

Oxfam Humanitarian Field Studies

**Disaster Management Policy & Practice:  
Lessons for Government, Civil Society,  
& the Private Sector in Sri Lanka**  
October 2006



## IMPROVING EMERGENCY RESPONSE

The tsunami disaster of December 2004 affected millions of people, dramatically magnifying the challenges that survivors and aid providers face in smaller emergencies elsewhere around the world. In 2005, Oxfam launched a program to investigate social, economic, and health issues that are critical to the recovery of tsunami survivors. Working through partners in universities and institutes in the region, Oxfam is carrying out studies that combine data and perspectives from disaster-affected communities with existing knowledge from related fields. Our goals are to strengthen the programs of Oxfam and other humanitarian aid providers for this and future emergencies, and to improve accountability to those we aim to help. This report is one of a series of summaries of the Oxfam Humanitarian Field Studies.

The research that forms the basis of this report was carried out by the Institute of Policy Studies in Colombo, Sri Lanka. Oxfam funded the project, and Nanditha Hettitantri, Oxfam America's Research and Networking Coordinator for Sri Lanka, provided technical and advisory support. This article, drawn from the original research report written by Malathy Knight-John, Amrit Rajapakse, Kanchana Senanayake, Paul Steele, and Kanchana Wickramasinghe, was composed by Emily Bruno and Martin Masama of the Feinstein International Center at Tufts University.

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## ABSTRACT

The Indian Ocean tsunami of 2004 highlighted glaring deficiencies in Sri Lanka's institutionalized framework of disaster management, which the government had been developing since 1996. This report reviews disaster management in Sri Lanka before and after the tsunami and offers recommendations for reform. The study points to a need for clear lines of responsibility among various actors; greater support for community participation and bottom-up approaches; greater focus on disaster risk prevention; and attention to promoting gender equity and to meeting the needs of communities' most vulnerable members.

## INTRODUCTION

The December 2004 tsunami created an unprecedented disaster in Sri Lanka, leaving more than 35,000 people dead and displacing hundreds of thousands from their homes. Since 1996, the Sri Lankan government has been in the process of developing an institutionalized disaster management framework, but that plan proved unequal to the challenge posed by the tsunami. Since 2004, therefore, disaster management reform has become a high priority in Sri Lanka. However, the multiplicity of organizations involved in disaster management and the sheer range and number of interventions have posed significant challenges to the effectiveness of reform efforts. Lack of clarity about roles and responsibilities of the various actors has caused considerable confusion. An additional concern has been the financial and institutional sustainability of some disaster management interventions.

In August of 2006, Oxfam America commissioned the Institute of Policy Studies (IPS) to review existing policies and practices related to disaster management in Sri Lanka and provide recommendations for reform.

## OBJECTIVES OF THE STUDY

The objectives of the study are twofold: (1) to review and evaluate the existing national disaster management system and policies in Sri Lanka, and (2) to review and investigate disaster management practices at the community level, with a view toward strengthening the country's capacity to deal effectively with future disasters.

## SCOPE AND METHODOLOGY

The research is based on surveys conducted at both the community and household levels using structured questionnaires. Researchers interviewed government officials at the national, district, and community levels. They also interviewed community leaders, as well as heads of 599 households selected randomly from 14 districts. The surveys were conducted only in the eastern and southern parts of the country, because security concerns prevented access to other regions. The potential bias resulting from that omission was partly mitigated by a policy review and the researchers' knowledge of those areas.

The conclusions and recommendations put forward in the humanitarian field studies represent the views of the researchers and not necessarily those of Oxfam.

## REPORT OUTLINE

- Abstract
- Introduction
- Objectives of the Study
- Scope and Methodology
- An Overview of Natural Disasters in Sri Lanka
- Disaster Management – International Guidelines and Best Practices
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- Civil Society and Private Sector Approaches to Disaster Management
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## AN OVERVIEW OF NATURAL DISASTERS IN SRI LANKA

### History and impact of disasters

Different types of natural disasters have had grave consequences for Sri Lanka in terms of loss of lives and livelihoods. Given the island's geographic location, Sri Lanka is especially vulnerable to water-related hazards such as severe flooding, landslides, and tsunamis. The tables below show the recent history of natural disasters in Sri Lanka.

#### Top 10 Natural Disasters – Number of Deaths<sup>2</sup>

Disaster Type	Date	Number of Deaths
Tsunami	December 2004	35,399
Windstorm	November 1978	740
Flood	May 1989	325
Flood / Landslides	May 2003	235
Windstorm	December 1964	206
Windstorm	December 1957	200
Mudslides	October 1993	65
Flood	December 1969	62
Epidemic	November 1987	53
Flood	May 1984	45

Droughts affected about 2 million people in 1982, 1983, and 1987—a larger figure than the 2004 tsunami—although the death toll was low.

#### Top 10 Natural Disasters – Number Affected<sup>3</sup>

Disaster Type	Date	Number Affected
Drought	1987	2,200,000
Drought	1982	2,000,000
Drought	1983	1,800,000
Flood	December 1983	1,250,000
Wave / Surge	December 2004	1,019,306
Windstorm	November 1978	1,005,000
Flood	December 1969	1,000,000
Drought	August 2001	1,000,000
Drought	March 1989	806,000
Flood / Landslides	May 2003	695,000

Additionally, the civil conflict in Sri Lanka that began in 1983 has resulted in more than 65,000 deaths. Currently, 2 percent of the population is displaced internally, and thousands more people have emigrated overseas.

Vulnerability to disasters varies among locations due to climate, socioeconomic factors, and other geographic features. The table below shows how many of the households surveyed were affected by previous disasters.

#### Non-Tsunami Natural Disasters in Selected Coastal Districts<sup>†</sup>

District	No. of HHs in the sample	Number of sample households (HHs) affected by different disasters and as % of total district sample <sup>†</sup>					
		Flood	Drought	Earth slip (land- or mudslide)	Epidemic	Wild elephant attack	Insect damage to crops
Ampara	164	108 (66%)	97 (59%)	4 (2%)	92 (56%)	9 (5%)	62 (38%)
Batticaloa	169	77 (46%)	56 (33%)	1 (1%)	15 (9%)	1 (1%)	2 (1%)
Galle	91	1 (1%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Hambantota	41	5 (12%)	40 (98%)	0 (0%)	7 (17%)	6 (15%)	1 (2%)
Matara	41	1 (2%)	4 (10%)	1 (2%)	1 (2%)	0 (0%)	0 (0%)
Trincomalee	89	11 (12%)	3 (3%)	0 (0%)	1 (1%)	3 (3%)	3 (3%)

<sup>†</sup> The same household may have been affected by more than one kind of disaster.

The IPS survey found that the tsunami considerably reduced the incomes of 39 percent of people living in the Southern and Eastern Provinces. The most affected districts were Ampara, Hambantota, and Batticaloa. Around 76 percent of the affected households had no alternative income source following the tsunami.

## DISASTER MANAGEMENT – INTERNATIONAL GUIDELINES AND BEST PRACTICES

### Disaster risk management

Disaster risk management encompasses disaster mitigation, prevention, response, and recovery. This cycle identifies the need for a proactive and integrated approach in order to minimize losses likely to be caused by future disasters. It is based on the premise that pre-disaster action is more cost-effective than relief assistance in reducing the impact of disasters.

### International principles

In 1989, the United Nations General Assembly declared the 1990s to be the “International Decade for Natural Disaster Reduction” (IDNDR), with a focus on reducing deaths, property damage, and social and economic disruption caused by natural disasters. One of the main outcomes of this declaration was the adoption of the Yokohama Strategy and Plan of Action for a Safer World at the World Conference on Natural Disaster Reduction held in Yokohama, Japan, in May 1994.

The Yokohama Strategy endorsed the disaster management approach and the disaster risk reduction framework. It is based on 10 principles, which emphasize the importance of risk assessment and disaster prevention and preparedness as integral to national planning. The principles focus on early warning, the participation of communities at risk, and the need to target each community’s most vulnerable people.

When the IDNDR ended in 1999, the UN General Assembly established the International Strategy for Disaster Reduction (ISDR) as a means of extending disaster

risk reduction work into the current decade. In 2005, the General Assembly convened a World Conference on Disaster Reduction in Kobe, Japan, to monitor progress in implementing the 1994 Yokohama Strategy, to share good practices and lessons learned, and to update the framework for the 21<sup>st</sup> century. This resulted in the adoption of the Hyogo Declaration and Framework for Action 2005-2015.<sup>5</sup> Five principles came out of this meeting:

1. ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation;
2. identify, assess, and monitor disaster risks and enhance early warning;
3. use knowledge, innovation, and education to build a culture of safety and resilience at all levels;
4. reduce underlying risk factors; and
5. strengthen disaster preparedness at all levels.

The Framework for Action identified a number of “key activities” for states, regional and international organizations, and other concerned actors when considering their capacities for disaster prevention and response.

### International best practices

Strong models of disaster management practices can be found in Bangladesh and the Philippines—two Asian countries that are widely acknowledged to have been most active in the region in taking measures to prevent, mitigate, and cope with disasters.

#### **Bangladesh<sup>6</sup>**

The Cyclone Preparedness Program (CPP) in Bangladesh is considered one of the best models of disaster management, incorporating the elements of warning, education and training, preparedness, and strong community participation. The CPP is a joint venture between the Bangladesh Red Crescent Society and the Ministry of Food and Disaster Management and covers 11 coastal districts. Its key feature is the role played by community volunteers. The volunteers have been trained to disseminate information about cyclone warnings, evacuation, rescue, first aid, and emergency relief, and in the use of communications equipment. Volunteers contribute both to early warning and to longer-term mitigation activities, such as planting palm trees as wind breaks along the coast and building cyclone shelters.

#### **Philippines<sup>7</sup>**

The Philippines has a strong community-based disaster management program driven by non-governmental organizations (NGOs). The Integrated Community Disaster Planning Program was piloted by the Philippine National Red Cross in 1994. The program identifies hazards and designs hazard maps and disaster action and mitigation plans. The plans inform preparedness projects, which include health education and first aid training, physical improvements to the community infrastructure such as water and sanitation, and income-generating projects.

## SRI LANKAN GOVERNMENT APPROACHES TO DISASTER MANAGEMENT

### Before the 2004 tsunami

Before 1996, various government agencies implemented individual pieces of legislation covering various aspects of disaster management, including land use planning. Because these laws did not focus on disaster management, critical issues of preparedness, emergency response, and long-term mitigation were not adequately addressed.<sup>8</sup> In 1996, the government formed the National Disaster Management Center (NDMC) under the Ministry of Social Welfare with the responsibility of reforming disaster management activities. As the focal agency for disaster management, the NDMC coordinated all relevant agencies in disaster preparedness, mitigation, response, and long-term rehabilitation and recovery. The NDMC established the necessary legal and institutional framework to put disaster management into practice at the national and sub-national levels through the development of a national disaster management law and plan as well as district- and local-level preparedness and response plans.<sup>9</sup>

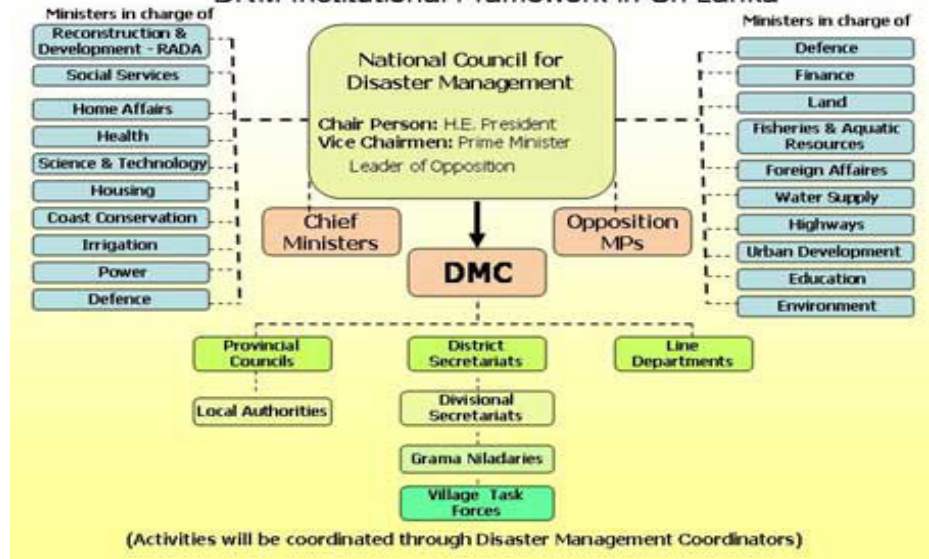
The preparation of comprehensive Disaster Preparedness and Response Plans was completed before the 2004 tsunami for five districts with high levels of vulnerability to natural disasters.<sup>10</sup> The focal body of each district plan is the District Disaster Management Committee, which is headed by the district secretary. The committee members include government representatives at district and division levels, the local-level representatives of government agencies, and representatives of NGOs active in the district. Subcommittees were also formed with responsibility for specific areas like early warning, evacuation, search and rescue, relief distribution, restoration of critical services like health care, and public awareness. The plans also established lines of reporting between the district committees and the national level. Similar plans have been adopted and committees set up at the divisional and village levels in some areas.

The Disaster Management Bill provided for the establishment of a National Council for Disaster Management (NCDM) to coordinate the preparation of comprehensive local and sectoral disaster management plans by committees and government ministries. The bill also provided for the establishment of a Disaster Management Center (DMC) and for technical advisory committees to implement policies.<sup>11</sup> Although drafted by 2000, the Disaster Management Bill and Plan were not formally adopted.

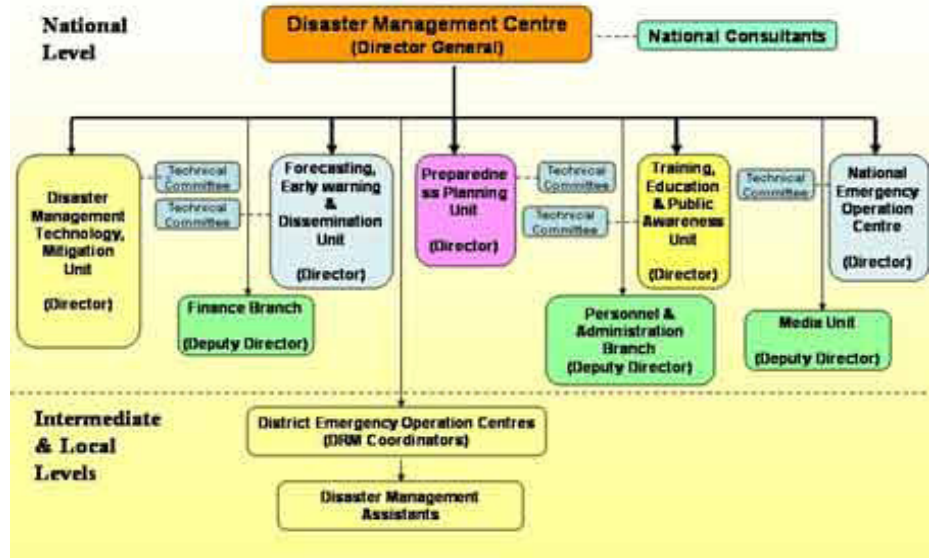
### After the 2004 tsunami

The unprecedented devastation caused by the tsunami revealed the shortcomings in the prevailing institutional framework for early warning and disaster preparedness. Accordingly, there was a strong political commitment to create a firm legal and institutional foundation for disaster management. The government passed the draft bill as the Sri Lanka Disaster Management Act, No. 13 of 2005. The act established the NCDM and DMC, which would function under the NCDM. Figures 2 and 3 outline the institutional structures of NCDM and DMC.<sup>12</sup>

## DRM Institutional Framework in Sri Lanka



## Organizational Structure of the Disaster Management Centre



The government also set up a Parliament Select Committee to review the disaster management situation post-tsunami and to recommend a strategy for development of an effective early-warning system. After an extensive investigation and national and international field visits, the committee recommended the following:

- adoption of a five-year program for strengthening disaster risk management based on the Disaster Management Act;
- development of an information system (including a Web site) relying on multi-hazard risk assessments and research and analysis of the historical impacts of disasters;
- development of a natural disaster mitigation strategy for each level of government;
- integration of disaster risk concerns in development policies and programs; and
- establishment of effective multi-hazard early-warning systems, focusing on communication systems and the development of public awareness and skills at the community level.

### Confusion over institutional roles and responsibilities

There is a considerable overlap among the various disaster management responsibilities assigned to several national ministries. Moreover, the role and future of the NDMC was not explicitly addressed in the Disaster Management Act. The 2005 government assigned the new NCDM and DMC to the Ministry of Disaster Management and Human Rights and the older NDMC was assigned to the Ministry of Disaster Relief Services. Coordination of disaster relief activities has been allocated to both ministries under this new structure. In addition, the Ministry of National Building and Development and Ministry of Social Services and Social Welfare also have disaster management responsibilities in their mandates.<sup>13</sup> Other government agencies involved in disaster management functions are the offices responsible for agriculture, irrigation, land use, health, law enforcement, construction, urban development, environment, coastal management, and conflict prevention.<sup>14</sup>

In practice, there is an emerging informal division of tasks between DMC and NDMC. The DMC has concentrated on awareness raising and pre-disaster mitigation, while the NDMC has taken the lead role in post-disaster relief work.<sup>15</sup> At the local level, the DMC has worked to prepare for disasters by appointing District Disaster Coordinators, who are high-ranking military personnel, and military teams for nine tsunami-affected coastal districts. These teams have mobilized communities to prepare for disasters. For example, they selected youth from vulnerable villages and trained them how to recognize the warning signs of a tsunami and how to evacuate once they receive a warning. Additionally, the units designated tsunami evacuation routes and locations in each community and held several mock drills.<sup>16</sup> Yet, there remains the potential for duplication of effort. Both the NDMC and DMC are creating volunteer search and rescue teams and awareness-raising activities at the local level, though in some areas the district representatives of the DMC, NDMC, and UNDP have agreed to coordinate their work. The divisional and village secretaries do not seem to be receiving conflicting instructions from the different ministries and national agencies. This study found that the District Committee performs the role of a filter between the national and sub-district levels, ensuring that consistent advice and instructions are passed on to them.

This study found that overlapping mandates may result in a lack of clarity and accountability in policies and programs. Because disaster management is a cyclical process with closely interrelated elements, a single institution should be directing the national agenda. The blurring of roles can result in duplication of some activities, which wastes resources and could potentially cost lives, while other critical activities may be ignored or overlooked. Moreover, confusion about lines of communication and reporting may weaken accountability. The 10-year national plan for improving disaster management, referred to as the “Road Map,” indicates no future role for the NDMC, and what will happen to it is unclear.<sup>17</sup> In streamlining responsibilities, the government must retain the substantial institutional learning that has accumulated in the NDMC, and the DMC may wish to absorb the staff of the NDMC.

### Early-warning systems<sup>18</sup>

Tsunami advisories are issued by the Pacific Tsunami Warning Center (PTWC) and the Japan Meteorological Society. The director-general of the DMC and the deputy director of the Meteorology Department hold the two mobile phones that are directly connected to the PTWC.<sup>19</sup> The advisories contain information on the location and magnitude of an earthquake and the probability of a tsunami. When the Department of Meteorology receives the advisory, it must decide within 15 to 20 minutes whether to warn the population. The department corroborates the advisory with an independent source, the California Integrated Seismic Network. Additionally, the Geological Survey and Mines Bureau (GSMB) and Meteorology Department maintain a broadband seismic station at Pallekele. The station can estimate the occurrence of an earthquake anywhere in the world and can monitor local tremors.<sup>20</sup> Once GSMB records activity, it informs the early-warning system at the Meteorology Office. If the department finds any change in sea level, it issues a warning or advisory, and it continues to monitor sea-level gauges and revises alert levels accordingly.<sup>21</sup> The following advisories are issued, in increasing order of urgency:

1. Earthquake Advisory – For earthquakes between 6.5 and 7 on the Richter scale. Informs the public that, although there has been an earthquake, there is no threat of a tsunami.<sup>22</sup>
2. Tsunami Advisory – For earthquakes between 7 and 7.5. Informs the public that an earthquake has occurred and that there is a possibility of a tsunami and to listen to the radio for information about evacuations.
3. Tsunami Warning – For earthquakes above 7.6. If the magnitude is above 7.8 the Meteorology Department will tell people to evacuate immediately.

Advisories and warnings are broadcast via radio and television to the central police office,<sup>23</sup> which then issues a warning to the various communities with sirens and announcement systems, to the military, to the DMC district disaster coordinators, and to the district secretaries. All of these groups disseminate warnings to their various communities.

## Post-tsunami “Road Map”

The DMC’s 10-year planning document, *Towards a Safer Sri Lanka: A Road Map for Disaster Risk Management*, outlines strategies for many government agencies and departments in the short, medium, and long term to implement a comprehensive disaster risk management program. It was followed in 2006 with a second volume of detailed project proposals. The first volume draws on international best practices and focuses on seven themes: institutional development; hazards, vulnerabilities, and risk assessments; multi-hazard early-warning systems; preparedness and response plans; integration of risk reduction into development planning; community-based planning; and public awareness and education. For each project, the document lists expected outcomes, outputs, activities, budgets, time frames, lead agencies, and partners. The Road Map accords a central role to NGOs, community-based organizations, and the private sector in disaster management. The Ministry of Disaster Management has overall responsibility for its implementation under the guidance of the NCDM and a joint government-civil society National Steering Committee, which will advise and monitor progress, and a Technical Advisory Committee. The DMC will provide overall coordination and management support.<sup>24</sup>

Despite the DMC’s plans, this study found that there has been uneven post-tsunami local disaster management planning, presumably partly as a result of the civil conflict in the north and east, with only half of the districts having prepared a plan.

## Relationships with NGOs and the private sector

A notable feature of the Road Map is that it recognizes a role for NGOs in promoting community-based disaster risk management. However, this study found that a level of mutual distrust occasionally exists between the government and NGOs at the national and local levels. Given the potential for cooperative relationships in disaster management, it appears that a commitment to the principles of good governance—transparency, accountability, and participatory processes—by both government and NGOs would provide a basis for the establishment of a successful relationship.<sup>25</sup> Coordination of NGO programs within the NGO community and by the government is also important. A lack of coordination can result in wasteful duplication of activities and can cause considerable confusion for the public. This study found examples of both duplication and effective coordination. Finally, an area that seems to have been somewhat neglected is the role of the private sector in disaster management. Although the private sector was active in the response to the 2004 tsunami, it is unclear whether it will be after future disasters.

## CIVIL SOCIETY AND PRIVATE SECTOR APPROACHES TO DISASTER MANAGEMENT

Civil society has a vital role to play in disaster management. This section presents examples of civil society and private sector activities.

### Community Tsunami Early Warning Center (CTEC)<sup>26</sup>

CTEC is a community-based volunteer organization working for emergency preparedness in the village of Peraliya. CTEC seeks to create a disaster-preparedness culture through community participation and empowerment, with special emphasis on the protection of vulnerable groups and the use of information technology. CTEC is trying to create a network among community, district, and

national government organizations to formulate and implement a disaster emergency plan. They attend district meetings and participate in policy discussions. Additionally, CTEC has identified village representatives and provided them with communication equipment to use during disasters. CTEC also takes responsibility for identifying and assisting vulnerable populations during disasters. Finally, CTEC conducts awareness-raising programs in communities and schools to help people identify evacuation areas and routes.

With constant access to the Internet, CTEC receives messages from the U.S. Geological Survey. If the center learns of an earthquake in the Indonesian region, it contacts the Meteorological Department and GSMB for confirmation. Once it receives confirmation, the center immediately relays a warning to neighboring villages.

This study found that CTEC appears to collaborate with the community, and people benefit by having an information center in their area. However, the Meteorology Department claims that CTEC caused a false alarm when it needlessly warned the public of an earthquake. In addition, the department logbook has no record of any calls from the center seeking confirmation of a tsunami warning, indicating that CTEC may be acting independently of the government in issuing warnings. Conversely, CTEC staff report that the local government officers do not collaborate with them, and they are critical of the government's top-down approach. The government and CTEC came to an agreement to remove the words "Early Warning" from the center's name, as this role should be limited to the government; the NGO sector should only disseminate the government's warnings.

### Sarvodaya disaster management programs<sup>27</sup>

Sarvodaya Community Disaster Risk Management Center is based in Rawatawatta, Moratuwa. Sarvodaya, the country's largest charity, develops comprehensive medium- and long-term preparedness plans for each district in which it works. The organization creates volunteer groups to identify and rank probable hazards in the area.

Sarvodaya has conducted community-based risk management trainings in 34 districts for volunteers and for officers from NGOs and international organizations. The Sarvodaya officers establish committees that network with government disaster management officers and other regional disaster management centers.<sup>28</sup> These relationships enable Sarvodaya to share resources and build its capacity. To maximize its resources, Sarvodaya has incorporated disaster management activities into ongoing programs. Often Sarvodaya is able to work jointly with other local and international groups on projects that reduce risk for coastal communities, such as through identifying hazards and designing evacuation routes and small-scale village alert systems.

### Private sector: LIRNEasia and Last Mile Hazard Information Project<sup>29</sup>

Although many people have televisions and mobile phones, the problem with using such technology as part of an early-warning system is that not everyone is continuously connected. The Last-Mile Hazard Information Project is being implemented by LIRNEasia in partnership with Sarvodaya and other media and technology companies to determine how to connect people at all hours. Five kinds of radio, satellite, and mobile phone equipment are being tested to determine the best use of these technologies in early warning.<sup>30</sup> The system will use pre-fabricated Common Alerting Protocol (CAP) messages to disseminate information in local languages.<sup>31</sup>

The alert system being set up is a closed user network rather than a public alert system. Sarvodaya is a first responder in the system. When Sarvodaya receives an earthquake report, it passes it on for authentication. Once authenticated, the message is converted into a CAP message and disseminated among Sarvodaya personnel in villages.<sup>32</sup> The DRM Center has a help desk to respond to inquiries from villagers. The warning messages do not order people to evacuate, but rather convey information about the occurrence and location of an earthquake, its magnitude, and the likelihood of a tsunami. It is left to the villagers to decide whether or not to take action, depending on the emergency plan developed for each village.

### Micro-insurance

Sri Lanka has very low insurance coverage for disasters. The Sri Lankan Reconstruction and Development Agency has worked with the private sector to launch a micro-insurance program to help the poorest people to recover after natural disasters. For example, companies may work with NGOs or the government to pay insurance premiums on behalf of low-income households. Additionally, the documentation process for claims needs to be simplified, and the industry needs to promote risk reduction awareness. The real challenge will be to make micro-insurance more profitable.

## AFFECTED PEOPLE'S VIEWS OF DISASTER MANAGEMENT

Local communities are normally first responders and have coping strategies to mitigate and respond to disasters, such as by moving to safer locations and issuing warnings. Their input into disaster planning is critical.

### Post-tsunami disaster mitigation

Housing design and construction are key to mitigating damage from future tsunamis or storms. Most informants felt that materials used to build post-tsunami houses were better than what they had used before, although others reported that the materials were worse. Approximately one-third of new houses have been designed to make them more resistant to a future tsunami.

### Preparedness for future disasters

Only 14 percent of the households report knowing how to react in case of a future tsunami, while 61 percent say they have some knowledge and 21 percent have no knowledge about what to do. More than 50 percent of households surveyed have identified safe places to which to evacuate, but only six percent have practiced evacuation drills; four percent have purchased insurance to protect them in the event of future disasters. However, the DMC reports that it has conducted awareness programs and evacuation drills for many households in some tsunami-affected districts, which appears to contradict the survey findings. One explanation could be that information does not filter down to all members of a household. The most important information sources are radio and television.

### False alarms and distress

False alarms are a major concern: 69 percent of informants indicated that they had run out of their houses at least once after false tsunami alarms over the previous six months, and 11 percent had reacted to false alarms many times. The proportion of households that responded to false alarms is higher in Ampara, Galle, and Trincomalee where the tsunami had the most devastating impact. In addition, female-headed households seem slightly more prone to react to false tsunami warnings. In some cases, false tsunami alerts are issued so burglars can steal from the vacated houses.

Feelings of distress and fear are a lingering symptom of the psychological impact of the tsunami. Among the 599 households surveyed, 14 percent of families have found it significantly more difficult to sleep at night, while 45 percent have found it a little more difficult to sleep at night. The percentage is higher for female-headed households (24 percent) than for male-headed households (11 percent). This has been a particular problem for a majority of people living in Ampara District, where 33 percent of families have faced considerable difficulties in sleeping during the night, while 51 percent have experienced slight difficulties. Children have been especially vulnerable, with 14 percent of them reportedly having more nightmares than before the tsunami. This rate was even higher in Ampara and Matara, where 23 percent and 20 percent of children, respectively, had more nightmares.

### WOMEN AND VULNERABLE GROUPS

Because of their unequal social, political, and economic status, women are more vulnerable in conflicts and natural disasters. Men, women, boys, and girls experience disasters differently due to asymmetrical power relations based on gender.<sup>33</sup> In the South Asian context, men's greater access to information and decision-making structures give them more opportunities to learn about and prepare for disasters than women. After the tsunami, gender roles influenced how men and women experienced the relief and reconstruction phases of the disaster.

Although assessment of the separate needs of women and men is essential to the overall success of the relief and reconstruction effort, there is little gender-specific, quantitative data to inform policy in Sri Lanka. Programs must address gender issues so that women can get the assistance they need.

### Gender and the tsunami: How women fared

This section highlights the ways in which women were more acutely affected by the tsunami and were neglected during the relief and reconstruction process.<sup>34</sup>

#### High death toll of women

Available disaggregated data from districts like Ampara show that more women died than men, and in this study, people reported similarly skewed patterns of survival. Analysts have attributed this disparity to socio-cultural and economic factors. For example, women may have had difficulty fleeing the waves because they carried children or were hampered by their clothing.

### **Inequality in access to relief grants and property**

In most cases, the relief grants that were paid to all households were given to the husband, unless a woman headed the household.<sup>35</sup> However, women are more likely to use the money for household expenses, while men are reportedly more likely to spend it on alcohol or other personal consumption. Additionally, houses reconstructed by the government and NGOs are typically given to the husband. However, as much as 75 percent of the property in the North and East was owned by women before the tsunami.<sup>36</sup>

### **Low participation in post-tsunami decision-making**

Women's involvement in policy planning and implementation is critical. In Sri Lanka, few women typically participate in decision-making processes in their communities and in elected government, although there is significant variation among districts.<sup>37</sup>

### **Domestic violence and sexual harassment**

Participants in this study reported that the close living conditions of camps and the mental stress and financial and physical insecurity after the tsunami have led to an increase in domestic violence and sexual harassment of women and girls, although little data on these issues is available. Alcohol consumption by men and some women seems to have increased, as well.

### **Livelihoods**

Women face many barriers to restoring livelihoods after disasters. They often bear the burden of ensuring that the household gets water and other supplies each day.<sup>38</sup> Additionally, women often engage in low-wage, repetitive income-generating activities such as coir production, weaving, and sewing. This work is flexible, which enables women to also carry out child care and household labor. Other barriers to business activities that they face after disasters include disrupted markets, loss of assets, lack of credit, limited access to raw materials, increased competition, and reduced profits.<sup>39</sup>

### **Other vulnerable groups**

While everyone living in disaster-prone areas is vulnerable, some groups—such as children, the elderly, and people with disabilities—are more vulnerable than others. Therefore, the needs of vulnerable groups should be addressed specifically in preparedness and relief operations. In Sri Lanka, district committees and NGOs have prepared lists of the elderly and disabled people in their areas, and some NGOs have formed groups of volunteers who are responsible for caring for the elderly during emergencies. The Department of Meteorology is conducting several programs to improve disaster preparedness in coastal schools from Panadura to Hambantota. These programs teach children how to identify evacuation routes and prepare for disasters. Children then share this information with their families.

## DISASTER MANAGEMENT IN PRACTICE AT THE LOCAL LEVEL

Three districts were selected for a review of disaster management practices. Ratnapura and Hambantota are vulnerable to natural hazards like floods, landslides, and droughts, and Ampara, in addition to having to cope with floods, droughts, and the tsunami, is also affected by the ongoing civil conflict.

### Disaster Management in Ratnapura District<sup>40</sup>

#### **Nature of disasters**

The major hazards in the district are floods, landslides, droughts, high winds, lightning strikes, and epidemics. In May 2003, torrential rains caused flooding in the district, leading to 122 deaths and affecting almost 35,000 households.

#### **Government approaches**

Under the UNDP Disaster Risk Management Program, the Ministry of Women's Empowerment and Social Welfare established disaster management committees at district, divisional secretary, and village levels after the 2003 floods. The district and divisional committees are composed of government officials (including the armed services and police), as well as representatives of NGOs. The village committees are composed of village officials, community leaders, religious heads, and members of community-based organizations. These committees are responsible for the coordination of disaster management activities at the local level, and a reporting mechanism has been put in place. In the most flood-prone areas, the district secretary has a boat and generator. About 20 villagers have been selected as volunteers from each of these villages. In the event of a flood, the district secretary is informed by phone, and she or he in turn informs the village committees. The village committees meet every few months, but are in a state of constant readiness during the rainy season (May-January). Informants noted that while many government positions were held by women, including the district secretary and several divisional secretaries, most members of the village committees were men. Disaster preparedness and response plans have also been adopted at district, divisional secretary, and village levels.

#### **Approaches by communities, civil society, and the private sector**

Communities possess local knowledge of disaster warning signs, which have been integrated into the government disaster warning systems. For example, elders can predict a flood by listening to the noise of a waterfall up to four miles away or by observing water levels at a bridge. People know they need to evacuate when they notice these signs.

In addition, the private sector is involved in early warnings of floods within the district. The Cyrex electricity station, a private establishment located close to the river channel, has been instructed to monitor water levels and to warn the divisional administration in the event of a significant rise.

#### **Areas for improvement**

The distribution of relief supplies should be well-coordinated and channeled through the divisional secretariat, and should be closely monitored to prevent corruption. Local structures should be well resourced in order to ensure preparedness. Equipment like boats and generators should be maintained. DMC and NDMC responsibilities should be defined and clarified at both national and district levels in order to avoid confusion and duplication of programs.

## Disaster management in Hambantota District

### **Nature of disasters**

Almost half of the district was affected by the tsunami. The district also regularly experiences floods and droughts.

### **Government approaches**

A district plan for Hambantota has been developed with assistance from the UNDP. Disaster management activities are mainly conducted by the DMC with seconded air force staff on two-year contracts that started in 2006.

A total of 64 disaster-awareness programs have been conducted in collaboration with various INGOs working in the district. For example, awareness programs on earth slips (mud- or landslides) were conducted in the towns of Katuwana and Walasmulla. The program also involved distribution of leaflets, banners, and booklets. In addition, training programs on first aid, firefighting, and search and rescue are being conducted in the district. The DMC's future plans include the establishment of various evacuation signs and disaster prevention and mitigation programs.

Villagers in Hambantota reported feeling that government disaster awareness and evacuation drills are generally conducted without proper planning. They also believe that programs focus too much on tsunamis at the expense of other natural and manmade disasters. Study participants complained that tsunami warnings issued by the police were targeted only at people living along the coast. Although a large proportion of households are covered by existing awareness programs, the IPS-ADBI 2006 survey findings indicate that only 34 percent of households have identified safe evacuation places.

### **Approaches by communities, civil society, and the private sector**

Oxfam is currently conducting youth disaster management programs in Hambantota District. Given the unstable security situation in the area, some local government officials expressed suspicion and mistrust about the programs and felt that they were not properly informed about them.

### **Areas for improvement**

Informants reported that greater participation of men and boys might be achieved by conducting trainings at Samurdi meetings (Samurdi is the national poverty eradication program) or on the shore, where fishermen congregate. Other potential disasters like lightning storms should also receive attention. Building codes must be enforced to avoid substandard housing. The respective responsibilities of the various organizations working on disaster management in the district must be clearly defined, and some critical government agencies, like the police and those involved in social welfare, need to be more involved. Finally, communities must find ways to reduce their dependency on tsunami aid.

## Disaster management in Ampara District

### **Nature of disasters**

Ampara in recent decades has experienced a series of disasters, including floods, drought, the tsunami, and the ongoing civil conflict. The resulting devastation has been high. Tens of thousands of acres of crops and homes have been destroyed by floods and cyclones, while thousands of people have lost their lives and livelihoods. The 2004 tsunami killed more than 10,400 people in the district and affected over 38,000 families. About 193,000 people were displaced and housed in 67 welfare

centers and in the homes of friends and relatives. More than 27,000 houses were damaged and essential services disrupted.

The ongoing civil conflict has added to the hardships faced by people already buffeted by natural disasters. Clashes among the three major communities in the district—Muslim, Tamil, and Sinhala—have increased the number of internally displaced persons and deaths due to violence.

### **Government approaches**

In the past half-century, the national government has adopted different methods of managing disasters in Ampara District. In the 1956 floods, the army and civil society were pivotal in evacuating communities from severely flooded areas, providing food and shelter, and stopping the outbreak of waterborne diseases. After the 1978 cyclone, a government task force undertook resettlement of the displaced and attended to reconstruction of the damaged houses. Following the 2004 tsunami, the government again used the task force structure to manage the disaster, forming a committee composed of government departments, selected members of parliament, and civil society representatives. Divisional disaster management committees under the leadership of divisional secretaries were also formed to organize village-level subcommittees to attend to relief work in their divisions. These committees - composed of government officers, community leaders, religious dignitaries, the police, and youth - conducted damage assessments and also supplied relief assistance.

### **Approaches by communities, civil society, and the private sector**

Sri Lanka has always relied on civil society, the international community, and the private sector to help manage its disasters. Village leaders have mobilized the youth to provide assistance and have helped government officials control the spread of disease. International organizations such as UNICEF, FAO, and WHO as well as local NGOs have provided assistance to the affected and displaced populations in previous cyclones and floods. Because the impact of the 2004 tsunami far exceeded the local capacity to respond, international aid was substantial. INGOs supplied much of the aid used in relief and recovery efforts, while the government's role was mainly to coordinate and provide a framework for operation.

Overall, the distribution of assistance was not properly coordinated in Ampara District, and informants expressed dissatisfaction with the distribution. Women reported that they were unable to meet the mandatory eligibility requirements needed to obtain assistance, which led to an inequality in aid distribution. Additionally, most of the refugee centers were male-dominated, and vulnerable groups felt that their grievances were not properly heard and that their fundamental rights were denied. People often failed to collect their rations because of the disorderliness at distribution points; while able-bodied persons were able to obtain sufficient stocks, vulnerable groups left without their quota of provisions. In some places, informants also reported, they were unnecessarily harassed and even sexually abused. Others reported that facilities provided at the refugee centers were inadequate and lacked such basic facilities as toilets, medical care, sufficient living space, drinking water, and electricity. They were unaware of how and to whom they could express their grievances.

## Areas for improvement

To improve the delivery of disaster services, disaster management committees are needed at district, divisional, and village levels. These committees should include all stakeholders, and should operate with clear lines of communication and responsibilities both horizontally and vertically. Community participation and bottom-up approaches should be emphasized.

## RECOMMENDATIONS OF THE INSTITUTE FOR POLICY STUDIES

### Key recommendations for all stakeholders

- **Reinforce the coping strategies of affected people**  
Local populations have developed strategies to prepare for, respond to, and mitigate disasters. It is important to understand these strategies, support them, and reinforce them in formal policy.
- **Give special attention to vulnerable and marginalized people**  
Certain groups such as the elderly and the disabled are more vulnerable to disasters than others. Communities should ensure that these populations receive the assistance they need.
- **Emphasize mitigation and prevention, not just response**  
Programs should focus on disaster preparedness and mitigation because they will save lives and are more cost-effective than relief operations. Examples of preparedness activities include rainwater harvesting, coastal protection, and land use and housing planning.
- **Adopt a multi-hazard approach**  
There has been a tendency to over-emphasize the tsunami; many people are affected by other hazards that require different strategies.
- **Avoid a “one size fits all” approach**  
All interventions should be tailored to the hazards and vulnerabilities of the local context. A “one size fits all” intervention can be harmful because it doesn’t take local needs into consideration.
- **Learn from experience**  
Adopt and scale up best practices in Sri Lanka and from other countries in the region.
- **Address psychological needs**  
Mental trauma is common in communities affected by disasters. Psychological strain is also evident among people who are experiencing armed conflict in Sri Lanka. A long-term approach to trauma recovery must be developed, with mental health services integrated into the national health care system.
- **Effectively coordinate implementation of programs**  
With such a multiplicity of actors, activities must be coordinated to avoid duplication of effort. Government agencies and NGOs should work on areas where they have comparative advantage. Government activities in affected districts need to be handed over from military to civilian administrators.
- **Ensure that interventions are cost-effective and institutionally sustainable**  
Focus must be placed on implementation of the 10-year national plan for improving disaster management (the Road Map).

## Key recommendations to government

- **Clearly define agency responsibilities**  
Many government institutions deal with disaster management. The government needs to streamline responsibilities among the stakeholders to avoid overlap and confusion. This study recommends clarification of the roles of the two principal institutions—the National Disaster Management Center and the Disaster Management Center—possibly by combining them under a single ministry. [Note: While the two centers remain under separate ministries, the NDMC was renamed the National Disaster Relief Services Center in February 2007, emphasizing its post-disaster responsibilities.]
- **Coordinate and facilitate bottom-up community approaches**  
NGOs are integral to implementing the Road Map. The government needs to take a more strategic role in coordinating and integrating their individual inputs.
- **Support local government**  
Local government, which is often best informed about local needs and can monitor progress directly, needs financial resources and technical assistance.

## Key recommendations to NGOs, community-based organizations (CBOs), and the private sector

- **NGOs and CBOs should work closely with one another and with government**  
Civil society and the government need to reduce duplication and ensure that disaster management interventions are both useful and sustainable.
- **Private sector role must be encouraged**  
The private sector can play a key role in disaster mitigation by providing financial resources and skills, although it needs to operate within a government framework.

## CONCLUSIONS

Effective coordination plays a critical role in the success of a complex disaster management system. This study determined that there should be clear definitions of responsibilities among the various actors working on disaster management. Yet, there may be insufficient trust between the government and civil society or the private sector to develop an effective and reliable early-warning system and disaster response. A key question seems to be to what extent NGOs and the private sector should be involved in early-warning systems. The challenge will be for the Sri Lankan government, international and local NGOs, and the private sector to establish a functional balance in their roles and responsibilities in all phases of disaster management. Without significantly improved coordination and disaster management programs rooted in community participation and practices, Sri Lanka's response to future disasters may be reactive and limited in its effectiveness.

## NOTES

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- 1 S.M.M. Ismail and L.C. Lekamge assisted in the field work.
- 2 EM-DAT.
- 3 EM-DAT.
- 4 IPS 2005.
- 5 The conference also adopted a Common Statement of the Special Session on the Indian Ocean Disaster concerning risk reduction for a safer future.
- 6 ADRC 2005, Bangladesh 2004, and Kokawa 2003.
- 7 Kokawa 2003, and Philippines 2004.
- 8 NDMC 2005.
- 9 These initiatives have received technical and financial support from the UNDP under its Disaster Risk Management Program. This program is still continuing at the present time.
- 10 The districts were Ratnapura, Hambantota, Galle, Matara, and Kalutara.
- 11 NDMC 2005.
- 12 RADA 2006.
- 13 Gazette 2005 and 2006.
- 14 Examples include the Central Environmental Authority (CEA), Ceylon Electricity Board (CEB), Coast Conservation Dept. (CCD), Center for Housing Planning and Building (CHPB), Geological Survey and Mines Bureau (GSMB), Institute for Construction Training and Development (ICTAD), National Aquatic Resources Agency (NARA), National Water Supply and Drainage Board (NWSDB), Sri Lanka Institute of Development Administration (SLIDA), Sri Lanka Institute of Local Governance (SLILG), Sri Lanka Land Reclamation and Development Corporation (SLLRDC), Ministry of National Building and Resettlement, and the Road Development Authority. List compiled from DMC (2005).
- 15 For this reason, the NDMC holds the supplies and financial resources for a disaster response, which the DMC presently lacks.
- 16 It is envisaged that the military role will be phased out in two years and transferred to civilians. The government initially assigned this role to the military based on its presumed greater efficiency in mobilizing people.
- 17 The Road Map document states that the NDMC was set up to provide “post-disaster relief activities at district and divisional level along with training and awareness activities amongst stakeholders ... [which] responsibilities have since been entrusted to the [DMC].” DMC 2005, p. 4.
- 18 Based on interview with Mr Lalith Chandrapala, deputy director of meteorology, 8 Sept 2006.
- 19 PTWC allows two mobile phones per country to be linked with it.

- 20 It takes approximately nine minutes for Pallekele to detect an earthquake in the Sumatra region. The Meteorology Department is hoping to install two more broadband systems with German funding, one at Anuradhapura and the other at Tangalle. However, presently there is no qualified seismologist in Sri Lanka. Therefore no seismic data processing is being performed there. With US assistance, this situation may change.
- 21 When the 2004 tsunami occurred there were no sea-level gauges. There are now two gauges at crucial locations – one in North Sumatra and one on the west coast of Sumatra.
- 22 Sri Lanka is only concerned with the two tsunami-genic zones that can affect it – Sumatra and Pakistan/Iran.
- 23 There is a 24-hour line with media institutions.
- 24 DMC 2005, 2006.
- 25 In this regard, the Parliament Select Committee Report (2005), based on international precedent, recommended the adoption of a code of conduct for NGOs.
- 26 The information presented is based on an IPS field visit on 5 August 2006 and discussions with the government and CTEC.
- 27 Based on discussion with Mr Nandana Jayasinghe, project director, Sarvodaya Community Disaster Risk Management Center, Rawatawatta, Moratuwa.
- 28 Such as the Asian Disaster Preparedness Center (ADPC) in Thailand and the Asian Disaster Reduction and Response Network (ADRRN) in Malaysia.
- 29 This section is based on an interview with Mr Nuwan Waidyanatha, project manager of the Last Mile HazInfo Project.
- 30 Worldspace Satellite Radio, Symbian phones with Wake-Up Applet operating system, Dialog Remote Early Warning Device with alerting and call-back functions, CDMA using voice, and VSATS using Internet Public Alerting System software, which is the most expensive.
- 31 This is being supported by the Lanka Software Foundation, which has developed the “Sahana Disaster Management Information System.” Available at [www.sahana.lk](http://www.sahana.lk).
- 32 However, in some cases there is information sharing with other (non-Sarvodaya) villages.
- 33 Kottegoda 2001.
- 34 DRMU 2005.
- 35 DRMU 2005; Some households in Jaffna opened joint accounts for women and men.
- 36 CPA 2005.
- 37 CPA 2005; While in Ampara, Trincomalee, and Jaffna, women’s participation is typically very low, it is greater in Hambantota and Matara. One factor is the higher degree of insecurity and conflict in the East and North so that traveling to meetings is more dangerous, especially at night.

38 Kottegoda 2001.

39 IPS 2005.

40 This section is based on information contained in the District Disaster Preparedness and Response Plan – Ratnapura 2005.

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The Institute of Policy Studies (IPS) was conceived in the mid-1980s as an autonomous institution designed to promote policy-oriented economic research and to strengthen the capacity for medium-term policy analysis in Sri Lanka. Operational independence from the government was very much part of the rationale for setting up an independent IPS. Since its inception, the IPS has functioned under the key ministries involved in economic policy making and implementation in Sri Lanka while enjoying considerable autonomy in setting and implementing its research program. Its institutional structure has allowed the IPS to acquire a unique position as an authoritative independent voice in economic policy analysis, working closely with the government, private sector, academia, and civil society.

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