



Speed or deliberation – a comparison of post disaster recovery in Japan and Turkey

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Abstract

A key challenge in post disaster recovery planning is balancing speed and deliberation. Recovering from a disaster involves many kinds of development and planning activities – land use plans, building norms and transport plans. What is unique in post-disaster situations is that these activities happen in a compressed period of time. Communities must rebuild as quickly as possible to maintain existing social networks and get the economy back on its feet. But they must also be deliberate in trying to maximize the opportunities disasters provide for improvement (Olshansky and Johnson, 2010)³.

Two earthquakes in 2011 bring this dilemma of balancing speed with deliberation into stark relief – the Great East Japan Earthquake (GEJE) and the Van earthquake in Eastern Turkey. The authors visited both places about a year after the event and interviewed earthquake specialists, disaster managers, urban planners and local authorities.

In Japan after the Tohoku earthquake and tsunami in 2011 the government adopted a deliberate approach to recovery and reconstruction. This was a much bigger event than had been forecast and science and engineering are being applied to define an enlarged hazard zone, to relocate residential areas outside this area and to build much larger and stronger sea walls. Recovery is to be based on ‘listening to the voices of the people affected’ but all this takes time and much of the affected coastline was already under demographic pressure and in economic decline.

In contrast, in Turkey after the Van earthquake speed was of the essence. Planning in Turkey is highly centralised. Van and Erğis are in a politically sensitive region and there is a national ‘reurbanisation’ plan aimed at addressing poor earthquake resistant buildings by rapid expansion on the periphery of cities. In Van, the government funded a major road building programme and large urban extensions. There is rapid economic development, residents are rebuilding their lives and new people have migrated to the area. But local stakeholders have not been involved in decision-making and speed has meant that opportunities have been missed in terms of urban planning.

These two patterns of recovery are compared and lessons are drawn for other countries facing similar issues of balancing speed and deliberation in planning post disaster recovery.

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Introduction

Following disasters, governments often clamor to reduce risk quickly, rebuild communities and restore permanence. (Comfort, 2005) But the urgent pressure to address complex, difficult decisions can result in reactive policies that may increase long-term vulnerability of affected populations. (Ingram et al 2006)

More than anyone, Robert Olshansky has drawn our attention to the issue of balancing speed and deliberation and the importance of planning in disaster recovery.

Alexander (213) suggest that post-disaster planning has three main aims: the timely restoration of normal activities and living conditions, protecting the community against the future impact of hazards, and the formulation and achievement of common objectives between the parties involved.

Research in the last decade shifted in focus from reporting issues, through identifying factors and patterns, to theory and model building based on theoretical analysis and quantitative calculations. (Honglei and Yang, 2014)

In Sri Lanka after the 2004 Indian ocean tsunami Ingram et al (2006) found that a hastily designed coastal buffer zone policy has incited massive relocation of affected populations and resulted in social, economic and environmental problems that threaten the well-being of these poor coastal communities. The urge to resettle people away from the coast has created tensions between immediate concerns of another tsunami, a relatively rare event for the Indian Ocean, and long-term well being, threatening coastal livelihoods and exposing people to other more persistent hazards, such as flooding, at resettlement sites.

A similar point was made by Lloyd-Jones (2007) commenting on post tsunami recovery in Tamil Nadu, Southern India. People from poor communities, displaced by disasters, face multiple uncertainties. Families who have traditionally depended on fishing are opposed to being relocated away from the places they formerly inhabited to new villages set back some distance from the coast. Displaced people worry about losing land, and they worry about restoring their livelihoods. In Tamil Nadu some of the newly-reconstructed houses remained unoccupied because they failed to meet basic needs and cultural practices, or because they just happen to be in the wrong place.

The authors of this paper found similar issues in Thailand. (Brown, Platt and Bevington, 2010). In Baan Nam Khem, one of the Thai fishing villages hardest hit by the tsunami, people, whose livelihood largely depended on fishing, had been moved considerable distances inland to unpopular government and NGO sponsored housing developments. Some families were, however, returning to the old centre of the village and rebuilding.

Building back better

We need to understand a disaster and track what is happening with the recovery to help plan reconstruction and learn lessons to mitigate future disasters. Disasters leave huge scars in people's lives, the economy and infrastructure. Yet despite the damage, there are opportunities to do some good – to 'build back better'. (Gunewadena and Schuller, 2008) This process of recovery involves planning, at both the national and international level and at the neighbourhood scale.

Not surprisingly, recovery is managed differently in developed and undeveloped countries, yet each can learn from the other. (Abhas, 2010) Although every event is distinct and there are huge differences between rich and poor countries, there are some basic similarities and developed countries can learn a lot from the aid community and vice versa. Faced with a devastating event, the authorities and civil society in Chile and New Zealand were able to mount appropriate and timely responses. In contrast, with the exception of the

Red Cross, members of the Disasters Emergency Committee (DEC), an alliance of all major international aid agencies, are only experts at responding to disasters in poorer developing countries. In these places, infrastructure is usually weak, government agencies often have limited capacity and many people are already extremely vulnerable even before a disaster due to chronic poverty. At the extreme end of the scale, the authorities in Haiti were paralysed by the disaster.

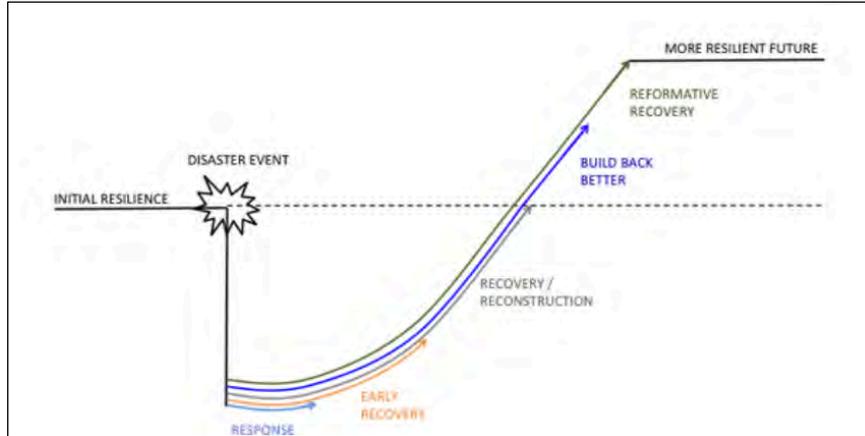


Figure 1. Idealised recovery curve (Lallemant, 2013, resilient urbanism blog)

Reconstruction following an earthquake is a complex process involving political, economic and social issues as well as geo-technical considerations. But it is also an opportunity to change the development model both in terms of what and how things are done. All thriving cities constantly face decisions about change, but what characterises post disaster planning is the urgency and seriousness of the situation. There are essentially three choices for land use planning: rebuild in the original place, partially move to a safer adjacent neighbourhood or relocate to a new place. The decision depends largely on the degree of damage, the willingness of the inhabitants to move, the difficulty of mitigating future risk and the economic implications of the move (Ye Yaoxian 1996)

Table 1 Historic earthquakes and recovery time (Kates and Pijawka, 1977)

Date	Location	Population	Fatalities %	Years Recovery
1746	Lima, Peru	37,000	20%	40
1755	Lisbon, Portugal	213,000	5%	6
1773	Guatemala City	34,000	33%	50
1775	Kashan	40,000	75%	85
1822	Aleppo	150,000	67%	56

Recovery may take many years. Disasters can be observed in the archaeological record and recovery may last for centuries. The population of an area may drop gradually and then either recover or not, depending on the relative attractiveness of the place. (Me-Bara and Valdez, 2004) Kates and Pijawka (1977) presented estimates of the time required for full population recovery after a disaster hit an urban area in ancient times. They give estimates of the original (pre-event) population of each location, the percentage of the population that was lost in the event (fatalities and immigrants) and the time it took for the population to recover. Recovery time is defined as the time it took for the population number to reach the pre-event

number. The recovery times for these historic events correlates closely with the proportion of the population killed in the disaster, but in one of the events this was over 40 years or nearly two generations. Nowadays, with infinitely better communication and transport, the time taken for the population to recovery to the pre-event number is in most cases much shorter. In the case of Bam, Iran, the population at the time of the earthquake on 26 December 2003 was about 80,000. In January 2004, almost exactly 10 years later, it was 120,000. The figure that is often quoted as the recovery time of contemporary major disasters is 20 years.

This raises an important question – what do we actually mean by recovery and how do we measure it? Various possible metrics come to mind. Housing might be measured by the number or proportion of people living in temporary accommodation, or the time taken to rehouse everyone in permanent housing. An indicator of education and health services might be the presence of new schools and hospitals. The local economy and livelihoods are more difficult to measure. Gross Domestic Product (GDP) Gross Value Added (GVA) per head are generally used to measure local or regional economic performance, but for most disasters this data is unavailable. Pedestrian footfall has been suggested as a proxy for economic vitality of business districts and shopping centres and has been used successfully and verified by empirical data in Christchurch New Zealand after the 2010-11 earthquakes. (Powell et al 2011).

Great opportunities exist in the aftermath of earthquake disaster to enhance earthquake hazard mitigation. Public awareness of the hazard is high, and the earthquake problem is of high priority on political agendas (Scholl, 1986). But experience has shown that current hazard response and mitigation practices often sustain communities as they are, and merely perpetuate the disaster-damage cycle rather than addressing the root causes of the problems (Graham, 1999). There is a natural tendency of victims to want to restore their lives and community to normal as quickly as possible (Scholl, 1986). This puts pressure on the authorities and inhibits mitigation strategies and long-term planning. Nevertheless, most communities become safer and less vulnerable to earthquake hazard as a result of post disaster reconstruction (Rubin, 1985; Haas et al 1977).

The ‘window of opportunity’

Post-disaster recovery inevitably involves tension between speed and deliberation. Speed is important in order to keep businesses alive, rebuild infrastructure, and provide temporary and permanent housing for disaster victims. (Olshansky, 2006) If official agencies do not act quickly, many victims will begin to rebuild where and how they choose. Although speed is necessary, it is also vital to take the time to plan the post-disaster reconstruction. Planning can create opportunities to improve land use and infrastructure, enhance safety, promote good design, involve citizens in decision-making, and seek cost-effective solutions. But if planning takes too long, it will be ineffective. Alexander (2013) cautions that reconstruction that occurs very rapidly should be treated with suspicion, for it implies that there has been a failure to consult adequately with interested parties. But time is not limitless. The worst cases, he suggests, are either those in which planners ride roughshod over local interests or those in which conflict of interests leads to stalemate.

The window of opportunity for accomplishing post-disaster improvements is short, lasting at most for several months following the disaster. Although there is little research on this topic, Comerio (1998) suggests that basic functions should be restored within 2 years to ensure a successful recovery. This window varies from one event to another. In Chile, after the 2010 earthquake and tsunami in Maule, this window lasted about eighteen months – the period of time that architects seconded from the University of Bio-Bio by the Regional Government worked on master plans for the 18 coastal communities affected by the disaster and the time it took for transport planners in the Ministry of Transport in Santiago to devise a new master plan for Concepción, the capital of the BioBio Region. (Platt, 2012) The two case

studies highlighted in this paper, Van and Tohoku, that both occurred in 2011, represent extremes in terms of this window of opportunity. In Turkey, the window was extremely limited both in terms of duration and extent. Post disaster planning by AFAD and the various government ministries followed strict protocols with well defined criteria, a small number of decision makers and little stakeholder or community involvement. The window of opportunity to do things better may have lasted at most five months. In Japan, in contrast, there was a massive concerted effort by many sections of society – national, provincial and local government, the scientific and engineering community, industry and commerce as well as community groups to come to terms with the issues and devise safer solutions. Despite the efforts of the national government to speed the process by providing resources and imposing deadlines, the effect has been to delay reconstruction. The window of opportunity is still open to some extent 36 months after the event.

Commenting on the pace of recovery in Haiti Clemens (2012) in a Blog makes distinction between development and reconstruction. Development, he says, is about ‘making things better than they were’. Reconstruction, on the other hand, is about ‘getting back to where we were’ as quickly as possible. Most importantly, it takes giving money to local people and governments to rebuild their lives. ... *we all want Haiti to be better than it was before the quake. But what a terrible time to try development –in the immediate aftermath of a disaster.* Relief and long term recovery and development are generally handled by different groups who work in different ways. Recently, aid agencies and donors have pushed for a merger of the two, but Clemens suggests this may be a considerable distraction. A Harvard University study of 30 disaster and relief and reconstruction efforts, however, concluded that initial actions are never neutral—they either support longer-term development or undermine it. In the first months after a disaster the situation remains highly dynamic—needs shift quickly and mistakes are common and can have serious consequences. (Anderson and Woodrow 1989)

Reactive policies are understandable in the context of the urgent policy needs in post-disaster situations. (Ingram, 2006) Relief and short-term recovery efforts have to be urgent and rapid. Short-term recovery efforts must aim to minimize the time needed for people to be rehoused safely and reestablish livelihoods. During, this ‘transitional’ phase it is critical that communities are informed about longer-term plans to reduce anxiety and frustration. Long-term recovery policies need comprehensive, site-based assessments of risk and vulnerability and effective consultation with stakeholders. Long-term multi-sector strategic planning can facilitate the sustainable management of resources, provide livelihood support, strengthen infrastructure, improve urban planning and design, extend insurance and enhance disaster preparedness at the national, regional and community level.

Mary Comerio (2013) analysing housing recovery in Chile after the Maule earthquake 2010. The disaster affected 75% of the population of Chile, damaging or destroying 370,000 housing units (about 10% of the housing in 6 regions). Yet within 6 months, the Ministry of Housing and Urban Development had published a plan to repair or rebuild, with government assistance, 220,000 units of low and middle income housing within four years. In October 2012, at the midpoint of the program, 84% of the units have started construction and 54% are complete and occupied. Several factors contributed to the program’s success: strong leadership at the national and local levels; the use of existing programs and institutions; flexibility to adapt programs over time; a strong technical staff; a robust economy; and political will. She concluded that in future, countries can learn from the experience of others and attempt to find the “sweet spot” that provides the best of government management for expediency and flexibility and incorporates opportunities for citizens to take some control over their own recovery, with housing choice and participation in plans for the community’s future. In this, she says, Chile’s performance stands out.

The authors' impression, from talking to planners and residents in three coastal settlements of Dichato, Tumbes and Tubul, that the need to balance speed and deliberation was managed with consummate skill by the team of about a dozen architect/planners charged with master planning (Platt, 2012). There was intense pressure from residents to rebuild homes, restore facilities and get the economy moving and a desire on the part of the authorities to develop new urban plans that would improve these communities and make them safer. Despite the psychological trauma of coming to terms with the disaster – most of these professionals were personally affected by the tragedy – and the lack of cadastral data and up to date plans. The design teams produced the plans and got the funding within twelve months and, most impressively, involved residents and business people in the planning process and kept the them informed with regular fortnightly visits and walk-about in the community.

Comerio (2013) uses two key factors, government involvement and community participation, to classify housing recovery in various counties that have experienced recent disasters. (Figure 1) Whilst the placement of each country is based on the author's judgment, the aim is to represent the variety of approaches used. For example, Comerio suggests that Chile and New Zealand combined both top-down and bottom-up approaches, providing government leadership and funding along with community empowerment in decision-making. In contrast, China and Italy took strong government leadership roles in providing replacement housing but did not engage local communities in most aspects of the decision-making. And Haiti's weak government and high levels of poverty has limited recovery from both perspectives. The authors visited seven of the nine counties in Comerio's graph (plus three others: Pakistan, Thailand and Iran) and interviewed people involved in planning recovery found that Comerio's assessment is broadly correct.

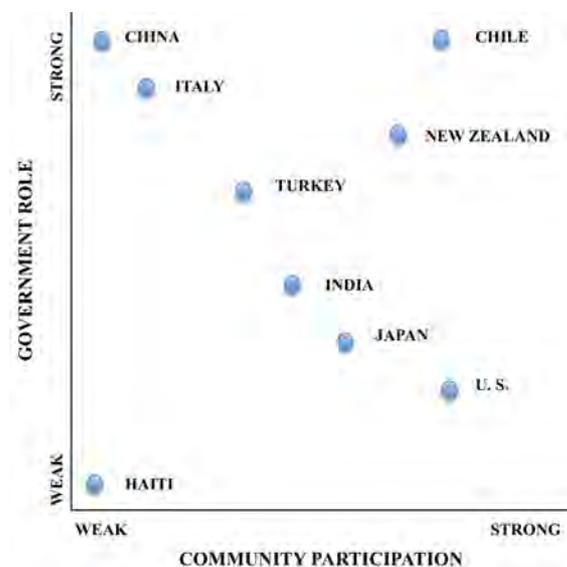


Figure 2. Comparison of recovery approaches

Insurance can be a powerful ex-ante strategy in an earthquake risk mitigation framework. Its primordial objective is to provide monetary compensation for damaged assets or lost income but, in addition, it can help achieve other important goals for society such as the establishment of safer building practices, the dissemination of risk information, and the promotion of financial responsibility. (Franco, 2014) Guy Carpenter (2014) estimates that 70% of global economic losses from natural catastrophes were uninsured between 1980 and 2013. Moreover, as the risk exposures grow at a faster pace than insurance, the gap keeps widening.

Japan

The Great East Japan Earthquake, a Mw9.0 earthquake off the coast of Tōhoku in north-east Japan on 11 March 2011 is the most expensive natural disaster recorded in the world to date. The unprecedented tsunami toppled sea defences, inundating more than 500 km² of land along this coastline. There were 18,500 fatalities, 400,000 dwellings destroyed plus 773,000 damaged and severely damaged critical infrastructure and buildings. Two years after the event, the recovery process is still in its initial stages. Debris has been cleared, reconstruction work has started on a third of destroyed embankments, and Japan is dealing with a difficult temporary housing situation. Construction of new-permanent housing has taken longer than originally planned, but has allowed for longer consultation process. (Pomonis et al, 2013)

The first temporary housing units were nearing completion after four to eight weeks. Within eight months of the disaster, 75 percent of the 450,000 people who had sought refuge in evacuation centres had been able to move to alternative accommodation (IRP, 2012). But twelve months after the earthquake 330,000 people were still in temporary accommodation and 500 remained in evacuation centres (BBC, 2012). The key issue is how long people will have to remain in temporary shelter. We interviewed people living in Kasai Temporary Housing in Ishinomaki. The air-conditioned containers measuring 30m² are of high quality, with two rooms, a kitchenette and tiny bathroom. But they are cramped and people expect to have to live in them for another 3-4 years.

One of the issues was the amount of debris covering urban areas and the huge scale of the clear up. Another was the extent and complexity of land use changes. In Japan the planning process is complex and relatively slow. Japan has a centralized political structure in which the national government maintains close oversight over the prefectures, cities, and other local governments (Sorensen 2004). The Government's top priority is accelerating the revitalization process and the focus is on policies that benefit economic revival, reconstruction and crisis management.

In Sendai people will be moved away from the coast to higher density apartment blocks. This is contentious as many families want to move inland away from the hazard zone. Along the Rias coast, residential areas in the hazard zone will be rezoned as non-residential and homes will be moved to higher ground. Designating new areas for housing, and terracing the slopes all takes time.

The International Recovery Platform pointed out that the problems of recovery are compounded by the shrinkage confronting most rural towns in Japan where population decline, ageing and economic decline pose special planning challenges (International Recovery Platform, 2012). The Central Government hoped that changes to land use (redefining housing areas in hazard zone as non-residential) improving transportation links and promoting urban centre regeneration projects would have a positive impact on the prospects of these places as well as make them more resilient to future disasters. But to date, March 2014, the focus has been on relocating housing to higher ground and constructing safety measures such as high levees and evacuation towers, whereas the imperative might have been better directed to strengthening the local economy and addressing economic and demographic decline. The lack of jobs has meant that many young people are leaving the area in search of work and better prospects. Measures that would strengthen existing local businesses, city centre shops, attract new industry and encourage young people to the city might also have been considered.

There is a question about how much room for adaptation there is locally in the application of the central government's template for recovery. Japan is a compliant society and there may be more flexibility than local officials or residents realise. But no one has any inkling about the cost-benefit of the huge investment. One of the biggest areas of controversy is the building of concrete sea walls of up to 9 metres high. For example, at Rikuzentakata

(original population 33,000), the monetary cost of reconstruction may be about US\$200,000 per family.

By law the authorities are obliged to consult local public opinion and from the earliest stages residents' opinions were sought in public meetings, surveys and workshops. But this takes time and causes delay. One of the issues in Japan is that community groups and municipal authorities are dominated by elderly men. But the younger generation, in their forties, is opposed to large embankments and tall sea walls, but they are not the decision-makers. Along the Rias coast the response of the majority is that the government has already decided so they can't do anything. Some even admire the massive colossal infrastructure. Unfortunately people cannot wait for the authorities to decide and people leave and the community may fall apart because of the delay.

Partly because of citizen opposition, reconstruction of sea embankments, which suffered extensive damage, has been considerably delayed. Local governments in devastated areas cannot decide on the details of restoration plans, as discussions continue on whether to prohibit people from returning to coastal areas. Reconstruction work has started on only 31 percent of destroyed embankments.

In Ishinomaki, one of the larger towns, there are plans to revitalise the city centre and the local community were involved in community workshops a year after the disaster in which there was an open discussion about the future of the place. The area of concern that is causing delay is the plan for a river protection wall. Historically the centre was located near the river because of the transportation of rice and many residents object to building a high wall. The debate is about balancing protection and historic value. The government have proposed a levee 4.5 m high and the citizen's committee of stakeholders has been discussing how to make the area attractive for visitors. There are plans for a riverfront development to attract visitors including a fish market with a fish food court and a memorial to the tsunami. Central government has set a time limit for construction to start.

At Oya East, a beach community near Kesenuma, the community group suggested that the proposed 10m high embankment be moved back. Initially the city was unhappy with idea but changed their minds after receiving a petition. The proposed municipal plan is now for a much lower embankment further back but this needs cooperation of the Ministry of Forestry, Japan Railways, the National Highways Agency and the Prefecture (Tomayuki, 2013). This is a bureaucratic nightmare and will cause further delay. In Kesenuma city Mr Akihiko, owner and CEO of Sugawara Sake Brewery, Vice President Chamber of Commerce and Member of Strategy Committee of Municipal Government told us that the citizens' committee oppose the planned 5m harbour embankment that will change the character of the picturesque seaside town. Most residents evacuated safely and they are used to living by the sea with all its attendant dangers. Above all they are concerned that delay in reconstruction will stall economic recovery. The majority of residents are against the proposal for the seawalls and because there has been so much opposition the deadline was put back six months to October 2013.

Local government have had lots of problems with consultation, which is time-consuming. And it is not easy to convince communities to relocate. Local governments want to consolidate communities to make it more efficient and economic to deliver services, since many of these places were in decline before the tsunami. The fundamental problem is that the authorities do not really know what size population they are reconstructing for. If the municipal authorities have to provide facilities and services for each community, no matter how small, the cost will be enormous (Bhatia et al, 2013).

Turkey

The Van earthquake of 7.1 magnitude (USGS,2011) occurred at 1:41pm local time on Sunday 23 October and was felt throughout eastern Turkey and adjacent countries. The epicenter was 16 km (9 miles) NNE of Van near the town of Erciş. (EERI, 2012; CEDIM, 2012). Van, the provincial capital, had a population of 526,725 and Erciş had 159,450 at the time of the disaster. There were a total of 604 fatalities and 4,152 casualties (AFAD, 2012). The earthquake caused significant damage in the cities of Van and Erciş, as well as in many villages. An aftershock of 5.6 magnitude on 9 November caused further damage and 40 more deaths (EERI, 2012). There was massive damage to buildings due to poor masonry construction and inadequate application of building codes. (Turan, 2012) A total 28,512 buildings were heavily damaged in the first event, including 18,424 dwelling units. This rose to over 35,000 after the second event. (Erdik, 2012) 60% of housing in the Van region suffered damage. Van is one of the poorest regions of Turkey and total economic damage is estimated in the low single digit billion USD. This is much less than in Japan. But the economic life of Van was destroyed by the earthquake and most people have no jobs.

The authors visited Van and Erciş one year after the earthquake. Huge progress had been made. 30,000 people had been re-housed in the city and 70,000 people were moving to the new suburbs. 6,000 new jobs had been created, mainly in construction (Personal communication Altay Usly, Deputy Governor Van). People are moving to Toki houses on 5 different sites around Van. They cost 37,000 Euros to build. People pay a third of this with a zero interest loan over 15-20 years, about 100 Euros a month, and the government pays the rest.

Political stability of the last decade has delivered economic development and there has been massive state investment in the region in roads, infrastructure and new settlements. But the economic bounce from construction is only temporary and long-term recovery is less certain. (Personal communication, Polat Gülken, Chair, Civil Engineering, Çankaya University, Ankara)

Turkey was ill-prepared for the earthquake. Disaster crisis management is highly organised in Turkey. But focusing on disaster response and recovery phases and not paying enough attention to mitigation disaster risk management) has meant Turkey was less prepared for the disaster in Van than it might have been. (Caymaza, Akyonb and Erenelc, 2013) *“We knew the theory but not the practice. Relief was different, AFAD were highly prepared. It is difficult to recover quickly, the earthquake left us with a big economic problem, but slowly the city is returning to normal.”* (Personal communication Barboros Baran, Mayor of Ergiş) Life is slowly returning. Schools and shops have reopened; there is traffic in the streets and a great deal of construction. More fortunate families have a family member who is back to work such as a schoolteacher or taxi driver. But it will be a long time, however, before full recovery occurs and for some people this will never happen. (Beam, 2012)

Since the turn of the twenty-first century, Turkish cities have undergone large-scale change through a process referred to as urban transformation, that has involved the demolition of inner-city low-income settlements. One of the justifications for this policy is to protect people from earthquakes (Sarañoğlu and Demirtaş-Milz, 2014). Disaster crisis management is highly organised in Turkey.

In 2001 the Turkish Government introduced compulsory earthquake insurance and threatened to cut off the electricity and water if people had no insurance. But the law was only enforced for one year and people now only buy insurance when they come to sell the house. In Van, insurance penetration is much lower than in Istanbul or Ankara. People were treated to the same level of government compensation whether they had insurance or not. The decision was political as the situation in Kurdish dominated Van was fragile after the disaster and the Government used the extraordinary situation to improve their popularity in the

upcoming elections. People who weren't insured should not have been rehoused in the same way as those with insurance. But this would have been politically unacceptable to the Government.

The new 2012 Urban Transformation Law aims to increase the safety of the existing stock by defining earthquake hazard zones and obliging people living in these zones to get professional help to analyse the earthquake risk of their building. The law is very new and in the process of being applied. (Personal communication Necmettin Şahin, Director, Disaster Management Center, AFAD, Izmir).

The key question facing both local authorities and building owners after any disaster is whether to repair or rebuild. The answer is influenced by a number of factors:

- The quality of the science and engineering assessment of ground conditions and structural integrity of the building and its vulnerability to future hazards
- The application of building codes and rigour in the inspection process
- Whether the building is insured and for how much.
- The relative cost of repair and rebuild.
- The possibility of developing the site by increasing the number of storeys or improving the planning or functionality of the building.
- The availability of funds, either in terms of capital or low interest loans.
- Multiple ownership or legal issues and the owners personal preference.

In Van and Ergiř 20,000 new housing units are being built by Toki, the Government housing agency. This suggests that approximately half the damaged residential property will be repaired. A higher proportion of commercial property is likely to be repaired rather than rebuilt, because most owners will rebuild on the same site rather than moving and there is less financial support for commercial property.

AFAD defines the location for new housing based on geological considerations and land ownership and legal issues. Largely because of the intense imperative for speed this invariably means government owned land. Toki manages all aspects of the construction and has built 15,000 apartments in Van and 5,000 in Ergiř in less than 12 months from the date of the earthquake. One issue is that these apartments are typically 100m² and average family size is ten. So they are cramped. (Personal communication, Nuray Karanci, Department of Clinical Psychology, METU)

The engineers in AFAD maintain that the impressive speed was due to taking right decisions and, in the main, choosing good sites. This strategy of moving people to new peripheral settlements has meant that the city is expanding, particularly towards the south and east and the planners have focused on new roads and new connections to these new sub-centres. But the new homes are isolated from the town centre and various experienced earthquake engineers are critical of scientific advice overriding logical urban planning criteria.

Toki are a construction contractor and have little understanding or expertise in urban planning or new settlement creation. Neither FAD nor Toki do any urban design plans for the new settlements. Although they completed 20,000 new homes within one year of the disaster this shouldn't have been the aim. (Personal communication, Altay Erdugay, Earthquake Research Institute, Gazi University and former President of Toki)

However, it has been almost impossible for the urban planners to produce radical plans to improve the city centres of Van or Ergiř because of land ownership issues. It is complex and expensive to 'expropriate' private land in Turkey and owners do not want to give up area for street widening, parks or any enhancement of the public realm. (Personal communication, Funda Tolman, Ministry of Environment and Urban Affairs)

Conclusion

Building back better

Disasters leave huge scars in people's lives, the economy and infrastructure. Yet despite the damage, there are opportunities to do some good – to 'build back better'. (Gunewadena and Schuller, 2008) This process of recovery is a complex process involving political, economic and social issues as well as engineering and geo-technical considerations. But it is also an opportunity to change what and how things are done. All thriving cities constantly face decisions about change, but what characterises post disaster planning is the urgency and seriousness of the situation. (Olshansky and Johnson, 2010)

In Japan, the nation as a whole was traumatized by the unanticipated scale of the disaster. It is now a matter of national pride to rebuild shattered communities and to make them safe almost 'at any cost'. This imperative to rebuild safely means that ways of life and people's relationship to the sea will have to change and this is painful and causes dissent. By law the authorities have to consult people and it is in the nature of Japanese society to try to reach consensus rationally. All this takes time, which undermines the possibility of recovery in places that were already in economic and demographic decline.

In contrast in Turkey the imperative was speed, particularly to provide temporary accommodation and then to rehouse people in permanent housing. The new Toki constructed housing on the periphery of the city will be much more earthquake proof than previous homes. And new hospitals, schools and government buildings will be built to code. All buildings must be inspected before they can be repaired and in theory dangerous buildings that cannot be repaired will be demolished, but the authors witnessed many examples of inadequate and dangerous reconstruction. Nevertheless, Van will be much safer. But there is little if any urban design or economic planning underpinning the fast paced reconstruction.

Land use change

There are essentially three choices for land use planning: rebuild in the original place, partially move to a safer adjacent neighbourhood or relocate to a new place. The decision depends largely on the degree of damage, the willingness of the inhabitants to move, the difficulty of mitigating future risk and the economic implications of the move (Ye Yaoxian 1996)

In Japan the policy is to define a hazard zone and to move people up and away. In the Sendai plain this involves moving people out of detached houses and into apartment blocks some distance from the coast. In the Rias coast this involves moving housing to higher ground on new terraces.

In Turkey perhaps between a third and a half of displaced persons will be rehoused in new apartments blocks sited on new land 5-6 km from the city. The rest of the population plus new migrants to the city will relocate on redeveloped demolition sites or repaired houses.

Economic recovery

Economic recovery is quite likely the most serious issue facing most communities in the post-disaster period, and almost certainly the central issue in every major disaster. Bolton says a major disaster forces an urgency to decide many things at once. (Bolton, 1996)

In Japan much of the area affected by the disaster was in economic decline. Japan has been in severe recession for decades and the whole country is suffering from a low birth rate and an aging population. These problems are worse if anything in this area of north-east Japan and were aggravated by the tsunami. The Government is trying to support industry and commerce by improving transport links and a variety of financial support mechanisms, but there is only so much it can do in the face of economic forces. The problems might be

resolved by a different policy on international migration, but this is politically unacceptable in Japan.

In Turkey there has been major investment in new highways and infrastructure. This has produced a mini boom in construction that has a finite life. Unemployment is high and although some are getting rich on the reconstruction, the majority are struggling to make ends meet. This is a border area with Iran and much of the economy is based on trade, both legal and contraband. It is unclear whether in the longer term this area will prosper or fail.

Planning system

A large number of authorities and organisations are involved in different aspects of recovery and there is a range of pre-existing and special earthquake-related plans and programmes. In many countries it is unclear which agency, organisation or department is responsible for planning post-disaster recovery. There is a pressing need to coordinate decision-making, land availability, the reconstruction programme and service provision. But there is often tension between local, regional and national authorities.

Japan faces a bureaucratic nightmare of many different agencies needing to coordinate their decision-making. Major planning changes also need extensive public consultation and community agreement. This means planning is slow and cumbersome, but plans are most carefully considered and evaluated.

In Turkey in contrast most of the important decisions were taken by officials in Ankara without much reference to local stakeholders and with little or no public consultation. This means decision-making was extremely rapid, but plans are much less likely to meet local people's aspirations and opportunities to improve urban planning have been missed.

Political issues

In a report for the International Recovery Platform providing guidance Ian Davis says all aspects of disaster management including longer-term recovery occur within political contexts. Disaster events place immense demands on government officials and the public, especially those affected, have high expectations of their leaders and public officials. But the brevity or superficiality of the media coverage tends to under-represent the challenges faced by government.

The Japanese Government has been under intense pressure, aggravated by its mishandling of the Fukushima nuclear accident, to clean up and repair the damage and make places safe. In a very polite and restrained way there has been intense debate about the way forward which has caused delay but may in the long-run prove beneficial.

In Turkey, there was a political imperative, because of the Kurdish separatist unrest, to react fast and decisively. The Government had immense powers to act without recourse to the same level of public scrutiny and local debate as in Japan.

In summary, recovery in Japan might be characterised as deliberate but slow and in Turkey as all speed and little or no deliberation. In an ideal world recovery would be both fast and deliberate and would involve local communities in strategic decision-making. Only Chile of the various places that have suffered recent disasters has this trick been managed successfully.

References

- Abbas, J K (2010) Safer Homes, Stronger Communities A Handbook for Reconstructing after Natural Disasters. The World Bank, Global Facility for Disaster Reduction and Recovery (GFDRR).
- AFAD (2012) Van earthquake activity report, English translation.
www.afad.gov.tr/EN/HblcerikDetay.aspx?ID=107&IcerikID=570. Downloaded 14/12/12
- Alexander, D. (2013) Planning for post-disaster reconstruction
<http://www.grif.umontreal.ca/pages/papers2004/Paper%20-%20Alexander%20D.pdf>
- Anderson, Mary B., and Peter J. Woodrow. 1989. *Rising from the Ashes*. Boulder, CO: Westview.
- Arnold, C.(1993) *Reconstruction After Earthquakes: Issues, Urban Design, and Case Studies*. Report to National Science Foundation. San Mateo, CA: Building Systems Development Inc.
- Assistance for Natural Disasters (2006) The World Bank Washington, DC.
- Beam, A (2012) Turkey's Recovery Six Months after the Van Earthquake. Blog.
http://www.mountararattrek.com/van_earthquake_2012.htm Accessed 6/1/14
- Bolton, P A (1996) The integration of housing recovery into reconstruction planning. In F Y Cheng and Y Y Wang eds (1996) *Post-earthquake rehabilitation and reconstruction* Pergamon
- Brown, D. Platt S. and Bevington J. (2010) *Disaster Recovery Indicators: guidelines for monitoring and evaluation*. CURBE, Cambridge University Centre for Risk in the Built Environment.
- Comerio M. C. (1998) *Disaster hits home: New policy for urban housing recovery*. University of California Press (Berkeley)
- CEDIM (2012) Comparing the current impact of the Van Earthquake to past earthquakes in Eastern Turkey. CEDIM Forensic Earthquake Analysis Group – Report #4
- Clemens, Michael (2012) Two Years after Haiti's Catastrophe It's Time to Complement Aid with the Most Cost-Effective Assistance: Migration. Blog Jan 09.
<http://www.globalhealthhub.org/2012/01/09/two-years-after-haitis-catastrophe-its-time-to-complement-aid-with>
- Comerio, M.C. (1998). *Disaster Hits Home: New Policy for Urban Housing Recovery*. UC Press, Berkeley, CA.
- Comerio, M.C. (2012). *Resilience, Recovery and Community Renewal*. 15 WCEE Lisboa 2012.
- Comerio M. C. (2013) *Housing Recovery in Chile: A Qualitative Mid-program Review*. Department of Architecture University of California, Berkeley PEER Report 2013/01
- Comfort, L. (2005) Risk, security, and disaster management. *Ann. Rev. Polit. Sci.* 8, 335–356.
- Caymaza, E , Fehmi Volkan Akyonb , Fahri Erenelc (2013) A model proposal for efficient disaster management: the Turkish sample. 9th International Strategic Management Conference. *Procedia - Social and Behavioral Sciences* 99 (2013) 609 – 618
<http://www.sciencedirect.com/>
- Davis, I. (2006) *Learning from Disaster Recovery: Guidance for Decision Makers*. International Recovery Platform (IRP) May 2006
- Erdik, M. Yaver Kamer, Y. Demircioğlu, M. and Karin Şeşetyan, K. (2012) 23 October 2011 Van (Turkey) earthquake. *Nat Hazards* (2012) 64:651–665
- Franco G. (2014) *Earthquake Mitigation Strategies through Insurance*. In Michael Beer, Edoardo Patelli, Ioannis Kougioumtzoglou and Siu-Kui Au (Eds.) *Encyclopedia of Earthquake Engineering* (Forthcoming)
- Graham A. (1999) Sustainability and community resilience: the holy grail of hazards planning? *Environmental Hazards* 1 (1999) 13}25
- Gülkan, P. (2014) *Istanbul at the threshold: mitigating an expected earthquake*. Earthquakes: from Mechanics to Mitigation, British Geophysical Association. February 2014.
- Gunewadena, N and Schuller, M (2008) *Capitalizing on catastrophe*. Altamira Press, Lanham
- Haas, J.E. Kates, R., Bowden, M J. Eds. (1977) *Reconstruction Following Disaster*. Cambridge, Massachusetts, MIT Press.
- Honglei Yi and Jay Yang (2014) Research trends of post disaster reconstruction: The past and the future. *Habitat International* 42 (2014) 21-29

- IEG (2006) Hazards of Nature, Risks to Development An IEG Evaluation of World Bank Assistance for Natural Disasters
- Ingram, J.C. Guillermo F, Rumbaitis-del Rio, C, Khazai, B (2006) Post-disaster recovery dilemmas: challenges in balancing short-term and long-term needs for vulnerability reduction *Environment Science & Policy* 9 pp 607-613
- Johnson L.A and Olshansky R.B. (2011) Recovery of the Whole Community. PERI Symposium: Community Recovery from Disaster
- Kahnemann, D. (2012) Thinking fast and slow. Penguin Books, London.
- Kates, R.W. and Pijawka, D. From rubble to monument: the pace of recovery, in: J.E. Haas, R.W. Kates, M.J. Bowden (Eds.), *Reconstruction Following Disaster*, MIT Press, Cambridge, MA, 1977.
- Kennedy et al. (2008) The meaning of ‘build back better’: Evidence from post-tsunami Aceh and Sri Lanka
- Kenny, C (2012) Build Back Better: Great Slogan, Bad Idea? in *Global Development, Migration and Disaster Recovery Tags: Haiti*. InShare January 11, 2012
<http://blogs.cgdev.org/globaldevelopment/2012/01/build-back-better.php>
- Lallemant, D (2013) Building post-disaster resilience into reconstruction via resilient urbanism. Collaborative Blog. <http://resilienturbanism.org/author/dlallemand/> (Accessed 12 Feb 2014)
- Linnerooth-Bayer, Joanne, and A. Amendola. 2000. “Global Change, Natural Disasters and Loss-Sharing: Issues of Efficiency and Equity.” *The Geneva Papers on Risk and Insurance— Issues and Practice*, 25(2).
- Linnerooth-Bayer, Joanne, and Reinhard Mechler. 2005. “Disaster Risk Financing for Developing Countries.” IIASA Presentation for the World Bank. Washington, DC, IIASA, November 17, 2005.
- Lloyd-Jones, T. (2007) Building back better: how action research and professional networking can make a difference to disaster reconstruction and risk reduction. RIBA Research Symposium 2007: Reflections on practice: capturing innovation and creativity
- Me-Bara, Y. and Valdez Jr. F. (2004) Recovery time after a disaster and the ancient Maya *Journal of Archaeological Science* 31 (2004) 1311–1324
- Olshansky, Robert B. (2005) Toward a Theory of Community Recovery from Disaster: A Review of Existing Literature’. Paper presented at the First International Conference of Urban Disaster Reduction, Kobe, Japan, 19 January. Disaster. Cambridge, MA: MIT Press.
- Olshansky R B , Johnson L A and Topping K C (2005) Rebuilding Communities Following Disaster: Lessons from Kobe and Los Angeles *Built Environment* Vol 32 No 4
- Olshansky R.B. (2006) Planning After Hurricane Katrina *Journal of the American Planning*
- Olshansky, R.B., Hopkins, L.D., Chandrasekhar, D. Iuchi. K. (2009) Disaster Recovery: Explaining Relationships among Actions, Decisions, Plans, Organizations, and People. Paper reporting on Grant # 0758310. Proceedings of 2009 NSF Engineering Research and Innovation Conference, Honolulu, Hawaii.
- Olshansky R.B and Chang S. (2009) in H. Blanco, M. Alberti *Planning for disaster recovery: emerging research needs and challenges*. *Progress in Planning* 72 195–250
- Olshansky, R. B., and Johnson, L A. (2010) *Clear as Mud: Planning for the Rebuilding of New Orleans*, American Planning Association, Chicago, IL, 360 pp.
- Platt, S. (2012) *Reconstruction in Chile post 2010 earthquake*. ReBuilDD: Cambridge University and CAR
- Platt, S and So (2013) *Urban planning and recovery*. In Antonios Pomonis et al Eds *Recovery Two Years After The 2011 Tōhoku Earthquake and Tsunami*. Return mission report by EEFIT.
- Pomonis, A. Ed (2013) *Recovery Two Years After The 2011 Tōhoku Earthquake and Tsunami*. Return mission report by EEFIT.
- Potutan, G. (2009) *Livelihoods: issues, options and lessons*. International Recovery Platform.
<http://eird.org/cd/recovery-planning/docs/5-presentations-english/11-Livelihoods.ppt>. Accessed 7/5/12

- Powell, F, Harding, A, Thomas, J and Mora, K (2011) Rapid response research in Christchurch: Providing evidence for recovery decisions and for future theoretical research *Australasian Journal of Disaster and Trauma Studies*. Volume 2011–2
- Rubin, Claire B., Saperstein, Martin D. and Barbee, Daniel G. Eds (1985) *Community Recovery from a Major Natural Disaster*. Monograph No. 41, Program on Environment and Behavior, Institute of Behavioral Science. Boulder, CO: University of Colorado.
- Saraçoğlu, C. Neslihan Demirtaş-Milz, 2014, Disasters as an ideological strategy for governing neoliberal urban transformation in Turkey: insights from Izmir/Kadifekale
- Scholl, R. (1986) *Reducing Earthquake Hazards: Lessons learned from earthquakes* EERI.
- Schwab, Jim (ed.) (1998) *Planning for Post-Disaster Recovery and Reconstruction*. Planning Advisory Service Report 483/484. Chicago, IL: American Planning Association.
- Slovic, P (1987) Perception of Risk Science, New Series, Vol. 236, No. 4799. (Apr. 17, 1987), pp. 280-285.
- So E and Platt, S (2014) Earthquakes and their socio-economic consequences. In Michael Beer, Edoardo Patelli, Ioannis Kouglioumtzoglou and Siu-Kui Au (Eds.) *Encyclopedia of Earthquake Engineering* (Forthcoming)
- Sunstein, C (2002) *Risk and Reason*, Cambridge University Press
- Tierney, K. J., 1985, Report on the Coalinga Earthquake May 2 1983 Sacramento, California, Seismic Safety Commission
- Tomayukin, M. (2013). Community worker in Mika Oya District, Kesennuma. Verbal report 5 June 2013.
- Turan, M. (2012) Lessons Learnt From Van and Erciş Earthquakes 2011, Turkey: An Evaluation of Disaster Management. *International Journal of Business and Social Science* Vol. 3 No. 22 [Special Issue – November 2012]
- Turan, M. (2012) Lessons Learnt From Van and Erciş Earthquakes 2011, Turkey: An Evaluation of Disaster Management. *International Journal of Business and Social Science* Vol. 3 No. 22 [Special Issue – November 2012]
- Turner, B.L., Kasperson, R.E., Matsone, P.A., McCarthy, J.J., Corellg, R.W., Christensene, L., Eckleyg, N., Kasperson, J.X., Luerse, A., Martellog, M.L., Polsky, C., Pulsipher, A., Schillerb, A., 2003. A framework for vulnerability analysis in sustainability science. *Proc. National Acad. Sci.* 100 (14), 8074–8079
- Tyler, Martha Blair, O’Prey, Katherine and Kristiansson, Karen (2002) *Redevelopment After Earthquakes*. Portola Valley, CA: Spangle Associates
- Ye Yaoxian (1996) Decision-making for recovery and reconstruction following a strong earthquake. In Cheng, F Y and Wang Y Y eds (1996) *Post-earthquake rehabilitation and reconstruction* Pergamon