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Saturday, April 23, 2011



Rajib Shaw inspects a tsunami-ravaged area of Rikuzentakata, Iwate Prefecture, during his visit to Tohoku in early April. COURTESY OF IEDM, KYOTO UNIVERSITY

COMMUNITY

Disaster expert seeks better tsunami defense

Better data, training, personal responsibility key to survival, Indian-born Rajib Shaw says

By JANE SINGER
 Special to The Japan Times

A town hall located several kilometers inland was the designated disaster evacuation site in Minamisanriku, Miyagi Prefecture. Immediately after the magnitude 9 earthquake hit Tohoku on the afternoon of March 11, a young town employee broadcast an urgent evacuation order to local residents. Her broadcasts continued until the tsunami hit, submerging the announcer, the evacuees and the hall itself.

Given tragic examples like this, one wonders: Could more have been done to anticipate the tsunami and lessen its impact? Or is it impossible, practically speaking, to prepare for a natural disaster of this magnitude?

These are the questions that concern Rajib Shaw, 42, an associate professor at the Graduate School of Global Environmental Studies at Kyoto University, who specializes in disaster and environmental management.

Shaw leads a team of 20 professors and graduate students who help communities in 17 Asian and African countries as far afield as Burkina Faso,

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Afghanistan, Indonesia and Vietnam prepare for natural disasters and the consequences of climate change through education and community-based planning.

Shaw was born in Kolkata, India, and studied applied geology at Allahabad University before receiving an education ministry scholarship in 1994 that allowed him to continue his research at Yokohama National University.

A quick study in all things, Shaw had acquired a Ph.D. in applied geology, a master's degree in science education and a pretty good grasp of Japanese by 1997.

On Jan. 17, 1995, Shaw was staying at the laboratory in Yokohama for an all-night experiment. "The television was on to help us stay awake. Early that morning I saw coverage of the Kobe earthquake that had hit at 5:46 a.m. I remember the sight of fire and smoke everywhere. My professor later explained that casualties might climb to several thousand."

Many Japanese students in his lab volunteered their time to assist the affected in Kobe. Shaw wanted to help as well, but with his poor Japanese he thought he would only be a burden. "I then decided that much as I enjoyed pure research, I wanted to do something that would involve people. After getting my degree in 1997, I took a position with a Japanese consulting firm in the development field."

As it happened, his first assignment was to help three communities — Zigong, China; Bandung, Indonesia; and Tashkent, Uzbekistan — with earthquake preparedness. His team worked with academics, local governments and community groups, and they included a local journalist to foster less sensational but easily understood disaster-related public communication.

At each site, technical experts created an earthquake scenario showing which buildings and infrastructure were at risk of damage, while the other members came up with an action plan to reduce the risks. Shaw felt that he had found his calling. The work allowed him to apply his training in pure research to identify and solve problems in the real world.

From 1999 to 2004, Shaw was with the United Nations Center for Regional Development and a government earthquake research center in Kobe, where he helped develop a master plan for earthquake and tsunami mitigation in the Asia-Pacific region. He also helped to coordinate disaster management, risk assessment and community participation projects in 14 countries throughout Asia.

"Usually the U.N. works with national governments, but in Kobe we saw that the first responders to a natural disaster are family, neighbors and local government, so we need strong communication with local stakeholders," he said "We started several community-based disaster projects with local nongovernmental organizations and local governments, and I convinced U.N. officials to lend their support."

In 1998 Shaw married Tomoko, a Japanese architect who also worked on disaster management projects throughout the developing world, and in 2005 they had a son, Aron. Shaw is now in Kyoto on weekdays and, when not correcting student papers and preparing meeting agendas on trans-Pacific flights, returns to the family home in Yokohama on weekends.

"I've found many similarities between Indian and Japanese cultures, including respect for old people and a strong attachment to family," he said. "I've become more attached to the country and the culture, and I feel more Japanese in my thinking; in fact, I tend to speak to myself in Japanese."

Shaw proved his attachment by becoming a naturalized Japanese citizen in 2007. "I had a natural feeling that I'm a part of this society."

He professed that he hadn't experienced any discrimination here from his fellow citizens. "Maybe I'm just insensitive," he said laughing, "but I don't think deeply about these things because there are many other things to do. Many Japanese ask me why I took Japanese nationality, while others seem pleased. Indian friends are accepting; they say, 'There are more than enough Indians but not enough Japanese today.' "

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Since April 2004 Shaw has been at Kyoto University, helping to train young professionals in the new discipline of disaster risk management — formerly the province of civil engineering but now regarded as a melding of engineering and social solutions.

One current project monitors the recovery of two communities — one in Southern India and another in Sri Lanka — that were decimated by the 2004 Indian Ocean tsunami.

Many of the coastal residents were resettled inland to create a coastal buffer zone. "Many residents were fishermen dependent on coastal access, so social issues arise when they move inland. We're trying to understand how these social lessons can be included in future planning."

Shaw's team is also involved in helping 36 Asian cities adapt to the heavy rainfall, typhoons, and other impacts associated with climate change.

"In these at-risk communities we understand the problems, we even know the solutions, but still we don't take action," he said. "The challenge is how to prioritize a low-probability but high-consequence event like a flood or typhoon. After it occurs, perceptions are higher and people say, 'We have never experienced this before.' After a disaster there's an initial recovery phase of three to five years, then it's back to normal and the memory fades.

"Particularly when you're talking about problems related to the global environment, it's hard for people to relate. We need to help individuals prepare, then the community, the town and the region. We must break disaster planning down to the level of individual life and build a 'culture of disaster preparedness.'

"This includes disaster education, either formal or in the home; school and family activities; and legislative measures, such as traffic penalties or a tax exemption for retrofitting your house. It also includes use of hazard maps, learning about previous disasters from the elderly, evacuation drills, and working with community organizations as well as the local government."

Shaw toured the Tohoku region for five days in early April, and although he has visited Aceh in Indonesia, Sri Lanka and many other postdisaster sites, the destruction in Tohoku "was beyond my imagination," he said. The enormous contrast between the coastal damage and the virtually unscathed areas in the hills showed that earthquake damage was limited, but the tsunami damage was huge, he said

"In some of these areas people are accustomed to tsunami threats so they didn't take them seriously this time. In 1933 and 1960 there were major tsunamis, so old people have experienced them, but hearing about something and actually experiencing it are different.

"An earthquake in Chile in February 2010 triggered a tsunami warning in Tohoku but only 10 to 12 percent of the residents evacuated. Many people even went to the beaches to see the tsunami. Coastal areas were inundated with waves up to 180 cm, although there were no fatalities.

"People make their own evacuation judgments based on their experience and awareness, and on whether they have the right information at the right time," Shaw said. "Nobody anticipated a 20-meter tsunami this time. People thought it would be 1 to 2 meters high, and they underestimated the severity of the evacuation order."

He noted that television networks and most local governments issued tsunami warnings within four minutes of the earthquake, but that the actual outcomes varied. Some of the coastal dykes were destroyed, but others helped to minimize damage.

Communities that survived the tsunami with relatively smaller damage than others were better able to respond to residents' needs, Shaw said.

"In Kamaishi, Iwate Prefecture, local students had good disaster education in their schools. They had just held an evacuation drill on March 3 in which they went up into evacuation routes in nearby mountains, so most students evacuated safely," although more than 1,300 residents of the city either died or remain missing in the tsunami, Shaw said.

In Ishinomaki, Miyagi Prefecture, however, 74 of 108 children at an elementary school died "because they thought their school, the designated evacuation site, was safe," he said.

In some cases, he said, parents went to the school following the earthquake to get their children and returned to their homes, with disastrous results. "Residents need more specific information on the height of the tsunami to encourage them to make correct decisions," he said.

Most of the communities had made hazard maps showing areas at risk in the event of tsunami. Shaw said, however, that when maps were available for tsunami of both 4 and 8 meters in height, local residents may have only received the map for a 4-meter tsunami because local governments lacked the resources needed to take the specific actions called for by the other map.

"In the future we need to publish a hazard map for a worst-case scenario, but this may raise the ire of local realtors," he said.

"Flat areas will need buffer zones and safe places for shelters, but plans need to be customized," he said.

Pointing to the example of flood-prone Bangladesh, where each villager is tasked with ensuring that elderly and other vulnerable neighbors have evacuated, he added, "We need a strong volunteer network as well as an infrastructure to bring the people to shelters. Governments have responsibilities, but people must also take on responsibilities for themselves."

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