1-5 Promoting Total Disaster Risk Management (TDRM)

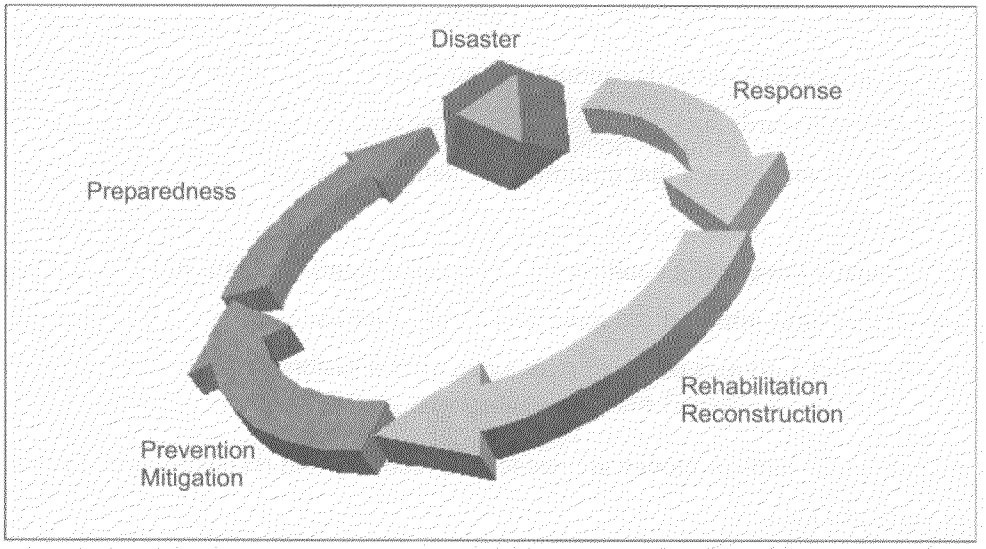
The disaster risk management cycle consists of (1) prevention/mitigation, such as retrofitting buildings and constructing dams and other facilities, (2) preparedness, which includes implementing emergency drills and distributing hazard maps to local residents, (3) response, consisting of emergency rescue and relief efforts immediately after disasters, and (4) rehabilitation/reconstruction.

It is important to take appropriate measures at each phase of this cycle rather than focusing only on the emergency response phase after disasters. As stated above, "mitigation" efforts made in advance to minimize damage are of crucial importance.

It is also important that TDRM is not handled by different organizations, such as national governments, local governments, communities, NPOs, academic societies, schools, private sectors, and other institutions, but that all of these sectors work together to address disasters

Relevant institutions must cooperate with each other to promote the TDRM, which addresses each phase of the disaster risk management cycle.

Figure 1-7 Disaster Risk Management Cycle



-COLUMN Examples of Disaster Risk Management Phases-

Examples of Prevention/Mitigation Efforts

(1) The Vietnam Red Cross Society

Vietnam is prone to typhoons, which caused 6,000 deaths and economic losses of about $2.3 billion from 1996 to 2002. It is against this backdrop that the Vietnam Red Cross Society, in cooperation with the Japanese Red Cross Society, began a mangrove plantation project in 1994, in order to combat the high tides whipped up by typhoons and to protect the coastal environment The major goals of the program were to secure embankments, protect people's lives and property, improve the coastal environment, create employment opportunities, and increase income among the poor.

As of December 2003, 18,000 ha of mangroves had been planted under this program, protecting more than 100 km of embankments. As a result, coastal erosion is beginning to wane, and annual costs for repairing embankments have been held down by about 600 million to 700 million Vietnam dong (approx. US$37,000 to US$43,000)

In the eight northern provinces, more than 7,750 impoverished families were involved in planting mangroves, allowing them to secure an income of about US$20 or more per household. Training was provided to about 10,000 people. As many as 3,000 elementary school teachers have undergone this training, and they in turn have educated approximately 174,000 students about disaster reduction. Animal and plant diversity was promoted in the mangrove forests, helping to improve the natural environment along the coast. The mangrove plantation project and other related projects improved the quality of life for people who live in the traditionally impoverished coastal areas, generating substantial economic effects. Four hundred and eighty two new houses have been constructed with a view to typhoon resiliency. In addition, local residents have been able to use the ponds protected by the mangrove forests to earn extra income from crab and shrimp cultivation.

Two typhoons struck northern Vietnam in July and August 2003, but resulted in only four deaths. With no damage to fields caused by the flood, the effectiveness of the mangrove plantation project in protecting people from high tides was clearly demonstrated. The effects of the mangrove plantation project and its advantages for local communities are immeasurable.

(2) The Tokio Marine and Fire Insurance Co., Ltd (Tokio Marine)

Similar efforts have been undertaken by the Japanese private sector, including one by the Tokio Marine and Fire Insurance Co., Ltd. Under a mangrove plantation project

undertaken in partnership with two NGOs, Tokio Marine & Fire Insurance has not only provided support for project costs, but also conducts the Mangrove Planting Volunteer Asia Program twice a year. Using a volunteer holiday system, this program allows employees to participate with local people as volunteers in the mangrove plantation process. A total of about 3,000 ha were forested with mangroves in five Southeast Asian countries including Vietnam between 1999 and March 2003

Fully grown mangrove forest

Sources: Vietnam Red Cross Society, Tokio Marine & Fire Insurance Co , Ltd

Examples of Disaster Preparedness

A massive cyclone that struck Bangladesh in 1970 killed as many as 500,000 people. Following this disaster, the International Federation of Red Cross and Red Crescent Societies (IFRC), the Bangladesh Red Crescent Society, and the Government of Bangladesh launched the Cyclone Preparedness Programme (CPP) The CPP's Dhaka headquarters and 143 wireless stations comprise Asia's largest wireless network, and 33,000 volunteers in local villages use megaphones and hand-cranked sirens to transmit the warnings received over this wireless system to villagers These volunteers are also well trained in providing humanitarian relief, getting people to the 1,600 shelters that have been established along the coast, providing first aid and assessing the impact of cyclones. Volunteers regularly conduct simulation drills and hold meetings to raise awareness and disseminate information for disaster reduction.

In May 1997, a massive cyclone with wind velocity exceeding 60 m/sec., the same scale as the 1970 cyclone, struck Bangladesh. This time, the CPP network was used to advise people to evacuate, allowing one million people to take refuge in shelters before the cyclone hit This reduced the number of casualties to 193. It was preparedness that enabled this dramatic reduction in the impact of disasters in comparison with the previous catastrophe.

Evacuation drills for the Cyclone Preparedness Programme are held in Bangladesh.
Sources: World Disasters Report, IFRC

Examples of Disaster Response

The earthquake that struck Bam, Iran, on December 26, 2003, toppled 25,000 public buildings and houses, 80% of the total buildings in the city, and left more than 30,000 dead. The Iranian government immediately asked the international community for assistance, and the next day the United Nations established UN reception centres at the Bam and Kerman airports to facilitate the arrival of overseas support teams In addition to the United Nations Disaster Assessment and Coordination (UNDAC) team, relief teams from various countries including the Japan Disaster Relief Medical Team, Red Cross and Red Crescent Societies, and NGOs, quickly undertook relief activities based on the framework of the International Search and Rescue Advisory Group (INSARAG) established following the 1988 earthquake in Armenia.

The prompt response of the international community in this situation demonstrates the effectiveness of the cooperative structure that has been established by the UN Office for the Coordination of Humanitarian Affairs (UN/OCHA) for disaster response. In spite of the dynamic cooperative structure, there are limits to the number of people that can be rescued or assisted by international teams

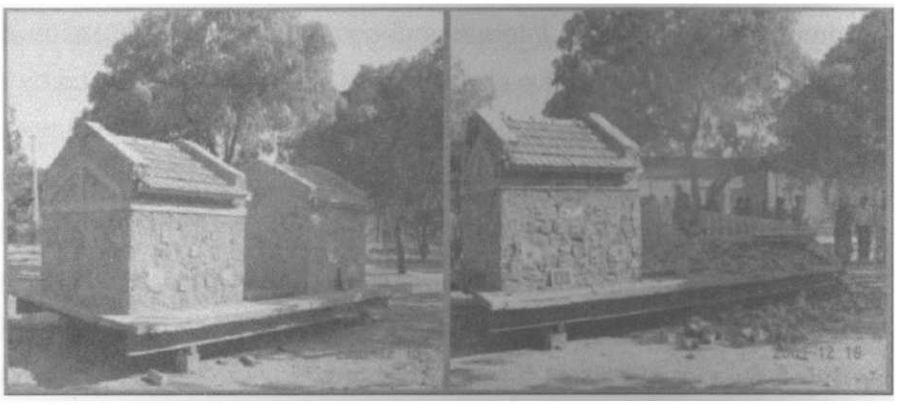
In the 1999 Marmara Earthquake in Turkey, 50,000 people were rescued from the rubble. However, 98% of those rescues were carried out by local community members, which revealed the clear limits of support from outside. In this regard, great importance is placed on self-help and mutual cooperation in community in the phase of disaster response.

Downtown Bam, Iran suffered catastrophic damage

Sources: Japan International Cooperation Agency (JICA), UN/OCHA, IFRC,Disaster Reduction and Human Renovation Institution (DRI)

Example of Rehabilitation

The earthquake that shook Gujarat, India, in January 2001 claimed 14,000 lives. Many of those who died were trapped in the debris of vulnerable buildings that collapsed in the earthquake. By training 26,000 stonemasons, the Gujarat State has been promoting the construction of earthquake-resistant buildings, as well as the utilization of traditional methods, with the support of the central government, international organizations and NGOs. Using the recovery process to prepare for future disasters will help reduce the damage caused by future disasters.



A shaking table illustrates the difference between an existing building and a retrofitted structure, in a demonstration targeted at stonemasons (Gujarat, India).
The traditional unreinforced structure on the right collapses, but the retrofitted structure on the left does not.

Sources: Disaster Mitigation Institute in India, UN Centre for Regional Development (UNCRD) Hyogo Office, Earthquake Disaster Mitigation Research Center (EDM)