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## **Community Capacity Building for Minimising Adverse Tsunami Impacts in Sri Lanka: Experience of Disaster Management Centre, Sri Lanka**

### Sri Lanka I

#### **Main Story:**

In the aftermath of the 2004 tsunami, an immediate concern was whether the vulnerable communities in coastal areas had been adequately made aware of how to act if another tsunami hits the country. As a solution the government decided to initiate Community Awareness Programmes to minimise adverse tsunami impacts in the coastal areas through the Disaster Management Centre (DMC).

The strategy adopted by DMC was to establish District Disaster Management Coordinating Units (DDMCUs) to work with the district administrative system in the tsunami-affected districts and implement a massive community awareness programme. A decision was taken to deploy about 225 officers and instructors from the Sri Lanka Army, Navy and Air Force and Police Special Task Force (STF) to these District DM Units.

As their immediate role was to conduct awareness programmes to community groups, they had to be trained as trainers. The training covered an overview of DM, community-based disaster management, raising community awareness and community mapping.

The training was followed by the formation of the DDMCUs in 9 tsunami-prone districts - Colombo, Gampaha, Kalutara, Galle, Matara, Hambantota, Puttalam, Trincomalle and Ampara. Senior-level military/police officers were placed as coordinators in each of the districts with 20 - 25 junior officers as assistant coordinators to assist them in these activities. Officers from the Air Force were deployed to 2 districts, from the Navy to 1 district, from the Police to 1 district, and from the Army to the remaining 5 districts.

For the community awareness programmes to be effective, officials of the district administrative bodies, including district-, division-and village-level officials, had to be given knowledge about tsunamis and the proposed community awareness programmes, as their support was essential for the success of the programme. The need to establish district-, division-and village-level Disaster Management Committees and Sub Committees was stressed at these awareness workshops.

The District DM Coordinating Units organised and implemented the following activities:

- Initial Awareness Programme aimed at the community, including the distribution of tsunami leaflets, information on how warnings will be disseminated and, where possible, the preparation of map sketches showing safe evacuation shelter locations and safe evacuation routes
- Second programme (as needed) to complete the preparation of community maps
- Mock evacuation drills with simulation of warnings.

It was clear that the strategy adopted by the DMC to employ personnel from the military forces was extremely effective and successful. This was vividly seen during the tsunami alert on 12 September 2007, during which people in coastal areas were effectively evacuated to safe shelters identified earlier in the community awareness programmes. From this it is evident that the public and the government can be confident that communities in vulnerable coastal areas will be able to be evacuated in a timely and effective manner in the face of a future threat. The success can be attributed to several factors, namely,

- i. Effectiveness of community capacity-building programmes
- ii. DM training imparted to the officials of District Coordinating Units on how to raise awareness and work with communities, and

iii. The deployment of officers and instructors from the Military Forces and Police Department to the District Coordinating Units, which achieved maximum results.



Tsunami hitting the Galle District in December 2004



Community members developing a community map at a Hazard Mapping Workshop in Galle District in January 2006



Tsunami evacuation drill in Gampaha district



Tsunami evacuation drill in Colombo district

**Information for readers to search**

**Background:**

Sri Lanka is affected by several types of natural hazards. The more significant ones according to frequency of occurrence and severity of impact include floods, cyclones, droughts, landslides and coastal erosion. More localized hazards such as lightning strikes, epidemics and hazards related to environmental pollution also affect pockets of the population from time to time. The Indian Ocean tsunami of December 2004 highlighted the vulnerability of Sri Lanka to such low-frequency but high-impact events.

In May 2005 in the aftermath of the 2004 tsunami, the Sri Lanka Disaster Management Act was enacted by Parliament. Consequently, in July 2005, the Disaster Management Centre (DMC) was established as the lead agency on disaster risk management in the country, under the National Council for Disaster Management (NCDM).

To achieve maximum results, the government decided to staff the district units with military personnel, which turned out to be a wise decision.

**Objective:**

Creating awareness among vulnerable communities to minimise the impact of tsunamis on coastal areas of the country

**Time Frame:**

Phase 1: November 2005 to December 2005

Phase 2: January 2006 to March 2006

**Activities undertaken:**

i. Training of Trainers (ToT): As the immediate role of trainers was to conduct awareness programmes for community groups, the objective of training was to provide them with:

- A knowledge of disaster management (DM)--both general and specific to tsunamis--adequate for conducting the awareness programmes
- An understanding of community-based preparedness activities such as community mapping, identifying safe evacuation shelter locations and safe evacuation routes, preparing an evacuation plans, and conducting evacuation drills
- The methodology for conducting the different activities of the awareness programme to obtain good community participation.

To cover the total target group, six 3-day Training of Trainers (TOT) courses were immediately organised. Owing to the urgency of commencing the community awareness programmes, these courses had to be completed at the earliest possible time. With this in view, 3 resource teams were established for each day of the course and each day's sessions were organised in such a manner that each resource team would undertake the sessions of the relevant day in one course and move on to the next course the following day (as in the Line-of-Balance technique).

The course was designed to cover the following :

- Overview of DM and related terminology and current state of DM in Sri Lanka
- Paradigm shift in managing disasters from traditionally dominant approach, i.e., shift from emergency management to risk management and considering the community as a resource and not a victim
- Community-based approaches and community-based disaster management
- Introduction to and consideration of community-based risk assessment and community perception of risk
- Community-based vulnerabilities and capacity assessment
- Tsunami hazards - early warning methods; early warning dissemination; and evacuation
- Community awareness and community-level planning for evacuation
- Group activities for community involvement in developing plans for tsunami warning dissemination and evacuation, consisting of:
  - i) an outline of the Community Awareness Programme agenda;
  - ii) community involvement in preparing map sketches showing safe evacuation shelter locations and safe evacuation routes;

- iii) organisation of tsunami evacuation drills for the community;
- iv) group presentations and discussions.

The training methodology adopted consisted of lectures using Power Point presentations, video presentations, discussions encouraging two-way communication, group activities, and role playing. Local languages were used as the medium of communication.

- ii. The training was followed by the formation of the DDMCUs in 9 tsunami-prone districts - Colombo, Gampaha, Kalutara, Galle, Matara, Hambantota, Puttalam, Trincomalle and Ampara – with senior level military/ police officers as coordinators in each of the districts and around 20 junior officers as assistant coordinators to assist them in these activities.
- iii. Development and printing of tsunami leaflets in English, Sinhala and Tamil (one million copies) for distribution during the awareness programmes.
- iv. Organisation and implementation of,
  - Initial Awareness Programme for the community, including warning dissemination system and, where possible, the preparation of map sketches showing safe evacuation shelter locations and safe evacuation routes
  - Second programme (as needed) to complete the preparation of community maps
  - Mock evacuation drills with simulation of warnings.

**Major achievements:**

- Effective awareness creation among vulnerable coastal communities for evacuation in a timely and effective manner in the event of a future threat
- Village-level community maps showing safe evacuation routes in the event of a tsunami

**Total Budget:**

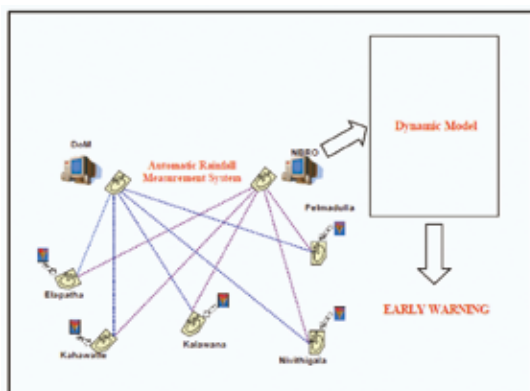
Funds allocated by the DMC for Phases 1 & 2 totaled approximately 20,218,500 Sri Lanka rupees (US\$225,000).

## Internalisation of Disaster Safety Message in a Community: A Case of Safety from Landslides

### Sri Lanka II

#### Main Story

In 2007, the Disaster Management Centre (DMC) implemented a landslide early warning system on a demonstration basis with the idea of replicating the system depending on its success. The National Building Research Organization (NBRO) and the Department of Meteorology also collaborated in this project. Automatic rain gauges were located at five selected locations in Ratnapura District, and the rainfall data were fed via SMS directly to a dynamic computer model developed by NBRO. This allowed early warnings of possible landslides to be disseminated to specific locations.



Landslide Early Warning System Diagram



Map of the 5 Divisional Administration Areas

One part of this project was community capacity-building through participation in hazard mapping, identification of safe routes and safe areas and participation in mock drills.

During these community activities, it came to light that most escape routes became flooded within a few hours of the start of rain, even before an early warning could be issued. At Elapatha, a structural intervention appeared necessary to cross the flood-prone passage across a waterway, so a suspension bridge was constructed at the appropriate location.

A visible sign of concern for its safety, the bridge catalyzed the community to pick up on the safety message. The community members formed their own organisation and conducted mock drills on their own to make sure all community members became aware of which evacuation route to use when an early warning was issued. The last mile took ownership of its safety.

The lesson learnt is that concrete measures, and not just awareness creation, can facilitate the internalization of a safety message through the conviction brought about by visible on-site action on the part of the Disaster Management Centre.



Traditional communication systems in villages

Public Announcements through Radio, TV



Public Announcements through Radio, TV



Evacuation Drill

**Information for readers to search**

**Background**

Almost all landslides in Sri Lanka that have been investigated to date are known to be rain-induced. Therefore, this project was proposed to investigate the possibility of interpreting landslide events in terms of the rainfall patterns immediately preceding the slide event. Statistical information on threshold values of rainfall that trigger landslides are obtained by analyzing rainfall patterns and can be deployed as regional early warning indicators.

This rainfall value is not the same throughout the country due to the differences in existing soil characteristics and climatological patterns in different areas of the country. Therefore, a complete study of the rainfall patterns in landslide-prone areas and their records of landslides will help to predict reasonable threshold values of rainfall and use them as a tool for landslide forecasting.

Threshold values of rainfall in most parts of landslide-prone districts have been already identified, but using these values to forecast landslides is not yet feasible due to the following reasons:

- a. Lack of community awareness about the rainfall threshold value
- b. Lack of facilities to measure rainfall, especially at the village level.

Therefore, proper awareness of critical rainfall values and quantitative measuring of rainfall are useful for forecasting landslides, especially at the village level. By providing villages with simple rain gauges and the training necessary to use them, they can assess their risk by analysing rainfall records during a rainy period.

**Objectives:**

- Establishment of an early warning mechanism for landslides (with the idea of replicating it at the national level in the future)
- Strengthening the dissemination of early warning mechanisms to communities, with community participation
- Frequent coordination between the expert organisations and communities for prompt action before and after a disaster.

**Time Frame:** 2 years commencing January 2006

**Activities undertaken:**

- i. With UNDP assistance, 5 automatic rain gauges manufactured by ITI have been installed at selected locations in Kahawatta, Pelmadulla, Nivithigala, Elapatha, and Kalawana Divisions.
- ii. The real-time rainfall readings taken at the above stations are received by both NBRO and the Met Dept. NBRO is using this data to issue early warnings based on the threshold values.

- iii. Programmes have been conducted to create awareness among the communities in the above areas about the advantages of the early warning system in safeguarding them from landslides. Evacuation areas have also been identified and community groups have been appointed to take care of the installed rain gauges.
- iv. A computer-based early warning model is being developed by NBRO for issuing early warnings at the national level.

**Major achievements:**

- Community participation in the dissemination of early warnings to communities
- Internalisation of disaster safety message in a community through concrete mitigation measures
- Ability to read rainfall gauges in real time and issue early warnings in time, and availability of rainfall data for further research

**Some problems noted:**

Some problems were noted and are being corrected at present:

- Rainfall readings taken from the rain gauges are disseminated through SMS. However, on certain days, the required automatic modem registration does not happen with the current SMS service, and as a result NBRO and Meteorology Department are not receiving the rainfall data.
- Monthly cost of SMS service is high

**Total Budget:**

Funds allocated were approximately 250,000 Sri Lanka rupees (US\$25,000)