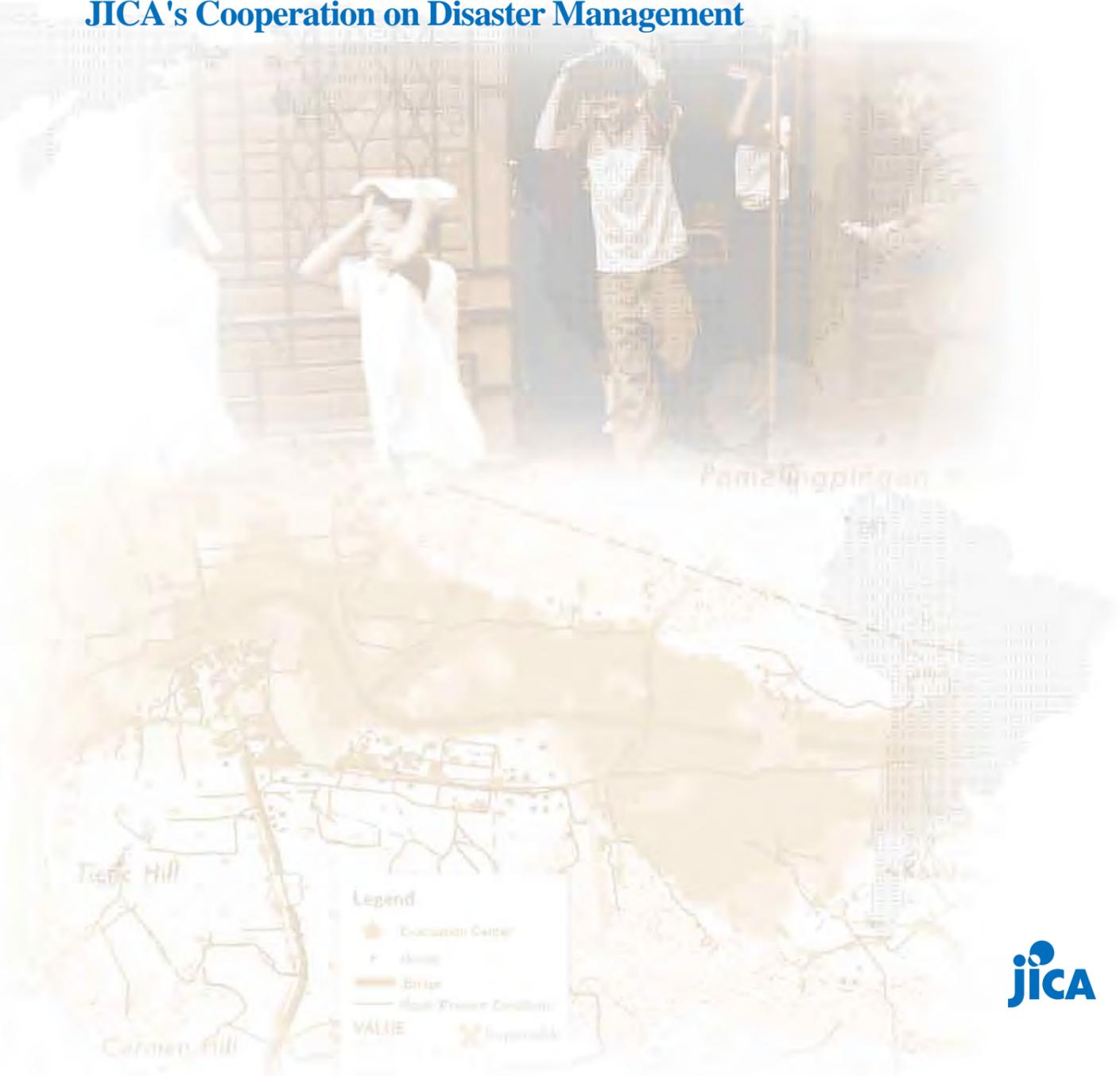




# Building Disaster Resilient Societies

**JICA's Cooperation on Disaster Management**



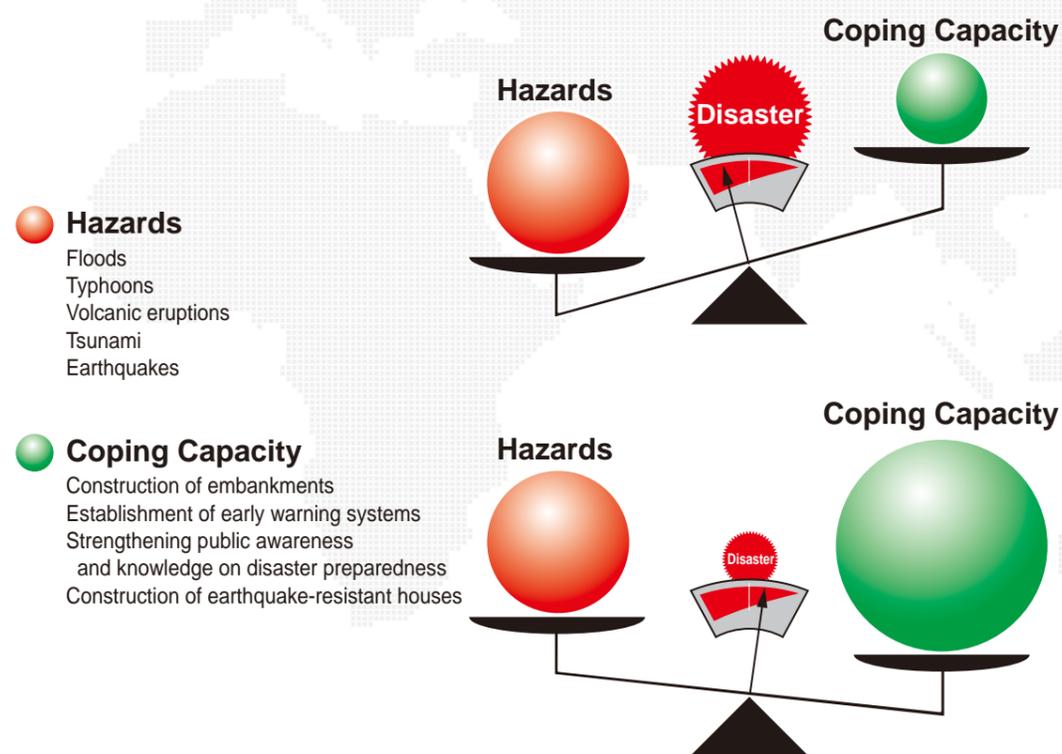
## JICA's Policy of Cooperation in Disaster Management

Frequent climatic anomalies attributed to global climate change have been increasing the number of natural hazards throughout the world and disasters caused by these hazards have become significantly severe, especially in countries where development plans do not take disaster risks in account. In most cases, damage caused by natural disasters have greater effect on the people in developing countries than in developed countries. Natural disasters in developing countries not only seriously affect people's health and sometimes even claim their lives, but also destroy properties and social infrastructure that people have developed over the years instantly. When natural disasters occur frequently, it becomes difficult for developing countries to effectively eradicate poverty and achieve sustainable development.

Although JICA has been engaged in various international cooperation programs assisting developing countries achieve their development goals, natural disaster has become a major obstacle in achieving sustainable development as it devastates people's security and livelihood. As the case, JICA has been strengthening its efforts to assist developing countries build societies that are more disaster-resilient.

### Why do disasters occur?

Natural phenomena cause natural hazards but they are not disasters by themselves. Hazards act on our societies as external forces and when these forces exceed the capacity of societies to cope with them, disasters occur. The effect of disasters can be determined based on the balance between hazards and people's capacity to cope with these hazards.



### Enhancing the capacity to cope with disasters

Controlling natural hazards is difficult and, thus, enhancing social capacity to cope with disasters is one of the most effective ways to manage and reduce disaster risks. JICA, based on the concept of disaster management cycle, has been providing support to enhance the capacity of societies to cope with disasters from a multi-disciplinary perspective.



Enhancing the capacity to cope with disasters and reduce damage caused by disasters require capacity to take adequate actions in the phases of disaster prevention (mitigation and preparedness), response, and recovery and reconstruction. JICA has defined the following goals in the respective phases of the disaster management cycle, and has been cooperating with countries to achieve these goals.

**Development Strategy Goal 1 (Prevention Phase):  
Development of disaster-resilient communities and societies**

**Development Strategy Goal 2 (Response Phase):  
Quick and effective delivery of emergency assistance to victims (Saving human lives)**

**Development Strategy Goal 3 (Recovery and Reconstruction Phase):  
Smooth transition to and implementation of recovery and reconstruction**

Development strategy goal 1 "Development of disaster-resilient communities and societies" has been given first priority because measures for disaster management and risk reduction should be most effective when they are taken during the prevention (mitigation and preparedness) phase before actual disasters occur.

## Development strategy goal 1:

# Development of disaster-resilient communities and societies

Developing disaster-resilient communities and societies requires accurate identification and analysis of the risks that the communities or societies are faced with, and having all stakeholders from government to communities fully understand these risks. Subsequently, it is necessary to take such measures as constructing structures to control and reduce damages caused by disasters, developing laws and systems that would allow timely and adequate response to disasters and training disaster managers. JICA has been providing various types of support to communities and societies of developing countries to analyze disaster risks and prepare for disasters.

### Project on Capacity Development in Disaster Management in the Kingdom of Thailand

Thailand suffers from frequent natural disasters such as floods, landslides and tsunami. In the wake of the devastating Indian Ocean tsunami of December 2004 that left approximately 8,500 people dead or missing, policies were launched to reinforce the national disaster management system in Thailand. JICA has been assisting the Government of Thailand through the implementation of the "Project on Capacity Development in Disaster Management" (August 2006-August 2008).

The project aims at equipping individual residents with capacity to prepare for disasters through community activities.

1 pilot community has been designated from each area vulnerable to frequent floods, landslides or tsunami and the following actions have been taken in the project:

- Conducting awareness workshops, preparing hazard maps and conducting evacuation drills using the maps.
- Building early warning system in communities using simple rain gauges.
- Educating children on disaster preparedness together with teachers and regional disaster managers in schools to promote disaster preparedness that is expected to disseminate from children to their homes and throughout the communities through a participatory process.

Public awareness on the need for disaster preparedness has gradually been heightened through people's active participation in the activities of the project such as in selecting location of evacuation shelters and evacuation routes, and maintaining the rain gauges.

Further efforts are aimed to establish community disaster prevention committees and develop community disaster prevention plans that will carry on the above-mentioned activities.

The project focuses not only on community participation but also in enhancing capacity of disaster prevention staff of the central and local governments.

In prior disaster prevention activities of the communities, technical transfer that would allow local disaster managers to plan and conduct workshops on their own was limited. As the case, outputs from these disaster prevention activities were not disseminated from the pilot communities to the other communities. An attempt was therefore made to have disaster managers prepare workshops and evacuation drills from the planning phase with advice from the Japanese experts and play leading roles as facilitators in the actual activities.

Manuals will be prepared based on past activities to enable local disaster managers to lead community disaster prevention activities. The disaster managers of central and local governments responsible for promoting community disaster prevention throughout the country are expected to accumulate useful knowledge and experience then disseminate the outputs from the activities of the pilot communities to other areas.



### Project on Capacity Development for Disaster Risk Management in Central America "BOSAI"

Natural disasters such as hurricanes, landslides, floods, earthquakes and volcanic activities occur frequently in Central America. To respond to these disaster risks, the governments of 6 countries in the region, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama, pledged to make a concerted effort to develop disaster-resilient societies and built a regional cooperation mechanism through the Center of Coordination for the Prevention of Natural Disasters in Central America (CEPRENAC), a regional disaster coordinating organization. JICA has been assisting regional cooperation through the Center in developing disaster-resilient societies.

The Project on Capacity Development for Disaster Risk Management in Central America (known as "BOSAI" project) aims at reducing risks and damages caused by disasters by increasing disaster management capacity of communities and local government.

Why is it important to enhance the disaster management capacity of communities and local governments? Most disaster management projects in the past have been limited to building disaster management capacity of the central government. However, experience has shown that enhancing disaster management capacity of the central government alone is insufficient to manage or reduce the effects caused by disasters. There have been numerous cases where assistance from the central government did not reach the affected areas fast enough, especially during major disasters, due to destruction of transportation and communications infrastructure systems. Therefore, enhancing disaster management capacity of the communities and local governments on the ground has been globally recognized as the more effective way to improve disaster management.

In the BOSAI project (2007-2012) the following activities will be conducted:

- Analyzing disaster risks in the selected pilot communities in Central American countries through community participation and developing hazard maps.
- Developing community disaster management plans and organizing emergency response drills.



- Enhancing the capacity of central and local governments to assist communities by having staff of disaster management of central and local governments conduct the above-mentioned activities under the guidance of Japanese experts.
- Sharing and exchanging experience and knowledge from activities in the pilot communities in Central America through CEPREDENAC to accumulate knowledge in the region for enhancing disaster management capacity of the communities and local governments.

It is expected that the accumulated knowledge will be utilized to encourage countries in Central America to develop disaster-resilient communities in the region.

### Cyclone Shelters in the People's Republic of Bangladesh



Bangladesh is located on a low-lying delta of the Ganges-Brahmaputra River and has been suffering from natural disasters, such as cyclones and floods, every year. In the event of a large-scale cyclone, high tides can

sometimes reach levels up to 5 to 6 meters with winds reaching maximum velocity up to 70m/s. Deaths occur in cases where poor farmers or fishermen living outside the tide embankments are engulfed by high tides or when pedestrians are hit by trees or galvanized steel sheets blown by the storms. The cyclone of 1991 claimed as many as 140,000 lives.

In order to reduce damages caused by cyclones, the government of Japan has been constructing multi-purpose cyclone shelters at 81 locations in Chittagong and Cox's Bazar since 1993. The shelters are used as elementary schools under normal weather conditions.

When cyclone Sidr hit southwestern Bangladesh on November 15 and 16, 2007, it affected close to 8.92 million people. However, according to reports, many people were able to harbor themselves in the cyclone shelters, which saved their lives.



### Project on Dissemination of Construction Technology for Low-Cost and Seismic Resistant Houses in the Republic of Peru

Peru is located in the Circum-Pacific Seismic Zone and has frequently been subjected to earthquakes that cause serious destruction to its people and their property. Poor families, in particular, are devastated when their houses collapse in the event of earthquakes. Earthquakes thus pose a great threat to the most vulnerable members of the society. In Peru, many houses, especially in the low-income communities, are built by sundried bricks known as adobe. Although adobe houses can easily be constructed at low cost, they are highly vulnerable to earthquakes. Because more than 12 million people live in adobe houses, developing and disseminating techniques to construct seismic resistant adobe houses are essential in protecting people.

JICA has designated pilot areas and provided technical assistance in constructing seismic resistant houses (Phase I: January 2005-March 2007). JICA secured this technical transfer by constructing 7 model houses with 147 construction workers from local contractors in cooperation with local NGOs. The Peruvian government gave high appraisal to the result of the project and requested JICA to further promote seismic resistant adobe houses nationwide.

In response, JICA has started implementing the Project on Dissemination of Construction Technology for Low-Cost and Seismic Resistant Houses in 10 districts since June 2007 (Phase II: June 2007-May 2010).



Based on the outputs of activities from Phase I of the project, Phase II will be implemented to further disseminate technology to build seismic resistant houses and to advocate its importance.

In the first step of Phase II, engineers of local municipalities were trained on construction technology in Lima. The engineers who completed the training have been constructing community facilities together with municipality workers and have transferred knowledge to construct earthquake-resistant adobe houses to them. As the engineers of municipalities obtain knowledge and skills in building seismic resistant adobe houses, a system to inspect and supervise the construction of seismic resistant adobe houses will be established, allowing further dissemination of earthquake-resistant adobe houses.



The August 2007 Earthquake that hit the central coast of Peru claimed more than 500 lives and caused devastating damage to Cañete Province in the Lima Region where the model houses stood. The model houses, however, suffered only minor damage and proved that they are resistant to earthquakes. To meet the increasing public demand for seismic resistant buildings, JICA in cooperation with the related Peruvian organizations has been continuously working to popularize seismic resistant adobe houses to reduce damages caused by earthquakes.

### The Study on the Integrated Watershed Management for the Nyando River Basin in the Republic of Kenya

Sub-Saharan Africa, with its high poverty rate, has urgent issues such as inadequate access to safe water, epidemics including HIV/AIDS and malaria, and problems of food security due to droughts.

In the Nyando River Basin in Kisumu District, Nyanza Province (basin area: 2,606 km<sup>2</sup>), the local economy has been stagnating because of the declining market price of sugar, reduction of rice production and deterioration of traditional fisheries. In addition to these problems, the Kano plains in the lower basin has been constantly hit by floods in the rainy season, causing serious economic and human losses.

There is no national organization in Kenya responsible for flood control. In the Nyando River Basin, urgent issues, such as battling infectious diseases and water resource shortages have taken priority over flood control.

In order to improve this situation, JICA has been taking the following measures in the Study on the Integrated Watershed Management for the Nyando River Basin (February 2006-July 2008).

#### 1. Building a system to assist the government to take flood control measures in the Nyando River Basin.

JICA has provided support in organizing the "Nyando River Forum," a working group composed of government agencies, academic institutions, NGOs, private companies and community associations. JICA has also assisted implementation of flood control measures through information sharing and consensus

building among the stakeholders through the Forum.

#### 2. Promoting the approach to incorporate flood control measures into community development plans.

5 villages have been selected in the Nyando River Basin as model communities and the following flood control activities have been implemented with community participation:

- Promoting the use of church and nurseries, which accommodate various community activities, as evacuation shelters.
- Securing evacuation routes by raising access roads to main roads.
- Conducting evacuation drills, awareness programs on disaster preparedness in schools and training on building small dikes with sandbags.



#### 3. Preparing the master plan for integrated watershed management in the Nyando River Basin

JICA has been preparing a master plan to promote flood control in the Nyando River Basin based on the lessons learned from the activities above.

The Nyando River Forum was evaluated highly by the Water Resources Management Authority of Kenya for its significant role as an organization effectively supporting flood control activities of the regional communities. The Forum is expected to continue its operation as a platform for water resources users after the completion of this Study.

### Disaster Reduction Learning Center (DRLC)

A hub for human resources development in disaster management

JICA and the government of Hyogo Prefecture jointly established DRLC in JICA Hyogo on April 1, 2007 as a hub for human resources development in disaster management.

#### Sharing Japan's disaster management practices

The Hanshin-Awaji Great Earthquake of January 17, 1995 heavily affected southern Hyogo. The unprecedented disaster claimed approximately 6,400 lives and the economic loss reached more than 10 trillion yen. However, with immediate assistance from the world, the affected areas were able to quickly recover and be rehabilitated. From this experience, the communities have been continuing their efforts in building a disaster-resilient society. DRLC is located inside HAT (Happy Active Town) Kobe which is an area developed to symbolize the efforts for reconstruction. DRLC works in cooperation with numerous disaster management organizations and international organizations residing in this area and disseminates Japan's disaster management knowledge and practices globally.

#### Activities of DRLC

DRLC will be conducting activities in the following areas, using knowledge and lessons-learned particularly from the Hanshin-Awaji Great Earthquake experience in order to train disaster managers.

- (i) Coordination of trainings on disaster management
- (ii) Training on disaster management
- (iii) Development and systematic use of networks among disaster managers
- (iv) Preparation and effective use of databases on human and other resources
- (v) Research and development



## Development strategy goal 2:

# Quick and effective delivery of emergency assistance to victims (saving human lives)

When disasters occur, immediate actions to save human lives and providing effective support to disaster victims are crucial. JICA has defined quick and effective delivery of emergency assistance to victims (saving human lives) as a development strategy goal in the disaster response phase. JICA dispatches the Japan Disaster Relief Team (JDR) in accordance with the decision made by the Japanese government when a disaster affected country or an international organization makes an official request for assistance. JDR is categorized into (1) Rescue Teams that search and rescue missing disaster victims, (2) Medical Teams that diagnose and provide treatment to sick and wounded victims, (3) Technical Experts Teams that provide technical advice on disaster analysis and effective measures and (4) Self-Defense Force that is dispatched to sites for large-scaled or specialized disasters. Relevant teams are sent depending on the type of disaster, objectives for dispatchment and the needs of the affected country. Disaster assistance not only includes dispatching of JDR, but also supplying necessary relief goods to those who have lost their homes or properties and are forced to live in temporary shelters. There are 8 items, selected based on past experiences in the field, including tents, blankets and plastic sheets. These relief goods are transported from warehouses (operated by private sector companies on a contractual basis) at 4 overseas locations to disaster affected countries in the quickest and least expensive way.

### JDR Medical Team dispatched at the time of the May 2006 Java Earthquake in Indonesia

On May 27, 2006, an earthquake with the magnitude 6.3 hit Yogyakarta, Indonesia. The devastation from the quake left approximately 5,800 dead and 138,000 wounded. The government of Japan, by the request of the Indonesian Government, promptly sent a JDR Medical Team, which devoted its medical activities on the field for 10 days.

#### Dispatchment of JDR Advance Assessment Team

A new attempt was made in sending the JDR Medical Team in responding to this particular disaster. First, a 7-member advance team including two doctors and two nurses was dispatched. This advance team was able to provide immediate medical service on site only 2 days after the disaster. This allowed the main team that arrived a day later to start its activities smoothly.

#### Improved assistance for medical institutions at the disaster site

Second, improved assistance was provided to medical institutions at the disaster site. The JDR Medical Team opened a temporary clinic on the street in front of Muhammadiyah Hospital, one of the largest hospitals in the city of Bantul, to support its medical operations. Initially, the JDR Medical Team started diagnosing patients who could not be treated at the hospital due to overcapacity, but soon, the team and the hospital started working complementarily by, for example, requesting to the hospital to receive patients whom the team could not provide adequate treatment due to lack of equipment. Because the hospital was well prepared for the potential eruption of Mt. Merapi, it was able to recover its medical service by the time the JDR 1 Medical Team completed its activities and smoothly took over the activities of the JDR team.

### Improved mobile medical services and cooperation with international organization

Third, improved mobile medical service was provided jointly with an international organizations. Pairs consisting of one doctor and one nurse toured 5 villages located within the 30-minute to one hour drive vicinity of Bantul to provide medical services. Patients in critical conditions were relocated to nearby hospitals, willing to receive patients, after obtaining consent from the patients. Transportation of patients were conducted in cooperation with the International Organization for Migration (IOM) that deployed emergency vehicles.



#### Providing seamless emergency assistance

Finally, two members in charge of making assessment for rehabilitation assistance needs were dispatched. The team was required to identify the needs in the recovery and reconstruction phase that followed the response phase to assist smooth and timely transition between the 2 phases. The activities of the team presented Japan's will to provide recovery and reconstruction assistance in the areas of primary and secondary school education, health and medical care, and water supply ahead of other countries.

## Development strategy goal 3:

# Smooth transition to and implementation of recovery and reconstruction

In order for disaster victims to recover from a state of disorder and regain their ordinary life quickly, smooth transition from the response phase to the recovery and reconstruction phase is essential. JICA, in order to ensure the smooth transition to and implementation of the recovery and reconstruction, has been conducting immediate assessment of recovery and reconstruction needs in the disaster-affected areas. JICA has also provided support in reconstructing houses and social infrastructure for such as water and sewerage, electricity, gas, roads, medical facilities and schools, making them more resistant to disasters. JICA has been active in mental health care of those affected by disasters who may be suffering from post-disaster traumatic illness.

### The Development Study on Rehabilitation and Reconstruction in Muzaffarabad City in Islamic Republic of Pakistan

Muzaffarabad, the political and commercial center of Kashmir Region, suffered devastating damage from the earthquake of October 8, 2005 that hit northern Pakistan. Located near the epicenter, the city received the most direct effect of the quake. JICA conducted the Development Study on Rehabilitation and Reconstruction in Muzaffarabad City to develop a reconstruction plan for the city by 2016 aimed to build a disaster-resilient city. JICA, by utilizing the Japanese experience, drew up the following three principles in making the plan: 1. Planning is the first step of the reconstruction process, 2. Building a safe city against natural disasters and 3. Application of the concept of self-help, mutual-help and public-help. Under these three principles, damage assessment was conducted and hazard maps were prepared. With this, the new land use plan was developed. In addition, reconstruction plans were prepared for different sectors that included the formation of temporary urban areas. In total, approximately 150 reconstruction projects and 13 priority projects were proposed.

JICA, while conducting the study, implemented the following prioritized rehabilitation projects for quick recovery of people's lives in cooperation with NGOs.

- Building a system to organize CBOs to remove debris left by disasters and to monitor, warn and evacuate from possible landslides.
- Rebuilding collapsed Sathibagh Government Girls High School



and conducting classes on disaster preparedness.

- Assessment for designing bypass road.
- Building a system to organize CBOs to remove debris left by disasters and to monitor, warn and evacuate from possible landslides was based on the idea of mutual help, which also enhanced public awareness on reconstruction efforts.

The renovated Sathibagh Government Girls High School is the first earthquake-resistant public facility constructed after the disaster and it is now used as a model for earthquake-resistant design and construction. It was designed to protect the students from disasters and serve as a shelter for local people in times of disasters.

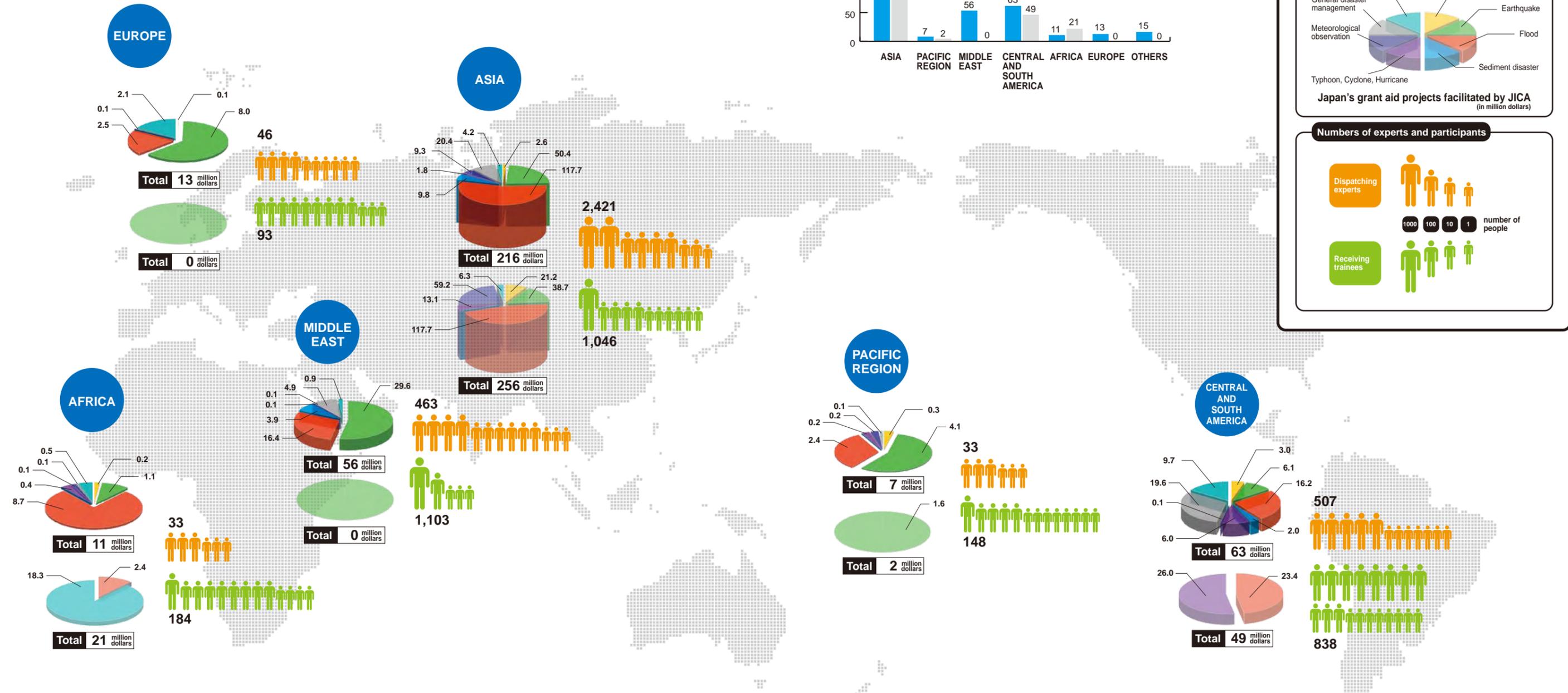
The effect of the earthquake was augmented partly because there has hardly been any education conducted on disaster preparedness in Pakistan, thus people did not have much knowledge about natural disasters or disaster preparedness. Under this situation, JICA responded with the following activities, taking its base in Sathibagh Government Girls High School.

- Preparing materials based on the knowledge from experiences of the Hanshin-Awaji Great Earthquake.
- On-the-job Trainings for teachers.
- Conducting classes that provide mental health care for students affected by the disaster.



# JICA's assistance for disaster management (FY 1997-2006)

Shown here are the cumulative totals of (1) expenditures of disaster management projects (JICA's investments for technical assistance and Japan's grant aid projects facilitated by JICA) and (2) numbers of JICA experts and participants of JICA training programs, by type of disaster prevention measure and by region.



## JICA's expenditure

JICA invested 381 million dollars for disaster management in the world. A total of 216 million dollars was invested in Asia, accounting for 56.8% of the total investment, followed by 63 million dollars (16.4%) in Central and South America and 56 million dollars (14.6%) in the Middle East.

164 million dollars (43.0%) was invested in flood control, 99 million dollars (26.1%) in earthquake management and 46 million dollars (11.9%) in general disaster management.

JICA also expedited the implementation of Japan's grant aid projects, in which the total amount was 328 million dollars. A significant amount of the investment went to Asia, totaling 256 million dollars (78.0%), followed by 49 million dollars (15.2%) in Central and South America and 21 million dollars (6.3%) in Africa.

144 million dollars (43.7%) went to flood control, followed by meteorological observation, 59 million dollars (18.1%) and earthquake management, 40 million dollars (12.3%).

## Dispatching experts

JICA dispatched 3,503 experts of disaster management, of which 2,421 were assigned to Asia (69.1%), 507 to Central and South America (14.5%) and 463 to the Middle East (13.2%).

2,268 experts (64.7%) were assigned for the earthquake management. 397 experts (11.3%) were assigned for flood control and 260 (7.4%) for general disaster management.

## Receiving trainees

JICA accepted 3,412 trainees, 1,103 (32.3%) from the Middle East, 1,046 (30.7%) from Asia and 838 (24.6%) from Central and South America.

Approximately half of the participants, 1,632 (47.8%), received training in the earthquake management, followed by 518 (15.2%) in general disaster management.

Note: As amounts and percentages are rounded-off, they may not match their total. Expenditures in dollars are calculated by converting the yen amount at the exchange rate of US\$1=116.4 yen as designated by DAC for 2006.