

## After the Deluge: Tsunami and the Great Wall of Japan 大洪水も何の その 建てるは建てるは日本版万里の長城

David McNeill, Justin McCurry

Like hundreds of communities along Japan's northeast coast, the village of Koizumi exists on maps only. On 11 March 2011, a M9.0 earthquake beneath the Pacific Ocean erupted with the force of a million tons of TNT, triggering towering waves that killed around 19,000 people. In Koizumi, 40 of the 1,800 villagers died.

As residents of a country pummeled by tsunami roughly every seven years, the survivors know that someday the calamity will almost certainly return.

Fear of a giant tsunami prompted Koizumi resident Abe Masahito to rebuild his family home on higher ground 20 years ago. Yet he and other local people are now questioning the wisdom of government plans to build 440 concrete walls and breakwaters along 230 kilometres of coastline in the worst-hit prefectures of Fukushima, Miyagi and Iwate.

The grand project will take five years and cost more than 80 billion yen. Many more similar defences are planned elsewhere: a joint 2012 report by the ministries of agriculture and land

said that 14,000km of Japan's 35,000km coastline requires tsunami protection.

The seawall solution is controversial, not least because the evidence for their effectiveness is mixed. Fudai, a village sheltering behind a giant concrete shield once condemned as a costly boondoggle, escaped unscathed in 2011. But in the city of Kamaishi, a US\$1.6 billion breakwater listed in the Guinness Book of Records as the world's largest, crumbled on impact with the tsunami. Nearly 90 percent of the seawalls along the northeast coast suffered similar fates. Critics say they even worsened the deluge's impact in many places.



Masahito Abe points to the village of Koizumi, Miyagi Prefecture, proposed site for a 230-million yen seawall that will do little more than protect rice paddies, he says.

“It’s madness,” says Abe, a local schoolteacher who points out that the proposed 14.7-meter-tall wall for Koizumi will be lower than the tsunami that inundated the village in March 2011. Besides, he adds, surviving villagers now spread out among several temporary housing units will later this year begin moving into new homes built on high ground some 3 kilometres from the coast, safe from tsunami.

“We want the government to change the shape of the wall, to redesign it so a tsunami would have minimal impact, not just put up giant walls with barely any consideration for local people’s wishes,” he says.

Experts agree that the government, perhaps caught up in the emotion that followed the disaster, rushed to judgment in turning to a familiar solution: concrete.

“There is simply no guarantee that seawalls will stop every single tsunami,” says Shuto Nobuo, a tsunami engineer at Tohoku University.

Christian Dimmer, an assistant professor in the urban studies department at the University of Tokyo, agrees.

“Seawalls have the potential to save lives wherever they are built, provided the tsunami does not exceed the simulated height and run-up pressures,” Dimmer says. “The problem is that you can’t predict how high the next tsunami will be, so seawalls can never give you 100 percent

security. There will always be a risk, no matter how high you build them.”

Professor Shuto, though not against all seawalls, is among a growing number of people pushing for a rethink. Surprisingly, perhaps, Abe Akie, wife of Prime Minister Abe Shinzo, is among them. For months, she has been gingerly speaking out against a plan signed off by her husband, saying it could damage tourism and destroy local ecosystems.

Earlier this year she met Murai Yoshihiro, the governor of Miyagi Prefecture, home to the largest number of planned seawalls. Murai said he had seen too many people die in the disaster to reverse course. “We were not on the same page,” lamented Mrs. Abe.

The same inflexible government response has greeted residents across the northeast, says Otsuka Hiroko, a campaigner who grew up near Koizumi. She says bureaucratic decisions made and funded from Tokyo are almost impossible to reverse: “There is no mechanism to make it happen, no matter how many residents, environmentalists or academics are against it.”

Koizumi’s wall, with a price tag of 230 million yen, will shelter a community that is no longer there. Essentially, the money will go to protecting rice paddies, says Abe, who adds that few local farmers have shown an interest in resurrecting their businesses in the area.

Even more puzzling, the land ministry admits the new structures are not designed to withstand the sort of seismic event that occurred in 2011. That quake is considered a once-in-a-thousand-year calamity and nothing could block it, said a spokesperson for the ministry. Koizumi's wall is less than half the size of the highest wave that hit the area three years ago. Still, the ministry insists, the walls will save lives, and many residents demand them.



Seawall construction in Sendai, in Miyagi Prefecture, which was hard-hit by the 2011 tsunami. Conservationists and some scientists say the Japanese government could be doing far more to sustainably rebuild its coastal storm defenses, including constructing seawalls further inland, where they won't fragment marshes, dunes, tidal flats, and beaches. (Photo by Winifred Bird)

Otsuka disagrees. She says coastal residents sheltering behind the walls are lulled into a sense of false security, and lose the ability to read the sea. The 2011 deluge killed her mother and her brother's two children. They could have been saved if they had fled 10 meters up a hill behind their house, she says. They didn't run because they thought the village seawall would protect them.

At stake is the pace and shape of the recovery of

the tsunami-hit coast. Construction cannot begin on sites considered vulnerable to tsunami until each community decides how, exactly, it wishes to be assimilated into what critics deride as the Great Wall of Japan.

The seawall debate has not only exposed a lack of imagination among central government planners, but revealed serious flaws in the lines of communications between policymakers in Tokyo and the people they claim to be helping.

Take the case of Odohama, one of one of hundreds of communities dotted along the jagged, beautiful northeast coast in Fukushima Prefecture. The tsunami washed away its 146 homes and sent residents fleeing to higher ground. Now, most live in temporary housing units, waiting for the opportunity to rebuild their shattered lives.

But even with the help of government grants of 2 million yen towards the cost of new homes and an offer to cover the interest on old mortgages, older residents nearing the end of their working lives cannot get bank loans for new homes.

"We will probably end up in a publicly-owned apartment," says Iwamura Koji, a resident of the village. In the meantime, he whiles away his days with his wife in a two-roomed shelter.

Japan's triple disaster leveled hundreds of similar communities, destroying or damaging more than a million buildings. An initial damage estimate

by the World Bank of US\$235 billion has almost certainly been rendered obsolete by the ballooning price tag for the Fukushima cleanup.

Japan's army of construction workers quickly removed the tsunami rubble, creating mountains of twisted metal and splintered wood on the outskirts of most coastal towns and cities. But rebuilding has been agonisingly slow, stalled by Japan's labyrinthine bureaucracy, disputes over the size and location of seawalls and where to relocate houses and businesses.

Toba Futoshi, the mayor of Rikuzentakata, which lost most of its city centre and nearly a tenth of its population, is one of a handful of local leaders to publicly vent his frustration. "My sense of hopelessness for the future is shared by many of the victims," Toba said in 2013.

He cites a slow-moving plan to relocate hundreds of homeless families to hills overlooking the city, bringing him into collision with multiple bureaucracies. Clearing the hillside forest, leveling and rezoning land, and reconstructing large buildings must all be cleared by overlapping government agencies, eating up precious time as the life ebbs out of his city.

The problem, for now at least, is not money. On the second anniversary of the disaster, Abe Shinzo topped up the reconstruction budget by six trillion yen to 25 trillion yen over five years. "What's needed is imagination, and politicians who lead and take responsibility," says Toda.

The location of new communities, and whether seawalls are necessary on such a grand scale, goes to the heart of the sclerotic reconstruction of the devastated northeast coast.

While local communities wrestle with these dilemmas, reconstruction stalls. Just four percent of 460 planned levees along the northeast coast have been completed, according to public service broadcaster NHK. Two-thirds have not even started.

"Many prefectural governments have foregrounded the seawalls as a precondition of rebuilding," says Marieluse Jonas, a landscape architectural designer with RMIT University in Australia.

Odohama at least has cleared one key hurdle that plagues much of the northeast. Its residents have decided to move back from their ledge overlooking the Pacific to safer ground. Already life has reverted to some sort of normality, says Iwamura, even if it is not one most would have chosen.

Skeptics say that they are not opposed to seawalls per se, but insist that differences in size, location and topographical features from one community to the next renders the government's one-dimensional solution practically useless.

Reconstruction is potentially lucrative. That's one reason why share prices in Japan's largest construction companies - Kajima and Taisei and

Shimizu - are up by 100 – 200 percent since March 2011. Many companies are chomping at the bit to put lucrative reconstruction contracts into action so the time for proper consultation – and the emergence of expert-led solutions to the life-or-death issue of coastal defence – may have passed.

Kawabata Yoshiaki, a professor at Kansai University and one of Japan’s foremost experts on disaster prevention and management, is one of several people calling for a rethink of one hitherto overlooked solution: evacuation.

“In cases like the last tsunami, the best approach is to evacuate people. And in areas that are used exclusively for agriculture, barriers aren’t necessary,” Kawabata says.

He advocates a multilayered approach that would combine quicker, easier evacuation routes and procedures, and physical barriers comprising forests and greenbelt with elevated areas carrying roads and railway lines. In cases where immediate evacuation would be difficult, whole residential areas should be built on elevated ground, he adds.

“The goal is to build more vibrant towns and cities than before,” he says. “We’re not saying that people just move to a higher place and build a huge breakwater. The most important thing is for residents to discuss seawalls, but not to assume that they are their only option.

“The March 2011 tsunami was the biggest in 1,200 years, so we believe it’s not fully possible to protect with breakwaters ... we have to look at the quickest ways possible to evacuate people.”

While Abe Shinzo and many local leaders push for construction of seawalls and the much-needed economic activity they will create, campaigners accuse the authorities of ignoring local people when the coastal defense policy was being discussed in the weeks after the disaster.

“People who experienced the tsunami found they could not defeat nature,” says Sugawara Akihiko, chairman of the Kesenuma Chamber of Commerce and Industry and founder of the Kesenuma city seawall study group. “They learned that the best chance of survival is to evacuate quickly, but still the government told us that we’d be protected in future by seawalls – even against tsunami of the size that come along only once every 100 years or so.

“We pushed them to design evacuation routes and procedures and to put them into place as quickly as possible, but we were ignored. The seawall issue isn’t just a question of for or against. We also need to look at the different needs of each community. What are their priorities? What exactly do they want in terms of protection?”

More than three years after the disaster, and with 230,000 people still displaced, the need to reconsider the seawall plans is likely to be

trumped by the needs of those with a vested interest in rebuilding the northeast coast as envisioned by the governing Liberal Democratic Party and its friends in the construction industry.

“Regardless of the need for more discussion, the urgent nature of the project and the interests of the construction industry will suppress criticism to allow firms to get the job finished on deadline,” says Seino Satoko, a professor in the graduate school of engineering at Kyushu University. “We relied on the usual Japanese way of doing things, which meant there was no room for innovation.”

In Koizumi, the debate is chipping away at the villagers’ enthusiasm to put their community back on the map from which it physically disappeared just over three years ago. “I don’t want the seawall issue to divide people,” Oikawa Yoshitaka, a local councilor, told a recent public forum on the issue. “I can see the debate is already weakening their determination to rebuild their village together.”

For every seawall skeptic in Koizumi, there are households that have already sold their land to make way for construction of the concrete barrier. “The attitude seems to be that if the walls have already been planned and budgeted for, why interfere?” Abe Masahito laments.

“I don’t want the rest of the world to think of Japan as a concrete fortress,” he adds. “The

tsunami was a force of nature, so I can forgive it for the destruction and misery it caused. But for humans to ruin their own environment ... I can never forgive that.”

This is an edited version of articles that have appeared recently in *The Economist*, *The Guardian*, *The Financial Times* and *The Christian Science Monitor*.

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Recommended citation: *David McNeill and Justin McCurry, “After the Deluge: Tsunami and the Great Wall of Japan”, The Asia-Pacific Journal, Vol. 12, Issue 30, No. 1, July 28, 2014.*

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