Human Security and International Contributions by Civil Engineering

Examples of international contributions by Japanese civil engineering: Efforts related to natural disasters

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Frequent natural disasters around the world

Every year, natural disasters like earthquakes, tsunamis, floods, landslides, and volcanic eruptions cause severe damage in various forms in many countries around the world. In major natural disasters in other countries from 1999 to 2003 (Figs. 1 and 2), earthquakes, floods, and storms accounted for about 80% of the fatalities, and about 60% of natural disaster fatalities occurred in Asia. Many tragic natural disasters have also occurred during the past year, including the tsunami in the Indian Ocean in late 2004, Hurricane Katrina in the U.S. in August, and an earthquake in northern Pakistan in October.

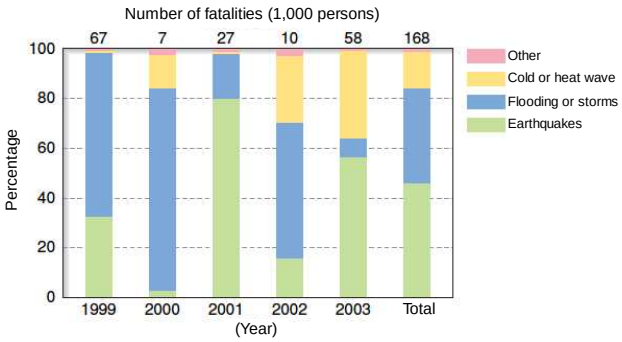

Fig. 1. Proportions of fatalities due to major natural disasters in other countries by disaster type

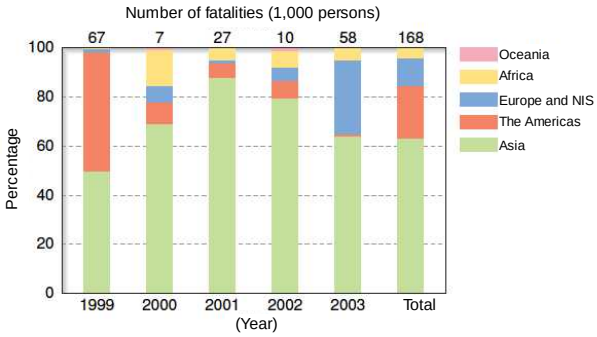

Fig. 2. Proportions of fatalities due to major natural disasters in other countries by region

Source: Based on *Kokusai Kensetsu Bousai* (Disaster reduction in international engineering), Issues 10-14, Overseas Disaster Reduction Association.

In general, many developing countries are vulnerable with regard to natural disasters and tend to suffer serious damage. The poor may become displaced by major disasters, and this often leads to secondary effects such as unhygienic conditions and food shortages. For poverty reduction and sustainable development to become a reality, it is essential to break the vicious cycle in which repeated disasters pose an obstacle to people's lives and economic and social development.

Japan is among the most prone to natural disasters of the world's nations. It has

developed many measures to prevent and mitigate various natural disasters, as well as the infrastructure that underlies the second greatest economic superpower. Japan's civil engineers are capable of making important contributions to other countries in the area of natural disasters.

The perspective of human security

At the United Nations World Conference on Disaster Reduction, held in Kobe in January 2005, the Japanese government announced its Initiative for Disaster Reduction Through ODA, which sets forth Japan's basic policies and specific endeavors regarding cooperation through ODA in the field of disaster reduction. This initiative includes the perspective of human security as one of its basic policies, and identifies the following as important points.

- Protecting individuals from disaster, putting individual human beings at the center of concern.
- Empowering individuals and local communities to take action themselves with regard to disasters.
- Accurately identifying the needs of residents.
- Supporting the empowerment of local communities.
- Giving consideration to people who are particularly vulnerable to disasters, such as children and the poor.

If international contributions in the field of disaster reduction are pursued from the perspective of human security, the result will be to actively promote assistance in the name of the Japanese people using Japan's outstanding experience, technology, and human resources, in the course of joint work by Japan and the affected countries to reduce or eliminate the threats of natural disasters from the people of developing countries and those regions.

Examples of efforts by the Ministry of Land, Infrastructure and Transport

Technical cooperation

One specific example of technical cooperation by the Ministry of Land, Infrastructure and Transport itself with regard to disaster prevention and mitigation was the transfer of technology for foundation consolidating dikes built with large wooden beds called "fascine mattresses" to prevent riverbank erosion along the Mekong River in Laos, which took place from 1999 to 2001 (Photo 1). When introducing Japanese construction technology in developing countries, it is necessary to consider factors such as the effects under different natural conditions than those of Japan, ease of obtaining the materials used, and feasibility in terms of the local technological level. These matters were verified through on-site trial construction, and the technology was then introduced and promoted in Laos.

Photo 1. Installing fascine mattresses

The Ministry of Land, Infrastructure and Transport also makes use of its knowledge and experience as a government agency that specializes in infrastructure by dispatching experts and accepting trainees through JICA technical cooperation projects. As of September 2005, 59 persons from the Ministry of Land, Infrastructure and Transport and related government agencies have been dispatched as long-term JICA experts in roads, rivers, housing, and other areas of construction infrastructure. Nineteen of these are providing technical cooperation in areas that are directly related to disaster prevention and mitigation, such as flood control, erosion control, restoration after disasters, and earthquake disaster reduction.

Collaboration at the international level

The purpose of the International Flood Network (IFNet) is to share information related to flood countermeasures, in cooperation with country level groups as well as international agencies such as the World Meteorological Organization, in order to reduce flood damage, a frequent occurrence around the world. This network was launched at the Third World Water Forum in March 2003, with the Ministry of Land, Infrastructure and Transport playing a central role. In one of its projects, IFNet was involved in the construction of the Global Flood Alert System (GFAS), which uses rainfall measurements from satellites to issue flood warnings to developing countries that have no ground telemetry facilities (Fig. 3).

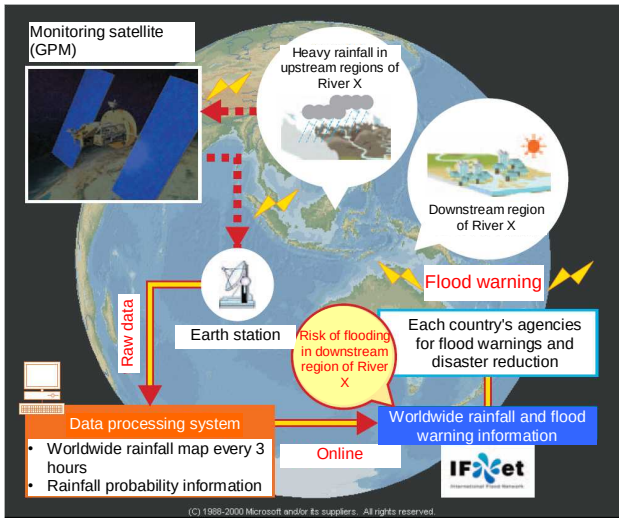

Fig. 3. Mechanism of GFAS

Coping with the major earthquake off Sumatra and the Indian Ocean tsunami disaster

After this disaster occurred, the Ministry of Land, Infrastructure and Transport sent members to international emergency assistance teams to support recovery and restoration, government investigation teams to investigate the situation and conditions in the affected countries, and so on. The Meteorological Agency, in cooperation with related agencies of other countries, began provisionally providing tsunami monitoring data on March 31, 2005 in response to requests from countries along the coast of the Indian Ocean.

In the future, in addition to full-scale restoration efforts, it will be important to continue with constant, everyday efforts to prevent disasters by promoting disaster prevention and mitigation measures in terms of "hard" aspects (structures and infrastructure) as well as "soft" aspects (services and systems). Continued contributions are planned in a wide range of areas, including support for recovery and restoration of public infrastructure and other matters in the affected regions, as well as

training human resources, strengthening government functions, and preparing hazard maps in order to improve the disaster reduction capabilities of the affected countries.