

Disaster Response and Recovery Strategies in Japan and New Zealand, including Attention to Land Use and Housing

Rosemary Du Plessis

Abstract: This paper provides an overview of insights gained into similarities and differences between disaster recovery strategies in Japan and New Zealand during a two-month Visiting Professorship at the Research Centre for Urban Safety and Security (RCUSS), Kobe University in 2019. It sets up a framework for comparison and then summarises what was learned through examining emergency response and recovery strategies following the 2010-2011 Canterbury earthquakesⁱ in New Zealand, the Great Hanshin-Awaji Earthquake in 1995ⁱⁱ and the Great East Japan Earthquake in 2011ⁱⁱⁱ in Japan.

Key words: recovery governance, time compression, community participation, land adjustment, land zoning, post-disaster housing

1. Framing a comparison – recovery governance and community participation

The Great Hanshin-Awaji Earthquake 1995 occurred 15 years before the Canterbury earthquakes, but analysis of both these quakes requires attention to government responsibility for response and recovery as well as post-quake action by affected communities and not for profit organisations (NPOs). Assessment of land, decisions about where repair and rebuilding could occur and community participation in recovery were key agendas for central, regional and local governments in Japan and New Zealand following these earthquakes. What is referred to as ‘human capital’, ‘social capital’ and ‘social infrastructure’ (Aldrich, 2011; 2012) has been significant for response and recovery in both national contexts. These aspects of disaster management were also highly relevant to a comparison of how New Zealand responded to the shallow 6.3 magnitude quake that hit Christchurch and surrounding areas on 22 February 2011 and Japan’s response 13 days later to the magnitude 9.1 Great East Japan Earthquake and resulting tsunami that had particularly devastating effects on Fukushima, Iwate and Miyagi prefectures.

On 4 October 2019, the first day of a two-month research visit to Kobe, I had the opportunity to attend the *Disaster Resilience – International Symposium* organized by the Graduate School of Disaster Resilience and Governance, University of Hyogo. This symposium focused on what had been learnt from the Great Hanshin-Awaji quake almost 25 years ago. International presenters at the symposium were Robert Olshansky (University of Illinois) and Laurie Johnson (Laurie Johnson Consulting). At this symposium, and in their published work, Olshansky and Johnson (2016) argue strongly for attention to both the physical and social dimensions of disaster response and recovery. They consider that good recovery processes require national level strategies, but regional and local government needs money and the freedom to make decisions about recovery in collaboration with affected communities. Olshansky, Hopkins and Johnson (2012) have also examined the way disasters generate ‘time compression’ – the pressure for rapid action in response to disruption of infrastructure and damage to housing - and the challenges this poses for effective community participation in recovery decisions. Issues relating to top down decision making, time compression and levels of public participation in recovery are highly relevant for this comparison of New Zealand responses to the Canterbury Earthquake Sequence 2010-2011 and Japanese

responses to the Great Hanshin-Awaji Earthquake 1995 and the Great East Japan Earthquake 2011.

2. New Zealand context – recovery governance

The New Zealand Canterbury Earthquake Recovery Agency (CERA), a central government disaster management agency, and the Minister for Earthquake Recovery have been criticised for not involving communities more extensively in recovery decision-making (Vallance, 2014; Joint Stakeholder Submission, 2014). The Department of the Prime Minister and Cabinet has acknowledged that CERA was increasingly seen as ‘owning’ the recovery and determining rebuild strategies, rather than collaborating with the Christchurch City Council, other local authorities, the local iwi of indigenous people (Te Rūnanga o Ngāi Tahu – the local tribal authority) and community organisations (Greater Christchurch Group, 2017: 7). CERA became the lead agency for two controversial aspects of disaster recovery – the Christchurch Central Recovery Plan (the redesign of the central city), and the Residential Red Zone Recovery Programme (the identification of land as no longer suitable for residential housing). The complexity of its relationships with other organisations was represented in a diagram that was referred to among officials at CERA as the ‘horrendogram’ because of the challenges of fulfilling the multiple expectations associated with these relationships. The challenges of delivering recovery through centralised bureaucratic recovery organisations have been identified by Olshansky, Hopkins and Johnson (2012: 176).

Officials who worked for CERA stated that they constantly balanced the need “to act quickly” and “get things done” with the requirement to “understand the problem” and “collaborate with others”. It was like “walking a tightrope” (CERA, 2016:7). Scholars such as Vallance (2014) have argued that the way CERA and the Minister for Canterbury Earthquake Recovery diminished citizens’ opportunities to participate in decision-making, despite community involvement in “the substance of recovery” - emergency service provision and community development in the days, weeks and months after the quakes (Craven, 2016; Kenney and Phibbs, 2015; Ministry of Civil Defence & Emergency Management, 2012; Thornley et al, 2015).

3. Japanese context – resourcing local recovery strategies and community input

At the *Disaster Resilience – International Symposium*, Olshansky and Johnson argued that recovery in Kobe City after the 1995 earthquake was long and costly, but resources spent on having professional planning consultants work with local communities were effective in facilitating people’s participation in recovery plans developed by Kobe City government that affected their communities. Grants to communities were helpful in providing resources for a number of communities to rebuild their neighbourhoods. This entailed many meetings among residents, meetings with planning experts, and meetings with city officials. While resident-based community organisations in Christchurch combined to represent the interests of residents in the parts of the city most affected by the Canterbury earthquakes, there was no strategic resourcing by government agencies in New Zealand of expert support for CanCERN (Canterbury Communities and Earthquake Recovery Network 2010-2015) or individual residents’ associations following the Canterbury quakes.

CanCERN mainly received money from independent charitable foundations.^{iv} Residents association leaders worked to make government recovery agencies aware of the experiences and concerns of residents and set up initiatives to help residents negotiate bureaucratic processes and interactions with insurance companies, but they had no formal input into what in Japan is referred to as ‘land readjustment’, ‘land redevelopment’ and ‘housing reconstruction’ (Shiozaki et al, 2005).

A research visit to the Tōhoku region which included interviews with members of post earthquake and tsunami residents associations in Minamisanriku and Kesennuma, as well as senior leaders of other NPOs and a hotel manager who has initiated a range of community development projects, highlighted the ways in which central, regional and local government in Japan includes support for local citizens' involvement in emergency response, community development and post disaster housing initiatives. Those interviewed spoke about the challenges of community organisation post-disaster, the demands on community leaders, and efforts to involve younger community members and women in decision-making about post-disaster housing developments. They also reflected on the importance of local shrines as sites for emotional and practical support and continued celebration of festivals that brought people together, including residents who had re-located as a result of the earthquake and tsunami.

There was evidence during the research visit to the Tōhoku region that lessons learnt during reconstruction after the Great Hanshin Awaji Earthquake were informing post-disaster governance after the Great East Japan Earthquake of 2011. At the same time, some research participants were critical of aspects of recovery that involved top-down decision-making by city and prefecture government. While women were extensively involved in emergency response and recovery work, they sometimes struggled to be included in formal leadership positions and decision-making processes.

4. Overview of research activity in Japan

Attention to the intersection between national, regional (in Japan – prefecture government) and local or city government and community organisations became a major focus for my research while at Kobe University. Through the research visit to the Tōhoku region (particularly Sendai and the area north of Sendai), and several field trips in Kobe and on Awaji Island, as well as interviews with people involved in a variety of community and business organisations, especially residents' associations, I was able to access some information about NPOs in Japan. I had the opportunity to find out about NPOs as 'the flowers of the recovery'. This information would not have been available to in New Zealand.

My time for fieldwork was limited (I was only in Japan for two months), and my lack of competence in Japanese also diminished what I could learn. However, I was very fortunate to have both Professor Hokugo (RCUSS) and Research Fellow Kumiko Yamaji as research colleagues who translated my questions and the responses of those who talked in various contexts about their involvement in disaster response and recovery after both the Great Hanshin-Awaji Earthquake 1995 and the Great East Japan Earthquake 2011.^v While on the Tōhoku field trip in October 2019, I also was greatly assisted by Associate Professor Elizabeth Maly, Assistant Professor Flavia Fulco and Assistant Professor Julia Gerster, International Research Institute of Disaster Science (IRIDeS), Tōhoku University. Using their expertise in architecture, ethnography, cultural studies and digital archiving they provided insights into the impacts of the earthquake and tsunami in the Tōhoku region and also summarised in English the words of several interviews conducted in Japanese.

This research report also draws on some of the published research of my colleagues at Tōhoku University (Gerster, 2019; Maly and Shiozaki, 2012; Maly, 2017), and is informed by Assistant Professor Flavia Fulco's work on the contemporary post-disaster phenomenon of *kataribe* – personal narratives about experiences of trauma and challenge that are told to ensure that knowledge of personal experiences of disasters is preserved and communicated across generations. The interviews we conducted in the Tōhoku region were mainly versions of *kataribe* – personal narratives about the Great East Japan Earthquake and Tsunami offered by community leaders and business operators. Research insights relating to the use of *kataribe* will be explored in a future paper relating to women's earthquake narratives in

Japan and New Zealand. I also learned more about the contemporary use of *kataribe* when I experienced its use on a research visit to Hiroshima.

Information from research participants was supplemented by reading material available to me in English about the Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake. With respect to the Great Hanshin-Awaji Earthquake, the collection of papers in *Lessons from the Great Hanshin Earthquake* (Shiozaki et al., 2005) was particularly relevant as it was published 10 years after the quake that struck Kobe. It is now just over 9 years since the first of the quakes in the Canterbury Earthquake Sequence – a very similar period since the first force of the disaster and a good time to assess the lessons learnt from New Zealand’s response to these quakes.

5. Recovery governance - Japan and New Zealand

Both Japan and New Zealand have well-developed systems for responding to disasters (whether earthquakes, tsunami, flooding, typhoons, tornadoes etc.) at national level, at regional council or prefecture levels, and at the level of city government. When the first of the sequence of quakes struck on 4 September 2010 in Darfield, 11 kilometres outside Christchurch, there was a response in New Zealand at a national level to this 7.1 magnitude quake. A Minister for Canterbury Earthquake Recovery was appointed and the Canterbury Earthquake Recovery Commission (RC) was set up as a key point of contact between central and local government. Members of the RC included the mayors of the three territorial authorities^{vi} affected by the quake (Christchurch City Council, Waimakariri District Council and Selwyn District Council), three central government appointees and an independent chair. The focus was on regional and local government as equal partners with central government in decisions about disaster recovery.

After the lower magnitude, but much more damaging, shallow 6.3 magnitude earthquake 0.5 kilometres from the city centre on 22 February 2011, central government decided to set up the Canterbury Earthquake Recovery Authority (CERA), to implement emergency response and recovery strategies. The Canterbury Earthquake Recovery Act that established CERA, gave the Minister for Earthquake Recovery powers to facilitate recovery decisions, including the right to suspend, amend, cancel or delay city, district or regional plans (CER Act, 2011; Vallance, 2014). City government was important, especially with respect to communication with city residents after the quake and the numerous aftershocks. However, decision-making and strategy shifted significantly to central government. This was associated with central government’s perception of the extent of the disaster, the high cost of recovery, the need for highly specialized skills and imperatives for coordination across government agencies at a national and local level (CERA. 2016: 10).

A national state of emergency was declared for the first time and a National Controller activated national civil defence emergency management systems for nine weeks. A predominantly ‘top-down’ approach to disaster response and recovery was adopted for the next five years. The Department of the Prime Minister and Cabinet has recently recognised that ‘top-down’ recovery governance, while cost effective and timely, limits community participation. ‘Bottom up’ strategies encourage innovation and involve citizens, but can cause delays in delivering recovery (Greater Christchurch Group, 2017: 34). In this respect, central government in New Zealand has recognised the challenges posed by ‘time compression’ (Olshansky, Hopkins and Johnson, 2012).

In Japan, the Great Hanshin-Awaji Earthquake and the Great East Japan Earthquake were followed by responses by Japan’s central, regional and local government. After the Great Hanshin-Awaji Earthquake, the Self Defence Force (SDF) was used to provide emergency response, but central government in Tokyo was slow to activate this response to the disaster (Edgington, 2010: 51). Volunteers were estimated to provide 80% of life saving emergency

action in the first four days following the quake and resulting fire, before the SDF was significantly deployed in Kobe and surrounding areas. Following the quake, central government focused on the management of ‘recovery’ (*fukkyū*), which mainly involved rebuilding roads and important public infrastructure. ‘Reconstruction’ (*fukkō*) or long-term recovery has mainly been the responsibility of prefecture (regional) and city government (Edgington, 2010: 27). Kobe city planners largely developed plans for the reconstruction of Kobe. Kobe’s reconstruction plan included widening city streets, increasing housing density, building more high-rise accommodation and creating parks and open spaces. The Kobe City Reconstruction Plan was published in June 1995. This was followed by a plan developed by the Hyōgo Prefecture with a wider geographical scope - The Phoenix Plan. These two plans included infrastructure repair and urban reconstruction projects (Edgington, 2010: 105-125). These plans for reconstruction were submitted to the national Hanshin-Awaji Reconstruction Committee which approved the plans overall, but stressed the need for interaction with citizens as the details for the plans were developed. Citizens appreciated the effort put into developing the plans so rapidly, but many people were critical of the limited opportunity at this stage for community input. They became more involved as specific reconstruction projects were developed for particular parts of the city (Edgington, 2010: 127-177).

The Great Hanshin-Awaji Earthquake also highlighted the importance of the voluntary and NPO sector after disasters. Over 1.2 million people from across Japan were involved as volunteers in 1995. Volunteers also made a significant contribution to emergency response, reconstruction and community development after the Great East Japan Earthquake in 2011. Currently, Japan’s Reconstruction Agency is managing ongoing recovery in the Tōhoku region. It is tasked with reconstruction and revitalisation and is involved in liaison between central, regional and local government. It was set up in February 2012 and will continue until 2030.^{vii}

Japanese central government has had more experience than New Zealand in developing central government institutions to address large-scale disasters. The differences in population size between Japan and New Zealand^{viii} also meant that at the regional government/prefecture level and the level of city government, there were more financial resources and specialist personnel to respond to the demands posed by a significant disaster. As a result, with respect to both the Great Hanshin-Awaji Earthquake 1995 and the Great East Japan Earthquake 2011, while national level resources were extensively used immediately after the quakes, prefecture and city government were most involved in key decision-making about recovery, particularly with respect to decisions about land use, urban development and housing (See Edgington, 2010:12 for an assessment of planning by Hyōgo Prefecture and Kobe City governments). In Japan, national level funding and regional and local government loans and decision-making have been key features of responses to large-scale disasters.

For the first five years after the Canterbury earthquake sequence, CERA, the central government recovery agency, was the key recovery decision-making body, working closely with the Minister for Earthquake Recovery and coordinating the responses of central government agencies. Following the disestablishment of CERA in April 2016, its powers were transferred to other government agencies, territorial authorities and local organisations such as the Christchurch City Council and Ngāi Tahu Rūnanga (the tribal group for this area of Māori, the indigenous people of New Zealand).

A new much smaller agency, Regenerate Christchurch, was set up in 2016, funded by central government and Christchurch City Council, and tasked with developing plans for the badly damaged central square, the residential red zone (land declared by central government as no longer suitable for housing), and a badly damaged coastal suburb. After a several stage consultation process,^{ix} it produced a plan for the Otākāro Avon River Corridor. This (yet to be funded) land development project will link the city centre, residential red zoned land (no

longer available for housing), and the damaged coastal suburb and run alongside the Avon River. Christchurch City Council and its development agency, Development Christchurch, now control Regenerate Christchurch and most earthquake recovery projects in the city. The often contested ‘top-down’ stage of recovery was in place for five years, followed by three years of transition to local government control. Post disaster recovery in Christchurch is now operating in a way that is closer to strategies that Japan has pioneered in the last 25 years since the Great Hanshin Awaji Earthquake.

6. Land readjustment and urban reconstruction

In the New Zealand context, central government were involved in making key decisions relating to land and the regeneration of the city center after the Canterbury earthquake sequence. On the basis of expert geological advice, central government decided within four months of the 22 February earthquake to identify certain residential housing zones areas (mostly in the north eastern, lower income part of the city) that were not suitable for housing “for a prolonged period of time” (CERA, 2011). Repairs and rebuilding of over 5,100 homes in these areas was not allowed and residents, whether homeowners or renters, had to relocate within a specified period of time to other parts of the city. There was no public consultation on decisions made about the zoning of land (land-use changes), and the terms of the offers by central government to land and homeowners who had taken out private insurance policies. Central government considered that rapid decision-making on these matters was necessary to end uncertainty among homeowners – an example of the operation of what Olshansky and Johnson (2012) have referred to as ‘time compression’.

Homeowners in these ‘red’ zoned parts of the city were offered specific amounts for the land they owned and the buildings on this land by the government. These offers were based on assessments of value decided for the purposes of rates (local property taxes) in 2007. Homeowners could accept the amount offered for the land and try to secure a more substantial amount from their private insurers, especially if the house was assessed as needing to be rebuilt. Unlike Japan, 98% of homeowners in New Zealand have private earthquake insurance, which includes a component that funds a government earthquake insurance system – the Earthquake Commission (EQC). EQC funded repairs under \$100,000 NZ to residential buildings after this earthquake sequence. Insurance for homes could include the cost of rebuilding a home after earthquake or fire, which could exceed assessment of its rateable value.

Central government purchased most of the land and the houses in what was declared the ‘residential red zone’ in June 2011. Most home-owners used what they were paid to purchase existing homes elsewhere in the city, or buy newly built homes in parts of the city that were opened up for private housing construction. (The government suspended existing regional government planning requirements directed at avoiding ‘urban sprawl’ to facilitate the establishment of new housing areas). Some homeowners (including those without insurance on their property who received lower offers from central government) went to court to challenge these offers. Eventually, they were successful, and Court of Appeal ruled in 2017 that the Minister of Earthquake Recovery’s decision to discriminate against uninsured red-zoned property owners was illegal.* In 2018 they received offers to purchase their land and buildings on the same basis as other owners. This was a major challenge by a small group of homeowners to decisions made by central government and indicative of the way citizens can use legal processes to challenge central government post-disaster decision-making. Central government took over the private home insurance claims of those whose land and houses they purchased.

In Japan, regional government (prefectures) and city government appears to be more empowered than in New Zealand to make decisions about the use of land after a disaster. Land use changes, land readjustment and urban reconstruction involve planning by city

councils, using the expertise of geologists, engineers and town planners. Kobe's redevelopment was the work of Kobe City planners and officials in the Hyōgo Prefecture, not central government. In this respect, Japan's disaster recovery strategies with respect to land are more consistent with Olshansky and Johnson's recommendations relating to planning being done at the local level (including the use of central government resources) rather than being imposed from above by central government. However Edgington (2010: 231) considers that there have been ongoing debates in Japan about "government decentralisation... and the relative balance of power between central bureaucracy and civil society." He argues that responses to the Great Hanshin Awaji quake have encouraged that debate and facilitated the formation of more local *machizukuri* groups and their participation in planning in their neighbourhoods and cities. Interviews in the Tōhoku region in October 2019 provided evidence of the participation of *machizukuri* groups in post-disaster rehousing, but also dissatisfaction in this process by some community leaders.

7. Housing reconstruction – repair and rebuilding

In both Japan and New Zealand central government has been committed to the provision of emergency shelter and temporary accommodation for those who had lost homes as a result of a disaster. The differences in population size and the extent of damage to homes (in both Kobe City and surrounding areas and in Tōhoku where so many houses were burnt to ashes, swept away or flattened by the quake, the fire or the tsunami), led to very different levels of demand for emergency shelter and temporary housing. In Christchurch many damaged and later demolished homes were safe enough for continued living (although often cold, damp and uncomfortable) after broken windows and dangerous chimneys were removed. Households whose homes were damaged moved into temporary housing for months rather than years while their homes were repaired or they could use insurance money to purchase new homes. Reimbursements for the costs of temporary commercial residential housing were also often a component of private home insurance policies.

Since levels of damage varied in different parts of the city and homes were on average larger than Japanese homes, many households in Christchurch moved in with friends and neighbours for long periods. Some families lived in very difficult conditions in garages and caravans because they could not meet the increased costs of rental accommodation or were waiting for low cost state-provided housing. However, they did not experience the discomfort of hot summers and cold winters for years in temporary uninsulated housing as families did after the Great Hanshin-Awaji Earthquake.

Private housing developers planned new housing for those who lost their homes during the Canterbury earthquake sequence, rather than city government planning new housing, streets and commercial buildings in association with post-disaster residents associations in Japan. These housing developments in the Christchurch and Canterbury (usually on the edge of the city) had to comply with regional council planning regulations (which were modified after the Canterbury quakes to facilitate land for housing), but they did not have community input and those who bought or rented these homes did not make collective decisions about this housing.

8. Community participation in response and recovery

8.1 Community and NPO emergency response

In both Japan and New Zealand, families, neighbours and communities organisations such as existing NPOs or post-disaster NPOs have been among the 'first responders' when disasters occur. While specialist teams such as the Self Defence Force (SDF), Japan Disaster Relief (JDR), Disaster Medical Assistance Team (DMAT) (initiated following the Great Hanshin-Awaji Earthquake and developed from JDR programmes), and the Japan Army have provided essential services within Japan and internationally following disasters, it is

ordinary citizens in disaster-hit areas, and volunteers from other parts of the country, who have most frequently interacted with those affected by large scale disasters. This has involved putting out fires, saving people from the rubble of collapsed buildings, taking people to centres where they can receive medical support and also providing food and shelter to those who are homeless.

In the New Zealand context, a review of the operation of civil defence action following the Canterbury earthquakes 2010-2011, and particularly the 22 February 2011 quake, has highlighted the importance of community emergency responses and the need for civil defence to communicate more effectively with local community-based organisations.^{xi}

8.2 Community and NPO participation in disaster recovery

Disaster researchers have highlighted the importance of sustaining community connectedness among people whose homes have been damaged or destroyed by earthquakes, resulting fire and tsunamis (Aldrich, 2011). In Japan, traditional community-based management practices referred to as *machi-kumi*, were reworked in late 20th century urban environments as *machizukuri* or ‘city-making’ which refers to local neighbourhood groups acting to influence the planning and development of their communities (Mamula-Seadon et al, 2015; Sorensen and Funck, 2007). These groups were initiated in 1960s and 1970s as central government increasingly delegated urban planning to local government and *machizukuri* groups became more important from the 1990s onwards. Japan’s City Planning Law 1968, provided for citizen’s participation in urban planning and delegated urban planning to prefecture and city governments (Sorensen and Funck, 2007: 120-122).

In Kobe City community participation in urban planning was facilitated in 1980 when resources were allocated to pay for technical support for *machizukuri* councils (Sorensen, 2007:128). Activation of *machizukuri* civil society groups in post-quake Kobe played an important part in the reconstruction of neighbourhoods within the city. This was facilitated by the establishment of 44 on-site consultation centres in Kobe that held over 700 meetings in the first three years following the earthquake. Many of these meetings were with representatives of *machizukuri* civil society groups. Machizukuri groups formed the Kobe Machizukuri Organisation Liaison Conference in June 1995 to address issues that individual groups could not resolve (Kobayashi, 2007). However, as analysis of post 1995 urban rezoning and redevelopment projects in Kobe indicates (Ando, 2005; Shiozaki, 2005), the extent to which community-based groups were able to access expert advice and work collaboratively with city officials varied across different parts of the city.

The location of disaster victims in temporary housing on public land outside the city and the random assignment of people to newly built post-earthquake public housing, often disrupted social ties and contributed to the isolation of some vulnerable and older people, especially those living alone and at risk of *kodokushi* – or solitary death. Kuroda and Shiozaki (2005: 90) have argued for re-housing residents together and stated that newly built housing “cannot be called a genuine restoration if the original communities from the pre-disaster period have collapsed.”

Analysis of the place of *machizukuri* in the process of rehousing those who lost their homes in the Great Hanshin-Awaji Earthquake has highlighted differences in the implementation of the principle of community involvement in the development of post disaster housing (Hirohara 2005). While some *machizukuri* councils (urban development residents’ and rights owner organisations set up post the Kobe earthquake) were very active in making decisions about planning and worked well with government urban planning officials and professional experts, others were less successful in having input into redevelopment projects. Hirohara and Shiozaki (2005: 102) report that key individuals in these NPOs sometimes worked closely with officials rather than collaboratively with other council members. They also indicate that community organisations were often not involved in the early stages of

planning, but “elected to act as a consensus building mechanism to approve the predetermined plans” (Hirohara and Shiozaki, 2005:103). Shiozaki (2005: 94) has argued that “What should be done before deciding on an urban planning project was to investigate and take into consideration what people desired and needed.”

The extent to which communities had strong social networks before the earthquakes had a major impact on the extent to which they could use the *machizukuri* councils to influence decisions relating to post disaster reconstruction that involved a mix of streets, residential housing, public facilities and commercial buildings. Rokkomichi was re-populated largely by people who were newcomers and only a third of the residents were original inhabitants. Those who could not purchase their own homes after the quake and went into public housing were much less likely to be surrounded by their previous neighbours.

Lessons learned from the challenges of rehousing neighbours after the Great Hanshin-Awaji Earthquake have informed support for post-disaster residents associations after later disasters in Japan. This has included attention to the value of locating neighbours together in temporary housing to facilitate their collective planning of new housing developments. There is recognition that “... the social capital among residents of disaster struck communities is a critical component of the post recovery process” (Aldrich, 2011: 608). Aldrich (2001: 2011: 607) argues “Grouping survivors from the same area together in temporary shelters and long-term housing ensure that existing stocks of social capital are not damaged by the move”. Interviews with leaders of residents associations in the Tōhoku region in November 2019 indicated that there were significant attempts to maintain neighbourhood relationships when people were located in temporary housing and to facilitate resident associations’ participation in decisions about rehousing, particularly the planning of new housing for home-owners.

In the New Zealand context, high levels of residential home ownership (65% in 2013)^{xii} combined with high levels of earthquake insurance (98% of residential homes), ensured that relocation after the Canterbury quakes was mainly decided by individual households, rather than communities.^{xiii} This occurred even in well-organized communities where neighbours initially talked about “moving their homes to the same new suburbs so we could maintain the connections that were so strong just after the quakes.”^{xiv} After acting collectively as earthquake responders, each household had to respond separately to the government’s offer to purchase their land and their home in the residential red zone, or negotiate with the state insurer, EQC, and or their private insurer to get their home repaired or rebuilt. Renters moved in with family or friends, moved out of the city, or managed to find existing homes to rent (often at higher prices than before because of the shortage of accommodation). These were ‘private troubles’ that individuals or households had to work through, although they were often discussed by community organizations, researchers, political commentators and the mass media as ‘public issues’ than needed collective responses.^{xv}

While in Kobe, I was asked on a number of occasions why there was not a more collective response to the rehousing of those who lost their homes (either as home owners or as renters) during the Canterbury quakes. Were New Zealanders less concerned about community connections? My answers tended to focus on contextual factors – especially levels of private home insurance which individualised the shared experience of finding the resources to repair or rebuild a home (either on its existing site or in a new housing development if the land was red-zoned). However, while some neighbourhoods discussed the possibility of jointly relocating to new housing in the months after the 22 February 2011 quake, there was no commitment by central government to facilitating this. And this does suggest significant differences between Japan and New Zealand in levels of commitment to the ongoing life of local communities affected by disaster. In this respect New Zealand has much to learn from the efforts over several decades in Japan to sustain neighbourhood communities.

While men are more likely to be represented in responses by the army or specialist emergency response teams, women have been crucial to earthquake response and recovery efforts in both Japan and New Zealand. They have been active in both pre-existing organisations such as residents associations and the Salvation Army, as well as NPOs that came into existence in response to particular disasters. As private citizens and as members of community organisations, they have taken on major responsibilities for feeding and caring for the most vulnerable members of the community when homes were damaged; sewerage and water supplies were disrupted; and food supplies were scarce. While in Japan, I heard the stories of women who were active in residents associations as well as providing community leadership as religious and business leaders. Research conducted in Christchurch after the Canterbury quakes has highlighted the many different responsibilities women assumed as national and local politicians, professionals, community leaders, members of religious communities, resident association leaders and student responders, as well as initiators of different uses for land in damaged parts of the city (Gordon et al, 2014). Analysis of women's involvement in community response and recovery efforts in Japan and New Zealand is ongoing.

9. Conclusion

This research report has focused on a comparison between earthquake response and recovery strategies in Japan and New Zealand with a particular focus on the Great Hanshin-Awaji Earthquake 1995, the Great East Japan Earthquake 2011 and the Canterbury Earthquake Sequence 2010 – 2011 in New Zealand. A particular focus for attention has been the relative power of central, regional and local government and NPOs in post-disaster planning and decision-making, particularly with respect to land and housing development and residential resettlement. Japan has exhibited significant commitment to planning and decision-making at the regional and city level, while New Zealand's response to the Canterbury Earthquake Sequence was, for the first 5 years at least, very dominated by central government – predominantly a 'top-down' approach to disaster management and recovery. These differences can be partly attributed to population size - New Zealand had a population of 4.384 million and Japan had a population of 127.8 million in 2011. Prefectures and city governments have more extensive resources of money and professional expertise than regional and city governments in New Zealand.

Citizens were active in emergency response and in community development and well-being strategies during the Canterbury earthquake sequence and as the city and the region recovered. However, they had a much less formal and collective role in decisions about land readjustment, land development and housing planning than members of Japanese local communities and residents associations who received funding and advice and support from relevant professional groups.

Critiques of post-disaster governance, the operation of recovery strategies and the extent of citizen participation in post-disaster planning have been offered in both these national contexts (Craven, 2016; Vallance, 2014; Shiozaki, 2005). More work remains to be done that explores the details of when post-disaster resident associations and NPO participation is best actualised and when it has not been realised in both these national contexts. Acting swiftly to address a crisis and maximising community participation will continue to pose challenges. This is what Olshansky and Johnson (2012) have referred to as the challenges of time-compression. However, much can be learnt from investigating disaster recovery strategies in different national contexts – in this case, Japan and New Zealand. While vastly different in many respects, they are island countries on 'The Pacific Rim of Fire' that will continue to confront disasters and benefit from local and international knowledge about disaster response and recovery.

Acknowledgements:

Thanks to **Kobe University** for a two-month Visiting Professorship. This visit was organized by **Research Centre for Urban Safety and Security**. Some research projects were supported by **Center for Resilient Design, Kobe University; Multidisciplinary Integration for Resilience and Innovation (MIRAI), Kobe University; Promotion Office for Disaster Science and Quake Restoration Support, Kobe University; and JSPS KAKENHI Grant Number 16H05666**.

Professor HOKUGO Akihiko, Research Centre for Urban Safety and Security (RCUSS) and Research Fellow YAMAJI Kumiko were my academic hosts during my time as Visiting Professor. They welcomed me warmly and facilitated my learning in many different ways while I was in Japan. **KUMASAKI Yuka and YAMASAKI Misao** provided crucial administrative support during my visit to Kobe University. I am very grateful to them for making me feel at home and their professional assistance.

Professor YAMASAKI Eiichi, Kansai University shared his insights into earthquake support for vulnerable people in Japan and New Zealand as well as his findings into disasters in these different contexts.

Associate Professor Liz Maly, Assistant Professor Flavia Fulco and Assistant Professor Julia Gerster, International Research Institute of Disaster Science (IRIDeS), Tōhoku University, Sendai, provided invaluable assistance during my field trip and joint research with them in the Tōhoku region. They put considerable effort into summarising in English information from research participants and contributed to my general understanding of the regional context. They also organized an opportunity for me to meet **Ms Naomi Chiba** who has conducted interviews with women in Ishinomaki relating to their earthquake experiences. This has facilitated the possibility of comparing these women's earthquake narratives with those conducted by the Christchurch Branch of the National Council of Women.

References

- Aldrich, D. P. 2011. The power of the people: social capital's role in recovery from the 1995 Kobe earthquake. *Natural Hazards*. 56: 595-611.
<https://link.springer.com/article/10.1007/s11069-010-9577-7>
- Aldrich, D. P. 2012. *Building Resilience: Social Capital in Post-Disaster Recovery*. Chicago: University of Chicago Press.
- Bennett, B. 2014. Design and Democracy. In *Once in a Lifetime: City-Building after Disaster in Christchurch*, (Christchurch).
- Bouterey, S. and Marceau, L. 2019. *Crisis and Disaster in Japan and New Zealand: Actors, Victims and Ramifications*. Singapore: Palgrave Macmillan, Springer Nature Singapore Pte Ltd.
- Craven, R. M. 2016. Local responses to disaster: The value of community led post disaster response action in a resilience framework. *Disaster Prevention and Management*, 25:1, 27-40.
- Canterbury Earthquake Recovery Act (CER Act), 2011.
<http://legislation.govt.nz/act/public/2011/0012/latest/DLM3653522.html>
- CERA Canterbury Earthquake Recovery Authority. 2016. Walking the Recovery Tightrope: Learning and Insights from the Canterbury Earthquake Recovery Authority. EQ Recovery Learning. <https://www.eqrecoverylearning.org/assets/downloads/Res0071-Walking-the-Recovery-Tightrope2.pdf>
- Du Plessis, R., Sutherland, J., Gordon, L. and Gibson, H. 2015. 'The confidence to know I can survive': resilience and recovery in post-quake Christchurch, *Kōtuitui: New Zealand Journal of Social Science Online*, 10:2, 153-165.
<http://www.tandfonline.com/doi/full/10.1080/1177083X.2015.1071712>
- Edington, D. 2010. *Reconstructing Kobe: The Geography of Crisis and Opportunity*. Vancouver: UBC Press:

- Galloway, M. 2014. A message and a messenger, in *Once in a Lifetime: City-Building after Disaster in Christchurch*, (Christchurch).
- Gerster, J. 2019. Hierarchies of affectedness: Kizuna: perceptions of loss, and social dynamics in post-3.11 Japan. *International Journal of Disaster Risk Reduction*, 41, 101304.
- Gordon, L.; Sutherland, J., Du Plessis, R. & Gibson, H. 2014. Movers and Shakers: Women's Stories from the Christchurch Earthquakes. Women's Voices Project/Ngā Reo O Ngā Wahine, NCWNZ Christchurch Branch. Report for Lotteries Community Sector Grants Board. <http://www.communityresearch.org.nz/research/movers-and-shakers-womens-stories-from-the-christchurch-earthquakes-final-version/>
- Greater Christchurch Group, Department of the Prime Minister and Cabinet. 2017. *Whole of Government Report: Lessons from the Canterbury Earthquake Sequence*. Wellington: Department of the Prime Minister and Cabinet. <https://dpmc.govt.nz/sites/default/files/2017-07/whole-of-government-report-lessons-from-the-canterbury-earthquake-sequence.pdf>
- Hirohara, M. and Shiozaki, Y. 2005. Machizukuri (Community Development) with Genuine Residents' Participation. In Shiozaki, Yoshimitsu, Nishikawa, Eiichi and Deguchi Toshikazu (eds.). 2005. *Lessons from the Great Hanshin Earthquake*.
- Hokugo, A. and Kaneko, Y., eds. 2017. *Community-Based Reconstruction of Society: University Involvement and Lessons from East Japan Compared With Those From Kobe, Aceh and Sichuan*. Springer Singapore.
- Joint Stakeholder Submission. 2014. Human Rights Impacts of the Canterbury Earthquakes. For the Periodic Review of New Zealand. Submission by 26 Christchurch Organisations, 17 June 2013 for the 18th Session of the Human Rights Council, January 2014.
- Johnson, A., Howden-Chapman, P. and Eaquad, S. 2018. *A Stocktake of New Zealand's Housing*. Ministry of Business, Innovation and Employment, New Zealand Government, Wellington.
- Johnson, L., & Mamula-Seadon, L. Transforming Governance – How National Policies and Organizations for Managing Disaster Recovery Evolved Following the 4 September 2010 and 22 February 2011 Canterbury Earthquakes, *Earthquake Spectra*, 2014.
- Kenney, C.M. and Phibbs, S. 2015. “A Māori Love Story”: Community led disaster management in response to the Otautahi (Christchurch) earthquakes as a framework for action. *International Journal of Disaster Reduction* 14 Part 1, 46-55. <https://www.sciencedirect.com/science/article/pii/S2212420915000059>
- Kingham, S., Dionisio, M.R. & Newman, P. The right tools at the right time: Encouraging community involvement in the post-disaster reconstruction of Christchurch, New Zealand, (IGU Urban Commission Annual Conference, 9-16 August 2015, University College, Dublin).
- Kobayashi, I. 2007. Machizukuri (Community Development) for Recovery whose leading role citizens play, *Journal of Disaster Research*, 2:5, 358-371.
- Kuroda, T. and Shiozaki, Y. 2005. Significance of Community. In Shiozaki, Yoshimitsu, Nishikawa, Eiichi and Deguchi Toshikazu (eds.). *Lessons from the Great Hanshin Earthquake*.
- Maly, E. and Shiozaki, Y. 2012. Towards a Policy that Supports People-Centered Housing Recovery - Learning from Housing Reconstruction after the Hanshin-Awaji Earthquake in Kobe, Japan. *International Journal of Disaster Risk Science*, 3:1, 56–65.
- Maly, E. 2017. Rethinking “Build Back Better” in housing reconstruction: A proposal for “People Centered Housing Recovery. *IOP Conference Series: Earth and Environmental Science*. 56: 1, 012025.
- Mamula-Seadon, L. 2016. Community led opportunity for renewal – Kobe earthquake recovery 1995-2000. *Making Christchurch*. <https://makingchristchurch.com/community-led-opportunity-for-renewal-kobe-earthquake-recovery-1995-2000-e43025c9f406>
- Mamula-Seadon, L. Kobayashi, I. Maki, N. 2015. Placemaking after a disaster: Japanese practice of Machizukuri. <https://www.parliament.nz/resource/en->

[nz/51SCLGE_EVI_00DBHOH_BILL66263_1_A462623/3b0e68cd4f874384025e66aa6f49d9e1c4870f45](https://www.nz/51SCLGE_EVI_00DBHOH_BILL66263_1_A462623/3b0e68cd4f874384025e66aa6f49d9e1c4870f45)

- Ministry of Civil Defence & Emergency Management. 2012. Community Resilience: Case studies from the Canterbury Earthquakes. *TEPHRA*, 3, November 2012: Wellington, New Zealand.
<https://www.eqrecoverylearning.org/assets/downloads/Res2063-tephra-community-resilience-case-studies.pdf>
- Olshansky, R.B., Hopkins, L.D. and Johnson, L. 2012. Disaster and Recovery: Processes Compressed in Time. *Natural Hazards Review*, ASCE, 13:3, 173-178.
[https://ascelibrary.org/doi/pdf/10.1061/\(ASCE\)NH.1527-6996.0000077](https://ascelibrary.org/doi/pdf/10.1061/(ASCE)NH.1527-6996.0000077)
- Olshansky, R. and Johnson, L. 2016. *After Great Disasters: How Six Countries Managed Community Recovery*. Policy Focused Report: Cambridge MA: Lincoln Institute of Land Policy. https://www.lincolninst.edu/sites/default/files/pubfiles/after-great-disasters-full_0.pdf
- Shiozaki, Yoshimitsu, Nishikawa, Eiichi and Deguchi Toshikazu, eds. 2005. *Lessons from the Great Hanshin Earthquake*. Translated by Watanabe, Reiko. Hyogo Research Centre for Quake Restoration, Kyoto: Creates-Kamogawa Publishers.
- Shiozaki, Y. 2005. Urban Planning Projects Forcibly Decided. In Shiozaki, Yoshimitsu, Nishikawa, Eiichi and Deguchi Toshikazu, eds. 2005. *Lessons from the Great Hanshin Earthquake*. Translated by Watanabe, Reiko. Hyogo Research Centre for Quake Restoration, Kyoto: Creates-Kamogawa Publishers.
http://www.shinsaiken.jp/oldweb/hrc-e/publish/lessons_ghe/
- Sorenson, A. and Funck, C. 2007. Living Cities in Japan. In *Living Cities in Japan: Citizens' Movements, Machizukuri and Local Environments*, eds. Sorenson, A. and C. Funck, eds, London: Routledge, 1-36.
- Thornley, L., Ball, J., Signal, L., Lawson-Te Aho and Rawson, E. 2015. Building community resilience: learning from the Canterbury earthquakes. *Kotuitui: New Zealand Journal of Social Sciences Online*, 10:1, 23-35.
<https://www.tandfonline.com/doi/full/10.1080/1177083X.2014.934846>
- Vallance, S. 2014. Disaster recovery as participation: lessons from the Shaky Isles. *Natural Hazards*, 75, 1287–1301. <https://link.springer.com/content/pdf/10.1007/s11069-014-1361-7.pdf>
- Wright Mills, C. 1959. *The Sociological Imagination*. Oxford: Oxford University Press.

ⁱ The Canterbury Earthquake Sequence 2010-2011 in New Zealand began on 4 September 2010 with a 7.1M earthquake 25 kms from central Christchurch at a depth of 11 kms. There were ongoing aftershocks and significant quakes on 22 February 2011, 13 June and 23 December. The quake on 22 February 2011 was associated with 185 deaths – a consequence of the 6.3 M quake close to the city at a depth of 5 kms. Approximately 4,000 people were injured and damage to land, property and infrastructure was extensive. A state of emergency was declared for 9 weeks and central government took over earthquake response and recovery. Within 4 months, 8,000 residential properties were declared no longer fit for rebuilding for a long period. The economic impact of this earthquake sequence has been estimated at 20% of New Zealand's GDP (CERA, 2016: 10-11).

ⁱⁱ The Great Hanshin-Awaji Earthquake (6.8 M, 16 kms deep and 20km from the centre of Kobe under reclaimed land on Awaji Island) occurred at 5:46 am on 17 January 1995. The earthquake and resulting fire resulted in 6434 deaths and 35,000 injuries. It is estimated that 400,000 houses and buildings were damaged, and 150,000 buildings were destroyed. Basic infrastructure services were suspended across a wide area. Over 300,000 people were evacuated to temporary shelters. Over 1 million households had no supplies of water or electricity. The recovery cost 10 trillion yen, 2.5% of Japan's GDP at that time (Edgington 2010: 1-11).

ⁱⁱⁱ The Great East Japan 9 M earthquake hit at 2:46 pm on 11 March 2011 72 kms east of Tōhoku and the earthquake and resulting tsunami with levels up to 39 metres led to an estimated 20,000 deaths. The tsunami led to a cooling system failure at the Fukushima Daiichi Nuclear Power Plant and a level-7 nuclear meltdown and release of radioactive materials. 120,00 buildings were destroyed and over 1 million were half destroyed or partially destroyed. The estimated cost is almost \$199 billion US dollars (about 16.9 trillion yen). It is the costliest natural disaster in world history. <https://www.livescience.com/39110-japan-2011-earthquake-tsunami-facts.html>

^{iv} The Todd, Tindall, Hugh Green and Rata Foundations.

<https://www.stuff.co.nz/the-press/news/76720729/cancern-never-threw-rocks-at-quake-agencies>

^v Audio recordings of most of those interviews are archived at RCUSS, Kobe University and await transcription and detailed analysis.

^{vi} ‘Territorial authorities’ in New Zealand are a core category of local government. Regional councils have responsibilities for environmental resource management, flood control, air and water quality, and in some cases public transport and water supply. Territorial authorities may be city or district councils with responsibilities for local services such as roads, water reticulation, sewerage, refuse collection, libraries, parks, economic and community development and town planning. The average population per council is 85,000 residents, but numbers range from 1.44 million in Auckland (the largest city) to 600 in the Chatham Islands. <https://www.lgnz.co.nz/nzs-local-government/>

^{vii} Reconstruction Agency – About Us

https://www.reconstruction.go.jp/english/topics/About_us

^{viii} New Zealand is about two thirds the size of Japan, but currently has a population of just under 5 million. The population of Christchurch was approximately 3500,000 in 2010. After a drop in population in the years after the earthquake sequence, the number rose to nearly 400,000 inhabitants in 2019. 2020 worldpopulationreview.com/Christchurch.

^{ix} The process of consultation on the regeneration of the residential red zoned areas to the north east of the city was much more extensive than processes initiated by CERA. Overall it has received a positive response from local community groups involved in the recovery process.

^x See report on offer in 2018 to residents of uninsured property in the residential red zone.

<https://www.stuff.co.nz/national/politics/106421869/quake-outcasts-to-be-paid-for-their-uninsured-red-zone-homes>

^{xi} NZ Government’s response to the Technical Advisory Group’s Recommendations. 2018. *Delivering better responses to natural disasters and other emergencies*. <https://dpmc.govt.nz/sites/default/files/2018-08/natural-disasters-emergencies-government-response-tag-report.pdf>

^{xii} Johnson, A., Howden-Chapman, P. and Eaquad, S. 2018. *A Stocktake of New Zealand’s Housing*. Ministry of Business, Innovation and Employment, New Zealand Government, Wellington. p. 13.

^{xiii} Levels of earthquake insurance in Christchurch at the time of the Canterbury Earthquake Sequence contrast to levels of business and private household earthquake insurance in Kobe at the time of the 1995 earthquake which is estimated to be 3% (Edington, 2009).

^{xiv} CanCERN. Our latest newsletter – The Space of Discomfort, 19 December, 2015.

<http://cancern.org.nz/newsletter/>

^{xv} C. Wright Mills outlined the concepts of ‘private troubles’ and ‘public issues’ in his classic sociological text, *The Sociological Imagination* (Oxford University Press, 1959). Writing in the context of post-war USA, he argued that what were often defined as the private troubles of individuals (such as unemployment or lack of housing) had their origins in public issues relating to the wider organization of human societies. Disasters are experienced as intensely personal or ‘private’ challenges but also require public, collective action if personal troubles relating to housing, transport or food are to be resolved.

Author:

Rosemary Du Plessis, Visiting Professor Kobe University (2019 October-November)
Adjunct Associate Professor Sociology and Anthropology,
University of Canterbury, Christchurch, New Zealand

Contact:

rosemary.duplessis@canterbury.ac.nz

©2020 Research Center for Urban Safety and Security, Kobe University, All rights reserved.