

Bridging the 'Last Mile'

Building grassroots capacity for disaster warning and preparedness in Sri Lanka

An analysis of the Asian Tsunami of December 2004 showed that thousands of lives could have been saved if Sri Lanka and other affected countries had effective warning systems in place at national and local levels.

Institutional, technological and societal failures combined to prevent timely sharing of information even within countries. For example, the tsunami progressively pounded the tear drop shaped island of Sri Lanka for nearly four hours - starting at around 8.30 in the morning on the east coast. If only the rest of the island had been alerted soon afterwards, coastal evacuation could have significantly reduced the death toll elsewhere. But it didn't happen.

In the wake of the tsunami, the United Nations and development donors initiated an inter-governmental process to build a high-tech tsunami early warning system in the Indian Ocean, to be operational by 2007. But even the most advanced early warning system can *only do half the job*: alert countries at risk about an impending disaster. The far bigger challenge is to effectively and credibly *disseminate* that warning to largest number of people in the shortest possible time.

How can we cover that all-important 'last mile'?

What communications and community tools, methods and processes are the most effective in accomplishing this?

The Last Mile Hazard Information Dissemination Project is a multi-partner, civil society initiative to complement other action being taken at national and regional levels. It brings together four Sri Lanka-based organizations that value the role of information, communication and community mobilization in disaster preparedness and management.

Better prepared next time!



"The Asian Tsunami's death toll could have been drastically reduced if the warning - already known to scientists - was disseminated quickly and

effectively to millions of coastal dwellers along the Indian Ocean rim. It is appalling that our sophisticated global communications systems simply failed us that fateful day.

"The best tribute to all who perished or suffered in this disaster is to heed its powerful lessons. We need to address the long-term issues of better disaster preparedness, functional early warning systems and realistic arrangements to cope with tsunamis and a multitude of other hazards. It is imperative that we improve our monitoring and early warning systems, but we must also put in place a fail-proof plan to sound the alarm as and when necessary."

- Sir Arthur C Clarke; on the first anniversary of the Asian Tsunami

This action research project is built on partnerships involving research, civil society, corporate and media organizations who share a commitment to supporting disaster resilient communities.

Lead partners:

LIRNEasia, www.lirneasia.net

Sarvodaya, www.sarvodaya.org

TVE Asia Pacific, www.tveap.org

Dialog Telekom, www.dialog.lk

Media partner:

Vanguard Foundation, www.lankabusinessonline.com/aboutus.php

Technology partner:

WorldSpace Corporation, www.worldspace.com

Funding partner: International Development Research Centre (IDRC), Canada, www.idrc.ca

Community outreach vital



"Bangladesh learned about the value of these things in 1970 when a cyclone resulted in more than 300,000 deaths. The government and people

subsequently put in place effective early warning and preparedness measures involving modern cyclone-forecasting systems and more than 5,000 people to get the message to the villages.

"When a cyclone of similar force struck in 1997, 200 people were killed, which brings up to mind a point I want to make. The interesting thing to me is what Bangladesh did to marry old-fashioned communication with modern technology, the so-called 'last mile' of the early warning system. It's something that we dare not forget in our UN work for the tsunami..."

"All the sophisticated technology won't matter if we don't reach real communities and people. Satellites, buoys, data networks will make us safer, but we must invest in the training, the institution building, the awareness raising on the ground."

- President Bill Clinton, UN Special Envoy for Tsunami Recovery, speaking at the Third International Early Warning Conference in Bonn, Germany, March 2006.

Highlights of the speech at:

<http://www.alertnet.org/thefacts/reli efresources/114372361721.htm>

Understanding the challenge

The project partners, between them, count several decades of experience in community mobilization, participatory development, communicating for development and participatory policy formulation. However, they don't set out on this project knowing all the factors and processes involved.

As an action research initiative, this project will study, experiment and understand which information and communications technologies (ICTs) and community mobilization methods will work most effectively in disseminating information on hazards faced by Sri Lanka coastal communities.

The exercise is not confined to tsunamis alone; among the other hazards addressed are coastal erosion, cyclones, drought and floods.

First phase

Focusing on the crucial 'last mile' dissemination, the project will:

- test different ICTs to deliver timely warnings to local people immediately at risk; and
- build community capacity to respond to such warnings rapidly and systematically.

In the first phase, the project will involve 32 selected villages from eastern, western, northern and southern coastal areas of Sri Lanka - all impacted by the Asian Tsunami. Different combinations of ICTs and community mobilization will be tested out in the participating villages.

Beyond the first phase

Based on the project's findings, the partners will identify the optimum combinations of technology, training and community mobilization that could help Sri Lankan communities to receive hazard warnings and disseminate them locally.

The project partners hope this will pave the way for providing disaster mitigation training and last-mile connectivity to all coastal villages and eventually to every village in Sri Lanka, making them disaster resilient. As Sri Lanka's largest development organization, working in 15,000 villages, Sarvodaya has a particular interest in this project. It hopes this project will lay the groundwork for giving all Sarvodaya villages necessary skills and training to effectively handle warnings on a multitude of hazards.



“Effective warning can prevent much economic loss to individuals, businesses and industries by enabling them to prepare for and mitigate the impacts of hazards that may affect them. The lack of mechanisms for early warnings can harm investor and business confidence and hence stifle economic development.

“Added to this, early public warning protects the poor, given that the sectors of the economy most vulnerable to disaster are often the poorest. It is heartening that advanced hazard detection and monitoring systems are now being established across the Indian Ocean. What is now a priority is effective national action to establish last-mile warning systems, along with awareness and response programmes.”

- Dr Rohan Samarajiva, Executive Director, LIRNEasia

“One of the biggest lessons we learned from the Tsunami was how lacking Sri Lanka was in terms of an emergency warning system. The most tragic aspect of the events of 26 December 2004 was the needless loss of life. This project seeks to prepare our villages from the ground-up to become disaster-resilient. When the official warnings come, the villages will be ready to receive them and act on them promptly.”

- Dr Vinya Ariyaratne, Executive Director, Sarvodaya

“As a regional communications organization working on development, we were astounded that the Asian Tsunami arrived without any public warning. This happened in spite of mass media and ICT proliferation in Asia, which showed that better management of information is critical. This project goes further, by building community capacity to respond to hazard information and warnings.”

- Nalaka Gunawardene, Director/CEO, TVE Asia Pacific

Training and community mobilization

The project will initially train 30 youth leaders of Sarvodaya Shanti Sena (Peace Brigade) -- a youth force of over 100,000 dedicated to peace building and community development.

The training, customized by TVE Asia Pacific, will sensitise them on disaster education and preparedness, covering topics such as:

- understanding vulnerability and hazards;
- community-based hazard identification using Participatory Rural Appraisal (PRA) techniques;
- communicating risks and hazards;
- understanding and responding to early warnings; and
- community response planning.

This training is delivered through multi-media presentations, group activities, field work and simulations by Sri Lankan experts with regional and international experience on disaster management and disaster education. They will draw from material produced by TVE Asia Pacific, Open University of Sri Lanka, the Asian Disaster Preparedness Centre (ADPC) and others.

The youth leaders thus trained will return to their areas to mobilize one or more coastal villages. Each community will determine, through a participatory process, the most appropriate methods to communicate disaster warnings they receive.

Parallel to this, Sarvodaya is setting up a Hazard Information Hub at its headquarters in Moratuwa, just south of Colombo. It will maintain close links with official disaster warning agencies of the government.

“Sarvodaya will rely on designated governmental authorities to issue a specific warning on impending disasters,” says Ravi Kandage, Coordinator of Sarvodaya Shanti Sena. “We will seek, receive and amplify such warnings to Sarvodaya villages.”

After a few months of community training and mobilization, the project will test and evaluate the preparedness and the response capacity of villagers to a carefully simulated disaster warning. The efficacy of different ICTs will also be tested at that time.

United against disasters

This project has brought together civil society, media, research and corporate partners working at national or regional levels. The lead partners and technology partners are listed on page one. In addition, Dr. Gordon Gow, a disaster communication expert at the University of Alberta, Edmonton, Canada, is involved. There is scope for other like-minded research, corporate and civil society partners to join the project.

Assessing the role of communications technologies

The project will evaluate the role played by several factors that contribute to the design of an effective last mile hazard information dissemination system. These are:

- Reliability and effectiveness of various ICTs as warning technologies;
- How community training influences effective warning responses;
- Contribution of the level of organizational development of a village to an effective warning response; and
- Gender-specific response to hazard mitigating action;

Some ICTs applied in this project have been in public use for years or decades -- fixed phones, mobile phones and VSATs. The project will also see the pioneering use of two ICT innovations profiled below.

Testing ICTs for early warning

The participating villages are being provided with different configurations of training and information and communication technologies. The ICTs being investigated in this project are:

- Very Small Aperture Satellites (VSATs);
- Disaster Warning Response & Recovery (DWRR) units based on addressable satellite radio
- fixed telephones;
- mobile telephones; and
- GSM-based disaster communication devices.

Targeted early warning via satellite radio



The Disaster Warning Response and Recovery (DWRR) system was launched in January 2006 by Raytheon and WorldSpace corporations. Our project is one of its first field applications.

Under normal circumstances, the

DWRR units work as radio sets, receiving digital radio transmissions from WorldSpace satellites. But they are capable of much more. For one thing, they can be switched on remotely from a central location, whether or not the user has turned it on at that moment. This converts them instantly to a hazard alert system. Moreover, focused warnings can be addressed directly to those communities immediately at risk from hazards like tsunamis, cyclones, floods, dam breaches, etc.

Each radio has an in-built Global Positioning System (GPS) and a unique code. This enables hazard warnings to be issued to those units that are known to be within a vulnerable area -- or just to those units with specific assigned codes. It is also possible to personalize and target the message to the vulnerable communities.

DWRR is the first device to incorporate the Common Alerting Protocol (CAP) - an international standard method to exchange emergency alerts and public warnings among different alerting technologies. CAP will help standardize the collection and relaying of all-hazard warnings and reports locally, nationally and regionally for input into variety of dissemination systems.

The equipment was field tested in Sri Lanka in November 2005, including at several Sarvodaya villages affected by the Tsunami. These specialized radios can be used not only for disaster warning, response and recovery, but also for transmission of information to community information centers for training and education.

Mobile phone as warning device

The Disaster and Emergency Warning device combines the inherent strengths of GSM technology and the widespread access provided by GSM networks. The device has been developed by the leading telecom service provider Dialog Telekom and mobile applications company Microimage at the Dialog-University of Moratuwa Centre for Mobile Communication Research. It is a Sri Lankan technological innovation whose field testing started in late 2005.

For further information and new partnerships, please contact lead project partners:

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