

Domestication of the Seawall in the reconstruction territories of the Great East Japan Earthquake

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This article is the second in a series examining the relationship between spatial design culture and demographic transition in Japan.² The first essay appeared in issue 108-109 of this journal (Kërçuku, Murayama, 2025). The investigation here focuses on the consensus-building process of *machizukuri* in Kesennuma, which enabled the local community – together with designers appointed to mediate with the Miyagi Prefecture – to conceive the coastal protection system, including a seawall, as an integral component of the urban and environmental landscape. *Machizukuri* is a Japanese term; it has no direct equivalent in English but can be roughly understood as community design and development. This approach contrasts with those adopted in other contexts, where protective barriers have disrupted spatial, visual, and functional relationships with the topography.

Forms of resistance

This text highlights the extraordinary recovery efforts in the Tōhoku region to reshape and adapt the 400-kilometer coastline that was severely damaged by the ‘Great East Japan Earthquake’ and the tsunami it triggered on 11 March 2011. Japan has a long-standing history of responding to the impacts of earthquakes and is often considered as the nation best prepared to deal with disasters. The great Kanto earthquake which destroyed a large part of Tokyo in 1923, the aftermath of World War II, the 1995 Kobe earthquake, and numerous other calamitous events have profoundly shaped Japan’s planning approaches to disaster response, reconstruction, and prevention (Tanaka, 2022). Over time, this has enhanced technical and practical expertise in disaster management, rescue and emergency relief, reconstruction, and recovery (Kingston, 2012), as evidenced by strict building codes, frequent evacuation drills, and other measures that have helped mitigate the impact of disasters over the years. Furthermore, the importance of

preparedness is also evident in the development of civic and participatory aspects of Japanese society in the aftermath of disasters.

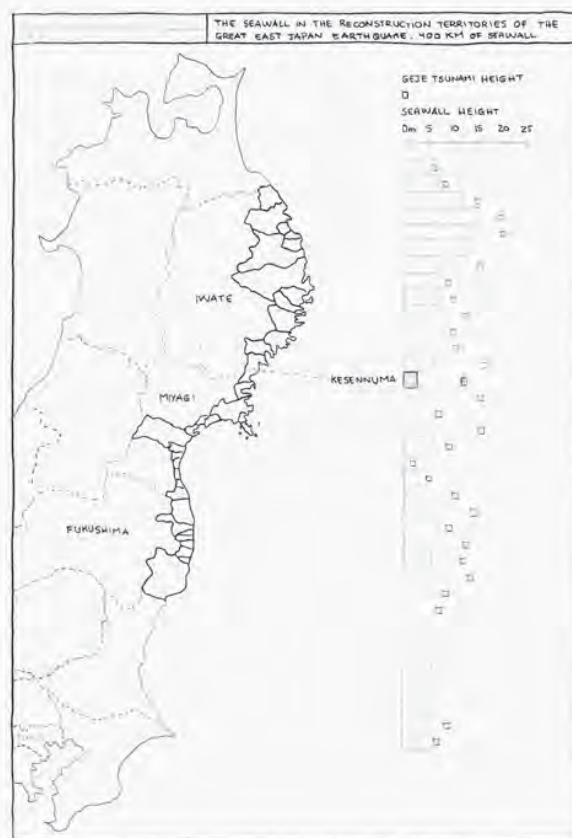
Following the 1995 Kobe earthquake, civic movements and the non-profit sector began actively supporting national, prefectural and local governments in emergency response and reconstruction planning. Although a tradition of participatory community building had existed since the 1970s (Satoh, 2021), it was in the aftermath of the Kobe disaster that the *machizukuri* approach regained prominence. The earthquake made governments aware that developing and supporting the non-profit sector was important to reconstruction. In fact, since then, there has been a steady expansion in the role of *machizukuri*. This term is formed by combining two concepts: *machi*, meaning ‘community and its shared place’, and *zukuri*, meaning ‘to cultivate things with full effort, heart and soul while participating in the lengthy process of making and animating them’ (Satoh, 2021). Therefore, *machizukuri* refers to a series of planned activities aimed at improving the quality of the *machi* – the communities and their

space of living. These initiatives are based on local resources and the cooperative integration of diverse perspectives (Satoh, Architectural Institute of Japan, 2004).

Machizukuri involves a series of activities aimed at improving the physical and social environment of the community through collaboration among diverse stakeholders. In doing so, it challenges traditional planning methods while promoting the development of social systems, planning techniques and technological innovation. This approach is widespread throughout Japan and applied in various situations and contexts. However, it serves primarily as an essential resource for local communities in post-disaster areas. Through the implementation of *machizukuri*, Kesennuma became one of the few places able to mediate with the central government and the Miyagi Prefecture, enabling the seawall to be conceived as part of the urban landscape, and as a means of reconnecting communities and the sea.

In 2011, the position of the central government and prefectures was to favour a rapid response and top-down management. Emergency management and reconstruction was based on the belief that

1. The prefectures of Iwate, Miyagi, and Fukushima and the 400-kilometer seawall. Source: Agim Kërçuku.
2. Photo from the Rias Ark Museum showcase records of the Great East Japan Earthquake and the history of tsunami disasters. Photo by Agim Kërçuku.
3. A map of Kesennuma City highlighting tsunami flooding areas and various seawall proposals. Source: Agim Kërçuku.



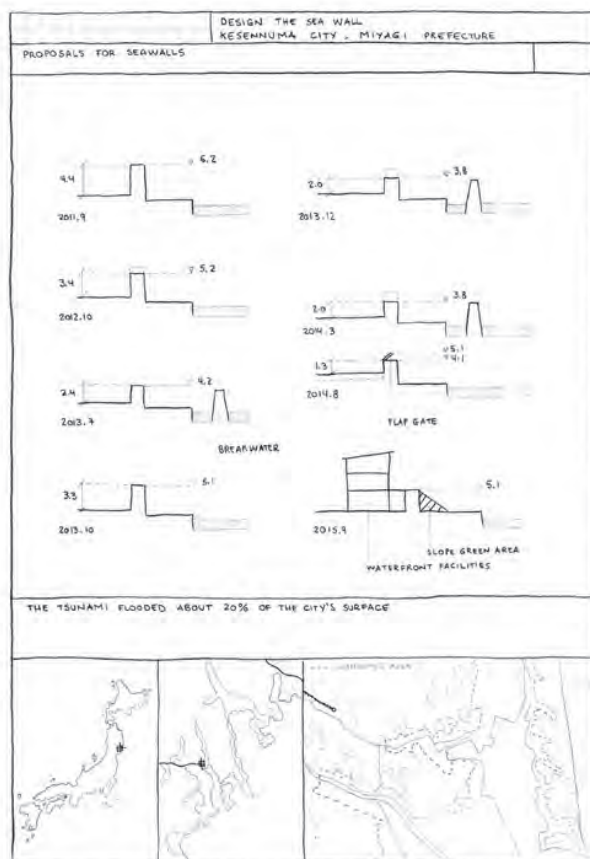
if this process was guided by open debate it would lead to unproductive conflicts, thereby slowing down the response and putting affected areas at greater risk from future earthquakes and tsunamis. The major reconstruction efforts mobilised significant public funding. However, to access these resources, local governments were required to submit a plan within a limited timeframe, significantly constraining the scope of action for local actors. While the Great East Japan Earthquake was a historical event that had the potential to change the state of society (Kubota, 2020), the opportunities for transformation were partially squandered by traditional and conventional governance and planning practices, such as the *Land Readjustment Project*, which standardised and weakened the impact of the protective infrastructures built (Kingston, 2012). The speed of intervention and the reliance on sectoral approaches prevented the immediate incorporation of the *machizukuri* process and innovation in planning and design tools for large-scale land redevelopment, compromising the coastal landscape

of Tōhoku, a region of Japan located in the north-eastern part of the island of Honshū. Many communities in Tōhoku, along with experts across Japan, opposed the indiscriminate and uniform use of seawalls along the 400-kilometre coastline (fig. 1). Fishing communities complained of a visual, physical, and relational separation from the sea – an essential economic resource, a source of livelihood, and an integral part of local culture. Some scholars and specialists emphasised the equally important need for ecological, social, and cultural reconstruction of the coast, arguing that the protective system should not consist solely of a concrete barrier but also include green spaces and social areas that facilitate coexistence with the seawall. Overall, opponents highlighted that, while the seawall undoubtedly offered protection against future tsunamis, its design appeared to undermine the possibility of living on the coast. These large-scale land redevelopment projects also significantly influenced many residents' decisions not to return, resulting in a sparse coastal urban landscape which, in turn, had a

considerable impact on both the reconstruction process and everyday life. Alongside the protective infrastructure, these oppositions have evolved into narratives of resistance, activated through *machizukuri*. This approach enabled the reconstruction process to consider not only the physical environment but also the social fabric, focusing on renewing ways of living, adapting local communities, mitigating the impact of the seawall and large-scale redevelopment, and supporting the revitalisation of the local economy. On the one hand, some of Tōhoku's municipalities sought to offer alternative visions, perspectives, and responses to the reconstruction models proposed by central governments; on the other hand, planning experts, academics and private consultants were able to help the people of Tōhoku in imagining a different future.

A different seawall project in Kesennuma

After the earthquake, rapid reconstruction work led by the central government and prefectures – including raising the ground level, constructing a seawall, and



rebuilding the infrastructure network – created a divide between the urban fabric, local communities, and the sea. Specifically, in Kesennuma, the implementation of large-scale land redevelopment met with some resistance from fishing industry entrepreneurs and other local actors due to fears that the seawall would deprive the city of an attractive coastal landscape, weaken the local community and historic resources, and provoke the exodus of people and businesses (Abe, 2021). The fishing industry plays a fundamental role in the local economy, society, and culture. Since the 1990s, the engagement of local fishing entrepreneurs through the *machizukuri* approach has enabled the city to build shared cultural and socio-economic visions centred on the sea. This led to Kesennuma becoming the first Slow Food City in Japan in 2003, and the creation of several symbolic landmarks of maritime culture, such as the Umi-no-Michi Walkway, the Rias Ark Museum of Art, and the Shark Museum. Over time, the city's relationship with the sea has shaped its urban form, especially in the central Naiwan District, nestled between the sea and the mountains. The area is densely

populated along the coastal road, near the port and fish market. However, the 2011 earthquake struck during a period of urban decline. In 1956, the fish market was relocated, and in the 1990s the city centre and the port began to deteriorate as commercial activity moved to other areas of the city.-

The tsunami flooded about 20% of Kesennuma's surface area, and many people were able to evacuate to the mountains behind the settlements. However, approximately 1,214 people died, 220 were missing, and a total of 8,483 homes were destroyed across the city (fig. 2). Due to its location and urban density, the Naiwan District was the part of the city most affected by the tsunami waves. In response, in September 2011, Miyagi Prefecture announced plans to build a 4.4-metre-high seawall in the old port area. The local community immediately opposed the seawall height, the mapping of the disaster hazard areas, and the reconstruction plan, advocating changes to preserve their relationship with the sea.

In December 2011, the city launched a nationwide competition to initiate a *machizukuri* process for a different post-disaster plan. Approximately 100 proposals

were submitted by universities, expert groups and businesses. Subsequently, the Naiwan District Machizukuri Council for Reconstruction, composed of 35 local community members, was formed to mediate with the central government, propose creative ideas to address various issues and develop an alternative reconstruction plan. The Council served as both a discussion forum for formulating the post-disaster *machizukuri* plan and a platform for sharing the progress of the project. Through the organisation of design workshops with residents, experts, businesses and local authorities, the proposals that emerged from the national competition and the Council were discussed. Once these topics had been incorporated, the city reconstruction plan was presented to the central government. In March 2014, this process led to a compromise between the local community and the central government, allowing for a reduction of the seawall height to 1.3 metre (fig. 3), and revisions to the disaster hazard areas and the *Land Redevelopment Projects* (Abe, 2017). That same year, reconstruction work began on damaged buildings through the implementation of small housing projects that integrated community spaces,



4-5. Naiwan District. Photos by Agim Kërçuku.

historic buildings and commercial areas. In addition, a network of commercial facilities was established along the main road, and approximately 148 housing units were built as post-disaster public housing. A community centre was also located on the ground floor of one of the buildings (fig. 4).

The seawall project simultaneously ensured safety and preserved the relationship between the urban fabric and the sea. The 1.3-meter-high seawall was incorporated into an urban project designed by the team led by Toshihiko Abe in 2014, featuring green slopes, terraced gardens, public squares and multifunctional buildings, tourist housing facilities, cafés, restaurants, public services, and a ferry terminal to Oshima Island. This urban infrastructure captured the essence of the local fishing lifestyle and cultural identity (fig. 5).

Building a better future

The response to the disaster in almost all the municipalities on the Tōhoku coast involved partially reconstructing the affected areas, relocating entire neighbourhoods and villages to higher ground, and constructing a 400-kilometre seawall with an average height of 4 metres.

In the months following the disaster, the Tōhoku coast underwent a vast and invasive process of transformation and modelling through redevelopment and the construction of this protective system, which prevented the coastal communities from interacting with the sea. The seawall project served as both a preventive measure against future tsunamis and an attempt to protect the region by reshaping the terrain, as well as social imaginaries and ways of life. The construction of the seawall and the relocation of urban settlements were processes driven by short timeframes and the technical rationalities of civil engineering without any compositional, social or environmental ambitions. The efforts followed traditional top-down methods of territorial governance imposed by the central government and the prefectures of Iwate, Miyagi, and Fukushima, which pressured local communities to make quick decisions on the seawall construction, limiting opportunities for public debate, and threatening to withhold reconstruction funds in the event of future disasters.

Overall, reconstruction processes and their limited timelines exacerbated the already established dynamics of depopulation and

marginalisation of the areas affected by the disaster (Hara, 2015). The disaster thus became an external factor that accelerated the decline of Tōhoku's coastal towns, which had already been experiencing a prolonged process of demographic decline and migration of young people to larger regional and national cities. In this context, those who remain or return after a calamitous event are primarily elderly people (Kawasaki, 2020). This creates a vicious circle, as depopulation has, in turn, made reconstruction highly complex, casting serious doubt on the recovery capacity of the territories.

However, the post-disaster experience in Tōhoku also reveals forms of resistance. Kesenuma is one of the few cases where the local community mediated the design and construction of the seawall, introducing a project that considered both its protective role and how the spaces around the infrastructure could be inhabited (fig. 6). In fact, Kesenuma is just one example of a widespread pattern of resistance to the coastline's aggressive transformation through the construction of seawalls. This was also the case in the community of Kerobe, in Iwate Prefecture, where it was decided not to build a seawall to preserve the fishing village's



connection with the sea. By choosing not to build a seawall, the community secured public housing for disaster victims, a relocation site and the promotion of disaster prevention measures within the village (Hagiwara, 2022). Similarly, ArchiAid, a network of twenty groups of architects, including Atelier Bow-Wow, supported the reconstruction of the Oshika Peninsula in Fukushima Prefecture, creating shared housing, welfare facilities and public spaces through community involvement (Kaijima, 2016). This array of resistance has become a source of knowledge and inspiration for rethinking planning decisions. Ultimately, the lessons from community rebuilding and revitalisation following disasters often intersect with those prompted by demographic transition (Mostafavi, 2024).

Notes

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2. Agim Kërçuku's research visit was self-financed using personal research funds and departmental resources of DASTU – Politecnico di Milano in support of international exchanges.

References

- Abe T., 2017, «Consensus building process of the Seawall plan in the inner port area in Kesennuma». *Journal of Japan Society of Civil Engineers, Ser. D1 (Architecture of Infrastructure and Environment)*, 73, 1: 37-51. Doi: 10.2208/jseceiae.73.37.
- Abe T., 2021, «Regeneration of the cultural landscape of the fisheries city of Kesennuma through collaboration in machizukuri by multiple project-implementing bodies». In: Satoh S., (ed.), *Japanese machizukuri and community engagement: History, method and practice*. New York-London: Routledge, 185-194.
- Hagiwara T., 2022, «Planning of Spatial Improvement and Development Project in Fishing Village in Tsunami Prone Area: Focusing on Projects Related to FishingSpace, Seacoast Protection Facility, and Living Environment in Iwate Prefecture». *Journal of the City Planning Institute of Japan*, 57, 1: 240-254. Doi: 10.11361/journalcpj.57.240.
- Hara T., 2015, *A Shrinking Society: Post-Demographic Transition in Japan*. Tokyo: Springer Japan. Doi: 10.1007/978-4-431-54810-2.
- Kaijima M., 2016, *Atelier Bow-Wow: Commonalities of architecture*. Delf: Delft School of Design.
- Kawasaki K., 2020, «Current Status and Issues of Residents and Areas Affected by the Fukushima Nuclear Disaster after the Lifting of Evacuation Orders. Case Study of the Town Center of Namie Town, Fukushima Prefecture». *Urban*

and *Regional Planning Review*, 7, 0: 109-31. Doi: 10.14398/urpr.7.109.

- Kërçuku A., Murayama A., 2025, «Guided shrinking to adapt to the demographic transition. The Japan case». *Territorio*, 108-109/2024: 296-300.
- Kingston J., 2012, eds., *Natural disaster and nuclear crisis in Japan: Response and recovery after Japan's 3/11*. New York-London: Routledge.
- Kubota A., 2020, «Reconsidering Restrictions on Freedom of Movement in Urban Planning: Based on the situation after the Great East Japan Earthquake». *Journal of the City Planning Institute of Japan*, 55, 3: 1358-1364. Doi: 10.11361/journalcpj.55.1358.
- Mostafavi M., 2024, «Japan and the Logic of Local Revitalization». In: Mostafavi M., Akiyoshi

K., (eds.), *Revitalizing Japan: Architecture, urbanization, and degrowth*. Barcellona: Actar Publishers, 6-11.

- Satoh S., 2021, «Introduction to machizukuri». In: Satoh S., (eds.), *Japanese machizukuri and community engagement: History, method and practice*. New York-London: Routledge, 3-11.
- Satoh S., Architectural Institute of Japan, 2004, eds., *Machi-dzukuri no hōhō uri* [Methods of Machizukuri]. Tōkyō: Maruzen.
- Tanaka M., 2022, *Gen wazawai fukkō seisaku to shakai-teki fubyōdō: Oyaji sentaku kikai no hoshō ni mukete e* [Disaster mitigation and reconstruction policies and social inequality: Toward ensuring opportunities for residential choice]. Tōkyō: Nihon Keizai Hyoronsha.



6. Kesennuma. The *Asobi-bar* playground was built by the NPO Japan Adventure Playground Association for children and the elderly in the disaster area. Photo by Agim Kërçuku.