

Chapter 2

Japan After March 11th 2011: Between Swift Reconstruction and Sustainable Restructuring

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Over five years after the “triple disaster” of an earthquake, a tsunami, and the subsequent nuclear accident at the Fukushima Daiichi power plant that devastated Japan’s Tohoku region on March 11th, 2011, reconstruction is still progressing slowly. The difficulties are unprecedented and vast in scope: over 400 communities in 62 municipalities are affected in six different prefectures, along hundreds of kilometres of coastline. The challenges are complex and differ in their particular manifestations: earthquake damage, displacement from nuclear disaster, and tsunami destruction. They are dynamically interrelated and cumulative; rural regions, long confronted with depopulation and ageing, are additionally affected by disaster, and the effects are exacerbated by slow recovery and uncertainty. It will be difficult to rebuild more resilient communities that are sturdy and adaptable in order to respond to the challenges of inevitable demographic and economic transformation and global climate change, if planners ignore countervailing trends of demographic decline and environmentally harmful lifestyle preferences. The purpose of this chapter is therefore threefold: First, to provide a comprehensive overview of factors that are complicating reconstruction in Tohoku; second, to show that many of the underlying, structural problems of rural Japan are caused by a proliferation of environmentally harmful lifestyles, which existing top-down urban planning prescriptions fail to address. Thirdly, to stress the importance of complementary, ‘soft’ policies that aim at raising environmental awareness and strengthening social resilience by reinforcing community networks and utilizing endogenous development potentials.

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Introduction

It has been more than five years since the so-called “triple disaster” of an earthquake, a tsunami, and the resulting accident at the Fukushima Daiichi nuclear power plant devastated significant parts of North-Eastern Japan on March 11th, 2011. Even so, the overall reconstruction effort is still only progressing at a slow pace.

Although Japan’s government has committed vast financial resources to facilitate a speedy reconstruction, and a fair number of promising grass-roots recovery projects¹ have sprung up across the region, these efforts are frustrated by the enormous spatial expanse of the affected areas, with over 400 communities in 62 municipalities affected in six different prefectures, along hundreds of kilometers of coastline; by very divergent socio-economic and topographic conditions at each locality, a shortage of personnel and reconstruction materials, as well as the wide spectrum and great magnitude of the tsunami devastations. Thus, there can be no single, one size fits all recipe for reconstruction.

However, it is not only these physical factors that distinguish the impacts of the Great East Japan Earthquake from those of the similarly destructive Hanshin-Awaji Earthquake in Kobe, in 1995. Since the mid-1990s, decentralization and devolution of government authority have progressed significantly in some policy areas and shifted the power balance in Japan from the central government to the municipalities, as well as from the state to civil society. This has created ambiguity and stress about responsibilities and leadership in the reconstruction endeavor and it stymies the communication and coordination between all stakeholders involved.

The creation of sustainable, resilient, and adaptable post-disaster communities—the often-stated objectives of many reconstruction policy documents—is further complicated by the fact that the affected regions are mostly located at the rural periphery and have long been confronted by a less spectacular, hidden disaster. Long before they were destroyed by the Tsunami on March 11 2011, these communities in the prefectures Iwate, Miyagi, and Fukushima were marked by atrophying local economies as a result of succession problems in agriculture, forestry, and fisheries, decreasing birth rates, a concentration of elderly population, outmigration of the young and disintegration of local communities (c.f. Hayashi and Saito 2011; Matanle et al. 2011; Matsuyama and Biggs 2011).

All these factors complicate the reconstruction process immensely and distinguish it from earlier precedents. It will be difficult to rebuild more resilient communities that are sturdy and adaptable enough to respond to the challenges of demographic and economic transformation, global climate change, or energy and food security, if such countervailing trends of shrinkage and the preference for environmentally harmful lifestyles are ignored. There is a danger that scarce public resources are misspent, which a highly indebted country like Japan could use otherwise.

The purpose of this chapter is therefore first to provide a comprehensive overview of factors that are complicating the reconstruction process in Tohoku. Second, I will show that changing lifestyle choices of the citizens causes many of these underlying problems and that consequently mere top-down directed urban planning prescriptions are likely to fall short. Thirdly, I will stress the importance of complementary, ‘soft’ policies that aim at strengthening social resilience and sustainability and reinforce social networks as well as endogenous development potentials in the affected communities.

The Disaster in Figures

On March 11th 2011, at 14:46 local time a massive earthquake struck off the pacific coast of Japan’s northeastern Tohoku region. The quake measured a record 9.0 on the Richter scale and was the strongest ever recorded in Japan. The mighty tremor shifted the tectonic plates by more than five meters eastwards, into the Pacific and caused parts of the Tohoku coast to subside by over 1 m—exposing towns, factories, ports, and agricultural land to the whims of the tides; erasing property lines and public records.

The tremor triggered a mighty tsunami that reached the land between 20 and 140 min later and wiped out whole communities along a stretch of coast of over 500 km (Cabinet Office 2011a). The waves claimed around 15.883 lives and as many as 2.667 people are still missing (NPA2013). Furthermore, almost 130.000 buildings were fully destroyed and around 742.000 remained severely damaged (Ibid).

561 km² of land were inundated by the tsunami, which is equivalent to nine times the area within Tokyo’s Yamanote loop line. Of this, 23.600 hectares of agricultural land were covered with toxic sludge—corresponding to 11% of all farming land in Miyagi (Cabinet Office 2011a). In total, 62 municipalities in six prefectures—Aomori, Iwate, Miyagi, Fukushima, Ibaragi and Chiba—suffered from the natural and the following man-made nuclear disaster.

The degree and the specific patterns of destructions differ widely and are strongly predicated by the particular topographical conditions of the affected communities. The power of the tsunami was amplified for example by the narrow, deep bays along the rugged Sanriku coast in Iwate with their steep slopes. Here the tsunami’s run-up height reached up to 40 m and cities like Minamisanriku and Rikuzentakata were therefore nearly fully destroyed. On the other hand, in the flat alluvial plains around Sendai the waves travelled as deep as 10 km inland but didn’t develop an equally destructive force.

Disastrous as they were, the destructions of the tsunami reached farther than the coastal areas that were directly affected.

Catastrophic Chain Reaction

Richard G. Little points out that today's interconnected urban infrastructure systems are highly vulnerable. *"A cascading failure in an engineered system occurs when a failure in one of the collection of interconnected parts that delivers a service, triggers the failure of successive parts ...(thus), an infrastructure disruption spreads beyond itself to cause appreciable impact on other infrastructures, which in turn cause more deleterious effects on still other systems"* (Little 2009, p. 29).

The earthquake and the tsunami of March 11 2011 are a graphic example of such a cascading failure of complex infrastructures—*infrastructure*, by definition mostly invisible and part of the hidden processes that keep cities operational. Susan Leigh-Star suggests this normally invisible quality of working infrastructure becomes only visible upon breakdown; only then do we get a more nuanced understanding of it's relational nature (Leigh-Star 1999). The waves that were triggered by the earthquake overwhelmed the emergency power supply of the Fukushima Daiichi nuclear plant. The resulting lack of power led to a nuclear meltdown of at least three of the uncooled reactor blocks, which in turn necessitated the hurried evacuation of over 200,000 residents, living in a radius of 20 km around the damaged plant (Harlan and Mufson 2011). Today it is still not clear if, or when, these people will be able to return to their homes, or whether they are willing to take the risk of potential long-term exposure to low-intensity radiation.

The failure of the Fukushima reactors led to the subsequent shutdown of all nuclear power plants in Japan in order to conduct safety tests. This in turn caused an unprecedented energy crisis in Eastern Japan and necessitated rolling brownouts throughout the summer of 2011 in order to curb energy consumption and prevent a complete collapse of the national power grid. The energy crisis as well as the shutdown of important infrastructure and lifelines such as highways, airports, railway lines, telecommunication lines, oil refineries, etc. led to gasoline and food shortages and impaired relief operations in the disaster-affected regions. Shortages of key components, manufactured in Japan, even caused significant disruptions to the supply chains of a highly interconnected global economy (cf. Cukier 2012b).

For days following the earthquake, food and water were in short supply, even in Tokyo, and on March 11th when the public transportation system of the megacity ground to a halt, millions of commuters were stranded without a place to sleep or food to eat. Left without water and electricity many inhabitants of Tokyo's countless tower condominiums found themselves in dire straits and it was learned that in the early days after the meltdowns in Fukushima then-prime minister Kan's administration was secretly considering to evacuate the whole capital (Fackler 2012b). These and other worrying problems highlighted the vulnerability of the Tokyo agglomeration, with its nearly 37 million inhabitants, and strongly suggested the need for speeding up the implementation of governmental disaster preparedness plans and dispersion of vital urban functions (Daily Yomiuri 2012a). It also highlighted the need for private companies to think about contingency plans and business continuity planning (Ito and Chu 2011).

The Disaster Behind the Disaster: Japan's Shrinking Periphery

Less visible than the triple disaster of earthquake, tsunami and nuclear catastrophe, but equally destructive is a fourth, hidden crisis that has been affecting Japan's rural regions for decades and that poses great challenges for the creation of sustainable, adaptable communities irrespective of the reconstruction process in Tohoku. Long before March 11, 2011 towns and communities along Japan's rural periphery, outside the metropolitan growth areas, were confronted with declining birthrates, over-aging, outmigration of the young, vacant real estate, and succession problems in forestry, agriculture and fisheries (cf. Matanle and Sato 2010; Matanle et al. 2011; Matanle 2011; Nakamura 2008; Seaton 2010).

Worse, Hayashi and Saito (2011) have pointed out that the population within 1 km distance from the coast of the three disaster-hit prefectures Fukushima, Miyagi and Iwate will have declined in average by 46% until the year 2040 (Table 2.1). This is well beyond the projected population decline for these prefectures as a whole.

The reasons for this are natural demographic change with deaths constantly outnumbering the number of births, but also lack of economic opportunities. Over 64% of Japan's 2.27 million farmers were older than 65 in 2014, and so are nearly 35% of all 174.000 employees in the fishing industry for example.² These figures then also raise the question about how to increase Japan's dwindling future food self-sufficiency.

The Great East-Japan Earthquake of March 11 2011 is likely to accelerate these negative demographic trends, as few new jobs have been created so far and reconstruction is progressing slowly. Uncertainty about a successful recovery also

Table 2.1 Projected population development within 1 km distance from coast

		Iwate	Miyagi	Fukushima
Overall population	2005	72.770 (1.385.041)	106.907 (2.360.218)	42.994 (2.091.319)
	2040	37.245 (962.093)	56.860 (1.894.070)	26.792 (1.504.029)
Population aged 65 and above	2005	20.244 (340.753)	27.619 (471.413)	10.232 (475.158)
	2040	16.813 (365.339)	24.000 (649.223)	10.274 (540.812)
Population aged 65 and above as a percentage of total population (%)	2005	27.8 (24.6)	25.8 (20.0)	23.8 (22.7)
	2040	45.1 (38.0)	42.2 (34.3)	38.3 (36.0)
Population development as a percentage of total population in 2005 (%)	2005–2040	–48.8 (–30.5)	–46.8 (–19.8)	–37.7 (–28.1)

Source Hayashi and Saito (2011), p. 4, Translated by Christian Dimmer

In brackets Figures for the overall prefecture

prevents shopkeepers and restaurant owners from reopening their businesses, or starting up new ones, as it is not clear if the purchasing power of the future community will be strong enough. In the areas that were affected by the Fukushima nuclear disaster, radiation fears are another strong reason for further out-migration.

Soon after the disaster Jun Iio, working group leader of the national government's Reconstruction Design Council, pointed out *"the problems faced by the people in those disaster-ravaged areas are a microcosm of the problems being faced by all of Japan"* (in Matsuyama and Biggs 2011) with its ageing and declining communities. Tohoku community rebuilding could therefore serve as a model for the revitalization of other similar rural regions in Japan, but as Tohoku University professor Masashige Motoe, points out, *"the tsunami attacked our poorer communities and (has) shown us how much they were already struggling. (However), no one wants to see that. No one wants to face it"* (Quoted in Hawthorne 2012).

For a sustainable reconstruction process in which limited financial and human resources are wisely utilized, these underlying processes of demographic and economic decline have to be taken into account. The fact that a similarly large disaster could happen anytime elsewhere in Japan adds further urgency.

Reconstruction Principles

On June 25 2011, Japan's Reconstruction Design Council, an expert commission directly appointed by then-prime minister Naoto Kan presented its seven principles for reconstruction (Cabinet Office 2011b). The council was chaired by the civil society expert Makoto Iokibe and brought together 15 leading experts from a variety of academic disciplines and from diverse roles in society. Its members included the architect Tadao Ando, who has been central to some of the country's larger national projects, such as the successful bid to host the 2020 Olympics in Tokyo, or Takashi Onishi, a former Tokyo University professor and leading regional planning expert in Japan.

The commission was well aware of the difficulties and the magnitude of the reconstruction task, but also of the opportunity to encourage more livable, sustainable communities that are able to deal with the demographic and economic challenges outlined above. It recommended therefore that local communities should be the foundation for reconstruction, with the national government only supporting reconstruction through general guidelines and additional institutional design. In order to revive the disaster-afflicted regions, the council recommended that recovery and reconstruction should harness the region's endogenous potentials and lead to technological and social innovation not only for Tohoku but also serve as model for all of Japan and in particular for rural areas, facing similar population decline.

A key element would be preserving and fostering strong social bonds among local residents in order to construct disaster-resilient, safe communities. A system of distributed energy generation is identified as a key to creating redundancies and

reducing the vulnerability of the existing centralized systems. The Reconstruction Council links reconstruction and the country's ailing economy as it stresses that Japan's economy cannot be restored unless the disaster areas are rebuilt and that the disaster areas cannot be truly rebuilt unless Japan's economy as a whole is restored. Finally, the council urges that *"(a)ll of us living now (in Japan) shall view the disaster as affecting our own lives, and shall pursue reconstruction with a spirit of solidarity and mutual understanding that permeates the entire nation"* (Cabinet Office 2011b, p. 2).

Two years later, the Reconstruction Promotion Committee (Reconstruction Agency 2013), a follow-up body under a newly elected Liberal Democratic Party (LDP) government, called for the creation of a "New Tohoku." It too stressed the need for a robust, resilient social infrastructure, able to mitigate future disasters, and for self-reliant local societies, utilizing regional, endogenous resources (Reconstruction Agency 2013).

Nonetheless, more than five years after March 11 2011, the reconstruction effort is still only progressing at a slow pace and the widely optimistic reconstruction vision so far has not lived up to the plans' promise "Hope beyond the Disaster;" a "New Tohoku" has not yet emerged. This can be partly attributed to the months of political strife within the then ruling Democratic Party of Japan (DPJ) and between the DPJ and the then oppositional Liberal Democratic Party (LDP), who rejected any meaningful collaboration with the government. Many have suggested the national government reacted too slowly and too hesitantly to the crisis (Cukier 2012a; Hawethorne 2012). Only in February 2012, for example, was a national Reconstruction Agency established and, much to the criticism of the people in the disaster-hit areas, it is headquartered in Tokyo with local reconstruction bureaus in Iwate, Miyagi and Fukushima prefectures as well as branches and other smaller offices in disaster-hit areas (Mainichi 2012).

Despite the validity of such criticism it has to be admitted that never before has an advanced, highly technological society been hit by such a complex and massive disaster, and thus no templates were readily available for policy makers and responders.

Despite the government's own bold rebuilding vision and countless "grand designs," proposed by scholars, urban planners, architects and other policy entrepreneurs the reality of the reconstruction process has been sobering, with many unforeseen challenges obstructing a swifter recovery. Some of the crucial factors that stood in the way of rebuilding entirely new cities, more in line with sustainability and resilience principles, will be discussed in the following section.

Obstructions to a Swifter Reconstruction Process

One of the most fundamental problems has been the enormous time pressure. The highest priority was the revitalization of the fishery industry; economic backbone of the coastal region (Matsuyama und Biggs 2011). With every day the ports in

Tohoku were not operational and processing plants not working, the probability increased that fishing fleets would land their catches in the ports of West Japan, spared from the disaster. Fears were strong that once new alternative arrangements evolved, fishery wouldn't return to Tohoku even after the reconstruction was complete. The following figures highlight how severe the damage of this vital primary industry was: In Iwate Prefecture 95% of the 10,522 fishing vessels had been destroyed, in Miyagi 90% of 13,570 and in Fuku-

shima 80% of 1068 boats. In Iwate 98% of 111 ports were destroyed, in Miyagi all 142 and in Fukushima all 10 fishery ports (Wright 2012). If new jobs would not be created soon, it was feared, younger employable people would leave the region to find work in other parts of the country. Because of this time pressure municipalities and planners felt that they couldn't afford the time needed for intensive, lengthy citizen participation during the drafting of reconstruction plans.

To make things worse, many survivors were isolated from their friends and family, as the scarcity of land in the rugged geography made it difficult to build temporary housing facilities and keep former communities together. In March 2014, 97,113 people were still living in some 44,211 prefabricated temporary housing units, 120,657 in 49,863 leased private houses, and 23,551 in 8,740 public apartments (Reconstruction Agency 2014). Like in 1995, after the Hanshin/Awaji Earthquake in Kobe, temporary housing was allocated through a lottery system, giving priority to the elderly, disabled people, or other vulnerable groups. Maly and Shiozaki point out that *"while the idea to provide additional support to vulnerable members of the community is admirable, it does not consider the entire community, excludes many from needed support, and does not take into account the effect of grouping vulnerable populations together in temporary housing ... When the impact on overall community networks is considered holistically, the randomized selection of temporary housing residents led to communities being fragmented and displaced from their former neighborhoods"* (Maly and Shiozaki 2012, p. 59).

Uncertainty about future infrastructure allocation is another problem. The reconstruction of individual livelihoods can only begin, once it is decided if and where tsunami-hit communities will be relocated, and how high new protective seawalls should be in order to rule out future disasters (cf. Miyake 2014).

The city of Iwanuma, located in the plains south of Sendai, is a positive example. Within months after the disaster, an agreement on group relocation of whole communities was reached here between municipality and the affected residents. Aided by the fact that the reconstruction coordinator—then a well-known then-Tokyo University professor for landscape planning—was of Iwanuma descent, already in summer 2011 a reconstruction plan was decided. In August 2012 the relocation of six villages began, which were merged into one new "reconstruction community", protected by three staggered, up to 15 m high embankments that are raised by utilizing tsunami debris. Extensive protective forests and water flows between the embankments serve as additional means to slow down a possible tsunami (Fig. 2.1).

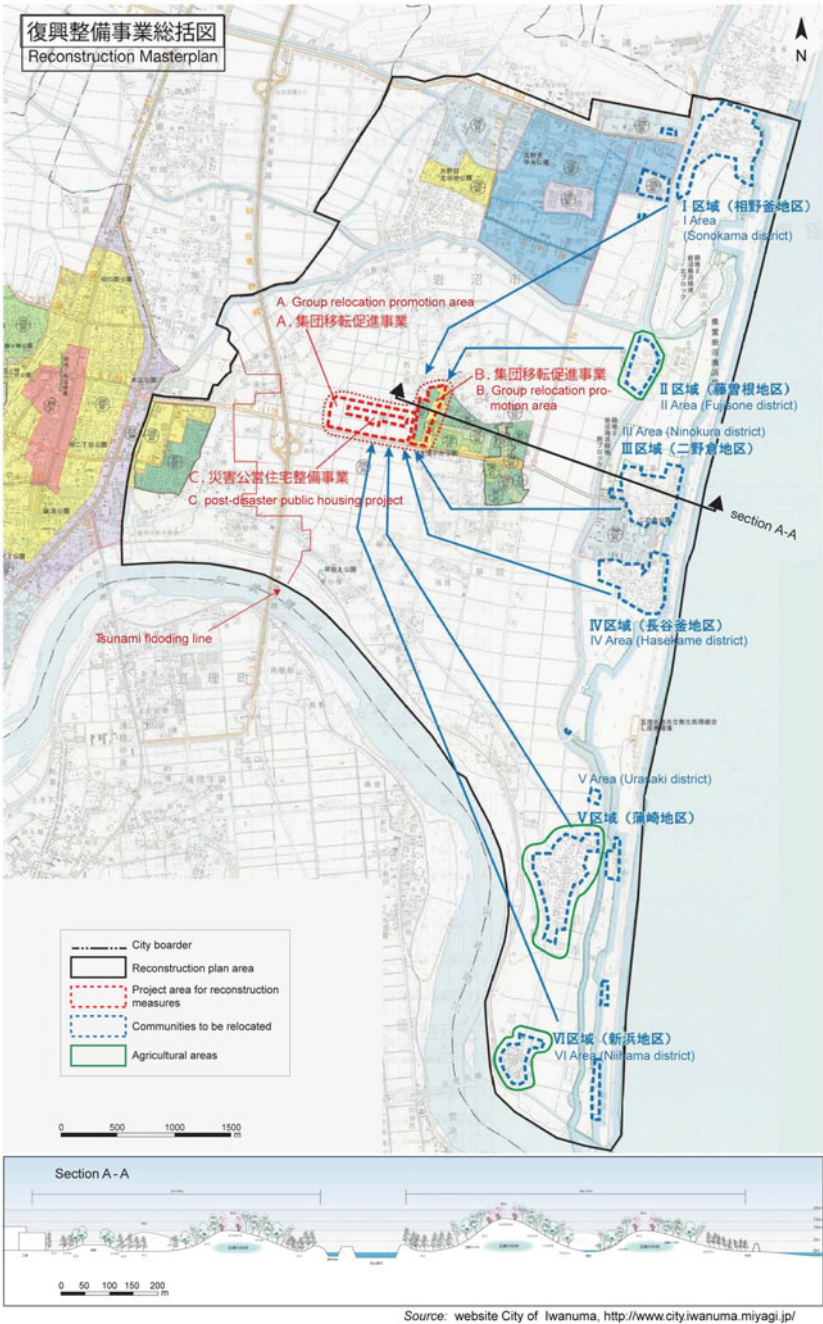


Fig. 2.1 Relocation plan in Iwanuma city

Such a solution is much more difficult in places with a more dynamic topography, and depends on the availability of buildable land. While it is feasible to terrace gentle slopes in order to prepare land for new housing many cities and towns along the jagged Sanriku coast have difficulties to finding sufficient amounts of land above the tsunami line. In many cases the only solution is relocation to areas with a more gentle topography, farther away from the coast. This is, however, often not a viable solution for people whose livelihoods depends on the sea (Ueda and Torigoe 2012).

Uncertainty has also persisted after the disaster about the exact location of new seawalls and their height. Communities are often deeply split whether to hide behind high embankments, or accept a higher risk in order to allow for a closer relationship between town and sea. The prefectural government of Iwate has given out unified height standards as late as November 2011 with the result that the disaster-affected municipalities had only four months to prepare their infrastructure plans for streets, or public buildings that had to be finalized by the end of the fiscal year, in March 2012. According to the Daily Yomiuri only 13%, or 41.7 km, of the tsunami-damaged seawalls was reconstructed by May 2013 (Daily Yomiuri 2013).

Conflict lines in the reconstruction process emerged between citizens, who were trying to fend off unwanted new infrastructure, and governments urging a swifter reconstruction. However the situation is more nuanced, and conflicts between different groups within local communities have also surfaced. Some, still traumatized by the disaster, demand higher seawalls to protect them from any probable future tsunami, which could exceed the height of a five-storied building in some cases. For others preservation of the close relationship between coastal towns and the ocean is more important. Furthermore, the exact siting of the seawalls determines which properties will be protected and can be used as building plots and which are rendered unusable and lose their market value.

Further conflicts surfaced between different generations. While younger people tend to embrace the opportunity of consolidating and future-proofing their towns through the reconstruction process, older people are often more conservative and instead interested in recreating what was lost. It is for example difficult for elderly people to make large investments in renewable energy installations, or to go through lengthy reconstruction processes when it is not clear how much of their lifetime is still ahead of them. The town of Onagawa on the Oshika Peninsula is a case in point. In the aftermath of March 11 2011 the incumbent mayor Nobutaka Azumi proposed to merge 15 tsunami-hit fishery villages into one new settlement in order to consolidate public services of the cash-stripped rural community. The mostly older people in the community resisted the proposal, not least because they feared to lose valuable fishery rights as a result of the merger (Onishi 2012).

Another critical issue for successful reconstruction is the difficult staffing situation of municipal governments. In communities where many city officials, or even mayors died through the tsunami, leadership was lacking critically and reconstruction plans were delayed. In a few cases, however, this also opened up opportunities for grass-roots initiatives that couldn't unfold in other communities. In Akahama, a settlement belonging to Otsuchi Town in Iwate and host community

of the Ocean Research Institute of the University of Tokyo, the mayor perished in the tsunami. In the months preceding the election of a new mayor in August 2011, University of Tokyo community planners intensively engaged in the community and developed a first planning vision together with local residents. The subsequent official rebuilding plan was significantly informed by the earlier citizen draft plan.

Whether communities succeed with reconstruction or not is often contingent on the leadership of mayors and local officials and how they manage to tap into funding sources and negotiate with Japan's notoriously segmented and inflexible state bureaucracy. Mayor Futoshi Toba of the massively devastated Iwate town of Rikuzentakata became famous for openly criticising the inability or unwillingness of politicians and ministries in Tokyo to cut red tape, speed up the reconstruction process and allow for local innovations (The Economist 2012). His colleague Kimiaki Toda in nearby Ofunato, on the other hand, a former executive of one of Japan's big general contracting corporations, with 26 years of working experience abroad, was less confrontational than his colleague. As a result, some see reconstruction in Ofunato advancing swifter than in the admittedly harder-hit Rikuzentakada (Cukier 2012a).

Where city halls weren't sufficiently staffed to handle the reconstruction challenge, municipalities from other parts of Japan dispatched employees when a previous partnership was already established, or sometimes on an ad hoc basis (cf. Samuels 2013, pp. 170–175). While key managerial positions were mostly held by local officials, technical experts were on loan from other city governments, particular from Western Japan. Here administrators had already gathered valued experience after the Great Hanshin/Awaji Earthquake of 1995. Although many city planning responsibilities had been formally devolved to the municipal level since the local reform of the Local Autonomy Law (2000) and the so-called Trinity reforms of the Koizumi administration (2001), in practice sufficient local planning expertise hadn't developed yet. Local government planners have therefore been overwhelmed by the scope of the reconstruction work, while central government officials were hesitant to step in. Furthermore, the last wave of municipal amalgamations (*gappei*) between 1999 and 2010 and the resulting reduction of municipal personnel has been blamed for slow rescue and relief efforts. The newly formed cities had become so large that emergency services and reconstruction planning were too far away from the local communities and that the staff was simply overwhelmed (cf. Samuel 2013, pp. 165–170).

Lack of clear leadership, understaffing, and insufficient skills were exacerbated by the fact that official records and land registers were lost in the floods, while some boundaries became unclear as a result of subsidence. Moreover, only 49% of all land in Japan has been properly surveyed and registered in cadastres (Daily Yomiuri 2012b). On the forested slopes landownership patterns are often unclear and the preparation of land for relocated communities can be delayed by this. Similarly the progress in rebuilding coastal seawalls that were destroyed or damaged by the massive tsunami is obstructed by difficulties in securing the necessary land, as some of the property owners went missing in the disaster (Daily Yomiuri 2013).

Equally important for the success or failure of the rebuilding of more sustainable communities are deeply seated lifestyle choices that are discussed in the following sections.

Lifestyle Choice Hindering Sustainable Reconstruction

Since the far-reaching deregulations of the so-called Act for Locating Large-Scale Retail Stores (*Daikibo kouritenpo richi hō*, in short *Daitenhō*), from 1991 on (cf. Hakogi 1993), and its subsequent abolition in 2000, the mediating influence of local shopkeeper associations on the design and siting as well as on the maximum size of retail facilities was eliminated. As a result of this foreign-induced deregulation, large-scale suburban shopping malls have rapidly proliferated in rural Japan. In combination with quickly growing numbers of inner- and extra-urban convenience stores, and with suburban housing developments this has furthered the decline of the roofed shopping arcades (*Shōtengai*), so characteristic of Japanese towns (cf. Arata 2012).

This “mallification” and suburbanization of rural Japan was, however, not merely supply-driven, by a liberalized regulatory framework, but, more importantly, by a profound shift of lifestyle choices. Like their peers elsewhere in the world, people outside of Japan’s well-equipped metropolitan centers *want* to use their private cars for shopping and they prefer the conveniences of suburban shopping strips with their large, comfortable parking lots to narrow downtown shopping arcades. After two decades of economic crisis, consumers have also grown more price-sensitive to the disadvantage of small, downtown mom-and-pop stores who cannot compete with the low prices of superstores.

Accordingly, person-trip surveys across Japan show that along with the growing suburbanization of residences, shopping and leisure facilities as well as work places the car ridership has sharply increased at the expense of a declining public transit ridership. In the Sendai region, for example, of all person-trips made in 2002, 53.5% were made by car, 20.2% by walking, and 10.5% by bicycle (Fig. 2.2). Thus, while in 1982 nearly one third of all trips were made by car and one third by walking, in 2002 the balance had shifted. Today car-dependent lifestyles clearly dominate and thus merely supply-side targeting planning policies are bound to fail (Sendai City 2003: p. 6).

This spatial dispersion has not only consumed more and more valuable agricultural land but has also contributed to the thinning out of social life in rural Japan. However, as Aldrich (2012) and Vedantam (2011) convincingly show, the intensity of social networks within a community is not only the key to survival in the event of a disaster but also a crucial factor for successful post-disaster recovery. Although the creation of resource-efficient, walkable, or compact cities is an undisputed guiding principle among planning experts (cf. Hayashi and Saito 2011; Japan Today 2011), and even of the country’s officially appointed reconstruction council (Cabinet Office 2011a), it will be nearly impossible to reverse the dominant trends

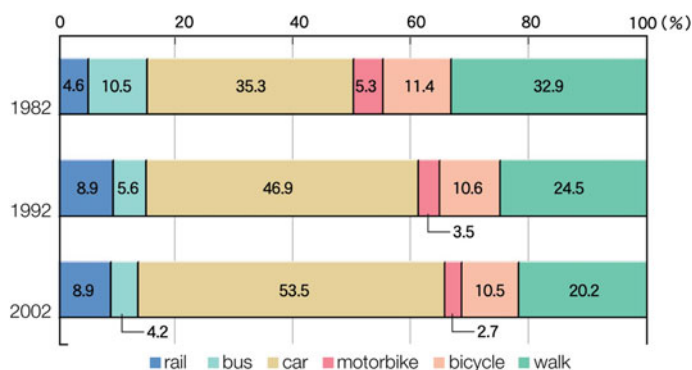


Fig. 2.2 Modes of transportation in Sendai urban region. Source Sendai City (2003), p. 6. Translated by Christian Dimmer.

towards further suburbanization and spatial dispersion if the demand side is not properly addressed.

Ishinomaki in Miyagi prefecture, the largest tsunami-hit city, is a good example. After the devastation of the downtown area, only relatively few shops and residents have returned yet. While well-known city planning experts and architects are propagating the idea of a public transit-oriented compact city³ as guiding principle for the reconstruction of the old centre, more and more people are voting with their feet and settle down around the Hebita business park. This area at the urban fringe is not only close to the next highway intersection and is host to many large-scale shopping facilities, but it has also proven tsunami-safe. Accordingly, the land prices had nearly doubled there within the first year after the tsunami disaster (Daily Yomiuri 2012c). With every family, however, that decides to resettle to the suburbs instead of returning to the center, the potential critical mass for a successful downtown business center and for cost-efficient public transit decreases. As residents look for jobs in the service sectors instead of primary sector, they move in the opposite direction to the natural potential of the region with fishery manufacturing as major industry in the town centers.

A successful downtown recovery seems even less probable in the aging steel town of Kamaishi in Iwate prefecture that lost nearly half of its peak population of 81.000 between 1955 and 2005, as a result of economic and demographic decline (cf. Nakamura 2008). Reconstruction planners successfully attracted a large-scale Aeon shopping center on the brownfield of a steel factory near the old downtown. It is now serving as a strategic growth core for recovery and planners hope that a flourishing city center will emerge around it.

Conclusion: Decentralizing, Empowering, Building Social Networks

For a sustainable reconstruction in the disaster-affected areas resilience against highly probable future disasters is required. Furthermore, as existing depopulation trends in these rural regions of Tohoku are likely to accelerate due to slow reconstruction and loss of jobs, adaptability to future change has to be built into these communities. As Jeremy Rifkin suggests in his book ‘The Third Industrial Revolution’ (2011) energy regimes largely determine the way societies are organized, and how the fruits of commerce and trade are distributed, how political power is exercised, and how social relations are conducted. Leaving large-scale power generation in the hands of a few monopolistic utilities in Japan, for example, safeguarded sufficient energy to power the country’s economic miracle in the past. However, these “elite energies”—coal, oil, natural gas, nuclear fuel—also helped to create highly centralized, command and control systems, and massive concentrations of capital to exploit them. *“The ability to concentrate capital—the essence of modern capitalism—is critical to the effective performance of the system as a whole. The centralized energy infrastructure, in turn, sets the conditions for the rest of the economy, encouraging similar (monopolistic) business models across every sector”* (Rifkin 2011, p. 108).

Turning this argument on its head, a decentralized energy system is not only less vulnerable in the event of a disaster, it also promotes a true devolution of political power, enables community empowerment and leads to a more even distribution of wealth. The example of Japan shows that the country’s highly concentrated, capital-intensive energy regime was mirrored in an equally monopolistic political system, in which large-scale energy providers and politicians formed close symbiotic relationships that had hitherto resisted democratic control and attempts for meaningful decentralization. Honma (2012) and others have also highlighted the collusive role between Japan’s major advertising agencies, the printing and broadcasting media, and Tokyo Electric Power Company (TEPCO), which led to media self-censorship that eventually allowed TEPCO and other energy utilities to get away with unsafe practices and malfeasance for years.

A locally managed system of distributed energy generation would therefore reduce disaster vulnerability on the one hand and increase resilience and energy self-sufficiency of peripheral communities. However, the growing number of energy cooperatives in Germany, for example, also indicates another useful side-effect: a distributed energy system with citizen-managed wind- or solar parks, or cooperatively operated local energy agencies creates jobs, fosters a sense of civic pride, and leads to more community activism and political participation. Thus, the formation of social capital, a sense of self-responsibility as well as new democratic practices could be fostered, where local communities take energy matters into their own hands.

In his book ‘Building Resilience’ (2012) Daniel Aldrich shows convincingly that social capital and active community ties increase survival rates in times of disaster. More importantly, by using the example of post-disaster reconstruction after Hurricane Katrina, he suggests that these social ties are also vital prerequisites for a swift physical reconstruction as well as for a positive sense of recovery. As an extension of this argument I would propose that a key to adaptable, resilient and sustainable cities is just as much the presence of a healthy civil society, with close-knit, active community ties and a vital public sphere as it is the presence of smart, adaptable urban hardware. Our idea of planning should thus be turned on its head: Instead of using citizen participation merely as means to get projects built, planners should also understand that the planning process can be, in itself, a part of resilience building. Carefully designed participation processes in which the citizens take the central stage can act as venues where new community ties and social capital are created—these are vital resources for the creation of adaptable communities (Dimmer 2014).

The example of the reconstruction process in Christchurch, New Zealand that was affected by a powerful earthquake on 22nd February 2011 offers some important suggestions of how communities can be placed at the center of a reconstruction process. Although the time pressure to rebuild was similar to Japan, the local government used the reconstruction process as an opportunity to aim at reconfiguring and restructuring the city significantly. The work on the recovery plan was entrusted to the well-known place-making consultancy of Jan Gehl. When David Sim, chief planner of Gehl Architects stood in front of the assembled citizens he stated: *“I am here to listen, find out what kind of city you want to have, and then do everything I can to help you get it.”*⁴ In the following weeks over 100,000 suggestions regarding the draft plans were submitted by the citizens themselves; thus, taking an active interest in the restoration of their city and its improvement.

This is not to deny the importance of urban hardware and infrastructure. Well-designed community centers, parks and public facilities do play an important role as venues for public life to materialize. When the creation of physical infrastructure is not tied to community, and is in fact only a self-serving end, a sustainable reconstruction is difficult, as the example of Okushiri, Hokkaido shows. A powerful earthquake and a tsunami devastated the island on 12th July, 1993. Following the intrinsic logic of Japan’s highly infrastructure-centered ‘construction state’, the equivalent of around 1 billion US Dollar was spent for memorials, coastal protections and public facilities. However, as Fackler (2012a) shows, this single-minded focus on the construction sector ignored the inability to develop new economic and social visions for the future. As in Tohoku, rebuilding brought a surge of well-paying but only temporary construction jobs. However, having grown accustomed to higher salaries, many of the remaining young people refused to return to the hard work of the fishery industry and after reconstruction was completed, they left the island in search of salaried work elsewhere.

Notes

1. For an overview of spatially relevant recovery initiatives, see for example the interactive Tohoku Project Map, compiled by the non-profit, volunteer organisation Tohoku Planning Forum: www.tpf2.net/tpm (accessed 31st May 2014).
2. Fact sheet on the website of the Ministry of Agriculture, Forestry and Fisheries. These numbers are based on the year 2012. The number of employees in fishery excludes the disaster-hit prefectures Iwate, Miyagi and Fukushima. Source: <http://www.maff.go.jp/j/tokei/sihyo/> (accessed 31st May 2014).
3. For details see the website of the 'Compact City Ishinomaki Inner City Creation Conference': <http://www.ishi-machikyou.com/> (accessed 31st May 2014).
4. See website of Gehl Architects: <https://gehlcitiesforpeople.dk/page/28/> (accessed 31st May 2014).

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