofty goals of the Sendai Framework will remain elusive.

Pockets of vulnerability across societies

Understandably, socially disadvantaged communities exposed to hazards have to date received the most attention from DRR specialists. This is because hazards tend to harm predominantly those [social groups](#) that were already disadvantaged before a disaster.

Large focus has been placed on "underdeveloped" or "developing" nations, where the social disadvantage factors are particularly obvious. For example, while studying the social aspects of food insecurity during droughts in the Sahel region in the mid-1980s, [scientists](#) showed that low-wealth families with many children were particularly susceptible to chronic food insecurity.

But groups of people living in places where the overall [socio-economic status](#) is higher can also be vulnerable to hazards, and little is known about these groups.

The assumption that all members of affluent societies are somehow immune to [disasters](#) seems to be broadly shared, perhaps because vulnerability may be less obvious. This (mis)belief seems to be reinforced by various [attempts to index and compare](#) the vulnerability of communities, regions or whole nations.

In fact, making inferences about disaster vulnerability based on aggregated economic characteristics often leads to misleading conclusions. This problem is known as the '[ecological fallacy](#)', where relationships on the aggregate level do not necessarily hold on the individual level.

For instance, [research](#) from the 1990s demonstrated that homeless people in Tokyo (at the time one of the wealthiest cities in the world) were far more vulnerable to earthquake hazards than the average resident. Problematically, emergency planning by government overlooked this 'invisible' sub-population. In this case, the 'ecological fallacy' meant there was a tendency for emergency planning activities to be directed toward a higher socio-economic class.

Additionally, research conducted in the wake of Hurricane Katrina's impact on New Orleans in 2005 has shown that socio-economically disadvantaged households and communities were disproportionately [affected](#) by the hurricane. These people lacked the capabilities to prepare for, respond to and recover from the event.

These examples, from affluent and less affluent countries, suggest the need to consider [social vulnerability](#) in more geographically and demographically nuanced ways when implementing DRR activities. On the one hand, poorer communities might bring [alternative capabilities](#) to DRR that are non-financial. On the other hand, ignoring existing social disadvantage within affluent contexts risks significant loss of life and property, and forgoes the opportunity to improve the circumstances of the affected sub-populations.

Indigenous peoples key in [#sustainability+](#) [#disaster](#) [#risk](#)
<https://t.co/ukgEca73fR> [#WeAreIndigenous](#) [#switch2sendai](#)
pic.twitter.com/jmjuK3mYAv

— UNISDR (@unisdr) [August 9, 2016](#)

The case of the 1991 Oakland Hills wildfire

In order to deepen understanding of social vulnerability in affluent contexts, we recently conducted [an interview study](#) on the long-term effects of the 1991 Oakland Hills wildfire in California. The analysis revealed that households with low socio-economic status actually benefited from the characteristics of the overall community.

Specifically, high levels of political and social capital in the neighbourhood contributed to extensive recovery efforts by public authorities (e.g. infrastructure upgrades). In turn, these measures increased not only the value of the properties of the politically active members of the community (typically higher socio-economic status), but also the value of the homes of the economically weakest families. In this way, resources available at the neighbourhood level mediated the hazard's impacts at the household level throughout the community.

Even so, there were sharp differences in the way the 1991 fire affected different sub-groups of the community. During the firestorm elderly residents and people with physical disabilities were especially vulnerable because these people had problems evacuating from the fire zone. After the fire, during the recovery stage, different groups faced difficulties in accessing their insurance, an often cited, but [perhaps unreliable resource](#) for recovery. As one female interview participant in the Oakland Hills [described](#): "Demographics count. If you're a single woman, if you're a person of colour, they'll treat you differently. And we were low income. So they accused us of fraud. How could we live here? Even though we had all the proof in the world."

After protracted negotiations with insurance companies, most financial losses were covered, but the affected citizens reported suffering

financial and emotional stress during the, for some, decade-long recovery phase. While the case demonstrated that affluence could mediate household vulnerability, damaging disparities remained nevertheless.

No magic formula

While the Oakland Hills case is informative, we must avoid uncritically generalising these findings. Understanding social vulnerability is ultimately about understanding the particular geographical and social contexts in which it manifests. What drives social vulnerability in one place may play no role in another. Instead, vulnerability should be understood as a dynamic concept - "[a product of specific spatial, socio-economic–demographic, cultural and institutional contexts](#)" that intersect in everyday life.

The Oakland Hills story does highlight the need to better understand the drivers of vulnerability, in both affluent and less affluent societies, in order to create effective DRR strategies. [Research](#) we have begun in Zurich, Switzerland, aims to foster a better understanding of these issues.

This work, again, demonstrates that even in this generally very affluent city, major social disparities exist, with susceptible social groups often being geographically concentrated. In the case of a potential natural hazard, these pockets of vulnerable people are likely to be affected most.

Key knowledge for emergency services and risk managers

Regardless of official interest in poor or affluent societies, questions about the drivers of social vulnerability are of significant practical importance. Understanding which parts of society are susceptible to

natural hazards, and why, is key knowledge for emergency services and risk managers.

Across all stages of the disaster cycle – preparedness, response, and recovery – knowledge about the nature and location of socially vulnerable groups is critical for effective DRR.

Before an event, knowing which groups have low levels of preparedness is essential for planning tailored risk communication and support initiatives. During a disaster, information on vulnerable groups can help to increase the effectiveness of response measures, for example, by establishing priorities during evacuations.

Finally, an in-depth understanding of vulnerability can be used to support disadvantaged social groups during the recovery process.

Together, these measures can make an important contribution to reducing disaster risk under very different socio-economic circumstances.

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