

The shake-table test demonstration had two components: (1) training masons by involving them in preparing the model houses, and (2) demonstration of the test in a public exhibition. Two 1/10th scale building models were prepared by local masons under the supervision of expert masons from Nepal. Of the two similar models, one was constructed by using conventional local methods without any earthquake-resistant features, and the other was an improved version of the same building with simple earthquake-resistant elements such as vertical reinforcements at corners and junctions and horizontal bands at various levels. Both model buildings were built in the typical local style prevalent in Bam.

During the process of constructing the models, which took about one month, local masons were trained on the job in earthquake-resistant systems. At the time of the test demonstration, those masons and other technicians, engineers, students and teachers, local government officers, NGO workers, community leaders, government officers and ordinary people were present. In the demonstration, the two buildings were subjected to a number of cycles of shaking as if they were experiencing the tremors of an earthquake. During this shaking, cracks began to appear in the conventional building, which increased along with the level of shaking and eventually led to its complete collapse. However, the model building with earthquake-resistant elements was in no damage and remained in position after the other one had already collapsed.

The demonstrations were found to be extremely effective in convincing common people, local craftsmen and the authorities of the importance of including earthquake-resistant features in housing construction. Most importantly, the demonstrations increased the confidence of people preparing to build houses in the simple techniques of making housing safer.



(a) Before shaking



(b) During shaking

Figure 2: Improvised shaking table demonstration

- Background

Over 70% of the houses in Bam are reported to have been destroyed in the last earthquake that occurred on December 26, 2003. The collapse of houses is considered to be one cause of the high number of casualties and injuries. People have realized that earthquake-caused disasters can only be reduced if people are well informed and motivated with regard to a culture of safety, and this requires confidence-building among citizens on the use of earthquake-resistant techniques.

- Objectives

The objective of the project were

- to impress upon people the consequences of living in seismically unsafe houses;
- to enhance their understanding of the performance of simple structures with and without earthquake-resistant features under the impact of an earthquake;
- to build peoples' confidence in earthquake-resistant building technologies, including the retrofitting of existing houses.

- Time Frame

August 2004-November 2004

- Activities Undertaken

- On-the-job training of masons on earthquake-resistant construction of residential buildings.
- Improvised public shake-table test demonstration on a pair of models, one conventional and another improved with earthquake-resistant elements.
- One-day workshop on promoting safer housing in Bam.

- Major Achievements

- Trained masons for earthquake-resistant construction.
- Raised public awareness on safety of houses.

The most important achievement was the promotion of culture of safety during the rehabilitation process of Bam City.

- Total Budget

US\$ 20,000 (Twenty thousand US\$)

- Contact Details

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3.2 Good Practices in Application Strategy

3.2.1 Establishment of Coordination Mechanisms and a Legal Framework for Disaster Risk Management

Coordination and Collaboration between Government and NGOs for Strengthening Disaster Reduction and Response: The India (Orissa) Experience

The 1999 Cyclone

On 14th October 1999, the southern coastal districts of Orissa suffered a cyclone that killed over 50 people. Hardly had the people heaved a sigh of relief when another cyclone struck on 29th October: this time, a super cyclone. The devastating cyclone killed 8,931 people and 440,000 livestock.

NGO Response to 1999 Cyclone

Numerous NGOs participated in the emergency response process and supplemented the efforts by the state government. About 40 local, national, and international NGOs joined hands to form an emergency response network called the Orissa Disaster Mitigation Mission (ODMM). It set up an emergency control room to coordinate relief and restoration works by member NGOs. In addition, the ODMM control room also brought out daily bulletins at regular intervals to share information with the state government. Another NGO network called Orissa Disaster Action Forum (ODAF) formed earlier was also active in emergency response.

Immediate Food Relief and Habitat Restoration: Disaster-response NGO networks ran community kitchens to provide cyclone victims with cooked food. Habitat restoration activities were also initiated to restore the affected villages to a habitable condition through clearing village roads and schools, disinfecting ponds, renovating wells, and disposing of carcasses.

Emergency medical response: NGOs mobilized doctors and paramedical workers to set up mobile health camps and treated hundreds of patients every day. Preventive measures such as distributing medicine and giving health tips to people by organizing community health awareness camps supplemented the curative health care initiatives.

Rejuvenating Spirits and Raising Awareness. Some NGOs adopted innovative means of raising people's spirits that had been depressed by death and devastation through organizing street theatres and participatory cultural shows. ODMM member NGOs ran Trauma Care Centers in the worst affected villages. NGOs such as Adhikar and ODMM members ran Legal Aid Centers to sensitize people who had showed little interest in restoration activities about their legal entitlements and help them receive compensation offered by the government.

Volunteer Mobilization. NGOs facilitated the voluntary participation of citizens. The ODMM set up a Volunteers Hub to coordinate volunteers' engagement in relief activities.

Food for Work: NGOs initiated Food for Work programs to provide people with temporary food security and to facilitate restoration and creation of community infrastructure and facilities such as canals, earthen check-dams, and village roads.

Child Centered Initiatives: Some NGOs took initiatives to bring school children back to the classroom by setting up temporary sheds and providing text books. Community day care centers for orphaned children were set up where widows and single women worked.

Social Mobilization and Group Formation: NGOs facilitated formation of village committees to decide future courses of action and monitor all rehabilitation initiatives. They also formed functional groups such as women's, farmers', water users, and youth groups to take specific developmental initiatives.

Livelihood Restoration: Major NGOs supported farmers by providing seeds, implements, tillage, irrigation facilities, and training to facilitate early revival of the agricultural cycle. Other NGOs facilitated income-generating activities by artisans, craftspeople, and the poor.

Micro-Credit and Women Self-Help Groups (SHGs): NGOs facilitated formation of women SHGs, which receive skills training for embarking on income-generating activities such as setting up vegetable nurseries, making incense sticks, and tailoring.

Plantations: NGOs strongly emphasized plantation activities with support from the government and other resource by providing seedlings and earmarking land.

Individual Dwelling Units: NGOs distributed temporary shelter building materials and facilitated community construction of low-cost temporary dwelling units for destitute families headed by women.

Community-Based Disaster Preparedness: NGOs constructed over 60 schools-cum-cyclone shelters, which supplement government initiatives for disaster preparedness.

Learning from Mistakes. There was no institutional mechanism for information sharing and regular consultation between the government and NGOs. The government had its own priorities in catering to all victims whereas NGOs were able to take community-based localized initiatives. Competition among so many NGOs led to substantial confusion. To address such problems, the NGO Coordination Cell was quickly set up with one Secretary facilitating the interface between NGOs and governmental departments. The process provided the basis for institutionalized GO-NGO coordination for emergency preparedness and response through the Orissa State Disaster Mitigation Authority (OSDMA), the autonomous nodal agency for coordinating efforts relating to disaster response, preparedness, and reduction created space for stronger institutional coordination with NGOs.

- Background

Till recently, the role of NGOs in disaster response was restricted to localized relief distribution in Orissa. NGOs emerged in large numbers in the 1980's and mainly worked with the poor, but the twin cyclones of 1999 radically changed the scenario.

- Objective

To effectively undertake response activities with support of NGOs' long experience of working with poor and vulnerable communities, ability to mobilize people for micro-level development initiatives and understanding of people's concerns and priorities.

- Term/Time Frame

After the Super Cyclone Orissa struck the state on 29th October 1999.

- Activities Undertaken

Response activities undertaken by NGOs include:

In the immediate phase: emergency food relief, disposal of human corpses, animal carcasses, supply of temporary shelter materials and utensils, emergency medical check up and distribution of medicine, sanitation and drinking water, trauma care and psychological counseling, awareness raising and rejuvenating community spirit for reconstruction.

The second phase: food security, restoration and creation of community assets, revival of learning process, social mobilization and group formation.

The final phase: livelihood restoration, construction of multi-purpose schools cum cyclone shelters, and community based disaster preparedness.

- Major Achievements

The initiatives conducted by NGOs on issues of livelihood, community organization, community asset creation etc. have facilitated quick social and economic recovery after the devastating disaster.

- Total Budget

N/A

- Contact Details

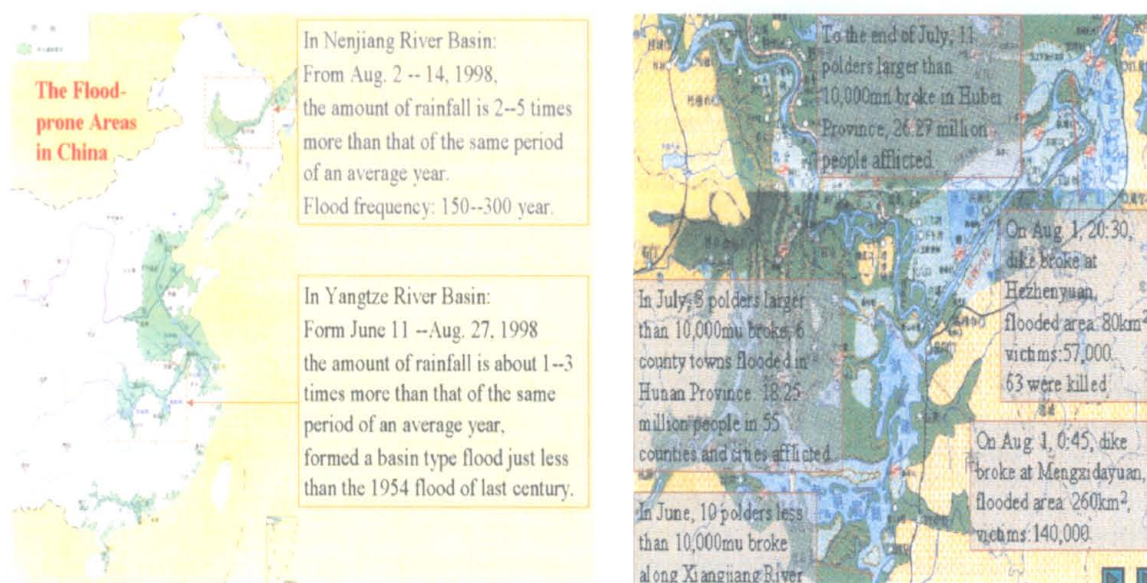
Aurobindo Behera, Managing Director, Orissa State Disaster Management Authority, India

3.2.2 Integration of Disaster Reduction Concepts into Development Planning

China

Case Study: Policies and Measures on Flood Disaster Reduction in China since 1998

China is a country that suffers from frequent floods. In 1998 flooding along the Yangtze River and Songhua River caused severe loss of life and property and caused billions of dollars-worth of economic loss to the country. In 2002, there was heavy rainfall in Hunan Province. Unlike other years, however, there was no disaster other than flood. A study financed by UNDP has reviewed government practices including policies and measures for flood control in China after the 1998 floods, as well as those supported by the international donor community.



In response to the floods, the State Council made timely proposals for several strategies for flood prevention and control. These include the following series of policies and measures: enclosing mountains to plant trees, transforming land back into forests, demolishing polder fields to channel flood water, transforming farmland back into lake, supplying laid-off laborers for reconstruction, relocating people to form new townships, reinforcing key dykes and dredging river beds.

This case study discovered that enhancement of the basic infrastructure and the improvement of flood-defense capability have not only offered a reliable flood prevention system and safety for the riparian people, but also significantly improved the entire social-economic development of the areas formerly threatened by flood disasters.

The report concludes that five changes have resulted for people in flood-prone areas due to these flood control measures. (1) The flood defense capability of the lower and middle parts of the rivers has increased. (2) The benefits are far greater than the investment. (3) Local socio-economic development is effectively booming. (4) The income of local people has increased. (5) These flood control measures promoted harmonious coexistence between human beings and nature.