



Making a Fresh Start toward a Safer Society

Brazilian project members participated in a month-long disaster risk reduction training session held in Japan in 2017. They visited the construction site of a sabo dam in Nara Prefecture.

In Brazil, sheer population density leads too many people in urban areas to build their homes on or near unstable hillsides, despite their vulnerability to landslides. These construction practices led to numerous casualties when a landslide occurred in 2011. To prevent similar tragedies in the future, the country's government is now urgently prioritizing the development of strategies to prevent disasters and to secure a safer living environment for its people.



Site affected by a landslide in 2011 (Nova Friburgo)

REGULAR MEETINGS HELP AGENCIES COLLABORATE AND BUILD CONSENSUS

In January of 2011, Brazil's state of Rio de Janeiro suffered an enormous sediment-related disaster. It caused over 800 deaths and left 400 people missing. It also destroyed the homes of approximately 20,000 people, turning out to be the worst natural disaster in Brazil's history.

"The rainstorm started suddenly and reached its heaviest around 4 a.m. It was still completely dark," reflects João Mori, who was then the chief firefighter of Nova Friburgo City, which is located in the region that was severely struck by the disaster. Nova Friburgo City is hilly and mountainous, and a landslide occurred on hillsides because of the rainstorm, causing heavy casualties. "Back then, we did not have any system for predicting landslides or warning against them," Mori says. "No one could predict that such a serious disaster would happen."

In response, the government of Brazil announced a policy to strengthen its disaster risk-management system. In December of 2011, to reinforce the country's capacity to predict and monitor rainfall, the government established the National Center for Monitoring and Early Warning of Natural Disasters (CEMADEN) within the Ministry of Science Technology, Innovations and Communications. In 2012, Brazil also set up the National Center for Risk and Disaster Management (CENAD) within the Ministry of National Integration to address disaster risk evaluation and disaster response. However, despite the establishment of these centers, the country still faced numerous problems, such as lack of infrastructure to prevent disasters, urban development plans that did not take disaster risks into consideration, and, most of all, no risk map to identify vulnerable spots. The Brazilian government requested Japan's cooperation to help improve these shortcomings. In 2013, a

four-year disaster risk reduction (DRR) project was launched.

"This is such a huge project. It's like running several technical cooperation projects at the same time," says Toshiya Takeshi from Japan's Ministry of Land, Infrastructure, Transport and Tourism. He is an expert who worked on the project as Chief Advisor for two years, starting from its launch. One major feature of this project is that it covers a broad range of fields: risk mapping, urban planning, prevention and rehabilitation, as well as prediction and warning. The project's aim is to make manuals for each respective field and to conduct pilot projects based on those manuals. Another unique aspect of the project is that it involves many different agencies, including four ministries of the Brazilian federal government (Ministry of Cities, Ministry of National Integration, Ministry of Science Technology, Innovations and Communications, and Ministry of Mines and Energy), and the governments of two states and three cities where the pilot projects are to be conducted.

"Since Brazil is a federal state, state and municipal governments have almost the same authority as does the federal government. So they used to issue warnings and predictions separately, and I found this system to be quite complicated," says Takeshi. "This is why I put special emphasis on reinforcement of cooperation across agencies and fields."

As part of this effort, Takeshi organized weekly liaison meetings where lead staff from federal agencies in each field could meet up. When conducting the meetings, Takeshi was careful not to push Japa-



Takeshi visiting a landslide site (Petropolis)

Disaster Risk Reduction : BRAZIL

Left: Weekly liaison meeting with members from four federal ministries
Right: After a lecture at the Nara Prefectural Office, trainees received a message of encouragement from Vice Governor Hiroshi Murai (center).



nese methods, but to find ways that best catered to local needs. He carefully considered pros and cons of both Japanese and Brazilian ways. “Instead of just introducing methods that were successful in Japan, I explained how Japan had tackled challenges that are similar to what Brazil faces now, highlighting Japan’s experiences and processes,” he explains.

Even the name of the project is an important example of this. Takeshi says that referring to the project as a ‘JICA project’ led some Brazilian staff members to perceive it as a Japan-initiated project, and to feel as if it were something external. “I encouraged the members to give a nickname to the project, and we decided to call it GIDES, an acronym for Comprehensive Sediment Disaster Management in Portuguese,” he says. “I felt that this name generated a sense of ownership over the project among the staff members.” The project members also held technical meetings organized by field once every two or three months, inviting not only federal government officials, but also officials of state and municipal authorities, as well as experts and researchers from the academia. As a result of these liaison meetings, cooperation across agencies became more intense, and in some meetings, federal government staff members even took the lead. Marcel Sant’Ana, an officer of the National Secretariat for Urban De-

velopment under the Ministry of Cities, says, “Since there was no opportunity for us, members of four different ministries, to collaborate together, we did not know how other ministries processed their work or what technologies they used. Now we clearly know the role of each agency and are able to consider measures based on that knowledge.” He adds, “It’s a great advancement.”

SHARING JAPAN’S EXPERIENCES AND EFFORTS FOR DISASTER RISK REDUCTION

The Brazilian project members also had an opportunity to participate in training courses on DRR held in Japan. The majority of trainees say they found them beneficial. In July and August of 2017, nine staff members in charge of disaster prediction and warning at federal, state, and municipal governments took part in a hands-on training course held in Nara Prefecture, which in 2011 experienced several catastrophic landslides caused by a rainstorm. The trainees first received a briefing on measures against sediment-related disasters developed by Nara Prefecture. When one of the trainees asked how they evacuated local residents, the lecturer explained various approaches, such as collaboration between the prefecture and local meteorological observatory to issue a sediment disaster alert, which municipal governments then used to issue evacuation advisories and orders. The lecturer also explained that sirens have been installed in spots that are vulnerable to disasters.

Then, the group visited actual sites where disaster control measures had been taken. Upon visiting a site where a sabo dam, which is a debris dam that is used to reduce the impact of debris torrents in mountain areas, was installed to prevent a mudslide from hitting a nearby retirement home, Jackson Laurindo, an official of Santa Catarina State government raised a question. He asked about costs – which is more cost-effective, to build a sabo dam or to relocate the retirement home? “In Brazil, we tend to pay more attention to costs when considering measures. But the Japanese said, ‘We determined that relocation of the retirement home is not feasible because many of its residents need nursing care.’ I learned something from this Japanese way: They also take into account social factors when deciding on measures.”

Wesley Felinto, leader of the group, reflects on

the month-long training saying, “In Brazil, up to now, we’d put more emphasis on measures to respond to disasters that already happened, but I realized that we also need to focus more on preparation and prevention, as is the case in Japan. I also learned about intangible measures such as DRR education and reinforcement of local communities. I think that such measures can be adopted in Brazil, even with limited financial resources.”

PRACTICAL MANUALS STRENGTHEN DISASTER PREVENTION MEASURES

Now, field-specific manuals have been created and pilot projects conducted in three cities: Nova Friburgo, Petropolis, and Blumenau. In the risk-mapping pilot project, the project team used drones to obtain topographical data in some regions where such data were scarce or unavailable. Jorge Pimentel, an official in charge of risk mapping at the Company Research of Mineral Resources, an organization under the Ministry of Mines and Energy, says, “By adopting Japan’s approaches to our original mapping methods, we are now able to indicate spots that are vulnerable to specific risks, such as steep slope failure, landslides, debris flows, or rockfalls.”

Urban planning efforts often go hand-in-hand with prevention and rehabilitation projects. Participants discussed how to safely zone urban areas. They used the risk maps made by the risk-mapping team to formulate urban development plans that avoid locating residential zones in vulnerable spots. When there was no other way to avoid such spots, they took a “hardware” approach to ensure safety, such as the construction of protective structures. Paulo Falcão, an official in charge of prevention and rehabilitation at the National Secretariat for Protection and Civil Defense under the Ministry of National Integration says, “In Brazil, many people live in areas that are highly vulnerable to landslides, including slums called ‘favela’. Those slums are so vast that the relocation of residents would be quite difficult. So we need to build structures to address the risk. As we had almost no experience in constructing structures that protect against debris flows, it was beneficial for us to learn about efficient methods from Japanese experts.”

Officials working in the field of prediction and warning reviewed their emergency response plans to determine the best timing, routes and places for smooth evacuation of residents. They are also working to strengthen ‘vertical’ cooperation. For example, CENAD now forwards early warnings issued by CEMADEN to relevant municipal authorities, who then call for evacuation of residents. Akinori Naruto, an expert dispatched from Nara’s prefectural government to take charge of pilot projects, explains a challenge he faces. “Federal government and municipal authorities need to discuss issues related to manuals with each other. But since the country is so vast, it’s not easy to set up meetings,” he says. “So whenever I find a problem, I do my best to share it with concerned parties as soon as possible so that we can schedule a federal government visit to the municipal authority efficiently, based on the project’s timeframe.”



Yamakoshi (right) and Naruto (center) discuss the outbreak mechanism of debris flows.

“JOY AND HAPPINESS IN TEN YEARS’ TIME”

“What has become most important now is to establish a system that allows Brazilian staff members to modify the manuals they have made in this project on a long-term basis, so that they can cater to the actual needs of the country,” says Takao Yamakoshi, an expert who replaced Takeshi as Chief Advisor in 2015.

Takeshi, who has completed his two-year term as Chief Advisor, made a promise to one of his Brazilian co-workers right before going back to Japan. The co-worker is Yuri Giustina, the Director of the National Secretariat for Urban Development under the Ministry of Cities, and one of the original members of this project. As the leader of the team and a coordinator of the entire project, he could reasonably be called the “front-man of GIDES.”

Giustina says, “I remember the time when I invited the experts to my house. I always have my guests write their wishes in my notebook, and Mr. Takeshi wrote his. It says, ‘May our efforts bring joy and happiness to Brazil in 10 years’ time.’”

Giustina himself left his position in July of 2017, and he is not directly involved in the project now, but he is still as passionate and enthusiastic about the future of disaster mitigation and prevention as ever, with a desire to live up to Takeshi’s promise. “In light of the current economic situation in Brazil, we need to make efficient investments, with clear understanding of the needs of the target regions. The GIDES project terminates in 2017, and our next goal is to strategically disperse what we have learned in this project to all the cities that have disaster risks.”

Brazil has overcome disasters in the past and it is about to make a fresh start. The teammates, both Brazilian and Japanese, shared joys and sorrows throughout this project. They will meet again someday and share the delight of further success.



Staff members of the Company Research of Mineral Resources and Blumenau City learn about risk mapping from an expert.



Takeshi and Giustina discuss disaster risk management. (photo by Atsushi Shibuya, 2014)