Report

Sri Lankan Parliament Select Committee on Natural Disasters
The Sri Lankan Parliament Select Committee to Recommend Steps to Minimize the Damages from Natural Disasters

The Mandate

When the tsunami hit people in Sri Lanka were not ready. In the light of the fact that the people of Sri Lanka were not prepared to face an event of this nature and the unpredictable and destructive nature of the tsunami event, on a motion moved in Parliament on 10.02.2005 the Parliament Select Committee consisting of 21 members from all political parties represented in Parliament was appointed with a mandate to:

‘Investigate whether there was a lack of preparedness to meet an emergency of the nature of the Tsunami that struck Sri Lanka on 26th December, 2004 and to recommend what steps should be taken to ensure that an early warning system be put in place and what other steps should be taken to minimize the damage caused by similar natural disaster’.

By unanimous choice of Parliament, Hon. Mahinda Samarasinghe, Chief opposition Whip of Parliament was appointed the Chairman of the Committee and the committee commenced its proceedings on February 11, 2005 and had 28 sittings up to the date of submitting this Report. The Committee heard the evidence of relevant personnel, went on field visits and participated in several local and foreign study tours.

Members of the Committee:

Chairman
Hon. Mahinda Samarasinghe, MP
Chief Opposition Whip

Other Members
Hon. (Mrs.) Ferial Ismail Ashraff, MP
Minister of Housing and Construction Industry, Eastern Province Education and Irrigation Development

Hon. Lakshman Kadirgamar, MP
Minister of Foreign Affairs

Hon. Dinesh Gunawardena, MP
Minister of Urban Development and Water Supply

Hon. D. E. W. Gunasekera, MP
Minister of Constitutional Reforms
Hon. Douglas Devananda, MP
Minister of Agricultural Marketing Development, Co-operative Development, Hindu Affairs and Assisting Education and Vocational Training

Hon. Jeyaraj Fernandopulle, MP
Minister of Trade, Commerce and Consumer Affairs

Hon. (Prof.) Tissa Vitharana, MP
Minister of Science & Technology

Hon. Mangala Samaraweera, MP
Minister of Ports & Aviation and Information & Media
Deputy Minister of Education

Hon. Maithripala Sirisena, MP
Minister of Mahaweli and River Basin Development and Rajarata Development

Hon. Muthu Sivalingam, MP
Minister of Estate Housing, Infrastructure and Community Development

Hon. Bimal Rathnayaka, MP
Deputy Minister of Agriculture, Livestock, Land and Irrigation

Hon. Vajira Abeywardena, MP

Hon. John Amaratunga, MP

Hon. Mohamed Musthaffa, MP

Ven. Athuraliye Rathana Thero, MP

Hon. Sagala Ratnayaka, MP

Hon. Nadarajah Raviraj, MP

Hon. Mahinda Wijesekera, MP

Hon. Rajavarothiam Sampanthan, MP

Hon. Rauff Hakeem, MP

**Secretary**

Ms. Priyani Wijesekera
Secretary General, Sri Lanka Parliament

By unanimous choice of Parliament, Hon. Mahinda Samarasinghe, Chief opposition Whip of Parliament was appointed the Chairman of the Committee.

This committee commenced its proceedings on February 11, 2005 and had 28 sittings up to the date of submitting this Report. The details of committee deliberations and presentations made are all uploaded on the committee website:

http://www.srilankanparliamentonnaturaldisasters.org . This is updated regularly.
Deliberations of the Select Committee, Local and Foreign Study Tours

The Committee heard the evidence of experts in the relevant fields, public officers, senior officers and commanders of the armed forces, Police and officers of the relevant government and private agencies; civil society organizations; and provincial, district and division authorities. The Committee also along with media personnel went on a field visit to the Geology Centre in the University of Peradeniya, the Pallekele Seismological Centre and Kuliatta, an identified landslide prone region in Kandy. The committee also visited the Tsunami-hit areas of Galle, Matara, Hambantota, Ampara districts and one of the worst affected areas of Kalmunai in Ampara district. The Committee Members also participated in several local and foreign study tours. The agencies represented, a list of those who made presentations and participated at the deliberations are appended at the end of this report. Some very important information gathered during foreign visits too is appended as appropriate.

These have been taken in to consideration in compiling the recommendations in this report.

This Committee wishes to place on record its appreciation of the valuable assistance rendered by the United Nations Development Programme, International Organization for Migration, Government of Australia and AUSAID, US State Department and the Governments of India, Italy, Japan, South Korea, Turkey, Germany and Indonesia.

The Committee in the course of deliberation agreed that the Parliament should appoint a Select Committee to examine and report on man-made disasters which the present Select Committee was unable to look into as a result of the Terms of Reference limiting its work to Natural Disasters. This should be followed up.
Foreword
Towards a “Safer Sri Lanka”

It has been my pleasure to chair this Select Committee constituted by the Sri Lankan Parliament to ‘investigate whether there was a lack of preparedness to meet an emergency of the nature of the Tsunami that struck Sri Lanka on December 26, 2004 and to recommend what steps should be taken to ensure that an early warning system be put in place and what other steps should be taken to minimize the damage caused by similar natural disasters’.

This Select Committee has adopted a truly bipartisan approach, consisting of senior ministers in the government and other senior members of parliament, who participated actively in the deliberations and study visits, despite their busy schedules. The proceedings of the various deliberations have been conducted in a very fair and impartial and constructive manner, leading to some very important recommendations.

I take this opportunity to thank the experts, officials, various organizations-government departments, universities, national/international NGOs, media and various individuals too numerous to be named, for their valuable contributions in the proceedings of the select committee and for their submissions.

I also wish to acknowledge the invaluable support provided by various governments and international agencies for arranging eye-opening, invaluable study visits to different countries. Most of these countries visited have highly effective mechanisms for mitigating disasters and for reducing their impacts on lives and economy and the experiences from these study visits have contributed a lot towards the select committee’s recommendations.

I also wish to put on record the valuable contribution of the UNDP and IOM in supporting the committee with technical inputs and assisting the select committee with this report.

The Committee also wishes to express its sincere appreciation for the assistance and cooperation extended by the Parliament Staff.

It is also my sincere belief that since the recommendations have been arrived at, by consensus, and considering the bipartisan approach of the committee, any government would be in an excellent position to implement these recommendations towards a ‘safer Sri Lanka’

Mahinda Samarasinghe, MP
Chief Opposition Whip
Chairman- Sri Lankan Parliament Select Committee on Natural Disasters
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Executive Summary

What Sri Lanka learnt from the 26th December 2004 Tsunami

The experience of Tsunami of 26th December 2004 was that the people were taken unawares. It was a rare disaster, the characteristics of which were not known widely and people in Sri Lanka did not know what was happening. The most important lessons learnt were preparedness for events of this nature is vital and that all segments of population including the community and all levels of officials must be made aware of the peculiar characteristics of tsunami, and as this is a very rare occurrence it is important that the knowledge is passed on to the next generation.

The Parliament Select Committee consisting of 21 members from all political parties represented in Parliament, was appointed with Hon. Mahinda Samarasinghe, Chief opposition Whip of Parliament as the Chairman to investigate and recommend steps to ensure that an early warning system be put in place and other steps to minimize the damage caused by similar natural disasters. The Committee heard the evidence of relevant personnel, went on field visits and participated in several local and foreign study tours. Outcomes of these have been taken in to consideration in compiling this report.

Sri Lanka Disaster Management Act

The recommendations suggested in this report are in conformity with the Sri Lanka Disaster Management Act, No. 13 of 2005 certified on 13th May 2005. This Act provides for a framework for disaster risk management in Sri Lanka and addresses disaster management (DM) holistically, leading to a policy shift from response based mechanisms to a proactive approach toward DRM; and for establishment of Institutional and Legislative systems for a ‘legal’ framework for DRM. The fact that disaster management is a devolved subject as per the 13th Amendment of the Constitution has been considered and consequently the Chief Ministers of all Provincial Councils are included in the National Council for Disaster Management as members.

In the Act functions of the National Council for Disaster Management (indicated as Council or NCDM in this report) and Disaster Management Centre (DMC) have been listed. The DMC will carry out the designated function under the guidance of the Council.

Proposed National Mechanism for Disaster Risk Management

In conformity with the provisions of the Act, a National Mechanism for Disaster Risk Management is proposed with appropriate Institutional Framework for National Disaster Management and the Structure for National Level Response with EOCs at relevant levels.

In handling local disasters which are the more frequent ones in the country Provincial Councils and Local Authorities are to activate the provincial and local authority level EOCs to respond to emergency situations parallel to the district / division setup and similarly in long term actions for disaster mitigation to reduce the adverse impacts of disasters. Legal Powers as required by the 13th Amendment of the Constitution should be delegated to the Provincial Councils and consequently to the Local Authorities.

The Committee recommends to work towards establishing the proposed DMC within a specially created Disaster Management Ministry with a mission to create a culture of safety to reduce the vulnerability of the population to natural hazardous events in the future.
The proposed DRM system recommends that the DMC, acts as the focal point to strictly monitor and coordinate the components of the system with relevant existing agencies under the guidance of the Council. The present National Disaster Management Centre (NDMC) is to be restructured with legal powers to form the proposed DMC.

Five Year Programme for Strengthening Disaster Risk Management in Sri Lanka; and Resource mobilization and Partnership Strategy

The Committee proposes a Five-year Programme for Strengthening Disaster Risk Management System in Sri Lanka for implementation. Resource mobilization and Partnership Strategy for mobilizing national, regional and international resources and partnerships for disaster risk management is also proposed.

Key Reforms Suggested

Considering the inadequate disaster preparedness in the country at present as was evidenced in the December 2005 Tsunami, the Committee recommends the following key reforms in setting up the National Disaster Risk Management (DRM) Mechanism. The five year programme for establishing the system including these key reforms will lead to a new approach in managing natural disaster risks in Sri Lanka.

These reforms and other components of DRM are elaborated in detail in Chapter 3 through Chapter 11, in Part II of the report - Establishing the National Disaster Management System.

1. Systematic Multi-hazard Mapping and Disaster Risk Assessment – Apart from work done by NBRO on landslide hazard mapping relatively little is available on disaster risks. A Systematic Multi-hazard Mapping and Disaster Risk Assessment approach has been suggested. A special Hazard Mapping and Risk Assessment Unit is proposed within the DMC. Land Slide Studies Division (LSSD) of NBRO and also provide inputs to this centre. It also stresses the importance of deciding on priority areas for Risk Assessment based on criteria such as severely prone areas; importance of the sector – education, health, housing, and agriculture depending on the geographical area; and where presently development projects are being finalized for integrating at the initial stages of such projects.

2. Systematic Data Collection, Research and Analysis - An approach is suggested for systematic data collection, Research and Analysis proposing a Data Collection Centre and a Research and Development Unit within the DMC. These will be special technical units, which should be headed and manned by skilled personnel. The report suggests a system to be devised using the equipments presently available but which were not of use at the time of the recent tsunami calamity. An inventory of past disaster impacts and a DRM Website are also proposed.

3. Countrywide Disaster Early Warning System – The Committee considers that a powerful mechanism is required for coordination and working with relevant early warning agencies - international, regional and local considering the need for strengthening capacities of relevant local agencies covering early warning for weather related hazards, riverine floods, possible flooding downstream of reservoirs, possible landslides, coastal flooding/ storm surges and earthquakes and tsunamis/sea surges. Improvement of early warning dissemination systems is stressed. A study is suggested for getting recommendations on an appropriate cost effective comprehensive tsunami warning system.
4. **Natural Disaster Mitigation Strategy for each level of Government** - Mitigation activities to be carried out by relevant infrastructure and service providing agencies, local authorities and provincial council engineering divisions to be responsible for identifying mitigation projects that reduce disaster risk in a given area or a community including financial commitments. Local or donor funding may be used for such projects.

A multi-stakeholder mechanism at different levels must review such proposals and decide on priority projects considering the benefits to the communities and financial requirements.

5. **Systems for integrating disaster risk concerns in development** - It is imperative that disaster risk concerns are integrated in development. This includes integrating DRM in the National Development Process, introducing Codes and Guidelines for Planning and Construction in Disaster Prone Areas. A Building Technology Unit has been proposed as a division of the DMC with the aim of:

   i. Reviewing existing and developing new codes and guidelines,
   ii. Taking action to adopt them legally and making them mandatory,
   iii. Ensuring compliance.

   Land Use Zoning Based on Hazard Maps and Data Base of Lands indicating proneness to various hazards are proposed. Activities required by programmes of UN Agencies should receive attention.

   With regard to the coastal area buffer zone the Council has made suitable recommendations. Recommendations have also been made on development controls by LAs and requirement of EIA for all large development projects. To reduce future disaster risks, specific mechanisms must be developed to incorporate disaster risk reduction in the planning processes of some of the key development sectors such as environment, water resources, power and energy, education and health.

6. **Natural Disaster Preparedness and Response Planning for each level of Government** - For each level of Government preparation of Disaster Preparedness and Response Plans, an Emergency Operating Centre (EOC) and Disaster Management Committees are to be made mandatory.

   Local authorities are to be strengthened to improve their capacity to respond to disasters. DMC will coordinate and monitor preparedness of all levels of administration. Private sector agencies and communities also will be encouraged to prepare their plans. Departmental disaster preparedness plans including Standard Operation Procedures by service providing agencies at various levels would be related to technical activities of the department for recovery, emergency services, etc.

   In **Disaster Victim Identification (DVI)** expertise lacking in Sri Lanka, Australia is willing to support through advanced courses in Canberra.

   Preparedness and response plans will ensure stakeholder involvement in disaster preparedness and during emergency, such as various traders and others, community and CBOs, NGOs and media. Ministry of Social Welfare/Department of Social Services must introduce a more effective system to register NGOs who can take on specific responsibilities in their specialized area of activity and entrust them with specific tasks.

   Special community recovery modules are proposed to enable the communities to return to normalcy within the shortest possible time.

7. **Arrangements for Equitable Distribution of Relief and Recovery** - DMC must derive a formula for Equitable Distribution of Relief and Recovery, considering the proportion of population affected in different areas, especially in national scale disasters. Concerns of the Internally Displaced Populations (IDPs) as proposed by IOM are to be considered.
8. **Protection of Public Infrastructure from Impacts of Natural Disasters** - The two aspects to consider are protection of existing infrastructure, and designing and constructing new infrastructure to withstand the forces of the prevailing hazards, for which mitigation strategies and risk reduction strategies are suggested using information on multi-hazard risks.

The Committee stresses the importance of maintenance of existing infrastructure and hence the significance of timely fund allocations to be made for regular and periodic maintenance; and for repairs including hazard resistant measures to be built in as required by retrofitting. Also vital is the new infrastructure incorporating hazard mitigation measures at different stages of development.

9. **A National Public Education, Training and Community Awareness Programme**

Incorporate natural disaster risk management in **school curriculum** taking into consideration present activities already started and activities in proposal stage. A special activity proposed by the Committee is the « School Net Project » to train children to use internet system and as a tool for risk prevention awareness issues. The Environmental and Disaster Management Circles already initiated in schools can be utilised and further improved. To include risk awareness education, two elements that could be included are, i) risk awareness education of children at school level and ii) making schools safe from major accidents - with school safety plans.

For incorporating disaster risk management in **university education** to initiate and commence teaching within a period of 3 years; draw up a programme for integration in all relevant degree and PG level courses as compulsory and/or optional modules in all other courses in all universities; start PG Diploma and Masters Courses, and PhD studies in Disaster Management related subjects; promote projects, assignments and research work; seminars for dissemination of findings and research publication of selected work.

Continue the present **training and public awareness** programmes with improvements; target groups and specific training areas are identified in the report; the mechanism for implementing should take into account activities presently done by various agencies and newly identified agencies.

10. **Development of Private Sector** - to promote private sector to organize themselves in to associations with the Goal of "providing a forum for information exchange to enhance emergency preparedness and contingency planning within the business community". They must have their own plans for responding to disasters as well as for rapid recovery after a disaster. A similar organization is in existence and functioning in the City of Los Angeles in USA known as Business and Industry Council for Emergency Planning and Preparedness (BICEPP). The Ceylon Chamber of Commerce has also recently commenced action on steps to be taken in case of an earthquake.

11. **Volunteers** - The Committee recommends creating a culture of volunteerism to promote Emergency Management Volunteers at village, LA and division levels for assisting in emergencies. These groups will be registered by the relevant administration and training provided. In recruiting volunteers some consideration are, getting committed people from non-traditional sectors, including young people, culturally and linguistically diverse groups, and retired and semi-retired people, without any political bias and those willing to provide their service irrespective of what political parties are in power at local, provincial or national level governing bodies. Lessons from Australia can be taken for organizing volunteers in a systematic manner.

12. **Role of Media in Natural Disaster Management** - Focus of media attention are, events which are of priority interest to each media organization's own audience and shock effect of an immediate disaster situation. Aspects of media coverage depend on their
operational capacity and news gathering strategy. Media Mobilisation Guidelines for Long Term and Short Term are proposed.

13. **Role of Non-Governmental Organizations** - NGOs active in the area of Disaster Management should be recognized and facilitated by government by registering and maintaining their details in a suitable format indicating types of their activity and their commitment in case of a disaster. It is recommended that a Code of Conduct similar to that used by AUSAID be developed for adoption.
# Key Recommendations

## Chapter 2

### Recommendation 2-1:
The Committee recommends that legal powers as required by the 13th Amendment of the Constitution be delegated to the Provincial Councils and consequently to the Local Authorities.

### Recommendation 2-2
The Committee recommends to work towards establishing the proposed DMC within a specially created Disaster Management Ministry, by restructuring the present National Disaster Management Centre (NDMC) with legal powers and strengthened as provided for by the Act making it a strong proactive organization.

### Recommendation 2-3
The Committee recommends that Organizational Structure of the DMC be such that it will have special divisions to directly carry out selected technical activities; and also to facilitate and coordinate other disciplines with relevant technical agencies/ministries and different levels of administration. Disciplines will include,
- Hazard Mapping and Risk Assessment
- Research & Development
- Data Collection
- Building technology
- Forecasting, Early warning and dissemination
- Long term Disaster Risk Reduction and Development
- National Level Preparedness for Response, Recovery, Rehabilitation and Reconstruction and monitoring same
- District, Divisional, Local authority, Village Level Preparedness for Response, Recovery, Rehabilitation and Reconstruction and monitoring same
- National and District Emergency Operations Centre
- Training, Education & Public Awareness
- Finance and Administration

### Recommendation 2-4
The Committee recommends that a multi-disciplinary approach be adopted by DMC to implement required tasks with involvement of existing agencies at national, provincial and local levels, with the participation of a large spectrum of stakeholders such as the armed forces, police, professionals, administrators, academia, policy makers, non-governmental and governmental organizations, religious leaders, private sector and most importantly communities at risk.

### Recommendation 2-5
The Committee recommends that in the proposed DRM system under the guidance of the Council, the DMC with necessary administrative powers, to act as the focal point to strictly monitor and coordinate all components of the system with relevant existing agencies.
### Chapter 3

#### Recommendation 3-1

The Committee recommends that mapping of all hazards be initially undertaken at national and provincial level by the DMC for all hazards that have not been undertaken so far (say in scales of 1:50,000 to 1:25,000). Mapping at other selected areas or local authority areas could be in scales of 1:10,000 or 1:5,000 as appropriate. These maps can be based on priority in highly prone areas.

#### Recommendation 3-2

The Committee strongly recommends that a technical division for multi-hazard mapping and risk assessment be established within the DMC under the title “Hazard Mapping and Risk Assessment Centre (or Unit)“. The aims are,
- Ensuring that all hazard maps will be available in one place enabling users to have easy access
- Ensuring that technology transfer will be in one central agency when collaborating in projects with the international agencies providing technical assistance
- Having the expertise, information and technology in one place without being scattered in several locations

#### Recommendation 3-3

The Committee recommends that priority areas be selected based on following criteria for specific risk assessments considering the financial capacities and availability of technical know how:
- Severely prone areas
- Importance of the sector – education, health, housing, agriculture depending on the geographical area
- Where presently development projects are being finalized – it is economically feasible to integrate at the initial stage of the development rather that trying to incorporate disaster aspect later on.

### Chapter 4

#### Recommendation 4-1

The Committee recommends setting up of National Data Collection, Research and analysis division of within the DMC

#### Recommendation 4-2

The Committee recommends promoting research studies on disaster related subjects to strengthen the data base on disaster information and assist in the disaster risk assessment studies in prone areas.

#### Recommendation 4-3

The Committee recommends improving the already initiated disaster inventory linking with the PDC, incorporating the considerations suggested.

#### Recommendation 4-4

The Committee recommends strengthening the existing website, including additional information on needs and allied details and regularly updated
**Chapter 5**

**Recommendation 5-1**
The Committee recommends that the Early Warning Division of the DMC under the guidance of the Council be the main focal point responsible for coordinating early warning, along with a Technical Advisory Committee comprising relevant professional agencies and experts. All responsible agencies to keep constant coordination with the Early Warning Division of the DMC and in instances of any imminent disaster take action to inform the responsible officers for onward communication to the Council.

**Recommendation 5-2**
The Committee recommends reviewing performance of existing technical agencies responsible for early warning and take measures to remedy shortcomings such as lack of professional staff (E.g., GSMB does not have even a single seismologist), lack of required basic equipment and lack of legal mandate to coordinate, monitor or issue warnings.

**Recommendation 5-3**
The Committee recommends initiating a study regarding the proposed Tsunami Warning System with a view to getting recommendations for an appropriate cost effective and comprehensive proposal.

**Chapter 6**

**Recommendation 6-1**
The Committee recommends that mitigation strategies be adopted by relevant agencies at all levels, such as:
- Relevant infrastructure and service providing agencies
- Local authorities and
- Provincial council engineering divisions, by identifying mitigation projects that reduce disaster risk in a given area or a community.

A Disaster Management Committee at the different levels will be the multi-stakeholder mechanism to review such proposals and decide on priority projects considering the maximum benefits to the communities in relation to the cost proposed, and availability finances. Local or donor funding may be used for such projects.

**Chapter 7**

**Recommendation 7-1**
The Committee recommends setting up of a Building Technology division within the DMC with the aim of:
- Reviewing existing and developing new codes and guidelines
- Taking action to adopt them legally and making them mandatory
- For ensuring compliance.
Recommendation 7-2
With regard to the buffer zone the Committee recommends:
- No future development should be permitted within the buffer zones, and the provisions of the coast Conservation Act should be strictly implemented.
- In case of people who wish to leave the buffer zone, the government should facilitate relocation on alternative safer sites outside the buffer zone.
- The authorities should take the responsibility of making available to the population who were resident in the 100m/200m buffer zone scientific information regarding the safety and the suitability of these locations. Upon receipt of the information, the people concerned would then be allowed to make an informed choice whether to rebuild in the buffer zone.

Recommendation 7-3
For disaster resilient development, as the major part of development are within the purview of LAs under the guidance of UDA, the Committee recommends reviewing the prevailing system and taking action for improvement. Other connected recommendations are, revision of land-use zoning plans of LAs considering prevailing hazards; revision of procedure for application for approval of land blocking out plans (BOPs) and housing and building construction; provision of training for LA technical personnel, including attitudinal changes.

Recommendation 7-4
The Committee recommends that EIA requirement for all large scale development projects irrespective of the category of implementing agency be strictly enforced.

Chapter 8

Recommendation 8-1
The Committee recommends that that Ministry of Social Welfare / Department of Social Services identify suitable NGOs who can take on specific responsibilities in their specialized area of activity and entrust them with specific tasks. The PSC recommends DMC to:
1. Assess the organizations helping in the relief and recovery including government and private sector agencies, and NGOs
2. Assess the current relief and recovery arrangements
3. Propose an approach which ensures the above criteria

Recommendation 8-2
The Committee recommends that DMC makes arrangements for Equitable Distribution of Relief and Recovery adopting a formula developed by considering the proportion of population affected in different areas, especially in national scale disasters. Concerns of the IDPs are also to be considered in the proposal.

Recommendation 8-3
The Committee recommends proposing and implementing special community recovery modules to enable them to return to normalcy within the shortest possible time.

Chapter 9

Recommendation 9-1
Considering the importance of maintenance of existing infrastructure, the Committee recommends that government makes fund allocations for regular and periodic maintenance;
and for repairs including hazard resistant measures to be built in by way of retrofitting initiatives on priority basis. The respective agencies are to carry out the activities using cost effective methods and in a transparent manner.

### Chapter 10

#### In school education:

**Recommendation 10-1**

The Committee recommends continuation of activities on integration of disaster Risk Awareness and Mitigation in School Curriculum, where possible timing with any proposed school curriculum development / revisions / reforms.

**Recommendation 10-2**

The Committee recommends developing and implementing school safety plans for making schools safe from major accidents.

**Recommendation 10-3**

The Committee recommends introducing Web based learning and School Net Project - Creating networks of school « Cyber-base »: permanent one for schools in urban areas and mobile one for schools in rural and mountains areas, with the aims of training children to use internet system and as a tool for risk prevention awareness. The Environmental and Disaster Management Circles already initiated in schools to be utilised and further improved in establishing a School Net Project.

#### In university education:

**Recommendation 10-4**

The Committee recommends action to initiate integration of disaster risk management in universities after reviewing current activities related to DM and drawing up a programme for integration in all relevant courses as compulsory and/or optional modules in order to commence teaching within a period of one year.

**Recommendation 10-5**

The Committee recommends commencing Post graduate Diploma and Masters Courses in Disaster Management related subjects in relevant departments of universities and promoting PhD studies.

**Recommendation 10-6**

The Committee recommends promoting research work and studies on disaster related themes; seminars for dissemination of findings; and publication of selected work.

#### Training and public awareness

**Recommendation 10-7**

The Committee recommends that proposed mechanism for implementing training and awareness takes into account activities that have been, and are being carried out by various agencies, and in addition services of other newly identified agencies to be utilised.

**Recommendation 10-8**

The Committee recommends that facilities available for officials for specialised training and post graduate education in international universities be utilised effectively by selecting relevant officials with required qualifications.
**Recommendation 10-9**

The Committee recommends strengthening the capacity of Grama Niladharis (GNs) who are closest to the affected communities and facilitating building of stronger links with other disaster response actors at the district, divisional, provincial and national levels.

**Chapter 11**

**Recommendation 11-1**

The Committee recommends promoting private sector to organize themselves in to associations with the Goal of “providing a forum for information exchange to enhance emergency preparedness and contingency planning within the business community” and also to have their own plans for responding to disasters and for rapid recovery after a disaster.

**Recommendation 11-2**

The Committee recommends creating a culture of volunteerism at village, LA and division levels for assisting in emergencies. To register volunteer groups by administrations at relevant levels and take action to provide training.

**Recommendation 11-3**

The Committee recommends recognizing the role of Media in Natural Disaster Management, providing awareness using Media Mobilization Guidelines for long term and for short term on impending or during disasters.

**Recommendation 11-4**

The Committee recommends NGOs active in the area of Disaster Management be recognized and facilitated by government; and a Code of Conduct similar to that used by AUSAID be developed for adoption.
### Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>BOISL</td>
<td>Board of Investment of Sri Lanka</td>
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<td>CBOs</td>
<td>Community Based Organizations</td>
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<td>CCD</td>
<td>Coast Conservation Department</td>
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<td>CHPB</td>
<td>Centre for Housing Planning and Building</td>
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<td>CEA</td>
<td>Central Environmental Authority</td>
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<td>CEB</td>
<td>Ceylon Electricity Board</td>
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<td>CECB</td>
<td>Central Engineering Consultancy Bureau</td>
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<td>Committee</td>
<td>Parliament Select Committee</td>
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<td>Council</td>
<td>Disaster Management Council</td>
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<td>CTBT</td>
<td>Comprehensive Test Ban Treaty</td>
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<td>CTBTO</td>
<td>Comprehensive Test Ban Treaty Organization</td>
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<td>CU</td>
<td>University of California</td>
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<td>DMS</td>
<td>Data Management System</td>
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<td>DM</td>
<td>Disaster Management</td>
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<td>DMC</td>
<td>Disaster Management Centre</td>
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<td>DOC</td>
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<td>DPRP</td>
<td>Disaster Preparedness and Response Plan</td>
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<td>DRR</td>
<td>Disaster Risk Reduction</td>
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<td>Emergency Action Plans</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>Early Warning System</td>
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<td>GN</td>
<td>Grama Niladhari</td>
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<td>GSMB</td>
<td>Geological Survey and Mines Bureau</td>
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<td>GSN</td>
<td>Global Seismic Network</td>
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<td>ICTAD</td>
<td>Institute for Construction Training and Development</td>
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<td>ID</td>
<td>Department of Irrigation</td>
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<td>IDA</td>
<td>International Deployment of Accelerators</td>
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<td>IDPs</td>
<td>Internally displaced persons</td>
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<td>IMS</td>
<td>International Monitoring System</td>
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<tr>
<td>IRIS</td>
<td>Incorporated Research Institute of Seismology</td>
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<td>ITDG</td>
<td>Intermediate Technology Development Group</td>
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<td>IOM</td>
<td>International Organization for Migration</td>
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<td>LSSD of NBRO</td>
<td>Land Slide Studies Division of National Building Research Organization</td>
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<td>LUPPD</td>
<td>Land Use Policy Planning Division</td>
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<td>MASL</td>
<td>Mahaweli Authority of Sri Lanka</td>
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<td>MC</td>
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<td>MD</td>
<td>Meteorology Department</td>
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<td>MWE&amp;SW</td>
<td>Ministry of Women’s Empowerment &amp; Social Welfare</td>
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<td>NARA</td>
<td>National Aquatic Resources Agency</td>
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<td>NBRO</td>
<td>National Building Research Organization</td>
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<td>National Disaster Management Centre</td>
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<td>NGOs</td>
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<td>NHDA</td>
<td>National Housing Development Authority</td>
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<td>NIE</td>
<td>National Institute of Education</td>
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<td>NOAA</td>
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<td>NPPD</td>
<td>National Physical Planning Department</td>
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<td>NWS&amp;DB</td>
<td>National Water Supply and Drainage Board</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<tr>
<td>PALK</td>
<td>Pallekele Station</td>
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<td>PC</td>
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<td>PHI’s</td>
<td>Public Health Inspector</td>
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<td>PRDA</td>
<td>Provincial Road Development Authority</td>
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<td>PS</td>
<td>Pradeshiya Sabhas</td>
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<tr>
<td>PTWC</td>
<td>Pacific Tsunami Warning Center</td>
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<tr>
<td>R&amp;D</td>
<td>Research &amp; Development</td>
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<tr>
<td>RDA</td>
<td>Road Development Authority</td>
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<tr>
<td>S&amp;T</td>
<td>Science &amp; Technology</td>
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<tr>
<td>SLIDA</td>
<td>Sri Lanka Institute of Development Administration</td>
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<tr>
<td>SLLRDC</td>
<td>Sri Lanka Land Reclamation and Development Corporation</td>
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<td>SLN</td>
<td>Sri Lanka Navy</td>
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<tr>
<td>SLRC</td>
<td>Sri Lanka Red Cross</td>
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<tr>
<td>SLUMDMP</td>
<td>Sri Lanka Urban Multi-Hazard Disaster Mitigation Project</td>
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<tr>
<td>SME - Peradeniya</td>
<td>Seismic Monitoring Equipment in Peradeniya</td>
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<tr>
<td>SOC</td>
<td>Site Operation Functions</td>
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<td>SOP</td>
<td>Standing Operating Procedures</td>
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<td>SSOs</td>
<td>Social Services Officers</td>
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<td>TMWS</td>
<td>Tsunami Monitoring and Warning System</td>
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<tr>
<td>UC</td>
<td>Urban Councils</td>
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<tr>
<td>UCSD</td>
<td>University of California San Diego</td>
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<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
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<td>UN WCDR</td>
<td>United Nations World Conference on Disaster Reduction</td>
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<tr>
<td>UDA</td>
<td>Urban Development Authority</td>
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<td>USGS</td>
<td>US Geological Survey</td>
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<td>USJ</td>
<td>University of Sri Jayewardenepura</td>
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PART I

BACKGROUND AND INSTITUTIONAL FRAMEWORK
Chapter 1

1 Background

1.1 Tsunami of 26.12.2004

The disastrous tsunami event which occurred on 26th December 2004 was the result of a great and shallow earthquake with its focus at a depth of about 30 km below the bottom of the Indian Ocean and characterized by upward movement (reverse faulting) with a maximum displacement of about 15 m. The earthquake ruptured about 1200 km long segment of the plate boundary between the Indo-Australian and southeastern Eurasian plates. This giant earthquake took place on 26th December 2004 at about 6.59 a.m. (Sri Lanka time) in a seismically active region at the above plate boundary. The epicentre was located in the Indian Ocean off the west coast of northern Sumatra Island.

It is the second most powerful earthquake in the world in the last 100 years registering a moment magnitude of 9.3 and the worst in 40 years. This earthquake generated the most disastrous tsunami in the human history, which affected 12 countries in the Indian Ocean region. The countries that were directly affected by the tsunami were Bangladesh, India, Indonesia, Kenya, Malaysia, Maldives, Mauritius, Myanmar, Seychelles, Somalia, Sri Lanka, Tanzania and Thailand. This great earthquake was felt in many areas in Sri Lanka with an intensity of II-III on the Mercali scale. The tsunami waves which were originated with this earthquake struck coastal regions causing unprecedented destruction to life and property in the Indian ocean region where such events were rare.

Over five tsunamis had been reported in this region in the last 500 years. The 26/12/2004 event has taken the biggest human toll recorded so far in the world by any tsunami. The earlier high casualty tsunami from the Pacific was reported from Chile in 1868 with more than 25000 deaths. However, a tsunami that killed about 70,000 people was reported from Portugal in 1755.

Tsunami is a rare, unpredictable and a destructive type of event. The experience of the 26th December 2004 was that the people were taken unawares. This was a disaster, the characteristics of which were not known widely. Unfortunately a historic and a well documented tsunami incident\(^1\) that hit Sri Lanka on 27th August 1883 was not widely known.

During this event, according to the reports, the water in some parts of the sea coast of Sri Lanka had receded by several hundreds of feet from the shore (Galle harbour) exposing wrecks and debris in the sea, while in other areas the water had surged in (Negombo and Arugam Bay). The cause of this tsunami event had been the eruption of the Krakatoa volcano in Indonesia. This eruption generated the loudest sound ever recorded by human beings - the

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\(^1\) Sunday Leader, 2\(^{nd}\) January 2005 – Article quoting The Reefs of Taprobane by Dr. Arthur C Clarke – 1957; Krakatoa: The Day the World Exploded by Simon Winchester; and Natural Hazards and Earth System Sciences, European Geosciences Union – Research Paper, 2003
cataclysmic explosion was distinctly heard as far away as Alice Springs in Australia\(^2\), and Rodriguez near Mauritius and atmospheric shock waves reverberated around the world. If the professionals or authorities concerned in Sri Lanka happened to do some researching into geology related catastrophic events in the region over the past 200 years or so, the findings could have served as a guide at the time of this catastrophe.

When the tsunami struck on 26 December people in Sri Lanka did not know what was happening. The people observing the phenomenon probably would not have known whether it is a local occurrence in the sea or a country wide phenomenon. Many people moving to the sea shore exploring it when the sea receded stand testimony to this fact.

There was a time gap between the strike of the tsunami on Indonesia and that on Sri Lanka. Even within the country, the coast was hit by the wave at different times (East getting the first brunt, but gradually spreading to North, South and finally the West) allowing adequate time for warning if the mechanism were there.

The most important lesson learnt was that all segments of population including the community and all levels of officials must be made aware of the peculiar characteristics of tsunami\(^3\), which are listed below. As this is a rare occurrence, it is important that the knowledge is passed on to the next generation.

- Impact on shoreline can be preceded by a marked receding of the shoreline, sometimes by a kilometer or more, similar to a massive outgoing tide, followed by a very destructive incoming tsunami wave. People may get trapped by going to investigate the phenomenon of the retreat of the shoreline and then being struck by the incoming dangerous tsunami wave.

- The velocity of tsunami waves depend upon the depth of the ocean water, and consequently the waves undergo accelerations or decelerations in passing respectively over an ocean bottom of increasing or decreasing depth. In the deep sea, tsunami waves can travel at velocities of 500 to 1,000 kilometers per hour. Near shore, however, a tsunami slows down to just a few tens of kilometers per hour.

- Warning time is very short depending on the distance from the source region of the tsunami.

- Speed of onset varies.

\(^2\) Wikipedia, the free encyclopaedia
\(^3\) Disaster Management A Disaster Manager's Handbook by W. Nick Carter, ADB, 1991
• Can be very destructive; wave heights of more than 30 metres have been known.

• Impact can cause: flooding; salt water contamination of crops, soil and water supplies; also destruction or damage to buildings, structures, roads, destruction of oil refineries and storages and shoreline vegetation, etc. Fire resulting from the destruction of oil refineries and storages can cause serious damages, sometimes greater than that inflicted directly by the tsunami.

While the velocity of tsunami waves on the land can be in the range of 3 to 8 \(\text{m/sec}\), the force of impact can be within the range from 400 – 3000 \(\text{kg/m}^2\).

In Sri Lanka, this catastrophe is widely considered as the largest and the most devastating natural disaster in the history of the country. The tsunami waves struck the coastal areas of the country across thirteen districts located in the North-Eastern and the South-Western parts of the country. The waves penetrated inland areas more than 500 meters in some places. The official figures indicate that approximately 30,959 people were killed by the tsunami in Sri Lanka leaving another 562,601 displaced. Over 113,625 houses were completely destroyed. The total replacement cost to the economy is estimated to be around US $ 1.8 billion\(^4\). The tourism and fisheries industries appear to be the worst affected due to loss of income and production. Natural eco systems and coastal infrastructure systems including roads and railways, power, communications, water supply and sanitation facilities and fishing ports were severely damaged by the tsunami waves.

1.2 The Geophysical Perspective

When the tsunami hit on 26 December, people in Sri Lanka were not ready. The reason was that the Indian Ocean and Atlantic Ocean had been internationally identified as Tsunami free zones. The same international community identified Pacific Ocean as a Tsunami generating area, 40 years back and established the Pacific Tsunami Warning Center (PTWC).

i. Earthquakes

The lithosphere which is the uppermost strong region of the Earth comprising the entire rigid crust and the underlying rigid part of the upper mantle is broken into about 13 fragments known as plates. The convective currents taking place in the mantle of the Earth below the lithosphere drive these plates with respect to each other on the soft region of the mantle called the asthenosphere. Because of these movements, stresses build up at the boundaries of the plates leading to earthquakes. Three kinds of plate boundaries exist, and the nature and magnitude of earthquakes depend upon the nature of the movements at these boundaries. The three types of plate

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\(^4\) Rebuilding Sri Lanka- Action Plan, TAFREN, 2005
boundaries are (1) convergent plate boundaries (including subduction zones), (2) divergent plate boundaries and (3) transform plate boundaries.

The most destructive earthquake occurs at convergent plate boundaries. For example, there is a very high intensity of occurrence of earthquakes along the margin of the Pacific Ocean where there is a convergent plate boundary. Sri Lanka lies in the middle of the Indo-Australian plate away from any major seismic zones, thus, is free from disastrous earthquakes. However, geoscientists believe that a new plate boundary has been developing in the Indian Ocean south of Sri Lanka during the last eight (8) million years. Some minor earthquakes and tremors felt in Sri Lanka may be originating in this newly developing seismic zone known as the South Zone development.

ii. Tsunamis

Tsunamis are impulsively generated sea waves by a disturbance in or near the ocean. Apart from earthquakes, other triggering mechanisms of tsunamis include volcanic eruptions in the ocean, submarine landslides, coastal landslides or even large scale man-made detonations or asteroid impacts. Unlike regular ocean tides, tsunamis are not caused by the tidal action of the Moon and Sun.

Tsunamis and associated earthquake ground shaking differ in their destructive characteristics. Ground shaking causes destruction in and around the epicentral area (e.g. near Sumatra in the 26th December 2004 event), whereas the tsunamis can cause destruction locally and at very distant locations (e.g., Somalia).

A tsunami travels outward from the source region as a series of waves. The height (amplitude) of a tsunami wave depends upon the depth of the ocean. In the deep sea its height is typically about 1 m or less. A tsunami wave that is just a meter or less in height in the deep ocean can grow to several tens of meters at the shore, sometimes higher than 30 m. The velocity of tsunami waves depend upon the depth of the ocean water, and consequently the speed increases or decreases in passing respectively over an ocean bottom of increasing or decreasing depth. In the deep sea, tsunami waves can travel at velocities of 500 to 1,000 kilometers per hour. Near the shore, however, a tsunami slows down to just a few tens of kilometers per hour. At the shore, the tsunami will behave differently depending on the near shore bathymetry (depth pattern), shape of the coastline and the state of the tide. In some instances, a tsunami may induce relatively benign flooding particularly in low-lying coastal areas. In other instances, it can come onshore as a vertical wall of turbulent water that can be very destructive. In most cases there can be a draw down of sea level either preceding or in between crests of tsunami waves that results in a receding of the shoreline, sometimes by a kilometre or more.

Destruction from tsunamis is the direct result of three factors: inundation, wave impact on structures and erosion. Strong tsunami-induced currents have led to the erosion of foundations, collapse of bridges and sea walls. Floatation and drag forces can move houses and overturn vehicles including moving
trains. The floating debris including boats and cars can become dangerous projectiles and cause considerable damage.

If the cause of the tsunami is an under-sea earthquake (with a magnitude generally over 6.5 on the Richter scale), a tsunami can occur only when the displacement of the ocean floor is upward (reverse or normal faulting). If the displacement is lateral, then a tsunami will not be generated. Thus, tsunamis are not associated with all under-sea earthquakes. The most destructive tsunamis are generated from large, shallow-focus under sea earthquakes, which mostly occur at subduction zones.
Chapter 2

1 Proposed National Mechanism for Disaster Risk Management

2.1 Linkage with the disaster management bill

The recommendations suggested in this report are in conformity with the Sri Lanka Disaster Management Act, No. 13 of 2005 certified on 13th May 2005, passed by Parliament without division and this Act provides for a framework for disaster risk management in Sri Lanka and addresses disaster management (DM) holistically, leading to a policy shift from response based mechanisms to a proactive approach toward DRM; and for establishment of Institutional and Legislative systems for a ‘legal’ framework for DRM. To ensure sustained impacts of DRM measures and mechanisms on the ground, structured implementation of the provisions of the Act will be vital.

The Chief Ministers of all Provincial Councils are included in the National Council for Disaster Management as members. Therefore, the subject on disaster management is should be made a concurrent subject in 13th Amendment to the Constitution so that legal powers could be delegated to Provincial Councils and consequently to local authorities.

Within the scope of this report, the following provisions in the Act are of importance:

i. Functions of the National Council for Disaster Management (NCDM)

The following are spelled out as functions of the Council as its functions and through these provisions it will strategize the implementation mechanisms:

   a. Formulate a National Policy and Programme for DM
   b. Prepare and formulate the National Disaster Management Plan and the Emergency Operation Plan
   c. Monitor and implement the National Disaster Management Plan and the Emergency Operation Plan
   d. Facilitate emergency response, recovery, relief, rehabilitation and reconstruction in the event of a disaster
   e. Take all steps to counter any disaster or impending disaster in accordance with the plans
   f. Direct, coordinate and monitor activities of the Disaster Management Centre established under the provisions of this Act
   g. Ensure adequate publicity to the above 2 plans
   h. In the preparation of Disaster Management Plan to specify guidelines to be complied by every ministry, government department and public corporations
   i. Facilitate and support local and community self reliance in the event of any potential or actual disaster
   j. Promote public awareness campaigns and fund research and development in DM
   k. Facilitate liaison with originations and persons pursuing hazard, vulnerability and risk reduction studies and implementing action programmes and commissioning such studies and action programmes
   l. Assign functions and responsibilities to the Disaster Management Centre (DMC)
   m. Initiate programmes relating to prevention and mitigation of disaster and provision of relief, rehabilitation and reconstruction
   n. Appraise the Cabinet of Ministers on all relevant matters connected with any potential and actual disasters
o. Recommend the allocation of funds for DM from the relevant authorities and bodies and the Reconstruction and Rehabilitation Fund established by the relevant Act

ii. Disaster Management Centre (DMC)

Disaster Management Centre will be headed by a Director General and there will be Directors appointed as determined by the Council. The functions will be as follows:

a. Assisting the Council to prepare the National Disaster Management Plan (NDMP) and the Emergency Operation Plan and proposals for upgrading when necessary

b. Taking responsibility to implement the National Disaster Management Plan (NDMP) and the Emergency Operation Plan (EOP), and upon declaration of a state of disaster to direct and coordinate implementation of EOP

c. Ensure that Disaster Management Plans prepared by ministries, government departments and public corporations conforms to the NDMP

d. Facilitate and support local and community self reliance in the event of any potential or actual disaster

e. Based on NDMP by various ministries, government departments and public corporations, preparing and implementing programmes and plans for disaster preparedness, mitigation, prevention, relief, rehabilitation and reconstruction activities and coordinating of all organizations which implement such programmes and plans, and obtain financial assistance from the Treasury and release same to relevant regions and monitor and evaluate these activities

f. Issuing instructions and guidelines to appropriate organizations, non-governmental organizations, district secretaries and divisional secretaries on DM related activities and initiating and implementing activities with such organizations and secretaries

g. Promoting research and development programmes in relation to DM and maintaining a database on DM

h. Submitting reports to the Council as required

iii. Technical Advisory Committees (TAC) - Provision for Technical Advisory Committees appointed by the NCDM for assisting NCDM and DMC

iv. National Disaster Management Plan (NDMP) - Disaster Management Plans to be prepared and submitted by ministries, government departments and public corporations conforming to the NDMP before the date specified by Council; DMC to extend assistance in the preparation; DMC to submit same to Council

v. Declaration of a disaster

vi. Procedure to be followed on Declaration of a disaster

vii. Council to obtain assistance of NGOs

viii. Duties of an appropriate organization

ix. Award of compensation

x. Designation of appropriate organization - Council may designate any ministry, government department, public corporation or Disaster Management Centre (DMC) as an appropriate organization required to carry out and implement the NDMP or Emergency Operation Plan (EOP) as the case may be and generally assist the Council (published in the gazette and specifying duties, guidelines, functions etc.)

In conformity with the provisions of the Act, the structures illustrating possible Institutional Framework for National Disaster Management and the Structure for National Level Response are shown in Annex 2.1-I and Annex 2.1-II. In addition the charts show the positions of provincial departments and local authorities; and the EOCs at these levels.
2.2 Legal Powers of each level of Government – National, Provincial, District, Division, Local Authority and Village Levels

In establishing the DRM system, a very vital aspect to be taken into consideration is the fact that disaster management is a devolved subject as per the 13th Amendment of the Constitution. Accordingly Chief Ministers of Provincial Councils have been included in the Council as members. However, in the practical context, there is confusion as to the line of hierarchy among the different streams of administration at national, provincial and district levels.

In case of a national disaster, Disaster Management can be coordinated by the national level. However, in handling local disasters which are the more frequent ones in the country Provincial Councils and Local Authorities are to activate the provincial and local authority level emergency operations centres to respond to the situation parallel to the district/division setup. Similar situation should prevail in taking long term actions for disaster mitigation to reduce the adverse impacts of disasters.

When discussing the powers of different levels of government, the experience of UNDP and SLUMDMP (a USAID project) in developing Long Term Disaster Mitigation Action Plans and Disaster Preparedness and Response Plans can be taken as examples. SLUMDMP in association with selected Municipal Councils and Urban Councils developed these plans where the relevant divisional secretaries were associated in the process. When UNDP developed such plans with the district and divisional authorities, representatives from PCs and LAs were involved in the process. However, it was observed that the success of the team effort mostly depended on personal relationships rather than the formal relations as required by the national and provincial setup.

There is an opinion among the PC administrators that they have not been consulted adequately in developing district level Disaster Preparedness and Response Plans (DPRP), whereas, the presumption of the district administration is that they function directly under the national government. This has to be cleared and the hierarchy established if the plans are to be implemented smoothly without friction among these two parallel streams of administration.

Even though the Chief Ministers of all Provincial Councils are included in the National Council for Disaster Management as members, there is no mention of delegation of authority either to the Provincial Councils or to Local Authorities.

Recommendation 2-1:
The Committee recommends that legal powers as required by the 13th Amendment of the Constitution be delegated to the Provincial Councils and consequently to the Local Authorities.

2.3 Institutional framework at the national, provincial, district, division, local and village levels

The recent tsunami has highlighted the cross-cutting nature of the disaster impacts, and thus the need for multi-sectoral, inter-institutional, and multidisciplinary approaches to manage current and future disaster risks. Having this in view there is a need for strengthening of national institutional arrangement that is multi-sectoral, works at all levels and plays an important coordinating role before, during and after the disasters. At the central level, there is a clear need to strengthen information management functions that continually track the existing and emerging patterns of disaster risk; understand linkage between development and disaster risk and form development policies that help reduce disaster risk. At the same time, there is need for strong information coordination systems for emergency response. Such a system will enable optimal utilization of emergency response resources available within the country and also help coordinate external emergency response assistance.
In a large scale disaster recovery efforts, this will assist in undertaking cross cutting interventions, with a participatory, equitable, flexible, decentralized, and transparent approach to meet the needs of the affected people.

Significant technical capacity presently exists within the country on various aspects of natural disaster risk management. However, this capacity is yet to be fully harnessed into a nationwide multi-tiered, multi-sectoral system that would address all aspects of disaster risk management. Such a nationwide system will not only improve the efficiency of post-disaster response but also ensure that development policy and practice works towards reducing future disaster risks.

**Disaster Management Centre (DMC)**

The initial steps would be the establishment of the DRM system and the institutional framework including the **Disaster Management Centre** (referred to as **DMC** hereafter) entrusted with responsibilities to monitor and coordinate all aspects of natural disasters with proactive attitudes as provided for in the Act.

**Recommendation 2-2**

The Committee recommends that the proposed DMC be established within a specially created Disaster Management Ministry, by restructuring the present National Disaster Management Centre (NDMC) with legal powers and strengthened as provided for by the Act making it a strong proactive organization. The Committee also recommends that the name of this centre be amended as "National Disaster Management Authority" as recommendations have been made to have special technical centers/units functioning as divisions within this organization.

By strengthening the existing NDMC to form the proposed DMC the activities carried so far by NDMC will be retained and it will be possible to develop those further. Otherwise, the work done by the NDMC will be lost and the new DMC will start all activities from the beginning which will be a waste of resources, time and effort.

Another very important issue is the strengthening with legislative powers if necessary of all other related agencies along with capacity building for smooth implementation of the system.

The **Broad Mission** of the disaster management authority would be to create a culture of safety to reduce the vulnerability of the population to natural hazardous events in the future.

In conformity with the functions as specified by the Act, the **main activities of the DMC** would be through country-wide ministries, departments and public corporations, district, division and local authority administration and Grama Niladharis to enforce, coordinate and monitor activities related to,

- Integration of natural disaster risk reduction (DRR) in the long-term planning, land use planning and development activities
- Specific risk reduction projects to reduce specific identified risks that can cause future disasters
- Forecasting impending disasters and issuing early warning and information dissemination
- Preparedness to respond to disasters when they occur
- Speedy restoration of post-disaster essential services, rehabilitation and reconstruction incorporating risk reduction measures

In addition, DMC should have the capacity to serve as the focal point and coordinating body for all world forums related to disaster risk reduction including integrating in development activities, such as UN WCDR, Regional Consultative Committee coordinated by the Asian Disaster Preparedness Center, Bangkok, Thailand etc.
Organizational Structure of DMC

The Organizational Structure of the DMC as provided for by the Act will be in the following lines (Refer Annex 2.3-I):

- Is headed by a Director General (DG) and instrumental in strengthening connections between the various actors who play a role in DRM in linking sources of technical information such as Department of Meteorology, NBRO, GSMB etc. to local planners, land use managers and those who disseminate early warnings etc.
- The sub division for "Finance & Administration" can be headed by a Deputy Director (or Director if deemed necessary )
- The essential staff required for the divisions must be assessed and placed with their duties and responsibilities well spelled out

<table>
<thead>
<tr>
<th>Recommendation 2-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Committee recommends that Organizational Structure of the DMC be such that it will have special divisions to directly carryout selected technical activities; and also to facilitate and coordinate other disciplines with relevant technical agencies/ ministries and different levels of administration. Disciplines will include,</td>
</tr>
<tr>
<td>- Hazard Mapping and Risk Assessment</td>
</tr>
<tr>
<td>- Research &amp; Development</td>
</tr>
<tr>
<td>- Data Collection</td>
</tr>
<tr>
<td>- Building technology</td>
</tr>
<tr>
<td>- Forecasting, Early warning and dissemination</td>
</tr>
<tr>
<td>- Long term Disaster Risk Reduction and Development</td>
</tr>
<tr>
<td>- National Level Preparedness for Response, Recovery, Rehabilitation and Reconstruction and monitoring same</td>
</tr>
<tr>
<td>- District, Divisional, Local authority, Village Level Preparedness for Response, Recovery, Rehabilitation and Reconstruction and monitoring same</td>
</tr>
<tr>
<td>- National and District Emergency Operations Centre</td>
</tr>
<tr>
<td>- Training, Education &amp; Public Awareness</td>
</tr>
<tr>
<td>- Finance and Administration</td>
</tr>
</tbody>
</table>

Multi-disciplinary approach

<table>
<thead>
<tr>
<th>Recommendation 2-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Committee recommends that a multi-disciplinary approach be adopted by DMC to implement required tasks with involvement of existing agencies at national, provincial and local levels, with the participation of a large spectrum of stakeholders such as the armed forces, police, professionals, administrators, academia, policy makers, non-governmental and governmental organizations, religious leaders, private sector and most importantly communities at risk.</td>
</tr>
</tbody>
</table>

The administrative network at National, Provincial, District, Divisional, Local authority and village levels, and all institutions at these levels would be responsible for implementation of the said activities with properly developed Long-Term Risk Reduction Action Plans and Disaster Preparedness and Response Plans.

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5 Long-Term Risk Reduction Action Plans and Disaster Preparedness and Response Plans have already been developed for some local authorities, districts and divisions under projects of UNDP and USAID; presently either published, being published or in draft stage; and disaster management committees have also been established

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Apart from these, Armed Forces and Police must prepare contingency plans and have them ready to be activated any time irrespective of holidays, weekends or night in case of large-scale national disasters. The existing supporting agencies would be Research & Development agencies, Science and Technology agencies (such as Department of Meteorology, National Building Research Organization, National Science Foundation, Marine Pollution and Prevention Authority, Geological Survey and Mines Bureau, Department of Irrigation etc.); Police and the Armed Forces; national and provincial level service providing agencies including hospitals and health department; planning and development agencies; training agencies etc. (see Table 2.3-1). These stakeholder agencies will be involved at the national level and other levels as relevant. These agencies must have their own disaster preparedness and response plans and procedures\(^6\) at different levels kept ready to be activated any time irrespective of holidays, weekends and at night. In addition NGOs, CBOs, communities etc. should be involved. The proposed Disaster Management Centre and some other agencies may be involved in all phases of the disaster management cycle.

**Table 2.3-1: Institutions involved**

<table>
<thead>
<tr>
<th>Departments and other National level Agencies</th>
<th>National Housing Development Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Department of Meteorology</td>
<td>• Department of Social Services</td>
</tr>
<tr>
<td>• National Building Research Organization</td>
<td>• Training and Development Agencies (SLIDA, CHPB, ICTAD, NGOs etc.)</td>
</tr>
<tr>
<td>• Irrigation Department</td>
<td>• Department of Education</td>
</tr>
<tr>
<td>• Geological Survey and Mines Bureau</td>
<td>• CWE and Cooperatives</td>
</tr>
<tr>
<td>• Coast Conservation Department</td>
<td>• Other as relevant</td>
</tr>
<tr>
<td>• Marine Pollution and Prevention Authority</td>
<td>Administration</td>
</tr>
<tr>
<td>• SL Army, SL Navy and SL Air Force</td>
<td>• District administration</td>
</tr>
<tr>
<td>• Police Department</td>
<td>• Divisional administration</td>
</tr>
<tr>
<td>• Health Department</td>
<td>• Village administration (Grama Niladharis)</td>
</tr>
<tr>
<td>• Hospitals</td>
<td>• Provincial Department</td>
</tr>
<tr>
<td>• Department of Railways</td>
<td>• Provincial Councils</td>
</tr>
<tr>
<td>• Road Development Authority</td>
<td>• Provincial RDA, Irrigation Department</td>
</tr>
<tr>
<td>• National Water Supply and Drainage Board</td>
<td>• Provincial Department of Education, Provincial Health agencies etc.</td>
</tr>
<tr>
<td>• Ceylon Electricity Board, other electricity providing agencies/companies</td>
<td>Local level agencies</td>
</tr>
<tr>
<td>• Telecommunication Authority</td>
<td>• All Municipal Councils</td>
</tr>
<tr>
<td>• TV, Radio, Press</td>
<td>• Urban Councils and</td>
</tr>
<tr>
<td>• Urban Development authority</td>
<td>• Pradeshiya Sabhas</td>
</tr>
<tr>
<td>• National Physical Planning Department</td>
<td>Other</td>
</tr>
<tr>
<td>• Central Environmental Authority</td>
<td>• SANASA</td>
</tr>
<tr>
<td>• SLLRDC</td>
<td>• Private sector agencies, businessmen</td>
</tr>
<tr>
<td>• Buildings Department</td>
<td>• NGOs</td>
</tr>
<tr>
<td>• State Engineering Corporation</td>
<td>• CBOs and Community</td>
</tr>
<tr>
<td>• National Aquatic Resources Agency (NARA)</td>
<td></td>
</tr>
<tr>
<td>• National Science Foundation</td>
<td></td>
</tr>
<tr>
<td>• Marine Pollution and Prevention Authority</td>
<td></td>
</tr>
</tbody>
</table>

\(^6\) Operational Procedure have already been developed for various agencies for use at district and divisional levels, and at local authority levels as a part of the preparedness plans.
These organizations appear to be working in isolation, sometimes loosely linked but with considerable gaps. And they are weak in some aspects which hinder their performance and therefore must be strengthened with legal amendments if necessary.

The national level mechanism and the DMC for monitoring and coordination as proposed by the Act will greatly improve these lapses. Institutional capacity building for these organizations is vital for effective implementation of the DRM activities.

Annex 2.3-II shows Specific existing agencies / stakeholders that would be associated in different phases. Annex 2.3-III describes Disaster Risk Management (DRM) Functions and Responsibilities of various agencies (This is not an exhaustive list of functions. Refer to Operating Procedures for detailed functions) and Annex 2.3-IV shows an Institutional Capacity Assessment – Natural Disaster Management done under the Stock Taking DM in Sri Lanka by MWESW & UNDP.

2.4 Approach for Setting Up a National Disaster Risk Management System (DRM)

The past major disaster events have shown the importance of having a sustainable national disaster risk management system for comprehensive disaster risk reduction (DRR) in the country. In the context of the preceding chapters of this report, long term disaster risk reduction should receive equal prominence in the national system as the preparedness aspects. Equally important is the need to take into consideration the risk reduction aspect during reconstruction after a disaster. What are required are proactive stances that look at the entire problem holistically rather than reactive measures following a disaster.

Two key weaknesses with regard to the state of the national disaster risk management system in the recent past as analysed in a study indicates that it is:

i. A system that is reactive rather than preventive
ii. A system that is ineffective in administering operational preparedness and response.

When implementing the provisions of the new Act following components of comprehensive disaster risk management must be considered:

**Risk Mitigation:** Measures to be taken before and after an event to reduce or minimize the effects of disasters on a community.

**Mainstreaming disaster risk reduction (DRR) into new development:** Measures to integrate mitigation into new development to reduce or minimize the effects of disasters on the new development, as well as to reduce or minimize triggering of new hazards / disasters due to the effects of the proposed development.

**Preparedness:** Measures to be taken before and after an event. This includes plans for response by national, regional and local governments, other public and private sector organizations, communities and individuals.

**Response and Recovery (restoration and rehabilitation):** Measures to be taken during and immediately after an event - Saving life, protecting property and dealing with immediate damage and disruption; assisting communities to return to normal level of functioning, includes restoration and rehabilitation.

**Reconstruction:** Post disaster measures (long term after the disaster) - replacement of destroyed buildings and infrastructure incorporating DRR with improved building systems, relocation where necessary and other programs to be resilient to future disasters.

<table>
<thead>
<tr>
<th>Recommendation 2-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Committee recommends that in the proposed DRM system under the guidance of the</td>
</tr>
</tbody>
</table>
Council, the DMC with necessary administrative powers, to act as the focal point to strictly monitor and coordinate all components of the system with relevant existing agencies.

Components of the system are given below:

♦ Integration of disaster mitigation in urban planning and development
♦ Control of ill-practices during development
♦ Prevention and mitigation of disasters wherever possible
♦ Forecasting of imminent disasters and providing early warning and dissemination
♦ Facilitating hazard and risk assessment of vulnerable areas (all hazards)
♦ Facilitating production and dissemination of information through research, and maintaining a National Data Collecting Centre
♦ Ensuring preparedness with emergency management plans to achieve well coordinated and effective response and relief distribution
♦ Ensuring speedy restoration of infrastructure and rehabilitation
♦ Reconstruction with due consideration to the possibility of recurrence of similar disasters
♦ Ensuring provision of awareness and training related to above for all relevant stakeholders including communities

The fact that disasters can happen at any time irrespective of holidays, weekends and nights must be taken into consideration when establishing systems for early warning as well as systems for immediate response following a disaster. This was clearly seen in the two recent major events, both of which happened during religious holidays.

Other Disasters

It should be noted and emphasised that once the system is established the same system (preparedness plans, response activities, recovery etc.) could be used in the event of any other disasters that could happen such as chemical leakages, building fire, major building collapses (due to earthquakes or other reasons), major road and rail accidents, plane crash or other man-made or natural disasters. Except for SAR activities and probably evacuation, the other response activities would be more or less similar. It is the attitudes and conscientiousness that is most important.

Reporting and Monitoring

A reporting and monitoring mechanism needs to be put in place which will track the progress of the DRM Programme as a whole as well as the progress of associated national, provincial and district level projects. Conducted on a quarter yearly bases, the mechanisms will identify gaps and recommend measures to fill these gaps, to enable successful implementation of the DRM Programme.

Expected Outcomes

Once the disaster risk management system is established and functioning properly the following outcomes can be expected:

i. Mitigation of hazards and disasters (will be felt in the long term)
ii. Forecasting of events and issuing of early warning for people to take appropriate action in time
iii. Reduction of adverse impacts of disasters when they happen
iv. Systematic search and rescue, and evacuation operations
v. Systematic searching for the dead bodies and disposing them in the proper manner including alternative forensic procedure
vi. Speedy clearing of roads and clearing of debris, waste disposal, including recycling of debris and building materials

vii. Orderly and coordinated distribution of relief, medical assistance, temporary shelter provision, psychological trauma counseling and other immediate needs

viii. Speedy restoration of essential infrastructure and rehabilitation, and

ix. Resettlement and reconstruction giving due consideration to possible recurrence of disasters in the future
PART II

ESTABLISHING THE NATIONAL DISASTER MANAGEMENT SYSTEM
Chapter 3

3 Systematic Multi-hazard Mapping and Disaster Risk Assessment

Risk is the exposure to the chance of injury or loss and is proportional the probability that a hazard impact will occur and the potential consequences of that impact. Three interrelated factors combine to describe the risk, i.e.,

i. Likelihood that a hazard event of a specified type and severity will occur - (Frequency and severity of event)

ii. Elements exposed to potential hazard impacts - (exposure inventory)

iii. Likelihood of injury, loss or destruction of the values at risk - (exposure vulnerability)

3.1 Disasters Prevalent in Sri Lanka

Natural hazards prevalent in Sri Lanka are tabulated below:

Categories and Types of Natural Hazards in Sri Lanka

<table>
<thead>
<tr>
<th>Atmospheric</th>
<th>Geological/ Seismic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tropical storms</td>
<td>Landslides</td>
</tr>
<tr>
<td>Cyclones</td>
<td>Land Subsidence</td>
</tr>
<tr>
<td>Extreme weather</td>
<td>Rock falls</td>
</tr>
<tr>
<td>conditions</td>
<td>Submarine slides</td>
</tr>
<tr>
<td>Lightning</td>
<td>Debris avalanches</td>
</tr>
<tr>
<td>Air pollution</td>
<td>Earthquakes</td>
</tr>
<tr>
<td>Tornadoes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hydrological</th>
<th>Biological</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floods</td>
<td>Disease</td>
</tr>
<tr>
<td>Coastal flooding</td>
<td>Epidemics</td>
</tr>
<tr>
<td>Droughts</td>
<td>Contamination of surface &amp; ground water sources</td>
</tr>
<tr>
<td>Coastal erosion</td>
<td></td>
</tr>
<tr>
<td>Storm surges</td>
<td>Other</td>
</tr>
<tr>
<td>Erosion and</td>
<td>Wildfires (forest fire, bush fire, grass fire)</td>
</tr>
<tr>
<td>sedimentation</td>
<td></td>
</tr>
<tr>
<td>Salinity intrusion</td>
<td></td>
</tr>
<tr>
<td>in rivers</td>
<td></td>
</tr>
<tr>
<td>Tsunamis</td>
<td></td>
</tr>
</tbody>
</table>

The major natural disasters leading to loss of lives and property damage are, cyclones, heavy rainfalls leading to floods and/or landslides, lightning, tornadoes, coastal inundation due to high sea waves and tsunami, which can be categorized as follows:

- **Frequent:** Floods, Landslides, Lightning, Tornadoes
- **Intermediate:** Cyclones, Storm Surges, Coastal inundation
- **Rare:** Earthquakes, Tsunami

Even though not posing immediate life threats or property damage, droughts, erosion and sedimentation, salinity intrusion in rivers, epidemics and bush fire are hazards that should receive adequate attention as they pose medium and long term adverse effects. Technological, Industrial, Fire and Chemical Risks should not be underestimated due to the increasing use of technology and chemicals in industries and increasing number of sky scrapers appearing in the cities and high rise buildings coming up even in less urban areas.
For effective disaster risk reduction, the following information about the prevalent disasters are required:

<table>
<thead>
<tr>
<th>Potential causes</th>
<th>Possible risk reduction measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>General characteristics and effects</td>
<td>Specific preparedness measures</td>
</tr>
<tr>
<td>Predictability</td>
<td>Typical post disaster needs</td>
</tr>
<tr>
<td>Factors contributing to vulnerability</td>
<td>Impact assessment tools</td>
</tr>
<tr>
<td>Typical hazard impact (adverse effects)</td>
<td></td>
</tr>
</tbody>
</table>

The nature of hazards plays an important role and must be taken into consideration, such as: Rapid onset vs. slow onset hazards; Controllable vs. immutable events; Frequency vs. severity of events; and hazards categorized by possibility of mitigation measures to withstand impact vs. mitigation measures to avoid impact.

### 3.2 Multi-Hazard Mapping

**Hazard Information**

Hazard data is generally available in various forms:

- Geological hazard maps showing fault lines or unstable slopes and areas prone to landslides
- Hydrological maps of flood-prone areas
- Cyclonic and high wind, rainfall and sea-surface temperature data
- Recordings of seismic activity from monitoring stations
- Records regarding frequencies of Sea Surge
- Tsunami inundation maps and coastal areas prone to erosion
- Local rainfall and flood level records

The major institutions presently having hazard information in some form are indicated below.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Hazard and type of activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Building Research Organization (NBRO)</td>
<td>Landslide hazard mapping, ranking proneness</td>
</tr>
<tr>
<td>Irrigation Department</td>
<td>Mapping flood prone areas, River flood levels</td>
</tr>
<tr>
<td>Mahaweli Authority of Sri Lanka (MASL)</td>
<td>Mapping flood prone areas down and dams stream of Reservoirs within their purview</td>
</tr>
<tr>
<td>Ceylon Electricity Board (CEB)</td>
<td>Mapping of coastal areas prone to coastal flooding / tsunamis / storm surges</td>
</tr>
<tr>
<td>Coast Conservation Department (CCD)</td>
<td>Information on coastal flooding / tsunamis / storm surges and sea-surface temperature data</td>
</tr>
<tr>
<td>National Aquatic Resources Agency (NARA)</td>
<td>Information on seismic activity in the region causing tsunamis or earth quakes within the country; landslides</td>
</tr>
<tr>
<td>Geological Survey and Mines Bureau (GSMB)</td>
<td>Information on Cyclones and associated storm surges, Heavy rainfalls leading to flooding and landslides, Lightning, Tornadoes, Droughts, Climate data</td>
</tr>
<tr>
<td>Meteorology Department</td>
<td>Coastal flooding / tsunamis / storm surges/Tropical cyclones</td>
</tr>
<tr>
<td>Sri Lanka Navy</td>
<td>Warning to Commercial Ships on Tsunamis/Storm</td>
</tr>
<tr>
<td>Sri Lanka Ports Authority</td>
<td></td>
</tr>
</tbody>
</table>

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41
Hazard Mapping

The need for hazard mapping has been discussed about repeatedly. In Sri Lanka, while a lot of information is available on natural hazards, relatively little is available on hazard and risk mapping except for landslide hazard risk mapping done by NBRO using GIS. While the importance of flood hazard mapping was highlighted after the 2003 flood disaster, no concrete moves were taken towards this end. After the December 2004 tsunami coastal area mapping has been discussed in various fora.

These developments stress the grave need to establish a separate centre for multi-hazard and risk mapping. Hazard and risk information should be available in one central point. In this respect the following fact also must be taken note of.

Italian Embassy and a representative have submitted a proposal for a study to the Select Committee from the University of Calabria, Italy on digital model construction, focusing on geomorphological studies on the coastal belt of Sri Lanka. This high technology impact assessment is aimed at providing Sri Lankan experts with the technology needed for emergency management and natural disaster mitigation - particularly from meteorological, hydrological and oceanographic hazards. This technology is imperative when it comes to advance territorial planning, helping to identify areas vulnerable to natural disasters. The Italian government has extended its cooperation to Sri Lanka in going forward with this project.

When conducting projects of this nature there must be a local partner for collaboration to ensure the technology transfer and the expertise in one central agency without having information and technology scattered in several locations. That central agency in this instance naturally would be the proposed DMC. In this context it is strongly recommended that a technical division for hazard mapping and risk assessment be established within the DMC which would collaborate in projects of this nature with the international agencies providing technical assistance. However as suggested in the proposal, the major local partners will be universities of Colombo, Ruhuna and Moratuwa, who will be involved and whose expertise will be developed in the process as well.

With respect to hazard mapping at national and provincial level mapping should be initially undertaken by the DMC (say in scales of 1:50,000 to 1:25,000) as have been done by NBRO in respect of landslide hazard. At local levels mapping could be in scales such as 1:10,000 or 1:5,000 as appropriate. These maps can be based on priorities in highly prone areas as needed for risk assessments for in different sectors.

Recommendation 3-1

The Committee recommends that mapping of all hazards be initially undertaken at national and provincial level by the DMC for all hazards that have not been undertaken so far (say in scales of 1:50,000 to 1:25,000). Mapping at other selected areas or local authority areas could be in scales of 1:10,000 or 1:5,000 as appropriate. These maps can be based on priority in highly prone areas.

3.3 Multiple Hazard Risks

Vulnerability

Vulnerability is the susceptibility of things to be damaged by a hazard. People's lives and health are at risk directly from the destructive effects of the hazard.
Their incomes and livelihood are at risk because of the destruction of the buildings, crops, livestock or equipment, on which those depend on. Each type of hazard puts a somewhat different set of elements at risk. Most disaster mitigation work is focused on reducing vulnerability, and in order to act to reduce vulnerability, development planners need an understanding of which elements are most at risk from the principal hazards that have been identified.

**Principal Vulnerable Elements**

It is important for development planners to make some effort to quantify the tangible aspects of vulnerability and loss to assist mitigation and preparedness planning. Some methods for doing this are discussed below. But, as explained earlier, the ‘intangible’ aspects of vulnerability will often be as important as the quantifiable aspects and must not be neglected. Local experience is a good guide to what is vulnerable in a society, and the list of potentially vulnerable elements should be supplemented by a study of written reports and the knowledge (often never recorded) of those who lived through previous disasters.

<table>
<thead>
<tr>
<th>Table: Principal Vulnerable Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Principal vulnerable elements</strong></td>
</tr>
<tr>
<td><strong>Tangibles</strong></td>
</tr>
<tr>
<td><strong>Intangibles</strong></td>
</tr>
<tr>
<td><strong>Floods</strong></td>
</tr>
<tr>
<td>People, Everything located in flood plains. Crops, Livestock, Machinery, Equipment, Infrastructure, Weak Buildings</td>
</tr>
<tr>
<td><strong>Earthquakes</strong></td>
</tr>
<tr>
<td>People, Weak buildings and their occupants. Machinery and equipment, infrastructure, Livestock, Contents of weak buildings</td>
</tr>
<tr>
<td><strong>Tsunamis</strong></td>
</tr>
<tr>
<td>People, Anything close to the coast. Crops, livestock, people, combustible roofs, water supply. boats, fishing and coastal industries</td>
</tr>
<tr>
<td><strong>Landslides</strong></td>
</tr>
<tr>
<td>People, Anything located on or at base of steep slopes or cliff tops, roads and infrastructure, buildings on shallow foundations</td>
</tr>
<tr>
<td><strong>Strong winds / cyclones / tornados</strong></td>
</tr>
<tr>
<td>Lightweight buildings and roofs. Fences, trees, signboards, boats, fishing and coastal industries</td>
</tr>
<tr>
<td><strong>Drought/ desertification</strong></td>
</tr>
<tr>
<td>Crops and livestock. Agricultural livelihoods. Peoples health</td>
</tr>
<tr>
<td><strong>Technological disasters</strong></td>
</tr>
<tr>
<td>Lives and health of those involved or in the vicinity, Buildings, equipment, infrastructure, crops and livestock</td>
</tr>
</tbody>
</table>

A system for collecting the inventory of vulnerable elements in study areas must be organized for assessing vulnerabilities.

Disaster risk information includes hazard, exposure and vulnerability information. Information on past and future hazards and their impacts on communities may be obtained from a variety of sources. The most common are myths/legends, past records, research studies and local people.
There are many advantages in defining the nature of the risk, that include,

- Identification of the hazards to which the area you are assessing is susceptible.
- Identification of the location, nature and probability of hazard events.
- Determining who and what are vulnerable to what degree and how have they become vulnerable.
- Identification of the capacities and resources available for reducing vulnerabilities.
- Determining acceptable levels of risk, based on people’s perception of risk.
- Providing a tool for determining the potential socio-economic, physical and environment risk
- Providing an instrument for decision-making, policy formulation, conceptual improvements and accounting
- Allowing for projection of future performance of physical building, social and environmental elements and economy
- Allowing for determining the capacity of the government to face reconstruction tasks in an event of a disaster
- Facilitating training, capacity building and resource mobilization to face future events

**Concepts of Risk Assessment**

Risk assessment with respect to any given hazard is the process of application of a methodology for evaluating risk as defined by

- the probability and frequency of occurrence of a hazard event
- the exposure of people and property to the hazard and
- the consequence of that exposure.

The methodology framework for carrying out a Risk Assessment comprises the following steps:

- Define the geographic area to be studied;
- Identify the type and amount of data needed to complete the risk assessment
- Identify the potential hazard(s) within the risk area;
- Inventory of study area exposures;
- Apply hazard specific damage functions to the inventory to determine direct damage quantitatively or rank potential damage qualitatively;
- Apply loss functions to damage results to estimate level of financial, operational, personal, or property losses quantitatively or rank potential losses qualitatively.

**Process of Risk Assessment**

The first step in the risk assessment process is to determine the **Study Area** by defining the boundaries of the risk assessment study area. This is an important part of determining the type and detail of data that might be available for the assessment. The study area may be defined by the boundaries of an urban area, a district, a city, etc. Different boundaries can be used to define the study area: administrative boundaries, political boundaries, geographic boundaries, a user defined grid system etc.

The selection of a study area will generally reflect the goals and objectives of the risk assessment. If the desire is to identify regional emergency response actions, the study area will need to include the areas to which emergency teams must respond. If the desire is to identify local community mitigation actions, a much smaller study area may be more appropriate.

This will be followed by Data Collection, assessment of Potential Hazards in the Study Area and Exposure Inventory (Values at Risk). Exposures are generally classified into four groups: **property, net income, legal, and personnel exposures**. Details of risk assessments are given in **Annexure 3.3-1**.
Technological, Industrial, Fire and Chemical Risk assessments should be undertaken in industrial areas. Fire safety requirements of high rise buildings imposed by Municipalities and other urban LAs must be reviewed and also the adherence of these requirements must be checked. Studies could be undertaken on these. Refer Annex 3.3-II - Technological Risk Assessment and Requirement Imposed in the US.

In this context a multi-hazard risk assessment system will involve systematic collection of above information followed by analysis.

A Comprehensive Risk Assessment would comprise assessment of all prevailing hazards and assessment of vulnerability resulting from these hazards in all the sectors.

For having a comprehensive risk information system, Risk Assessments must be carried out for all hazard prone areas as explained above by assessing

- The hazard situation with respect to the magnitude and frequency of occurrence in the given geographical area; and
- Vulnerability assessments for each selected sector such as, education, agriculture, housing and construction, infrastructure, health, economy etc.

**Fire risk studies**

In the context of building fire risk, the rapid development and large multi-storey buildings coming up in city areas must be looked into. In areas of the Colombo city, studies may have to be taken up to identify areas of high building density for determining fire risk and necessary fire fighting and response mechanisms to be set up.

**Earthquake risk**

Earthquake vulnerability is an aspect that should be considered seriously in the context of present developments. A study group may have to be appointed to study the possible local earthquake intensity for the purposes of response mechanisms and decide on design criteria for design of buildings (as it is the buildings which kill people and not the quake itself). This is all the more important with the rapid development and coming up of large multi-storey buildings in Colombo and other urban areas.

### 3.4 Hazard Mapping and Risk Assessment Centre within DMC

As mentioned above the main agency responsible for hazard and risk assessments should be the DMC. In the above context the proposed centre is recommended to function as a division of the DMC under the title "Hazard Mapping and Risk Assessment Centre (or Unit)". It is also recommended that the Land Slide Studies Division (LSSD) of the NBRO be moved from NBRO in to the DMC in establishing this centre. Presently the personnel and equipment available are adequate, but with mapping of other hazards, such as floods, coastal area hazards etc. additional personnel and equipment will have to be provided. With foreign funded technical assistance projects gradually the center can be equipped adequately with high-tech equipment.

NBRO in its presentations to the Select Committee highlighted the need for institutional capacity building. It must be noted that NBRO has carried out some commendable work in doing the mapping work with the prevailing inadequate facilities, such as GIS / computer equipment, transport facilities and lack of personnel. NBRO also has proposed some preventive activities to be taken up. These could be facilitated in a better manner by creating the proposed new unit. Although the Irrigation department, Ceylon Electricity Board (CEB) and Mahaweli Authority also have indicated the need for mapping they do not process the capability and therefore rather than creating mapping units scattered in different agencies it will be feasible to have it at the centre. All these factors have been considered in proposing this recommendation.
Recommendation 3-2

The Committee strongly recommends that a technical division for multi-hazard mapping and risk assessment be established within the DMC under the title "Hazard Mapping and Risk Assessment Centre (or Unit)". The aims are,

- Ensuring that all hazard maps will be available in one place enabling users to have easy access
- Ensuring that technology transfer will be in one central agency when collaborating in projects with the international agencies providing technical assistance
- Having the expertise, information and technology in one place without being scattered in several locations

3.5 Planning Multi-Hazard Disaster Risk Assessment

Risk assessments must be undertaken at national level by the proposed Hazard Mapping and Risk Assessment Centre of DMC, and at provincial, district and local levels by different relevant authorities getting national level information as necessary. Decisions will be taken depending on the hazards prevailing in the respective areas after giving priority as well as considering the fund availability and the availability of specialized agencies for carrying out the risk assessment.

The following are the main agencies dealing with the respective hazards.

Main agencies responsible for managing different hazards

<table>
<thead>
<tr>
<th>Name of Agency</th>
<th>Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meteorological Department</td>
<td>Cyclones and associated storm surges, Heavy rainfalls leading to flooding and landslides, Lightning, Tornadoes, Droughts</td>
</tr>
<tr>
<td>Irrigation Department Mahaweli Authority of Sri Lanka (MASL)</td>
<td>River floods</td>
</tr>
<tr>
<td>Irrigation Department Mahaweli Authority of Sri Lanka</td>
<td>Floods in downstream of reservoirs due to opening of flood gates, dam breaches etc.</td>
</tr>
<tr>
<td>Central Engineering Consultancy Bureau (CECB)</td>
<td></td>
</tr>
<tr>
<td>Ceylon Electricity board (CEB)</td>
<td></td>
</tr>
<tr>
<td>Geological Survey and Mines Bureau</td>
<td>Earthquakes Tsunamis</td>
</tr>
<tr>
<td>National Aquatic Resources Agency (NARA),</td>
<td>Tsunamis</td>
</tr>
<tr>
<td>Sri Lanka Navy</td>
<td>Tsunamis, Tropical cyclones, Storm surges, Tidal Variations</td>
</tr>
<tr>
<td>Health Department</td>
<td>Diseases, epidemics, plagues etc.</td>
</tr>
<tr>
<td>National Building Research Organization (NBRO)</td>
<td>Landslides</td>
</tr>
<tr>
<td>Respective LAs</td>
<td>Forest fire risk</td>
</tr>
<tr>
<td>Respective LAs, UDA, Fire Services</td>
<td>Building Fire Risk</td>
</tr>
<tr>
<td>- In building approval for conformity of the building with the fire code.</td>
<td></td>
</tr>
<tr>
<td>- In densely built up areas keeping fire gaps</td>
<td></td>
</tr>
<tr>
<td>- An assessment of current risks in densely built up areas</td>
<td></td>
</tr>
<tr>
<td>National Science Foundation</td>
<td>Tsunamis and other coastal hazards (Mapping and Awareness)</td>
</tr>
<tr>
<td>Central Environmental Authority</td>
<td>Effects of global warming and climate change</td>
</tr>
</tbody>
</table>
In a multi-hazard context in a given geographical area a multi-disciplinary team representing different specialized agencies and specialists could be entrusted to carry out the risk assessments. In specific risk assessment studies other agencies must be involved as relevant.

In future, disaster risk assessment studies and research must be undertaken and should be encouraged by DMC. A register can be maintained of R&D and S&T agencies, Universities, reputed private sector agencies and individual specialists in the field etc. for utilizing in risk assessment studies.

Information pertaining to hazard information, scientific studies, simulations and investigations related to river floods, landslides, reservoir dam safety and coastal floods, and work presently done by different agencies are given in the Annex 3.5-I. Some suggestions on surveys and research for future disaster mitigation is given in Annex 3.5-II. These are based on presentations made by the representatives of respective agencies to the select committee.

<table>
<thead>
<tr>
<th>Recommendation 3-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Committee recommends that priority areas be selected based on following criteria for specific risk assessments considering the financial capacities and availability of technical know how:</td>
</tr>
<tr>
<td>- Severely prone areas</td>
</tr>
<tr>
<td>- Importance of the sector – education, health, housing, agriculture depending on the geographical area</td>
</tr>
<tr>
<td>- Where presently development projects are being finalized – it is economically feasible to integrate at the initial stage of the development rather that trying to incorporate disaster aspect later on.</td>
</tr>
</tbody>
</table>
4 Systematic Data Collection, Research and Analysis

4.1 System for Disaster related Data Collection

Sri Lanka’s vulnerability to natural disasters was further highlighted by the Tsunami that devastated the coastlines of at least 10 of its Districts in December 2004. The subsequent response and more pertinently the planned recovery process has created a need for both aggregated and disaggregated information pertaining to both losses to lives and livelihoods as well as structural damages suffered.

The lack of coherent and consistent ‘losses’ and ‘damages’ data for immediate recovery planning and lack of information on existing and emerging patterns of disaster risk for longer term preparedness and mitigation measures had previously been identified as a major constraint faced by policy and decision makers in Sri Lanka. Systematic disaster inventories that capture time-series, local-level impacts of disaster events can be very useful in discerning trends in emerging disaster risks and in making policy, program design and resource allocation decisions to manage those risks.

According to past records, more than 90% of the tsunamis recorded in the last 200 years have occurred in the Pacific Ocean region. Indian and Atlantic Oceans were generally regarded as tsunami-free, although some mild ones with wave heights about one meter have been reported in the coastal region. Therefore, tsunami-monitoring systems (which are very elaborate and expensive) have not been installed in the Indian and Atlantic Ocean regions.

With respect to some disasters even though Sri Lanka has some monitoring equipment they were not of use at the time of the last devastating calamity. A system must be devised using these equipments presently available under the following two monitoring stations enabling data transfer between the two centers and in order they can be made use of for collecting data as a knowledge base and for research and analyses as necessary.

i. Seismic Monitoring Equipment (SME) in Peradeniya

The Government of Japan through JICA donated Seismic Monitoring Equipment and the seismometers located at Matara, Mihintale, Olluwil, and Peradeniya to the Department of Geology, University of Peradeniya for teaching and research purposes. The system of equipment was not intended to be serving as a Regional Seismic Monitoring Center providing information on earthquakes to the general public in Sri Lanka (in the manner Meteorology department of Sri Lanka operates) or to the international community.

It can be developed to that capacity if and only if 24-hour, 365-day monitoring of seismicity in the region can be financially supported to provide, (a) the man-power to run the system, (b) maintenance cost of equipment, (c) licensing and updating relevant computer software (presently the software is not functioning and cannot receive information), (d) an uninterrupted power supply, (e) maintenance of communication links to be used in emergencies etc. Above all providing sufficient office space and security for the system is a matter for concern. Similarly, components attached to this system installed in other universities should be protected and given adequate security and the responsibility has to be handed over to identified officials in those institutions.

The seismometers attached to this system are capable of receiving seismic waves of regional and local earthquakes, after the earthquakes have occurred. Four seismometers are stationed at, Matara, Mihintale, Olluwil, and Peradeniya, within university premises, to receive seismic signals. Any signals received are channeled through telephone lines to the main station at the Department of Geology, University of Peradeniya, where the seismic data can be analyzed. Analysis of the data will reveal the location of the epicentre of an earthquake and its magnitude.
It should also be mentioned that the seismic equipment donated by the Government of Japan to the Department of Geology cannot be used to predict earthquakes or tsunamis. Prediction of an earthquake means revealing the location of the epicenter of an earthquake, its magnitude in Richter Scale and the time of occurrence in advance (see below). Even countries like the United States of America possessing very high technological capabilities, have not successfully predicted an earthquake, even though zones of high seismicity (earthquake activity) around the globe are very well known to the geo-scientists.

As mentioned above, tsunamis are generated mainly by earthquakes beneath sea-floor and would be predictable if an earthquake causing a vertical displacement of the sea-floor could be predicted. Because earthquakes cannot be predicted tsunamis are even more unpredictable. But centres like the PTWC can identify a tsunami in the middle of the ocean, after it has been generated by an earthquake, and warn the coastal communities before it reaches the shore.

If Sri Lanka is to install a tsunami warning system in any part of the Indian Ocean in the near future, the Seismic Monitoring Equipment (SME) at Peradeniya is going to be of crucial significance in assisting any Tsunami Monitoring and Warning exercise. After an earthquake, Peradeniya SME will receive seismic signals ahead of any indications of a tsunami on the Tsunami Monitoring and Warning System (TMWS). Thus, TMWS can be on the look-out for a tsunami more closely on their system of instruments. Thus, Peradeniya SME should be made capable of raising an alarm of a possible tsunami both manually and automatically to the officials at the TMWS. Thus, any future TMWS in the Indian Ocean will largely benefit from closely cooperating with SME at Peradeniya. That will not only ensure efficient functioning of the TMWS but that will enable them to make accurate predictions and warnings on time.

### ii. Seismic Monitoring Station at Pallekelle (PALK)

Sri Lanka is a member of the Global Seismic Network (GSN). One station within Sri Lanka is situated at Pallekelle (PALK) and it is given to GSMB by the University of California (CU), San Diego and it is also connected to United States Geological Survey (USGS) and to Comprehensive Test Ban Treaty Organization (CTBTO).

Pallekele Station (PALK) is an unmanned Station of the global seismic network maintained by the University of California, San Diego, supplying seismic data to USGS through CU, working on a 24 hour basis. An earthquake cannot be forecast with data from this station alone. When an earthquake occurs, the information received by this station is processed together with data obtained from other stations elsewhere in the world by the US scientists. The resulting information about the magnitude and location of the earthquake is fed into USGS (United States Geological Survey web-site. Even developed countries with several stations face difficulties in forecasting an earthquake. Data from at least 3 stations are needed for this calculation (Nearest stations are Diego Garcia and COCO near Sumatra). After an Earthquake occurs with data from Pallekele Station only one cannot get its magnitude or location.

Capacity building for GSMB is essential as it does not have even seismologists. In addition it needs the necessary software. Under the provision of CTBT it is possible to organize training within the Oceanographic Faculty of UC, San Diego.

### 4.2 A Data Collection Centre within DMC

Sri Lanka is a signatory to the Comprehensive Test Ban Treaty (CTBT) and is a member of the CTBTO. Sri Lanka has also signed an agreement with CTBTO to facilitate International Monitoring System (IMS).

The information at Pallekelle Station is used by CTBTO for which they have agreed to provide facilities to set up a National Data Centre including software and training. Such facilities would be of utmost importance if Sri Lanka is to install a tsunami warning system in any part of the Indian Ocean in the near future. All data from Global Seismic Network (GSN) are freely and openly available to any interested scientists through the IRIS Data Management System.


## Recommendation 4-1

The Committee recommends setting up of Data Collection, Research and Analysis division of within the DMC

It is necessary to establish an effective information system not only for earthquakes and tsunamis, which are considered to be a rare phenomena but also for all the weather related disasters that are more frequent in the recent past such as flash floods, landslides, tropical cyclones, tornadoes, lightning etc. While having a system for collecting data related to earthquakes and tsunamis from international and regional agencies, information regarding weather related disasters can be gathered through a system established using the national and local administration network.

With the proposed Data Collection Centre in the DMC the serious present weakness of the unavailability of current data related to disasters will be diminished. This Data Collection Centre will be a special technical unit which should be headed and manned by skilled personnel.

### 4.3 Research

Research will help strengthening the data base on disaster information as well as in the disaster risk assessment studies in prone areas. As will be discussed in the integration of DRM in university education Ph.D, Masters and Bachelor Degree students will be encouraged to select Disaster Risk Management related themes for dissertations. Important and urgent research studies can be entrusted to R&D agencies dealing with these subjects; and also relevant departments of universities, either as specific studies to the staff or by providing grants for PhD or Masters theses with proper supervision by the staff. Publication of research findings also will be promoted.

## Recommendation 4-2

The Committee recommends promoting research studies on disaster related subjects to strengthen the data base on disaster information and assist in the disaster risk assessment studies in prone areas.

In addition R&D division of DMC must promote conducting seminars and workshops for disseminating findings of such research among all professionals and disaster risk management stakeholders. This will be a special technical unit which should be headed and manned by skilled personnel.

### 4.4 Disaster Risk Information Systems & Inventory of past disaster impacts

Sri Lanka’s vulnerability to natural disasters was further highlighted by the Tsunami that devastated the coastlines of at least 10 of its Districts in December 2004. The subsequent response and more pertinently the planned recovery process has created a need for both aggregated and disaggregated information pertaining to both losses to lives and livelihoods as well as structural damages suffered.
The lack of coherent and consistent ‘losses’ and ‘damages’ data for immediate recovery planning and lack of information on existing and emerging patterns of disaster risk for longer term preparedness and mitigation measures had previously been identified as a major constraint faced by policy and decision makers in Sri Lanka. Systematic disaster inventories that capture time-series, local-level impacts of disaster events can be very useful in discerning trends in emerging disaster risks and in making policy, program design and resource allocation decisions to manage those risks.

For the government, the availability of accurate, comprehensive, time-sensitive data on disaster-affected populations is critical for operational efficiency, planning and transparency. IOM has developed relations with national entities and district offices to provide support to efforts to create a cohesive national database of the disaster-affected populations.

On the one hand, the establishment of the information management centre at the central level is critical to plan the reconstruction and disaster risk management strategies. On the other hand, information management centres at the district level is also important. IOM provided district authorities with hardware and technical assistance in an already active registration process. IOM continues assistance to districts in maintaining their database of disaster-affected populations and to track assistance provided to all beneficiaries. IOM provides funding support for staff, equipment and technical assistance for the “Information Management Cell (IMC)” which is a part of the office of the GA (Government Agent). The IMC enters and validates the registration data received from the GA office, the Census Bureau, the Election Commission and other sources of registration. The objective is to centralize and speed up the processing of accurate information collection, collation and dissemination at the district level.

**DesInventar - a computer based disaster inventory system introduced by UNDP**

A workshop and training for building a disaster inventory in Sri Lanka, has already been conducted as a first step in assisting stakeholders, to build a systematic historical disaster inventory that covers 30 years of disaster (small, medium and large) loss data in Sri Lanka. Losses and damages data was also fed into this mechanism – DesInventar - to capture information from the Tsunami of December 2004. The focal agency is the NDMC in the Ministry of WE&SW.

UNDP has now initiated a regional initiative to develop and institutionalize DesInventar (Disaster Inventories) in the Tsunami affected countries of the Indian Ocean Region which will support DRM initiatives with accurate statistical information and analysis and subsequently support policy and programming planning. The mechanism will also act as an effective and ‘ready to use’ tool for use during the assessment of damages and losses to support recovery planning. The Sri Lanka segment of the regional initiative is being undertaken as part of the DRM Programme and is supported by technical experts both from Bureau for Crisis Prevention and Recovery (BCPR) and from the private sector.

**Further improvements to the inventory**

Information in the above mentioned inventory, which has been initiated as a first step and in progress is limited to disasters and loss data in the past 30 years indicating the locations by the divisions or districts.

<table>
<thead>
<tr>
<th>Recommendation 4-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Committee recommends improving the already initiated disaster inventory linking with the PDC incorporating the considerations suggested.</td>
</tr>
</tbody>
</table>
Following are suggestions to be considered by the DMA for improvements in the future:

- As a first step action was initiated to inventory past disasters. In the future a country wide system is recommended to be set up to collect information about all disasters taking place in the country. This can be through a pre-designed form for each type of possible hazard with guidance, distributed to districts, divisions, local authorities and grama niladharis, as well as all service providing agencies and agencies identified for early warning. With such a system accurate information could be collected in a timely and structured manner for developing a geo-referenced database. A form has already been designed by the NDMC which can be reviewed by the proposed DMC with the relevant Technical Advisory Committee and finalized.

- Such a geo-referenced disaster inventory of past disasters can be compiled to build and generate analyses of potential disaster threats in different parts of the country in future.

- The data (inductive or deductive) on hazards, vulnerability and capacity, once collected should be used to produce different risk analytical products. One could be the Vulnerability Atlas of Sri Lanka that systematically captures and maps multiple-hazards at a decentralized level.

- The high demand of disaster damage, impact and need information from multiple sources cause pressure on the District Secretariats and the Divisional Secretariats during a disaster (different formats and institutions collecting information and the absence of user-friendly and updated databases in the district/ divisional secretariats). Suggestions are:
  - Standardization of formats and common systems in all the divisions and districts to collect information and relevant statistics from Grama Niladharis and Divisional Secretariats should be built. Such formats have already been developed for the District Disaster Preparedness Plans. Similar formats have been designed for District, Division and GN levels as well as agencies providing utility services.
  - These formats and requests should originate from the Disaster Management Centre, instead of various ministries and departments.
  - These should be understood and used during pre-disaster times and uniformly updated with time. This will be very useful for the authorities to prevent delays in getting the overall picture.
  - Further, the forms being standard with a given Form Number, if there is postal breakdowns, vital urgent information can be easily communicated through telephone or alternative communication modes.

- Lack of information on district officers and line departments in the district (difficulty in gathering information and data on the damages and response causing an adverse impact on coordination and timely response). Suggestion is:
  - Set up a database of disaster management actors within the government and non-government system (at different levels) and their emergency contact details, jurisdiction, specialization and other relevant information should be compiled and regularly updated. This should be made available in a user-friendly format for timely and coordinated disaster preparedness and response. These have already begun in the district plans developed in districts affected by 2003 disaster.

4.5 DRM Website

The website, with regular updates of activities of NGOs, UN Agencies and government, developed by NDMC/Ministry of WE&SW with assistance of UNDP was useful in dissemination of important information during the last disaster. Crucial time and effort were saved by use of emails instead of faxes and letters for emergency communication and coordination.
<table>
<thead>
<tr>
<th>Recommendation 4-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Committee recommends strengthening the existing website, including additional information on needs and allied details and regularly updated.</td>
</tr>
</tbody>
</table>

With information from research the web site will be updated regularly. The potential of web-based technology for prompt and mass dissemination of disaster impact and needed information should be explored and developed.
Chapter 5

5  Countrywide Disaster Early Warning System

5.1  Mechanism for Coordination and Working with Relevant Early Warning Agencies - International, Regional and Local

It is necessary to establish an effective early warning system for all natural disasters, giving priority for those more frequent in the recent past such as flash floods, tropical cyclones, tornadoes, lightning etc. and at the same time for rarer but very destructive hazards such as tsunamis. Due to different characteristics of different hazards the methods of obtaining information about impending disaster events and issuing early warnings would vary from one hazard to another. For some hazards such as earthquakes, tsunamis, adverse weather conditions and cyclones it is necessary to work in constant coordination with relevant regional and international hazard early warning centres, whereas with respect to local hazards such as floods and landslides, local systems (already available) must be strengthened.

As Disaster Early Warning aspect is not directly addressed in the Act, the following course of action is recommended.

<table>
<thead>
<tr>
<th>Recommendation 5-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Committee recommends that the Early Warning Division of the DMC under the guidance of the Council be the main focal point responsible for coordinating early warning, along with a Technical Advisory Committee comprising relevant professional agencies and experts. All responsible agencies to keep constant coordination with the Early Warning Division of the DMC and in instances of any imminent disaster take action to inform the responsible officers for onward communication to the Council.</td>
</tr>
</tbody>
</table>

The role of the Early Warning Division of the proposed DMC would be to,

- Establish coordination with the local early warning agencies who will be in constant communication with regional and international early warning agencies to receive early warning of earthquakes and tsunamis due to any cause as the need arises
- Establish coordination with all local early warning agencies responsible for other local hazards
- Create awareness among communities and all concerned including Police on early warning and immediate actions to be taken, especially on rapid onset disasters. Get the assistance of the respective early warning agencies mentioned above
- Establish a reliable communication system (telephones, radio communication etc. from gauging stations to the Head Office and to District Control Rooms directly or through Head Office). Always have alternative communication systems in place in case of breakdowns in the main system
- Have the system established with public media and ensure dissemination of information through same. Inform relevant District/Divisional Secretaries of above through the established system for taking action for quick evacuation of communities to safe areas
- Inform communities and fishermen in the sea likely to get affected for quick evacuation to safety.
- Give wide publicity to the emergency telephone number of 119 to call special police emergency section

5.2  Capacities of Relevant Local Agencies

At present in Sri Lanka, there is no single authority empowered to handle issues related to all the disasters mentioned in the table above.
For most of the disasters, a government institution is legally mandated to monitor the disasters which fall within their expertise. For example, Geological Survey and Mines Bureau is responsible for matters related to earthquakes while Department of Meteorology is responsible for weather related disasters such as tropical cyclones.

The technical institutions that are and would be responsible for different hazards and authorized to issue warning are shown in the table below:

<table>
<thead>
<tr>
<th>Disaster</th>
<th>Authorized Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>All disasters in general</td>
<td>Early warning division of proposed DMC</td>
</tr>
<tr>
<td>Adverse climate conditions, Cyclones and Storm Surges, Heavy rain, Lightning, Tornadoes, Cyclones, high winds, Droughts</td>
<td>Department of Meteorology</td>
</tr>
<tr>
<td>Floods</td>
<td>Irrigation Department</td>
</tr>
<tr>
<td>Landslides</td>
<td>National Building Research Organization (NBRO) National Science Foundation</td>
</tr>
<tr>
<td>Tsunamis</td>
<td>Geological Survey and Mines Bureau (GSMB) Sri Lanka Navy NARA Department of Meteorology</td>
</tr>
<tr>
<td>Ocean waves</td>
<td>National Aquatic Resources Agency (NARA) Sri Lanka Navy Coast Conservation Department</td>
</tr>
<tr>
<td>Earthquakes</td>
<td>Geological Survey and Mines Bureau (GSMB)</td>
</tr>
<tr>
<td>Epidemics</td>
<td>Public Health Department</td>
</tr>
<tr>
<td>Road Accidents</td>
<td>Police</td>
</tr>
<tr>
<td>Industrial and Chemical Accidents</td>
<td>Police Central Environmental Authority Labour Department</td>
</tr>
<tr>
<td>Fires</td>
<td>Police Fire Service Community</td>
</tr>
</tbody>
</table>

Functions of Agencies in relation to Early Warning (some are already in effect) are in Annex 5.2-I and Specific detailed activities for the agencies at the early warning stage in different disaster situations are described in Annex 5.2-II (These must be reviewed by DMC).

Though some of the above institutions have legal and administrative mandate to monitor and issue warnings related to natural disasters, their efficient performance is affected by want of state-of-art technology, infrastructure and human resources. Some of the above proposed organizations do not have legal mandate to coordinate, monitor or issue warnings.

**Recommendation 5-2**

The Committee recommends reviewing performance of existing technical agencies responsible for early warning and take measures to remedy shortcomings such as lack of professional staff (E.g., GSMB does not have even a single seismologist), lack of required basic equipment and lack of legal mandate to coordinate, monitor or issue warnings.
5.3 Early Warning Systems

It is necessary to establish effective early warning systems not only for tsunami, which is considered to be a rare phenomenon but also for all the weather related disasters that have been more frequent in the recent past such as flash floods, tropical cyclones, tornadoes, lightning etc.

Early warning systems of different disasters take different forms. To receive early warning of disasters such as earthquakes and tsunamis due to any cause, communication with regional and international early warning agencies is essential, whereas, for weather related hazards such as landslides and river floods early warning is generally done in coordination with local agencies.

Within all agencies responsible for early warning the following shortcomings are common and therefore need new installations or improvements to existing systems:

- Inadequate institutional capacity
- Inadequate information communication systems of relevant agencies or their poor condition
- Need for alternative communication systems

i. Early warning for weather related hazards

The Department of Meteorology (DoM) provides forecasts of weather and climate parameters using data from 20 synoptic stations (15 stations have daily 3 hourly observations, Fig 2), 33 agrometeorological stations (twice a day observations, with weekly data transmission), and 400 rainfall monitoring stations (of which only 60 stations transmit data by telephone, the rest by post monthly). Recipients of information are the agriculture, fisheries, energy, aviation, and shipping sectors, and the general public. Hazards monitored include heavy rainfall events, thunderstorms, tropical cyclones, and drought.

Compared to cyclonic storms, which are infrequent yet severe, thunderstorms and heavy rainfall episodes are high frequency, low intensity hazards that have significant cumulative impact. Forecast information of actionable lead time can reduce risks to these hazards. Though the DoM could have the capacity to generate weather and seasonal forecasts, aging and insufficient observation and data communication facilities, numerical prediction capability, as well as capacity to make use of new generation forecasts are major constraints. Specifically, the following limitations, as identified by the DoM, exist:

- Synoptic stations are still manually operated
- Inadequate number of observation stations
- Observation capacity to verify forecasts from regional/ global centers (e.g. India National Center for Medium-range Weather Forecasting)
- Upper air observation instruments are obsolete, hence unreliable
- Absence of meteorological surveillance radar system for tracking bad weather patches
- Data transmission by telephone; most rainfall stations transmit data by post monthly; back-up communication system during emergency is non-existent
- GTS connection with WMO is bare minimum (capacity is low, hence unable to receive increased data flow, such as tsunami information)
- Numerical weather and climate prediction capability

The specific recommendations to improve the weather and climate forecasting could include:

- Upgrading of 20 synoptic stations (to become automatic/telemetered) and upper air observation system
- Installation of additional observation stations (meteorological surveillance radar system, automatic weather stations (Fig. 3), rain and stream gauges in upper catchment areas, etc.)
- Upgrading of the GTS using TCP/IP link
- Capacity enhancement of data processing centers (computing facilities, including automatic weather chart plotting system, numerical weather receiving system)
• Capacity building on numerical weather and climate prediction
• Capacity building on generating forecasts of various time scales (to provide 24 hr-, 48 hr-, 72 hr-, 10 day-, 20-25 day-, and 1 month and beyond lead times)

Drought forecasting

The Maha crop accounts for about 2/3 of the yearly crop production, the remaining 1/3 is contributed by the Yala crop. About 1/3 of the Maha crop is rain-fed, while all of the Yala crop is dependent on irrigation. These are sensitive to reductions in seasonal rainfall or failure of monsoons.

Development of drought conditions are monitored by the DoM using parameters such as rainfall. Though DoM could have the capacity to generate seasonal forecasts, capacity to deliver localized forecasts that meet end user needs (e.g. to guide cropping decisions) is a major constraint. Also, the current drought monitoring mechanism can be improved, to consider other parameters, such as El Niño Southern Oscillation (ENSO).

Capabilities for the generation and application of localized seasonal climate forecasts may be built within the DoM. Experience is available in the region, particularly from Indonesia, the Philippines and Vietnam. In the Philippines, an institutional mechanism is in place, involving the meteorological, agriculture and water resource agencies from the national, sub-national, and local levels, the local government, and end-users. Locally relevant climate information (ex: Indonesia) are available which helps in drought mitigation measures like change of cropping patterns leading to amelioration of the impact of the drought.

ii. Early warning on Riverine floods

Warning of floods (riverine and dam breach/ release of stored water) is the responsibility of the Irrigation Department, which has been successfully operating the flood warning system for Colombo in the last 20 years. The system utilizes measurements of river level, and hourly observations of rainfall and river flow from the Kelani Ganga. The flood warning system provides 12 hours lead time for Colombo.

Out of 123 river basins, 11 have been identified as critically flood-prone. Surveys are now underway to establish flood forecasting systems in 5 of these critically flood-prone basins. The May 2003 floods demonstrated the constraints of the existing flood warning system in the Kelani Ganga:

• Flood warning system for Kelani Ganga does not provide information of flood levels along the river
• There is no flood warning system for Kalu Ganga: Ratnapura is highly vulnerable due to location (gradient difference between upstream and downstream of Ratnapura)
• No flood warning system for other rivers, such as Nilwala, Gin and Mahaweli.
• Very little lead time for upper basin communities (e.g. Ratnapura)
• Flood classification does not consider changes in river morphology - still based on flood levels before 1940s
• Standing orders for spillgate operation of dams are based on reservoir water levels - rainfall and water levels in upper catchment areas not considered

Improvements in Flood forecasting could involve:

• Review of flood classification to consider changes in critical water levels with changes in river morphology
• Revision/ updating of standing orders
• Establishing flood warning system for Kalu Ganga basin, comprising of:
  o a decentralized system for upper basin communities
    • observations may be made from three sources: DoM, Irrigation Department, and upstream communities
    • information may be relayed by hand phones, community radio, etc.
  o a centralized system for downstream communities
• Orienting flood information products based on assessment of needs of various users
iii. Early warning on possible flooding downstream of reservoirs

Sri Lanka has a large number of dams constructed over the years and continuing to be maintained. Out of 351 major/medium dams in the country 80 are categorized as “large dams” according to the International conventions. A list of major dams and a map is given in Annex 5.3-1. These dams are operated by Mahaweli Authority of Sri Lanka (MASL), Department of Irrigation (ID), Ceylon Electricity Board (CEB), Provincial Councils and National Water Supply and Drainage Board.

None of the Dams have an adequate Early Warning System (EWS). Data communication system for EWS should be able to collect information required for activation of EWS at different locations. It is, therefore, necessary to get services of an Automated Data Acquisition Systems to manage the pre-disaster situations successfully.

Until recently, Sri Lanka was considered to be located in a geologically stable and safe area with minimum earthquake related incidents. However, Geologists have recently reported a phenomenon of developing an earthquake zone about five hundred kilometers south of Sri Lanka. If there is an active plate boundary just 300 km away from Sri Lanka, an earthquake originated there could reach our dam sites within two minutes. Therefore, the people living in the area probably have a higher risk than Tsunami and we must look for equipment that can help us to activate an Early Warning System through accelerometers including piezoelectric accelerometers.

Mahaweli Authority of Sri Lanka has conducted a Portfolio Risk Assessment and Operation and Maintenance (O&M) Review of 32 key dams engaging an international consultant.

The study showed that though the modern dams have generally been built to current standards of the world’s best use practices the same cannot be said for all the other dams. The study also revealed that many dams including some of the modern dams were showing signs of aging (such as seepage, leakage, cracking and scouring). The other significant issues were non availability of proper Emergency Action Plans (EAP), Updated Standing Operating Procedures (SOP) and legislation to ensure safe operation by dam managers. The key issue requiring prompt attention is that in number of major dams, automatic water level regulation systems for spillway operations that were in place are not functioning now. As such, the dams are posing unacceptable risk levels according to internationally accepted norms.

At present MASL, ID or CEB do not have an adequate Early Warning System (EWS) for dams. It is not possible to give an adequate warning to people living downstream along the Main Rivers. Correct operation of equipment alone will not minimize the consequences of dam failure. They should be integrated with Emergency Action Plans (EAP) and Early Warning System (EWS).

Key stages in the preparation of an EAP are identification of an emergency and assessment of the potential inundated area in case of an unlikely event of a dam failure.

The failure of a dam in a cascade is the worst scenario that can occur. When the top most dam in a cascade fails, there will be severe impact on the lower dams and the downstream community. For example, in Mahaweli Ganga four major dams (Kotmale, Victoria, Randenigala and Rantembe) are in a cascade. Castlereigh, Norton, Maussakele, Canyon and Laxapana are another cascade of dams in Kehelgamu Oya and Maskeli Oya in the headwaters of the Kelani Ganga basin. Similarly in almost all the rivers dams can be found in cascade.

Hence it is identified that a central data acquisition and processing system such as Supervisory Control and Data Acquisition (SCADA) system for all river basins to get the data as fast as possible. Annex 5.3-1 gives details of Preparation of an Emergency Action Plan, identification of an emergency, Supervisory Control and Data Acquisition (SCADA) system, Preparation of inundation maps, Dam Break modeling, Data Management, monitoring systems, Technical assistance and Training and urgent improvements required.
iv. Early warning on possible landslides

Landslide hazard zonation maps of 1:10,000 scales produced from a UNDP- and UNCHS- (United Nations Center for Human Settlements) supported mapping program implemented by the National Building Research Organization (NBRO) in 1986 provide guidance in identifying critical landslide-prone areas. However, there is no landslide forecasting and warning system in place. Since landslides in Sri Lanka are associated with heavy rainfall during the monsoon season, accurate real-time hydrological data from DoM may be used, alongside these maps, human settlement and infrastructure maps, land use data, etc., to predict landslides.

Issuing of warning on landslides happen in several ways. On receiving of heavy rains in hilly areas above a critical value Meteorology Department gives warning through media and also NBRO officials issue warning messages. Apart from that NBRO through mapping has identified high risk areas and disseminated such information through district and division officials and created awareness as to how to identify an imminent landslide by being aware of early symptoms of landslides of the following nature, especially during excessive rainfall spread over long periods of time, particularly unusual or unprecedented:

- Sudden opening up and progressive widening of cracks on the slope surface or on the walls of the buildings.
- Sudden or progressive tilting of trees and towers located on the slope.
- Sudden oozing or appearance of water on the slope and continuous water logging due to poor slope drainage.
- Subsidence or heaves observed on the slope.
- Spurt of rocks from the unstable upper slopes.
- Subsidence on road surfaces and bulging of roads, retaining walls etc.
- Unusual behavior of domesticated animals and birds.

v. Early warning on coastal flooding and storm surges

With respect to coastal flooding and storm surges due to other causes other that seismic activity, prevailing system is not adequate. Had a system prevailed some sort of warning at least in limited areas would have taken place. Therefore systems must be established to communicate to media, national, district, division and LA administration regarding imminent storm surges. Sri Lanka Navy, National Aquatic Resources Agency (NARA) and Coast Conservation Department (CCD) can be involved as responsible agencies.

vi. For earthquakes and tsunamis/ sea surges

Sri Lanka is a signatory to the Comprehensive Test Ban Treaty (CTBT) and is a member of the CTBTO. Sri Lanka has also signed an agreement with CTBTO to facilitate International Monitoring System (IMS).

The action to be taken by Sri Lanka should be compatible with the regional as well as global disaster management and early warning systems. It is hoped that the UN led initiatives would result in setting up an early warning system for the Indian Ocean. Taking this into consideration, it is necessary for Sri Lanka to plan its disaster Management and early warning systems. Sri Lanka is very much involved with the regional initiatives headed by the United Nations in setting up an early warning system for the Indian Ocean, especially to provide tsunami early warning capacity. Collaboration with agencies such as Pacific Tsunami Warning Center (PTWC) in Hawaii and other relevant agencies in Japan should be given priority.

As mentioned before Sri Lanka is a member of the Global Seismic Network (GSN). One station within Sri Lanka is situated at Pallekelle (PALK) and it is given to GSMB by the University of California (CU), San Diego and it is also connected to United States Geological Survey (USGS) and to Comprehensive Test Ban Treaty Organization (CTBTO).

Pallekele Station (PALK) supplies seismic data to USGS through CU, working on a 24 hour basis. When an earthquake occurs, the information received by this station is processed together with data obtained from other stations by the US scientists.
The resulting information about the magnitude and location of the earthquake is fed into USGS (United States Geological Survey web-site. Data from at least 3 stations are needed for this calculation. After an Earthquake occurs with data from Pallekele Station only one cannot get its magnitude or location.

To play the role of coordinating agency in earthquake monitoring and forecasting of tsunamis capacity building for GSMB is essential, as it does not have even seismologists presently. In addition it needs the necessary software. Under the provision of CTBT it is possible to organize training within the Oceanographic Faculty of UC, San Diego, which facility must be made use of. Also GSMB needs restructuring with a new mission and activities for which legal and administrative powers are essential.

With respect to the Warning System, different proposals have been made in the presentations to the Select Committee. Therefore as was suggested by in some presentations it is necessary to initiate a study with a view of receiving recommendations on an appropriate cost effective comprehensive tsunami warning system.

### Recommendation 5-3

The Committee recommends initiating a study regarding the proposed Tsunami Warning System with a view to getting recommendations for an appropriate cost effective and comprehensive proposal.

### Suggested Study Group

A study is suggested to carry out a short term study and to propose suitable recommendations leading to the identification of the most appropriate system. This requires the services of a multi disciplinary team of experts consisting of specialists in legal / institutional frameworks, information technology and communication, disaster management and relevant technology related to data gathering, analysis and dissemination of warnings.

### Terms of Reference

The suggested TOR for this study group would be to,

i. Examine the adequacy of existing legal and institutional frameworks of the agencies responsible for tsunami earning

ii. Recommend an appropriate institutional infrastructure taking into consideration the strengths and weaknesses of existing agencies to maintain an effective system for data gathering

iii. Make recommendations on capacity development including technology needs and human resource development capacities. Study the existing warning/information dissemination procedures in each of the relevant institutions and to make recommendations for their improvement

iv. Assess the existing capabilities of the identified institutions and identify the deficiencies, which hinder them from performing their legally mandated tasks related to natural disasters effectively.

It is recommended that the Early Warning division of the DMC coordinates this activity with the guidance of the Council.

After establishing the system a Technical Advisory Committee appointed by the Council with members drawn from among officials and experts in the relevant agencies and fields of activities will be regularly associated with this activity ensuring constant vigilance and functioning of communication systems etc.
5.4 Early Warning Dissemination Systems

One serious weakness in the present system is the unavailability of an effective information dissemination system to pass prior warnings to the public. This is one of the major reasons for the loss of large number of lives during the December 26th tsunami.

Onset of a disaster is indicated through forecasting and the information should be communicated to the community likely to be affected through a warning system. This system at all levels may consist of following methods and the most appropriate to the locality is recommended be adopted in case of local systems and incorporated in the plans at respective levels, such as, District, division, local authority and village levels.

- Alarms (e.g. for fires)
- Sirens (e.g. for industrial accidents)
- Local announcements through loudspeakers organized at division, LA or village levels
- Other traditional modes of communication (e.g. beating of drums, ringing of bells at religious places, hoisting of flags).
- Public announcements through radio, television etc. (e.g., for cyclones, floods and landslides)

Experience has shown that in disaster situations loss of life and property could be significantly reduced if adequate preparedness measures and appropriate warning systems had been adopted. The importance of warning systems therefore hardly needs any emphasis.

However, the following must be emphasized:

- Not in all cases the opportunity for warning exists.
- Indiscriminate warnings may result in non-responsiveness of the people.
- It is therefore necessary that with respect to every disaster, a responsible officer is designated to issue the warnings.

Some important aspects to be considered in warning

The following aspects must be ensured in warning:

- All warning systems and technologies must be maintained in working condition and checked regularly
- Communities in disaster prone areas must be made aware of the warning systems
- Alternative warning systems must be kept in readiness in case of technical failure (e.g. power failure)
- Only the designated agencies/officers will issue the warning
- All available warning systems should be used. Each warning system has a limited reach and multiple warning systems will help in reinforcement.
- The warning should be very clear about the severity, the time frame and the area that may be affected to the extent possible.
- Warning statements should be conveyed in a simple, direct and non-technical language.
- The do’s and don’ts should be clearly communicated to the community to ensure correct responses
- Warning statements should not evoke curiosity or panicky behavior. This should be in a professional language devoid of emotions.
- Rumour control action should be taken.
- All relevant agencies and organizations should be alerted.
- Wherever possible, assistance of community leaders and organized groups should be sought in explaining the threat.
- Once a warning is issued it should be followed-up by subsequent warnings in order to keep the people informed of the latest situation.
- In the event of the disaster threat fading away, an all-clear signal must be given.
Annex 5.4-I to Annex 5.4-III show Response Structures at different levels during Warning Stage. Preparedness of different stakeholders during warning stage is shown below:

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Preparedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Room / EOC</td>
<td>- Standby, Alert, Evacuation</td>
</tr>
<tr>
<td>Supdt. of Police &amp; other forces as appropriate</td>
<td>- Standby, Cordonning of area as required, -Law and order, Local area warning, Evacuation, Traffic management</td>
</tr>
<tr>
<td>Dept. Operational Centres</td>
<td>- Standby, Alert</td>
</tr>
<tr>
<td>NGOs &amp; CBOs</td>
<td>- Standby</td>
</tr>
<tr>
<td>Hospital Staff, Surgeons, Pharmacies, Health Dept., Clinics etc.</td>
<td>- Standby, Alert</td>
</tr>
<tr>
<td>Groceries, Bakeries, CWE, Cooperatives</td>
<td>- Standby</td>
</tr>
<tr>
<td>Fire Brigade and other service agencies</td>
<td>- Standby, Ready with operation crews</td>
</tr>
</tbody>
</table>
Chapter 6

6 Natural Disaster Mitigation Strategy for each level of Government

6.1 Disaster Mitigation Strategies

Mitigation options available for disaster managers are

- Preventive measures that aim to minimize the physical damage created by hazard events.
- Spreading the risk that aims to reduce the effects of physical damage by ensuring a range of alternative facilities.
- Delegating the responsibility that aims to provide an incentive for different agents to implement mitigation measures.
- Covering or minimizing the impact that aims to manage potential effects.
- Planning disaster management that aims at long-term resilience.

i. Structural mitigation

A few generic structural mitigation options

They are given below for clarity. Note that this list is not exhaustive.

- **Dams and dikes.** These man-made structures include the construction of levees and dikes to retain flood waters. Other types of intervention are dams and reservoirs to harness the flow of rivers, for flood control, irrigation and hydro power. However these methods may not provide the level of protection intended.

- Another mitigation technique employs structural measures to strengthen buildings and facilities. These measures can take place at original construction, during renovations, or as specific retrofit projects.

- Another mitigation technique is the elevation of structures within identified flood hazard areas.

In structural mitigation, there are two categories of buildings as follows:

**Engineered structures** - These are the structures (e.g., buildings, bridges, communication towers, dykes/dams, sluice gates etc) designed and constructed according to standard engineering practices. Engineered buildings are generally designed and supervised by a professional engineer who must obtain a building permit from the municipal or other designated authority. The building permit, plan review and construction inspection by the local authority helps ensure that the building meets building code requirements and planning by-laws. This process does not ensure that the building codes are adequate or that engineers have received appropriate training. The formal design and construction process is observed only in urban areas, but the process should be improved to protect lives and property from disaster effects in all areas.

Building codes have to be developed made mandatory at national level for use by the professional community in the designs. This will enable LAs to adopt same for use by its technical officials for development approvals accordingly. Land use regulations must be adopted by the LAs in accordance with the land use plans prepared based on hazards prevalent in the area (hazard maps). Presently these are being done by local authorities and already gazetted by a few local authorities.

**Non-engineered structures** - These are physical structures (e.g., buildings) that have been built without consideration of the design and construction standards that engineered structures must address. These structures have not been through a formal building permit process to ensure conformity with local building codes and land-use regulations. Such codes and regulations may not have been adopted.
Neither have those responsible for construction received any guidance or supervision from the building department or professional engineers. Non-engineered structures are prevalent in rural and non-urban areas, such as the periphery of municipalities. A large percentage of the buildings even in urban areas are non-engineered constructions. For example: dwelling houses, rural infrastructure etc.

Mitigation strategies for non-engineered construction

**Preparation of necessary documents**

- Mandatory rules of thumb
- Design Guidelines
- Mason's manual
- Preparation of leaflets, posters and a handbook

**Raising awareness:** People and house owners should be made aware about the consequences of disasters, necessary actions for mitigation and also the affordability of the technology.

**Training of artisans:** Masons or craftsmen should be trained through on-the-job training so that they would ensure safety of structures.

**Development and transfer of appropriate technology:** In case of earthquakes non-engineered buildings suffer most. Theoretically, if appropriate resources and building materials are made available, such buildings can be constructed to withstand the effects of earthquakes. Practically, it is not feasible to do so due to very high costs involved. Engineering advice is essential to achieve the cost effectiveness and optimization of resources without compromising on safety standards.

The safety aims would be met, if a building could be designed and constructed using appropriate technology in such a way that even in the event of the probable maximum impact of disaster, it will remain functional.

ii. **Non-structural mitigation**

**Land-use planning**

Land use planning helps in controlling human activities in hazard prone areas to avoid damage to infrastructure, and loss of life and injury. Land-use planning addresses the changing relationship between people and their environments. It is a useful approach to managing urban population growth and minimizing risks.

The process involves the active participation of land developers, local authorities and the community. With decentralization of governance, local government needs to take a major role in the planning of land use in their constituencies. Land use planning in the country is presently carried out at district level by the district land use planning officer of the LUPPD of the Ministry of Lands, as well as at local authorities, which develops a land use plan for its area of authority.

**Broad categories of land use:**

<table>
<thead>
<tr>
<th>Residential</th>
<th>Commercial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural</td>
<td>Medical</td>
</tr>
<tr>
<td>Religious &amp; cultural</td>
<td>Administrative</td>
</tr>
<tr>
<td>Recreational</td>
<td>Industrial /Airport</td>
</tr>
<tr>
<td>Conservation</td>
<td>Employment centers</td>
</tr>
<tr>
<td>Forests</td>
<td>Business centers</td>
</tr>
</tbody>
</table>
Land use planning legislation that governs risk mitigation

Zoning Regulations
Zoning is the way the governments control the physical development of land and the kind of uses to which each individual property may be allocated. Zoning regulations should be based on detailed risk analysis. Local authorities should implement it in consistency with the comprehensive Area Development Plans.

Acquisition and relocation
The acquisition of land identified as a hazard prone area is another land use planning technique. In some cases, human settlements prone to flooding can be shifted and relocated to higher ground nearby. Such hazard prone land is usually allocated for passive land uses, such as open space sometimes suitable for parkland, children's playgrounds, sports fields, retarding ponds and retention areas; depending on the severity of flooding.

Sub-division Regulations
Regulations for land subdivision into two or more parcels for the purpose of sale or building development are a useful legal tool for controlling development and maintaining accurate records of land titles through taxation. The main benefit is that these regulations enable the authorities to follow a constant policy.

Building Regulations
Buildings in disaster prone areas are likely to be subjected to abnormally heavy stresses, varying based on the types of hazards that occur in that region. Accordingly, buildings need to be built to certain varying specifications in order to combat the stresses.

Economic measures - Incentives and disincentives
Incentives as well as disincentives or penalties can be used as economic measures to promote or control development in hazard prone areas. Loans, incentives tax concessions, grants can be used to influence decisions communities make to reduce the disaster risks by attracting them to safer areas. Tax, fines, penalties can be used as financial tools to discourage people moving in to hazard prone areas.

One form of incentive relatively new to disaster management is insurance that can spread the financial burden of disaster risk. This financial instrument involves private and public sector cooperation. Different systems need to be experimented on a small scale over short periods of time to pilot what works best.

Allocation of funds for mitigation projects
Ideally, if mitigation is considered an everyday component of development planning, budgets at national down to local level government should set aside funds for risk management.

6.2 Mitigation Approaches

A generic list of available options to prevent risk
- Carry out audit of all infrastructure using city zonation maps to identify elements at risk.
- Identify key components of each system, particularly in installations and buildings of post disaster significance and infrastructure linking them. Nominate strategic components for upgrading or re-routing away from vulnerable areas.
- Upgrade all vulnerable strategic structures.
- Design, detail or retrofit systems where it is impossible to avoid hazard-prone areas to minimize the effects of hazards and enable a rapid return to normal operation.
- Review design standards, specifications and good practice guides. Revise them according to the priority of the component and the level of finance available.
Provide protection for sensitive plant and equipment. For example, raise items above flood or surge level, fix and brace freestanding equipment in earthquake areas, insulate computer hardware and control equipment from the effects of volcanic dust.

Keep records on a database secure from damage, and ensure that maps of primary systems and district-by-district records of secondary systems are retained and accessible to users.

**Spread the risk**

- Avoid dependence on single facilities and transport routes.
- Introduce redundancy or reinforcement into the distribution system for re-routing operations (advisable to safeguard supply during major repairs). For example, city water or electricity supplies.
- Provide alternative sources of electricity supply

**Spread the responsibility**

- Widen ownership of the system, particularly for maintenance and operation, under regulatory control.
- Help informal communities to install and manage local systems, subject to regulations on minimum standards for security and quality of supply.
- Encourage user participation by promoting public & private partnership in community-based projects utilizing forms of concession such as BOT (build/operate/transfer) or BOOT (build/own/operate/transfer).

**Cover or minimize the impact**

- Provide insurance for physical losses, particularly for mechanical and electrical plant, to facilitate rapid decommissioning of the system.
- Encourage strategic users to install and regularly test standby power-generation equipment and ensure that there is adequate fuel for, for example, 30 days continuous operation.
- Hold spares to replace critical items.
- Establish procedures for system failure and minimizing the effect of pollution.

**Plan disaster management**

- Plan to minimize the time taken to return to normality.
- Arrange regular workshops and training programs for the continuing education of staff in hazard preparedness and mitigation.
- Promote hazard awareness and the planning of facilities away from vulnerable areas.

6.3 **Mitigation Planning and Implementation**

<table>
<thead>
<tr>
<th>Recommendation 6-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Committee recommends that mitigation strategies be adopted by relevant agencies at all levels, such as</td>
</tr>
<tr>
<td>- Relevant infrastructure and service providing agencies</td>
</tr>
<tr>
<td>- Local authorities and</td>
</tr>
<tr>
<td>- Provincial council engineering divisions, by identifying mitigation projects that reduce disaster risk in a given area or a community.</td>
</tr>
</tbody>
</table>

A Disaster Management Committee at the different levels will be the multi-stakeholder mechanism to review such proposals and decide on priority projects considering the maximum benefits to the communities in relation to the cost proposed, and availability finances. Local or donor funding may be used for such projects.
Who should be involved in planning process?
As mitigation is a multi-stakeholder activity, it is desirable that representatives from the following organizations as relevant should be involved in mitigation planning, which can be achieved by Disaster Risk Management Committee (DRMC) responsible for reviewing proposals at the given level.

- Planning department/administration
- Political leadership (national, provincial and local)
- Administrators (provincial, district and divisional)
- Public works
- Infrastructure
- Critical facilities (hospitals, schools, power stations)
- Public safety (police, armed forces, fire, health)
- Building code enforcement authorities (LAs)
- Planning and zoning authorities (UDA, NPPD)
- Finance (budget, legal & policy planning)
- Engineering
- Representatives of communities (farmers, women's groups)
- Donors
- Urban development
- Private sector (businesses, industries, land developers, real estate agents, construction)
- Academic, training and research

How should this plan look like?
A basic outline of a plan is given below. These points to major items that must be included in mitigation plan.

Components of a mitigation plan:

<table>
<thead>
<tr>
<th>1. Introduction</th>
<th>4. Community considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The reason for developing mitigation plan</td>
<td>- Economic development</td>
</tr>
<tr>
<td>- How it was prepared?</td>
<td>- Environment</td>
</tr>
<tr>
<td>- Who was involved?</td>
<td>- Future needs</td>
</tr>
<tr>
<td></td>
<td>- Other considerations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Problem description</th>
<th>5. Proposed risk reduction measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>For each hazard provide</td>
<td>For each include</td>
</tr>
<tr>
<td>- Hazard description</td>
<td>- Description, Objectives supported</td>
</tr>
<tr>
<td>- Impact on property</td>
<td>- Who is responsible?</td>
</tr>
<tr>
<td>- Impact on human life, injury and health</td>
<td>- When it must be done? Who can help?</td>
</tr>
<tr>
<td></td>
<td>- Budget</td>
</tr>
</tbody>
</table>

3. Goals and objectives

Implementation and Evaluation

1. Implementation schedule

A sample Mitigation Plan developed for Nawalapitiya Urban Council by SLUMDMP is in Annex 6.3-1.
Chapter 7

7 Systems for integrating disaster risk concerns in development

There are several aspects to be covered under risk concerns in development as follows, which need to be strengthened under the proposed DRM system:

- Indicating proneness of a given area for incorporating DRM in the National Development Process
- Land Use
- Data Base of Lands indicating prevalent hazards.

Further, the development strategy should be such that appropriate policies are adopted in the respective sectors as follows:

1. In developing Key economic sectors – i) Agriculture, ii) Manufacturing, iii) Mining, iv) Tourism.
2. In expanding Urban Sectors (vulnerability reduction of buildings and infrastructure in disaster prone areas by adopting guidelines for construction in natural disaster prone areas)
3. In providing necessary infrastructure (having facilities in safe locations and hazard resilient designs)

For example, in Agriculture sector policies can be adopted:

i. Contingency crop planning (CCP)
ii. Crop diversification including use of hazard resistant crops to deal with shifts in climate patterns;
iii. Promoting supplementary income generation from off-farm, e.g. Animal husbandry

7.1 Integrating DRM in the National Development Process

Mainstreaming Disaster Risk Management into the National Development Process comprises two major areas, i.e.,

- Mainstreaming of Disaster Risk Management in National Development Policy, Planning and Implementation
- Mainstreaming of Disaster Risk Management into Specific Sectors

It is necessary to develop a multi-pronged strategy for holistic risk management - comprising prevention, preparedness, response and recovery - and simultaneously initiate development efforts aimed towards risk reduction and mitigation. Additionally the DRM Programme will also work towards ensuring that development schemes in vulnerable areas include a disaster mitigation analysis, whereby the feasibility of a project is assessed with respect to vulnerability of the area and the mitigation measures required for sustainability. Environmental protection, afforestation programmes, pollution control, and construction of earthquake resistant structures will also be prioritized within development projects and plans in partnership with local administrations, UN agencies and other partners/stakeholders.

In Sri Lanka, measures also need to be taken to integrate disaster mitigation efforts at the local level within the general exercise of development planning, and a more supportive environment needs to created for initiatives towards managing of disasters at all levels: national, district, division and GN level.

Some problems at national level that must be corrected are,

- Non-adherence to prevailing Acts and Legislations: Although there are so many Acts and Legislation governing land development central government too is not practising them for avoiding unplanned land use and development practices.
Presently there is some control practiced under the Environmental Impact Assessment (EIA) process, but these are limited to only projects of certain categories and beyond a certain magnitude financial wise. Others are not covered.

- **BOI Projects:** Sometimes local authorities and district officials have indicated that projects undertaken under Board of Investment of Sri Lanka (BOISL) do not heed to any approvals at local levels, apparently because of the authority and high powers exercised by that agency.

**Annexure 7.1-I** indicates **A Process for Mainstreaming of DRM in the National Development Process and some Possible Areas.** This is not an exhaustive list of areas and mainstreaming must be in all areas as practically possible, may be in a phased out manner depending on funds availability.

Some shortcomings observed and suggestions that have been made to be incorporated in the proposed mainstreaming are,

- Landslide Hazard Maps, which are produced by NBRO identifying risk areas are not utilised as they should be and still there is no disaster mitigation paradigm in place from the people's side or construction and planning institutions to make use of them. Development takes place without identifying the vulnerable areas as indicated in such maps. Information regarding hazard information should be incorporated in the mainstreaming.

- Revising building application and approval procedures of local authorities and introducing monitoring and auditing for engineered construction practices, sitting criteria and lifeline facilities. The present application form is mostly the same for any area of the country (hilly areas, flood prone areas, coastal areas, and drought prone areas) irrespective of the prevalent hazards and asks the same set of questions regarding the land.

- Accommodate training and capacity building required by the technical and development officers, politicians and planning committees of local authorities authorized to approve development activities

- Training and capacity building are required for community at large on the use of hazard information and adopting in development activities

- The present practice is that for considering the building applications the developer must get prior approval for the blocking out plan of the land. What usually happens is that the house builder purchases the land oblivious of this and when going for the development approval faces problems as very often no consideration has been given to surface drainage in doing the blocking out of the land. By various means he gets out of the situation. But these activities cause immense environmental problems and may eventually result in disasters.

- In order to reduce the risk of disasters, most essential thing is to mitigate it at the planning stage. Hence, highlighting the disaster mitigation in the development plan of the local authority is important.

### 7.2 Activities required by programmes of UN Agencies

Under the systems for integrating disaster risk concerns in development, DMC must give attention to implementing Programmes/Plans of Action as required by the UN Agencies, which are listed below:

<table>
<thead>
<tr>
<th>1.2</th>
<th>Mainstreaming Disaster Risk Reduction into the National Poverty Reduction Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>Mainstreaming Disaster Risk Reduction into In-Country Assessments and the Multi-year Program Framework of International Development Agencies</td>
</tr>
<tr>
<td>1.7</td>
<td>Mainstreaming Disaster Risk Reduction into the National Adaptation Plan of Action (NAPA) under the UN Framework on Convention for Climate Change</td>
</tr>
<tr>
<td>1.8</td>
<td>Mainstreaming Disaster Risk Reduction into the UN Common Country Assessment and UN Development Assistance Framework Process</td>
</tr>
</tbody>
</table>
7.3 Codes and Guidelines and Building Technology Unit in DMC

Codes and Guidelines

The situation with regard to Codes and Guidelines for Planning and Construction in Disaster Prone Areas on different hazards is summarized below. Similar action with regard to other prevailing hazards must be pursued by the DMC.

Construction Guidelines for Cyclone hazard prone areas

After the severe cyclone in 1978 in the eastern province, considerable studies had been carried out including reports and a comprehensive design manual, viz., *Design of Buildings for High Winds Sri Lanka, July 1980, Ministry of Local Government Housing and Construction*. Although this had been distributed among most of the government departments involved in design and construction at the time, SLUMDMP project managed by CHPB identified the fact that the present professional community, especially those working in government agencies in the Eastern Province, contractors etc. are not aware of this manual. This manual is not available for purchase either. The efforts by CHPB to reprint this for wider circulation did not materialize. Action has to be taken regarding this. In addition CHPB has developed simplified guidelines for construction in cyclone prone areas and carried out training as well. This must be pursued further, may to develop a building code.

Construction Guidelines for other hazards

CHPB under SLUMDMP has developed simplified guideline for construction in areas prone to floods, landslides, Lightning and carried out training as well. Future considerations on this aspect may be developing codes.

Guidelines for planning in hazard prone areas

CHPB under SLUMDMP with UDA has developed and published guideline for planning in areas prone to various hazards including floods, landslides, Lightning and Cyclone, and carried out extensive training for planners. This has to be pursued further.

Earthquake vulnerability and Code of Practice

The rapid development and coming up of large multi-storey buildings increases earthquake vulnerability which is to be considered seriously in DRR. According to the present requirements the building in Sri Lanka are not designed for seismic forces. Necessity of stipulating new requirements and making them mandatory is an issue to be considered.

For this purpose after the earthquake risk assessment as proposed in previous section, a Code of Practice for Earthquake Resistant Buildings must be developed and adopted, for which a Committee with members from the Society of Structural Engineers, Sri Lanka; and Institute of Engineers, Sri Lanka can be appointed. This can be taken up as an activity under the Development Division of Institute for Construction Training and Development (ICTAD). The Existing Codes used in neighbouring countries (India and Nepal) can be made use of in the process. Once developed there must be awareness creation among professionals before adopting it as mandatory.

Building Standards for Construction in areas prone to tsunami

With the experience of the December 2004 tsunami, it is evident that it is necessary to develop building standards or code for construction in coastal areas prone to tsunami hazard. After the tsunami there have been queries from various NGOs, foreign and local, regarding the availability of such standards or codes of practice. Arrangements must be made to develop such standards after appointing a suitable committee with representing the UDA, Department of Buildings, Society of Structural Engineers, Sri Lanka and Institute of Engineers, Sri Lanka. This too can be taken up as an activity under the Development Division of Institute for Construction Training and Development (ICTAD). The Existing Codes used in other countries frequently affected by tsunami,

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such as Japan, Indonesia etc. can be made use of in the process. Once developed there must be awareness creation among professionals before adopting it as mandatory.

Fire Code

In the context of building fire risk, the rapid development and coming up of large multi-storey buildings must be considered seriously. Strict compliance of the stipulated requirements in the Sri Lanka Fire Code - 2000, must be reviewed and if any lapses are identified necessary steps taken to rectify same. The present Sri Lanka Fire Code is presently being revised by ICTAD with subject specialists, which would greatly help improve the situation. After the revision is done, awareness programmes must be conducted for development professionals and local authority technical officials about these requirements in development approvals / controls.

Building Technology Unit in DMC

Codes and Guidelines for Planning and Construction in Disaster Prone Areas on different hazards already developed have to be reviewed and revised as necessary regularly and also new guidelines have to be prepared as the needs arise. These guidelines will not be of any use if not adopted legally and made mandatory, and not complied with. With these in view a Building Technology Centre (or Unit) is recommended to be setup as a division of DMC. In addition,

<table>
<thead>
<tr>
<th>Recommendation 7-1</th>
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</thead>
<tbody>
<tr>
<td>The Committee recommends setting up of a Building Technology Centre (or Unit) as a division of the DMC with the aim of</td>
</tr>
<tr>
<td>- Reviewing existing and developing new codes and guidelines</td>
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<tr>
<td>- Taking action to adopt them legally and making them mandatory</td>
</tr>
<tr>
<td>- For ensuring compliance.</td>
</tr>
</tbody>
</table>

7.4 Land Use Zoning Based on Hazard Maps

National Land Use Policy for Sri Lanka

Land Use Policy Planning Division (LUPPD) of the Ministry of Agriculture, Livestock, Lands and Irrigation has proposed a National Land Use Policy for Sri Lanka and action was taken some time back by the Sri Lanka Urban Multi-Hazard Disaster Mitigation Project (SLUMDMP) managed by the Centre for Housing Planning and Building (CHPB) of the Ministry of Housing and Construction, to integrate disaster mitigation by inclusion of relevant statements and sections in the goals, objectives and activities of the Policy. It is recommended that this proposed policy be implemented.

- Land Use Planning Committees to be established at district level and divisional level for implementing of proposals of Land Use Plan and minimizing misuse of land.
- For mitigating damage caused by improper land use following are recommended:
  - Use of land on the basis of scientifically prepared zoning plans as separate areas as Residential, Agricultural, Commercial, Tourism industries, Industries, Recreation and Conservation
  - Decision of allocation for any purpose should be taken by a multi-disciplinary team based on divisional level indicative land use plan of LUPPD and local authority land use plan / development plan
  - Identifying and mapping safer areas for relocation
  - Awareness programmes for all stakeholders (land users, planners, decision makers, school children etc.)
- Identifying vulnerable areas and demarcating on the ground.

**Land use zoning and development plans by LAs**

Preparation of land use zoning plans taking into consideration some hazards such as landslides, land subsidence and floods is already taking place. However, it has been observed that they are not adequately used in land use zoning plans by local authorities or in development plans. Therefore, it is recommended that this is made mandatory by the Council / DMC to ensure that UDA planners and the LAs consider this aspect in land use zoning and in preparing development plans.

**Regional Structure Plans by NPPD**

In developing the National and Regional Structure Plans, the NPPD has considered the hazard-prone areas to a great extent.

**7.5 Coastal Area Buffer Zone for Post Tsunami Reconstruction**

After the tsunami, it was observed that the destruction caused by the tsunami waves differ from place to place depending on the morphology of the land as well as the morphology of the sea bed close to the coast. If the destruction pattern is mapped, it would be clear that stipulating a flat buffer zone of hundred or two hundred metres may not be very logical or reasonable.

With regard to the Buffer Zone, a scientific approach should be embarked upon to identify areas which are safe and suitable for human settlements. Once this information is ready, it should be made available to all those concerned in the context of the Buffer Zone, and this information could be made use of by individuals when making a decision as to whether they will rebuild within the Buffer Zone or whether they want to exercise the option of resettlement outside the Buffer Zone. In any case, the final decision whether to rebuild within the Buffer Zone will be given to the relevant population.

**Recommendation 7-2**

With regard to the buffer zone, the Committee recommends:

- No future development should be permitted within the buffer zones, and the provisions of the Coast Conservation Act should be strictly implemented.
- In case of people who wish to leave the buffer zone, the government should facilitate relocation on alternative safer sites outside the buffer zone.
- The authorities should take the responsibility of making available to the population who were resident in the 100m/200m buffer zone scientific information regarding the safety and the suitability of these locations. Upon receipt of the information, the people concerned would then be allowed to make an informed choice whether to rebuild in the buffer zone.

To ensure safety of the communities that wish to remain on their original lands within the buffer zone, the committee recommends that features like berming, green belts, mangroves etc. be adopted, as envisaged in the Tsunami devastated areas of Banda-Aceh in Indonesia and described briefly below:

- In Indonesia, the Tsunami-affected population are given the choice to return to their own lands, but spatial planning along the coastal line is being considered as crucial to facilitate this.
- Designing of buffer zone, construction of water canals, green belt etc. are being envisaged.
- Construction of multi-purpose hills, elevated structures in vulnerable locations that
function as safe evacuation centers during a crisis, and put to other uses during normal
times

For all future developments, it may be of interest to look at the Coast Conservation Act\textsuperscript{7} and
the Coastal Zone Management Plan, Sri Lanka\textsuperscript{8}.

According to the Coast Conservation Act: “... no person shall engage in any development
activity within the coastal zone except under the authority of a permit issued in that behalf by
the Director.”

Under Interpretation following definitions have been given:

"Coastal Zone" means that area lying within a limit of three hundred metres landwards of
the Mean High Water line and a limit of two kilometres seawards of the Mean Low Water
line and in the case of rivers, streams, lagoons or any other body of water connected to
the sea either permanently or periodically, the landward boundary shall extend to a limit
of two kilometers measured perpendicular to the straight base line drawn between the
natural entrance points thereof and shall include waters of such rivers, streams and
lagoons or any other body of water so connected to the sea;

"development activity" means any activity likely to alter the physical nature of the Coastal
Zone in any way, and includes the construction of buildings and works, the deposits of
wastes or other material from outfalls, vessels or by other means, the removal of sand,
coral, shells, natural vegetation, sea grass or other substances, dredging and filling, land
reclamation and mining or drilling for minerals, but does not include fishing;

According to the Revised Coastal Zone Management Plan, 2003 for administrative purposes
three categories of permits are issued for development, viz., major, minor and emergency
permits.

<table>
<thead>
<tr>
<th>Categories of permits</th>
<th>Review</th>
<th>Permits issued by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major permits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Projects not requiring EIA/IEE</td>
<td>Through checklist</td>
<td>Director Coast Conservation</td>
</tr>
<tr>
<td>• Projects requiring EIA/IEE</td>
<td>By scooping committee</td>
<td>-do-</td>
</tr>
<tr>
<td>Minor permits</td>
<td>Through guidelines, criteria, standards</td>
<td>A Divisional Secretary</td>
</tr>
<tr>
<td>Emergency permits</td>
<td></td>
<td>DCC or Divisional Secretary</td>
</tr>
</tbody>
</table>

As per the Coastal Zone Management Plan development activities within the Coastal Zone
requiring permits \textit{among other things} include “Dwelling houses and related structures,
Tourism, commercial and industrial structures, Roads, bridges and railway lines. Removal of
sand or sea shells”\textsuperscript{6}.

\textbf{7.6 Data Base of Lands indicating proneness to various hazards}

Establishment of a Land Data Bank is one objective / activity of the LUPPD and they have
details of land data. The land data in the Data Bank must include characteristics of land with

\textsuperscript{7} Coast Conservation Act, No. 57 of 1981, Parliament of the Democratic Republic of Sri Lanka, 9\textsuperscript{th} September 1981

\textsuperscript{8} Revised Coastal Zone Management Plan Sri Lanka 2004 - Draft, Coast Conservation Department
respect to proneness if it is not already included. Land database available with the Coast Conservation Department (CCD) also form a part of the total database. Centre for Housing Planning and Building (CHIPB) as a part of the National Housing Data Bank has collected data regarding land suitable for housing. As this may now be somewhat outdated it may be updated by a data collection process, but care must be taken not to duplicate the similar activities by different agencies. In working on the Data Base of Lands LUPPD must obtain information from the Hazard Mapping Unit of the DMC and a system for regular links must be maintained.

This could also include the proposal submitted by the Italian government to the Select Committee on a digital model construction, focusing on geomorphological studies on the coastal belt of Sri Lanka, which can be done by an overhead satellite and can identify areas vulnerable to natural disasters.

7.7 Development Controls by Different Agencies

Presently local authorities and UDA are the development controlling agencies and in special areas there are other agencies responsible.

**Recommendation 7-3**

For disaster resilient development, as the major part of development are within the purview of LAs under the guidance of UDA, the Committee recommends reviewing the prevailing system and taking action for improvement. Other connected recommendations are, revision of land-use zoning plans of LAs considering prevailing hazards; revision of procedure for application for approval of land blocking out plans (BOPs) and housing and building construction; provision of training for LA technical personnel, including attitudinal changes.

**Recommendation 7-4**

The Committee recommends that EIA requirement for all large-scale development projects irrespective of the category of implementing agency be strictly enforced.
8 Natural Disaster Preparedness and Response Planning for each level of Government

8.1 Disaster Response Organisations

Due to the multiplicity of players in disaster response, the organisational model should emphasize coordination rather than command and control (which will only be applicable within the state hierarchy or each agency). The key is clear delineation and assignment of functions and responsibilities and effective inter-agency coordination. For coordination and command and control mechanisms and organizational structure are needed. While at national level the Council will be the coordinating authority, at each subsequent level (Provincial Council, district, local authority, and village) there should be a focal point for coordinating response and recovery efforts and managing and disseminating critical information.

At national level the Council with the assistance of the DMC will coordinate all response activities with a National Disaster Preparedness and Response Plan.

All government ministries; provincial councils; national and provincial departments; boards and corporations; district, division, local authority and village administrations; private agencies including offices, factories, commercial establishments etc.; all educational establishments including schools, universities, technical colleges, training establishments etc. must develop a Disaster Preparedness and Response Plan (DPRP) for the organization / establishment for implementation on receiving or declaration of warning or on occurrence of a disaster. This will be made mandatory and DMC will coordinate and monitor adherence and progress. For monitoring of activities of private sector agencies, educational establishments etc. at district and divisional level, a mechanism will be developed utilizing the district, division and LA administrative set up.

In this context, it is recommended to make it mandatory to appoint a Disaster Management Committee and an Emergency Operating Centre (EOC) for coordination and information management at each of the following levels in the government and provincial administrative set up:

<table>
<thead>
<tr>
<th>Level</th>
<th>EOC headed by / DMC chaired by</th>
</tr>
</thead>
<tbody>
<tr>
<td>National level ministries</td>
<td>Minister / Secretary of responsible Ministry</td>
</tr>
<tr>
<td>Provincial councils</td>
<td>Chief Minister / Chief Secretary</td>
</tr>
<tr>
<td>District level</td>
<td>District Secretary</td>
</tr>
<tr>
<td>Divisional level</td>
<td>Divisional Secretary</td>
</tr>
<tr>
<td>Local Authority level</td>
<td>LA Chairman</td>
</tr>
<tr>
<td>Village level</td>
<td>Grama Niladhari</td>
</tr>
</tbody>
</table>

All other agencies will be required to appoint an Emergency Management Committee with several members, the number depending on size of the establishment. Members of Disaster Management Committees at different levels of government are suggested in Annex 8.1-I.

8.2 Decentralization and Devolution of Disaster Management- Experiences from India:

In Sri Lanka, it is recognized that the principle of subsidiarity applies for disaster management, where policy makers cannot centralize decisions that need to be made by relevant authorities on the field. Essentially disaster management falls within the mandate of the provincial councils. The situation is similar in India, where the states take a predominant role in disaster management, with the Centre providing additional support.
The key features of the Indian Model\(^9\) are:

- The Government of India has adopted mitigation and prevention as essential components of their development strategy. The Tenth Five Year Plan document has a detailed chapter on Disaster Management. The plan emphasizes the fact that development cannot be sustainable without mitigation being built into developmental process. Each State is supposed to prepare a plan scheme for disaster mitigation in accordance with the approach outlined in the plan.

- The Finance Commission makes recommendations with regard to devolution of funds between the Central Government and State Governments as also outlays for relief, rehabilitation, mitigation and prevention. The earlier Finance Commissions were mandated to look at relief and rehabilitation. A Mitigation Fund is also proposed.

- The responsibility to cope with natural disasters is essentially that of the State Government. The role of the Central Government is supportive in terms of supplementation of physical and financial resources. However, since response to a disaster requires coordination of resources available across all the Departments of the Government, the policy mandates that the Central Government will, in conjunction with the State Governments, seek to ensure that such a coordination mechanism is laid down through an appropriate chain of command so that mobilization of resources is facilitated.

- The States have also been asked to set up Disaster Management Authorities under the Chief Minister with Ministers of relevant Departments. The Chief Secretary of the State heads a state level committee which is in overall charge of the relief operations in the State and the Relief Commissioners who are in charge of the relief and rehabilitation measures in the wake of natural disasters in their States function under the overall direction and control of the state level committee. In many states, Secretary, Department of Revenue, is also in-charge of relief. The Government of India is working with the State Governments to restructure the Departments of Relief & Rehabilitation into Departments of Disaster Management with an enhanced area of responsibility to include mitigation and preparedness apart from their present responsibilities of relief and rehabilitation.

- The district administration is the focal point for implementation of all governmental plans and activities. At the district level, the District Magistrate who is the chief coordinator will be the focal point for coordinating all activities relating to prevention, mitigation and preparedness apart from his existing responsibilities pertaining to response and relief. The District Coordination and Relief Committee is being reconstituted/ re-designated into Disaster Management Committees with officers from relevant departments being added as members. Because of its enhanced mandate of mitigation and prevention, the district heads of the departments engaged in development are now being included in the Committee so that mitigation and prevention is mainstreamed into the district plan. The existing system of drawing up preparedness and response plans will continue. There will, however, also be a long-term mitigation plan. District Disaster Management Committees have already been constituted in 256 districts and are in the process of being constituted in the remaining districts.

- Similarly, sub-divisional and Block/Taluka level Disaster Management Committees are also being constituted. At the village level Disaster Management Committees and Disaster Management Teams are being constituted. Each village in multi-hazard prone district will have a Disaster Management Plan. The process of drafting the plans at all levels has already begun. The Disaster Management Committee, which draws up the plans, consists of elected representatives at the village level, local authorities;

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\(^9\) ‘Disaster Management in India: A Status Report’ & ‘Disaster Management- The Development Perspective’ Govt. of India, Ministry of Home Affairs, National Disaster Management Division
Government functionaries including doctors/paramedics of primary health centres located in the village, primary school teachers etc. The plan encompasses prevention, mitigation and preparedness measures. The Disaster Management Teams at the village level will consist of members of youth organizations like Nehru Yuvak Kendra and other nongovernmental organizations as well as able bodied volunteers from the village.

- The teams are provided basic training in evacuation, evacuation, search and rescue, first aid trauma counseling etc. The Disaster Management Committee will review the disaster management plan at least once in a year. It would also generate awareness among the people in the village about dos’ and don’ts for specific hazards depending on the vulnerability of the village. A large number of village level Disaster Management Committees and Disaster Management Teams have already been constituted.

- The 73rd and 74th constitutional amendments recognize Panchayati Raj Institutions as ‘Institutions of self- government’. The amendment has also laid down necessary guidelines for the structure of their composition, powers, functions, devolution of finances, regular holding of elections and reservation of seats for weaker sections including women. These local bodies can be effective instruments in tackling disasters through early warning system, relief distribution, providing shelter to the victims, medical assistance etc.

- Other than the national, state, district and local levels, there are various institutional stakeholders who are involved in disaster management at various levels in the country. These include the police and para-military forces, civil defence and home-guards, fire services, ex-servicemen, nongovernmental organizations (NGOs), public and private sector enterprises, media and HAM operators, all of whom have important roles to play.

This model for disaster management can be very easily adapted to Sri Lanka with the Provincial Councils and local authorities working hand-in-hand with the national and district administration.

8.3 Responsibility of Preparation of Disaster Preparedness and Response Plans

At each level and agencies mentioned above a Disaster Preparedness and Response Plan (DPRP) is recommended to be developed. Under the DRM system proposed there should be a directive that development of these Disaster Preparedness and Response Plans (DPRP) is mandatory. With regular monitoring the relevant division of the DMC should monitor progress of these and periodic review and updation. These plans should be in conformity with the national level disaster preparedness and response plan that will be prepared by the DMC. Conformity of these plans to the national level plans is shown in Annex 8.3-1.

Responsibility of Plan development

<table>
<thead>
<tr>
<th>Level</th>
<th>Responsibility</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>National level</td>
<td>Council / DMC with other national level stakeholders</td>
<td>National Disaster Preparedness &amp; Response Plan</td>
</tr>
<tr>
<td>National level</td>
<td>Ministries</td>
<td>Ministry Emergency Plan</td>
</tr>
<tr>
<td>Ministries</td>
<td>National level infrastructure service providing agencies</td>
<td>Departmental emergency plans</td>
</tr>
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<td></td>
<td></td>
<td>Operating Procedures</td>
</tr>
<tr>
<td></td>
<td>National level other agencies</td>
<td>Department’s emergency plans</td>
</tr>
</tbody>
</table>
### Provincial level
- PC with other stakeholders
- Provincial level infrastructure service providing agencies
- Provincial level other agencies

### District level
- District Secretariat
- District level units of service providing agencies as part of the head office plan

### Divisional level
- Divisional Secretariat
- Divisional/local level units of service providing agencies in conformity with the head / provincial / district office plan

### LA level
- LA Chairmen
- Divisional/local level units of service providing agencies as part of the head / provincial / district office plan

### Village level
- GN with help from Divisional Secretaries

These response mechanisms will be made mandatory through the Act. Provisions should be made in the DMC role for coordinating and monitoring of these activities with other levels of administration.

Apart from the above private sector agencies and communities will be encouraged to prepare their plans, which will receive the government's blessings.

Refer Annex 8.2-II for “Risk reduction and disaster management in Sri Lanka: Local level disaster preparedness and emergency response\(^{10}\): Report by IOM International Organization for Migration”. Responses st national and other levels including civil society response are described which can be used in developing plans at different levels.

### 8.4 Emergency Response

Emergency response systems will be established at different levels, by community, by NGOs and state led - at national, provincial, district, divisional, local and GN levels. There will be a role for all of these provided in the DPRPs. For effective response during a disaster all these groups have to coordinate and work together, for which response preparedness is required. In the response preparedness the roles of above stakeholders must be described depending on their expertise. Response Structures on Occurrence of a Disaster at national, provincial and district levels are shown in Annex 8.3-I to Annex 8.3-III.

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\(^{10}\) Jean-Pierre Massue, Risk reduction and disaster management in Sri Lanka: Local level disaster preparedness and emergency response, Colombo, 4th May 2005
Responsibilities of different stakeholders on occurrence of a disaster relevant to the Response Structures are shown below:

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armed Services &amp; Police</td>
<td>Law &amp; order, Search &amp; Rescue, Disposal of dead bodies</td>
</tr>
<tr>
<td>Divisional Secretary</td>
<td>Search &amp; Rescue, Disposal of dead bodies, Temp. shelter, Relief activities, water cooked food, dry ration etc.,</td>
</tr>
<tr>
<td>Health, National Hospitals</td>
<td>First aid, Medical aid, Disposal of dead bodies, Health &amp; sanitation,</td>
</tr>
<tr>
<td>CWE, Coop., Food Dept.</td>
<td>Relief activities, cooked food, dry ration etc.,</td>
</tr>
<tr>
<td>Telecom</td>
<td>Infrastructure restoration</td>
</tr>
<tr>
<td>NWS&amp;DB</td>
<td>Health &amp; sanitation, Infrastructure restoration, water</td>
</tr>
<tr>
<td>CEB</td>
<td>Infrastructure restoration</td>
</tr>
<tr>
<td>Education Dept.</td>
<td>First aid, Temp. shelter,</td>
</tr>
<tr>
<td>Dept. of SS</td>
<td>Relief activities</td>
</tr>
<tr>
<td>RDA</td>
<td>Infrastructure restoration</td>
</tr>
<tr>
<td>NGO &amp; CBO</td>
<td>Search &amp; Rescue, First aid, Disposal of dead bodies, Temp. shelter, Relief activities, cooked food, Cattle camps, Health &amp; sanitation,</td>
</tr>
</tbody>
</table>

Activities to be addressed in Emergency Response - Measures during and immediately after a disaster occurs

i. Mobilise

ii. Search & Rescue (SAR) and evacuation

iii. Assess and obtain immediate requirements

iv. Organize and coordinate

   • Establishment of Relief camps in accordance with standards laid down
   • Essential services such as drinking water
   • Arrangements for dry rations and family kits for cooking
   • Disposal of dead bodies – Identification of victims
   • Disposal of debris
   • Livestock camps
   • Relief supplies to transit camps and relief camps, and to Site Operations Centres
   • Supplies of fodder and cattle-feed to livestock
   • Welfare Services
   • Maintain law and order to prevent looting and theft
   • Cash Compensation requirements

v. Coordinate NGO activities through necessary support to ensure community participation

   • Establishing coordination mechanisms with local level NGOs and other national level NGOs
   • Identification of NGOs to serve on committees etc.
   • Assigning well-defined areas of operations of the EOC
   • Assigning specific response function to specialized NGOs
   • Reporting upon procurement and disbursement of relief materials received through government and non-government channels
   • Mobilize and coordinate work of volunteers ensuring community participation

The District level example of Activation of EOC and Vigilance under the chairmanship of the District Secretary is shown in Annex 8.3-IV.
8.5 Emergency response by Local Authorities

To minimize response time to local emergencies like fire and accidents, the local authorities have to have fire service capabilities and should be able to respond with ambulances and other measures within a very short time. These facilities can be shared between a few local authorities and can be self-financed by imposing a levy from people in the area. In some countries, funds for such facilities are also collected as levy from insurance companies on the basis of each insurance policy that is sold. However, common standards for the support infrastructure required—hydrants to ensure compatibility are essential and should be provided by relevant departments of the national government.

8.6 Disaster Victim Identification (DVI)

The experience of the process of disposal of great numbers of dead bodies in many districts in the aftermath of the 26th December 2004 devastating tsunami event stressed the need to have a formal Disaster Victim Identification (DVI) procedure. This may be included in the Disaster Preparedness and Response Plan as part of the immediate response after a disaster.

Disaster Victim Identification is the procedure to positively identify deceased victims of a major disaster to the satisfaction of the coroner. In Australia a DVI procedure is in place that can be applied to Mass casualty incidents such as air / bus crashes, building collapse / fire, shipping accidents and acts of terrorism, and also in smaller incidents. Broadly these can be categorized as open or closed disasters.

Closed disaster – Identity of victims known with a high degree of certainty such as an air crash

Open disaster - Identity of victims unknown or largely unknown

Visual identification is not generally acceptable in a DVI procedure. In the DVI procedure the criteria through which the dead bodies are identified are,

i) fingerprints,
ii) dental records and
iii) DNA

The secondary criteria are,

- Medical
- Property and
- Photography.

Even though the system seems to be very appropriate after a disaster with many victims, there is a doubt regarding the practicability and usefulness of this procedure considering the criteria through which the dead bodies are identified, i.e., i) fingerprints, ii) dental records and iii) DNA. Sri Lanka being a developing country a major segment of the population cannot afford even the minimum health care, and therefore, the practicability of identifying victims through fingerprints, dental records and DNA, which usually may not be kept by even a small segment of population, must be given due consideration.

Australia is willing to support this initiative. A committee may be appointed to look into this and if feasible assist in setting up the system with the required training and capacity building of associated organisational set up.

8.7 Scope to be addressed in plans at different levels

Departmental disaster preparedness plans by service providing agencies at various levels would be related to technical activities of the department for recovery, emergency services, etc. Standard Operation Procedures will be part and parcel of the respective departmental plans. These have already been prepared for some departments, drafts of which have been discussed and amended with department representatives before inclusion in District Disaster
Preparedness Plans developed in some districts with UNDP support. The actual departmental emergency plans should include more specific information regarding roles and responsibilities of officials stationed on duty at different units and workstations including their contact information. The above mentioned Standard Operation Procedures for each department will have a reporting format for reporting preparedness to the respective EOC and a format for reporting during emergency response. For ensuring response preparedness Chairmen of respective Disaster Management Committees will convene regular meetings where the preparedness will be discussed and reviewed. Theses also will be mandatory requirements.

National, provincial, district, division, local authority and village level plans would be more towards institutional arrangements and coordinating activities by different committees and agencies, other levels of administration, NGOs, CBOs, Community etc.

Village level plan will include specific details about local population, geographical information etc. as given in Annex 8.5-I. In addition a database of details of the entire population within the GN division is recommended to be kept as a hard copy as well as in the division and the district as well as the DMC. In a few division level forums GNs have indicated the difficulty they face due to non availability of such information. Earlier during the time when ration books were being issued they used to have all details with information such as new born babies and those dead updated, whereas that practice is not there any more. UNDP expects to introduce along with the village level plans initially in the 5 districts affected in 2003, a system for getting such information first to develop the database and subsequently to update regularly. It is recommended to make this activity mandatory with the implementation of the Act.

At other levels aspects as discussed in the above sections will be generally included as relevant to the level of planning. The coverage of Disaster Preparedness Plans at other levels in general is included as Annex 8.5-II. Standard Operation Procedures will be part and parcel of these plans too, as these will indicate the roles and responsibilities of these various service providing agencies in recovery, emergency services, reconstruction etc. making the coordination and emergency management easier.

8.8 Stakeholder Involvement in Disaster Preparedness

A most critical issue would be the maintaining of operational capability of
- Critical facilities
- Emergency power
- Communications
- Access to decision-makers and key staff.

Proper coordination between various levels of response actors will ensure above and help smooth response during the emergency. The decision-makers and key staff would include bureaucrats and politicians at various levels. The representation of service providing agencies and departments in the DMCs and EOCs will ensure smooth functioning of Critical facilities, Emergency power and Communications. Disaster Preparedness Plans will be developed by these service providing agencies and departments covering internal departmental actions in an emergency and also Standard Operation Procedures for each department.

The plan will make provision for involving various traders and others in getting the following resources in the event of a disaster:
- Earth Moving and Road Cleaning Equipment
- Earth moving and Road cleaning equipments (belonging to Private owners)
- Water Bowsers

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11 CHPB has introduced such preparedness plans at selected local authorities under USAID-OFDA project SLUMDMMP and UNDP in selected districts after 2003 disaster. Divisional plans are in progress presently

12 CHPB has introduced such Standard Operation Procedures under the project SLUMDMMP and UNDP, MWESW in selected districts after 2003 disaster.
Involvement of Community and CBOs
Details of planning for Involvement of Community and CBOs in the Initial Response and in the aftermath of a disaster are described in Annex 8.6-I.

Involvement of NGOs
Leading international and national NGOs would work on relief supplies, search and rescue, first aid, community awareness, reconstruction and rehabilitation activities. Depending on the geographical area of their involvement they would work on disaster risk mitigation at district, division, LA and village level.

**Recommendation 8-1**

The Committee recommends that that Ministry of Social Welfare / Department of Social Services identify suitable NGOs who can take on specific responsibilities in their specialized area of activity and entrust them with specific tasks. The PSC recommends DMC to:

4. Assess the organizations helping in the relief and recovery including government and private sector agencies, and NGOs
5. Assess the current relief and recovery arrangements
6. Propose an approach which ensures the above criteria

At any given level of preparedness planning (district, division, LA or village level) details of NGOs will be maintained and registered in the following format and particularly indicating the types of their activity and their commitment in case of a disaster. Their activities can be governed by an acceptable code of conduct for NGOs (refer Annex 8.6.II).

<table>
<thead>
<tr>
<th>Name of NGOs and CBOs</th>
<th>Area of Operation</th>
<th>Possible Sectors of activity by NGOs</th>
<th>No. of Staff</th>
<th>Contact Name &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evacuation</td>
<td></td>
<td>First Aid, SAR, Assistance in temporary shelter management Relief Health &amp; Sanitation Training and education Flood Rehabilitation Sector Community Development Humanitarian support Recovery of agricultural activities Poverty alleviation Environment Village development Gender balance and development</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Role of Media

Media has a vital role to play in terms of Disaster Preparedness and Response. It could be dissemination of warning, degree of vulnerability or any information related to disasters. It is their responsibility to ensure authenticity and accuracy of the news prior to publishing. A responsible officer appointed by the Emergency Operation Centre at a certain level would release relevant information to the media within the shortest possible period of time.

8.9 Arrangements for Equitable Distribution of Relief and Recovery

As recovery of damaged public infrastructure services have been addressed in the Disaster Preparedness and Response Plans at different levels of government and Operational Procedure for line departments this section deals with relief and recovery of affected communities. A mechanism should be established to ensure the following that in the aftermath of a disaster:

i. Equitable Distribution of Relief
ii. Reduce Incidence of Ad-hoc and Disparate Relief Distribution
iii. Ensure Equitable Assistance to Individuals

For this the following action is recommended to the DMC:

1. Assess the organizations helping in the relief and recovery including government and private sector agencies, and NGOs
2. Assess the current relief and recovery arrangements
3. Propose an approach which ensures the above criteria

One special focus on distribution of relief and arrangements for recovery should be equitable distribution, for which a formula may arrived at by considering the proportion of population affected in different areas, especially in national scale disasters such as the December 2004 tsunami. Concerns of the Internally Displaced Populations (IDPs) also have to be focused on, as reflected in the report prepared by IOM attached as Annex 8.6-III.

Recommendation 8-2

The Committee recommends that DMC makes arrangements for Equitable Distribution of Relief and Recovery adopting a formula developed by considering the proportion of population affected in different areas, especially in national scale disasters. Concerns of the IDPs are also to be considered in the proposal.

8.10 Special Community Recovery Modules

Special attention should be given to community recovery by proposing special community recovery modules to enable them to return to normalcy within the shortest possible time. Such a mechanism has been proposed to the Council of Australian Governments by a high level officials’ group. This document also recommends "Nine Model Complementary Arrangements for State and Territory Relief and Recovery".

Recommendation 8-3

The Committee recommends proposing and implementing special community recovery modules to enable them to return to normalcy within the shortest possible time.

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13 Natural Disasters in Australia - Reforming mitigation, relief and recovery arrangements, A report to the Council of Australian Governments by a high level officials' group, August 2002
Chapter 9

9 Protection of Public Infrastructure from Impacts of Natural Disasters

The responsibility for Protection of Public Infrastructure from Impacts of Natural Disasters lies with agencies providing lifeline, utility and infrastructure services. Apart from the general services these would include schools, hospitals and other public health facilities, administrative buildings etc. Structures related to river flood control, power generation, irrigation, ports and harbours, airports, coastal break waters etc. too should be protected from the impacts of natural hazards.

In looking at protection of public infrastructure from impacts of natural disasters there are two aspects to be considered, viz.,

♦ Protection of existing infrastructure and
♦ Designing and construction of new infrastructure to withstand the forces of the prevailing hazards.

Mitigation strategies must be addressed in both these after consideration of the hazards prevalent in the area, vulnerabilities and risks.

9.1 Using Information on Multi-Hazard Risks to reduce Vulnerabilities of Infrastructure

Whether it is protection of an existing infrastructure facility or designing and construction of a new facility, answers to the following questions must be found for the specific project prior to identifying mitigation measures:

• What are the hazard risks in the area?
• What is the nature of the vulnerability of specific lifeline systems and physical structures?
• What risks, if disaster comes, will most impact the built environment and which hazard may cause the most damage?
• What level of risks is acceptable: how safe is safe? To what standards are we to mitigate?
• Which areas of risk reduction - structural or non-structural mitigation - should be given the higher priority for attention?
• What are the cost-effective ways of reducing the risk of damage and possible failure?
• Is an urban infrastructure mitigation strategy compatible with achieving other city objectives i.e. in the time needed and with the resources available?
• Can the mitigation measures envisaged in the strategy be embodied in existing programmes and projects - and into maintenance schedules?
• Is there a need for an over-arching mitigation programme, project progressing unit/agency?

These questions can be a risk mitigation brief that would form the Terms of Reference or Scope of Work for the project committee or team within the agency responsible for the particular infrastructure facility. The team should get assistance / advice form agencies conversant with the prevalent hazards in the area and also disaster mitigation aspects, together with representatives of private business, insurance and industry as relevant. The group’s task would be to identify the nature of the mitigation (loss reduction) strategies to be adopted and to develop an ‘Action Plan’. The responsible agency will implement the proposed actions.

Some aspects discussed in Chapter 5 on Natural Disaster Mitigation Strategy for each level of Government are relevant to this chapter. The actions identified for protection of infrastructure can be included in the Action Plans of the respective agencies as discussed in Chapter 5.
9.2 Risk Reduction Strategies

The team/committee must discuss and identify measures to be taken to reduce the vulnerability of the particular facility after considering the following aspects. Prior to undertaking new infrastructure also similar exercise should be undertaken to finalize design criteria for the new facility. In case of large projects such studies are generally undertaken with the feasibility study and/or EIA prior to the detailed designs.

1. Preventive and mitigating measures which may reduce the physical damage from hazard events
2. Ways of spreading the risk to lifeline services by decentralization (of utility networks), through planned redundancy
3. Providing of routes and bridges as alternative escape routes for pre and post emergency. (Hill paths for emergency exit and/or appropriately located boat boarding sites).
4. Allocate and spread responsibility for provision, upgrading and maintenance
5. Seek to minimize hazard impact by proposing precautionary measures to be adopted on receiving warnings.
6. Planning of disaster management, and its monitoring and upgrading, to ensure the resilience of the mitigation and of the physical infrastructure to be protected.
7. Seeking higher specifications and special protection measures for systems and structures which must perform post-disaster activities: i.e. Critical bridges as escape/relief routes; hospitals, fire stations, telecommunications buildings, and key administrative buildings
8. Upgrading of urban land management and planning controls by LA/UDA to have a development control approach that is disaster mitigation conscious. Support with appropriate enforcement and by the issuing of guidelines and checklists.


Another dimension to the mitigation menu may be added by separately listing measures to be taken for productive infrastructure such as dock installations, factories, power stations and energy distribution and storage points. For these they may insist upon internationally agreed safety standards, as no local standards are available.

9.3 Existing Infrastructure

Maintenance

It is the responsibility of the agencies responsible for any given facility to regularly inspect all elements of the facility and carry out regular and periodic maintenance. It is the practice in the country that large amount of monies are spent on capital projects for construction of new facilities but no funds are allocated for annual or periodic maintenance, which is a very pathetic situation resulting in reduction of the life of the facility on one hand and on the other hand the facility not serving the purpose which it was built for.

In some fora it was highlighted that in a large river flood protection scheme rain gauges and river water level gauges were installed at the time it was constructed. With time these were not functioning (apparently purposefully damaged by some parties) and to date no action has been taken to replace those. These were meant for forecasting the downstream areas of possible water level rising in the river.

Some such facilities maintained by a few state agencies are given below as examples:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Department</td>
<td>Power and irrigation reservoirs dams and flood control schemes (dikes and connected structures, pumping stations etc.) within their purview</td>
</tr>
<tr>
<td>Mahaweli Authority of Sri Lanka (MASL)</td>
<td></td>
</tr>
<tr>
<td>Ceylon Electricity Board (CEB)</td>
<td></td>
</tr>
<tr>
<td>Coast Conservation Department (CCD)</td>
<td>Coast erosion control structures</td>
</tr>
<tr>
<td>Meteorology Department</td>
<td>Rain gauge monitoring stations - maintenance and new stations with communication facilities</td>
</tr>
<tr>
<td>Irrigation Department</td>
<td>Rain and river water level gauges - maintenance and new gauges with communication facilities</td>
</tr>
<tr>
<td>RDA, PRDA, LAs</td>
<td>Roads, bridges and culverts within their purview</td>
</tr>
<tr>
<td>Department of Railways</td>
<td>Railways, bridges and culverts within their purview</td>
</tr>
<tr>
<td>NWS&amp;DB</td>
<td>All components of the system within its purview</td>
</tr>
<tr>
<td>CEB</td>
<td>All components of the system within its purview</td>
</tr>
<tr>
<td>Hospitals</td>
<td>All facilities within the hospitals, some elements more vulnerable than others</td>
</tr>
<tr>
<td>Telecom</td>
<td>All components of the system within its purview</td>
</tr>
</tbody>
</table>

**Recommendation 9-1**

Considering the importance of maintenance of existing infrastructure, the Committee recommends that government makes fund allocations for regular and periodic maintenance; and for repairs including hazard resistant measures to be built in by way of retrofitting initiatives on priority basis. The respective agencies are to carry out the activities using cost effective methods and in a transparent manner.

At the same time it is equally important that the respective agencies carry out the activities using cost effective methods and in a transparent manner.

**Retrofitting**

Another mitigation technique available is structural measures to strengthen buildings and facilities known as retrofitting. These measures can take place at original construction, during renovations, or as specific retrofit projects after consideration of the risk and identifying the need to strengthening.

To strengthen existing structures, retrofit measures have to be taken to protect and enhance the survival of high priority structures such as power stations, bridges, tanks, dams, water pumping stations and, archaeological structures and buildings. Anchoring walls and water supply lines, strengthening steel frames are some of the methods, which can be adopted. Sometimes the cost of retrofitting is higher than the cost of reconstruction. Even if the cost for retrofitting may be high, the benefit gained by securing the system and preventing direct and indirect damages is higher.
There are hazard specific guidelines for building in hazard prone areas to reduce damage from impact. Many of these measures can be done at any time within the life of a structure, not only during new construction. It must also be noted that it is much more cost effective to do it at the time of new construction of facilities.

**Examples of retrofitting**

An example is the school retrofitting initiative under the Kathmandu Valley Earthquake Risk Mitigation Project, Nepal, under the Asian Disaster Mitigation program of ADPC, Bangkok. Schools in Kathmandu Valley are two to three storeyed buildings without a reinforced concrete structure and only with load bearing walls. This retrofitting programme used bandages of reinforcement materials (reinforced concrete tie beams) to strengthen and tie together the wall units to counteract the lateral forces of earthquakes.

In Bengkulu, Indonesia, the Indonesian Urban Disaster Mitigation Project under the same programme, carried out an innovative retrofitting scheme, which involved only selected components of the building prone to damage thereby saving much cost.

In the local context some examples of possibilities for infrastructure strengthening are as follows:

1. In existing bridges if the abutments and bank protection upstream and downstream are found to be not strong enough for anticipated hazards they can be strengthened with an appropriate engineered design. After the tsunami destructions were seen to structures of this nature.

2. Some bridges in flood prone areas the deck level goes under water during certain floods. Measures can be taken to raise the level after giving due consideration.

3. In cyclone prone areas houses or other facilities are not always constructed strong enough to resist the wind forces. In cyclone resistant design he main design criteria are anchorage, bracing and continuity known as the A B C of cyclone resistant design.

   **A**  Anchorage of all parts, one to the other, with ties and fixings.
   **B**  Bracing of all planes with strengthening, holding and diagonally stiffening members.
   **C**  Continuity being the watchword to achieve structural integrity wholeness of building working under the loads of the storm wind

Such measures can be taken for making buildings stronger without incurring much cost.

### 9.4 Future Development of Infrastructure

As mentioned above, specific activities, which must be carried out at various stages, would comprise,

1. An assessment of the presence and frequency of natural hazards in the area concerned and their effects on the proposed project.
2. Estimates of the potential impact of the natural events on the proposed development activity (vulnerability assessment and risk assessment) and
3. The inclusion of measures to reduce vulnerability in the proposed development activity.

The possible measures for incorporation of hazard mitigation at different stages can be summarized as follows:

1. During feasibility study
   - Choice of location
   - Availability of land
   - Alternative design concepts or other possible alternatives
   - Consideration of alternatives
2. During design phase
   - Site investigations and surveys
   - Design alternatives
   - Appropriate specifications

3. During construction phase
   - Ensuring adherence to specifications
   - Proper supervision

Infrastructure and support systems for human settlements should be invulnerable as much as possible. Therefore, such facilities must be adequately designed to be least vulnerable. Potential Impacts of Natural Hazards on facilities and Mitigation Measures\textsuperscript{15} explained above in this chapter are recommended for use by the designers.

**Mitigation Strategies for Proposed Development**

Mitigation measures to reduce vulnerability in the proposed development activities can take either a structural or non-structural character.

**Structural measures** include,
- Building of protective devices such as dikes
- The use of building codes and material specifications in the design and construction of new facilities in hazard prone areas
- Retrofitting of existing structures and facilities to make them more hazard resistant.

**Non-structural measures** concentrate on identifying hazard prone areas and limiting their use. Examples include,
- Land use zoning
- Tax incentives
- Insurance programmes and
- The relocation of residents away from the path of the hazard.

In Sri Lanka as a developing country, a strong case can be made for emphasizing non-structural mitigation, since structural mitigation measures have a direct cost that must be added to the project cost. Non-structural measures may have some capital and/or operating costs but these are usually less than structural costs. But of course it has to be kept in mind that hazard prone areas cannot always be avoided for the following reasons;
- Shortage of land for development
- With some hazards, the prone areas cannot be avoided and development must be designed to withstand the effects of the event when it takes place

\textsuperscript{15} Megacities: reducing vulnerability to natural disasters – Institution of Civil Engineers, London, 1995
Chapter 10

10 A National Public Education, Training and Community Awareness Programme

Education has always been at the forefront of knowledge gathering and knowledge sharing activities of a society regardless of the geographical location or religion or language. However, the concept of natural disaster mitigation as part of the formal education is not well accommodated or integrated. In Sri Lanka as in any other under-developed countries, the main concern in primary and secondary education has always been and still is, to prepare students for the university entrance exams that will determine their future career choices.

A national public education and awareness generation programme will have several components, viz., i) School Education, ii) University Education, iii) Training and iv) Public awareness.

10.1 School Education - Incorporating Natural Disaster Risk Management in School Curriculum

Activities implemented up to now by various agencies

Some initiatives on school based DRM has been taken by the Centre for Housing Planning and Building (CHPB) under the Sri Lanka Urban Multi-Hazard Disaster Mitigation Project SLUMDMP, Sri Lanka country project of Asian Urban Disaster Mitigation Program (AUDMP) managed by ADPC (funded by USAID-OFDA). SLUMDMP in collaboration with National Institute of Education (NIE) and Ministry of Education carried out several activities in school based DRM.

1. Series of school awareness programmes in demonstration project and other selected areas consisting of the following:
   - Art, Poster and Essay competition for school children
   - Disaster Safety Day Programmes as awareness
   - Seminars for school children, teachers and parents
   - Distribution of hazard specific awareness leaflets.
   - Awareness programs conducted through media (TV, Radio and Newspaper) targeting at school children, parents and teachers.

2. Training of Trainers (ToT) for Teachers during 1998-1999 to deploy them to train G.C.E (Advanced Level) students to undertake Projects and Assignments related to natural disaster phenomena, under the Competence Based Learning that was being introduced under the educational reforms during that time.

3. Initiative to integrate NDM into the existing curriculum of the Geography subject, which is in the process of finalization. Teachers’ Guide Book / Manual in this respect too is now being finalized. Further discussions were held for integration in sections such as (a) Languages (b) Science and Technology (c) Social Studies and (d) Aesthetic studies.

4. Implementation of Social Marketing Programme as demonstration activity in 15 selected schools in the 5 districts affected by the 2003 disaster. The activity comprised establishing in the selected schools of Disaster Management Circles with a group of 50 students from the highest grades in the school but not the grades sitting for the GCE "O" level or "A" level exams. 2 teachers and the Principal were responsible for the DM circle. Activities focused around
   - Identifying the disasters in the neighbourhood of the school
   - Measuring rainfall using rain gauges provided by the project
   - Studying wind effects and measuring wind speeds
   - Gathering and recording DM related data and information.
The NDMC of the ministry of Women's Empowerment and Social Welfare has been conducting a series of school awareness workshops for schools on different hazards – landslides, floods, drought, tsunami etc.

**Present proposal by GTZ**

A project is presently being finalised for School Based DRM – Education for Social Cohesion – which is a collaboration of the GTZ, National Institute of Education (NIE) and Ministry of Education, the Goals of which are
- Increased awareness of students at various levels on natural disaster reduction to respond to the social needs of the society to strengthen the disaster preparedness activities.
- Established a “Culture of Safety”, promoting vulnerability reduction of the communities in Sri Lanka through education and learning.

Three main activities proposed are as follows:
1. Integration of Disaster Management and Mitigation issues into existing school curriculum
   After a curriculum review integration of DRR modules in selected subject areas and in selected grades (1, 6, 10, 11 & 12), review and revise as necessary, Teacher Training and Pilot Testing of in 3 districts in tsunami affected provinces.
2. Formation of support groups in schools
   Under this, the exercise on the re-establishment of Environmental Circles (ECC) formed in the schools as Environmental and Disaster Mitigation Circles (EDMCC) can be extended to the pilot sites.
3. Replication of the Activities in other Tsunami affected areas

**Risk Awareness Education, Web based learning and the School Net Project**

In the presentation and report prepared by Jean-Pierre Massue, European Academy of Sciences and Arts for International Organisation for Migration on “Risk Culture: Proposals on education and training”, Risk Awareness Education and a School Net Project is proposed considering the children's role and capability to take the message to the society. As a School Net Project the following is proposed. Refer Anex 10.1-I:

« School Net Project » - Create networks of school « Cyber-base »: permanent one for schools in town, mobile one for schools in rural and mountains areas. At Each « Cyber-base » will be associated one or two part time animators. The aims of the systems will be to:
- Train children to use internet system for
  - the chat functions,
  - to be able to built a website,
  - to use the network to built radio and ideally Internet TV on their own
- Use such « School net project »as a tool for risk prevention awareness issues 3-in addition the children will have the possibilities to use the school-net project to built others types of radio or TV programmes: cultural, music, theater etc…

The Environmental and Disaster Management Circles already initiated in schools can be utilised and further improved in establishing a School Net Project as proposed. This will enable the schools to create web sites and cyber-base and network the Disaster Management Circles and use same for issues relating to risk mitigation, awareness etc. A constraint will be the different levels of facilities available in different schools. Thee activities should not be limited to the well to do schools in urban areas only.

Risk Awareness Education can be incorporated as appropriate in the proposed school curriculum development / revisions / reforms. Appendix 1 of Anex 10.1-I mentioned above
includes details of the following which can be used in such integration:

i. Element for risk awareness education of children at school level and

ii. Making schools safe from major accidents - A school safety plan should, when drafted, include the following:

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<tr>
<th>Recommendation 10-1</th>
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<tr>
<td>The Committee recommends continuation of activities on integration of disaster Risk Awareness and Mitigation in School Curriculum, where possible timing with any proposed school curriculum development / revisions / reforms.</td>
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<tr>
<th>Recommendation 10-2</th>
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<tr>
<td>The Committee recommends developing and implementing school safety plans for making schools safe from major accidents.</td>
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<th>Recommendation 10-3</th>
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<tr>
<td>The Committee recommends introducing Web based learning and School Net Project - Creating networks of school « Cyber-base »: permanent one for schools in urban areas and mobile one for schools in rural and mountains areas, with the aims of training children to use internet system and as a tool for risk prevention awareness. The Environmental and Disaster Management Circles already initiated in schools to be utilised and further improved in establishing a School Net Project.</td>
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10.2 University Education - Incorporating Disaster Risk Management in University Education

Activities Implemented so far

One major focus of Sri Lanka Urban Multi-Hazard Disaster Mitigation Project (SLUMDMP) managed by the Centre for Housing Planning and Building (CHPB) as a tri-partite project with UDA and NBRO was integration of disaster mitigation in urban planning. With this in view an intensive training programme was implemented for the town planners of UDA and other agencies. As a further strengthening of the town planning profession an initiative was taken to integrate NDM in the Masters and Degree courses in Town Planning in the University of Moratuwa. This was coupled with integration in the Masters and Degree courses in Architecture and Building Economics of the Faculty of Architecture in the Moratuwa University and all courses in the Geography Departments in the Universities of Ruhuna and Sri Jayewardenepura. The faculty members of these departments were trained in the ADPC with a view to developing a resource base in NDM in these universities and curricula were developed appropriately. NDM modules are being taught in these courses at present.

SLUMDMP under its Extension Phase during 2004 initiated a dialogue with the Department of Civil Engineering of the University of Peradeniya for integration in its programmes too. At present discussions are being held for commencing a Masters degree in Disaster Management by the Department of Geology at the University of Peradeniya. The MSc degree programme will be conducted at the Postgraduate Institute of Science, University of Peradeniya with the collaboration of many institutions and universities in Australia, Thailand, The Netherlands and USA. This programme is principally intended for engineers, scientists, middle level government officials such as divisional secretaries, social service officers, police and military personnel who have experience in managing disasters such as floods, landslides, droughts and tsunami.

The proposed MSc program will have a duration of 18 months (12 months for course work
and 6 months for the research component) is scheduled to commence in September 2005 at Peradeniya.

It is suggested to implement following activities to commence teaching within a period of one year:
- Review current activities related to DM in all Universities
- Draw up a programme for integration in all relevant courses as optional modules and as optional modules in all other courses in all universities
- Some relevant major streams to be considered for compulsory modules in all universities are - Science and Technology (Civil engineering, Engineering Geology, Geology, Environmental Engineering / Science, Medicine, Biological Science, Physical Science, Agriculture and other), Social Sciences (Geography and other), Aesthetic Studies (Music, Arts, Sculpture and other), Languages, Health and Physical Education etc.
- Post graduate Diploma and Masters courses in Disaster Management related subjects and also promote PhD studies. In fact this recommendation has already been acted upon and with support from the East West and Pacific Disaster Centre in USA, the University of Peradeniya has already initiated steps to commence a M.Sc course in Disaster Management for mid-level administrators.

Such integration will result in students undertaking projects, assignments and theses in DRM related themes. In this context it is further recommended to,
- Encourage Degree, Masters and Ph.D. students to select Disaster Risk Management related themes for dissertations and carry out research in and publish research papers
- Promote conducting seminars and workshops for disseminating findings of such research among all professionals and disaster risk management stakeholders
- Outcome of such studies which are of high quality may be published for wider use.

Recommendation 10-4
The Committee recommends action to initiate integration of disaster risk management in universities after reviewing current activities related to DM and drawing up a programme for integration in all relevant courses as compulsory and/or optional modules in order to commence teaching within a period of one year.

Recommendation 10-5
The Committee recommends commencing Post graduate Diploma and Masters Courses in Disaster Management related subjects in relevant departments of universities and promoting PhD studies.

Recommendation 10-6
The Committee recommends promoting research work and studies on disaster related themes; seminars for dissemination of findings; and publication of selected work.

10.3 Training
Target groups will include politicians, all levels of administrators and technical personnel, field officers, NGOs, business community, CBOs, selected community leaders and volunteers.

Some specific training areas
Training on EOC, DMC and SOC functions
- Training in EOC, DDMC and, SOC functions and operations must be provided to staff of the District Secretariat, all heads of departments, all members of the DDMC and selected
representatives of the Divisional Secretary’s office and government departments operating in the district.

**Fire / Life Safety Training and Awareness**
- All staff in the District Secretariat must undergo training in personal / family preparedness, preparedness in work place, at home and while traveling in a vehicle, at least once a year. Similar training must be provided to the general public as follows:
  - a. Community groups
  - b. In work places
  - c. In schools etc.
- Selected senior officials of the District Secretariat, Departments, Principals and teachers of schools can be trained to serve as trainers. These activities must be coordinated by the Divisional level EOC and Divisional Disaster Management Committee.

**Basic Emergency Practices**
- The following groups that are involved in disaster management operations and responsible for keeping vigilance should be given training on basic emergency practices and codes. These activities must be coordinated by the Divisional level EOC and Divisional Disaster Management Committee.
  - a. First aid groups
  - b. SAR parties
  - c. Community groups selected as response teams
  - d. Traffic wardens

**Field Personnel**
- All field personnel, Technical Officers, Supervisors, Public Health Inspectors, Family Planning Officers, Social Service Officers, Grama Niladharis, Samurdhi Development Officers etc. should be given training on specific aspects of emergency management and planning. They can also be used as trainers for training their subordinate staff and especially for training of community groups to maintain the family preparedness programme. These activities must be coordinated by the Divisional level EOC and Divisional Disaster Management Committee.

**Different forms of training for different personnel:**
- Awareness about the Emergency Management Plan
- Awareness about the safe and quick evacuation routes
- Awareness about very rare but very destructive disasters such as tsunami, including their peculiar characteristics. E.g., High speed of the sea waves, the sea receding before a killer wave to discourage people going to investigate and getting trapped in the killer wave, that the wave can be very high, to run away from the sea to safety as early as possible etc.
- EOC functions, and duties and responsibilities assigned to various personnel
- Site Operation Functions (SOC) functions, and duties and responsibilities assigned to various personnel
- District Secretariat staff - Training on supplies and procurement, Maintenance of equipment etc., etc.
- GNs - Damage assessments, rescue, relief management, rehabilitation and recovery.
- Initial response on occurrence of disaster
- Communication
- Specific training on departmental activities, e.g., fire, police, NWS&DB, CEB, Telecom etc.
- Technical personal, PHIs and other officials of LAs who approve building plans
- Administrative personal who are responsible for disaster relief operations
- Volunteer organizations who support the administrative mechanism in relief operations
- Planning officers and Planning Assistants of UDA on guidelines for planning in prone areas and mitigation planning
Some considerations in implementing Professional Training and Education:

**Government Officials**

Appropriate modules or programs in specialist areas associated with their particular sector that would help career pathways. Strengthening of national or community capacity to lead and deal with disasters. This can work through identifying and strengthening organizations that serve as coping mechanisms: by increasing capacity and skills to face a crisis.

Increasing the number of coping mechanisms within a country or community and linking them to outside resources; and, encouraging actions that promote cooperation among different government ministries, departments, programs, etc.

**Construction Specialists**

On the job training for structural mitigation measures. Special training programs and guidelines that detail hazard specific mitigation practices.

**Planners**

Professional education, including disaster management courses that include theory and practice.

**Tertiary Students**

Include modules and subjects directly related to disaster risk management that contain both theory and practice associated with their disciplines.

**Building Maintenance Staff**

Include training for building maintenance staff on steps to take to reduce potential hazard damage, such as fixing of non-structural elements such as fans, cupboards, furniture etc… in earthquake hazards prone areas.

**Risk Awareness Education**

“Risk Culture: Proposals on education and training” as proposed by Jean-Pierre Massue\(^\text{17}\) in the presentation and report to the Select Committee can be incorporated as appropriate in the different training programmes. Refer Annex 10.1-I. The document includes possible areas on civil protection for training of trainers to be used in training and awareness creation in different provinces.

**Additional issues to be considered:**

- Strengthening the capacity of Grama Niladharis (GNs) who are closest to the affected communities can be undertaken to ensure sustainable recovery of affected people and facilitating building of stronger links with other disaster response actors at the district, divisional, provincial and national levels. This can be done through:

  - Supporting GNs to build and maintain a database of disaster vulnerabilities and capacities at the local level. This will help them verify facts and ascertain actions at the times of disasters. Such databases should be compatible and contributory to larger databases at different levels.

  - Building close communication links with the Divisional Secretaries at all times from disaster warning to response and recovery stage.

  - Supporting and assisting GNs when they are affected in a disaster, so that they are able to carry out their duties.

\(^\text{17}\) Jean-Pierre Massue, Risk Culture: Proposals on education and training, Colombo, May 2005
10.4 Public Awareness

Public awareness campaigns generate community support for the implementation of mitigation actions and encourage those engaged in the building profession to address mitigation. The importance of public awareness and social marketing must be realized. Informing the general population about the potential hazards and risks increases public knowledge and understanding of the situation. Risk communication can encourage greater public participation in mitigation activities, enhancing the effectiveness of preparedness and prevention planning. Campaigns need to be targeted to specific audiences with directed messages.

Public Awareness programmes should be for the following target groups:

- Community – all categories in all fields of activities including farmers, fishermen, traders, skilled workmen in building trades etc. and house wives
- School children
- Officials of various organizations
- Professionals of different sectors
- Political heads of Provincial Councils and Local Authorities
- Journalists

Art competitions, participation in disaster reduction campaigns and events, and meeting with people involved in disaster mitigation are among many tools that can be used with school children. Apart from these, a wide array of channels of communication is available for adoption for Public Awareness with different target groups and situations:

- Face-to-face: meeting, seminar, workshop, conference, march, exhibition, demonstration, training, exchange visit, planning
- Mass media: television, radio, newspaper, cinema
- Distributor print: leaflet, pamphlet, brochure, booklet, guideline, case study, newsletter, journal, research paper, report
- Folk media: story, drama, dance, song, puppet, music, street entertainment
- Audio-visual: video, audio, multi-media, artwork, photograph, slide show, model, map
- Stand-alone print: billboard, poster, banner, warning sign, flood water level marker
- Postal: direct mailing
- People: community leader, volunteer, project worker, head of women’s group
- Electronic media: website, e-mail, e-mail discussion lists, electronic conferencing, distance learning platform, SMS and MMS

Public Awareness should cover areas such as (these ought to be hazard specific wherever relevant):

- Emergency Management Plan
- Emergency evacuation including safe and quick evacuation routes
- Very rare but very destructive disasters such as tsunami, including their peculiar characteristics. E.g., Tsunami with high speed of sea waves, sea receding before a killer wave to discourage people going to investigate and getting trapped in the killer wave, that the wave can be very high, to run away from the sea to safety as early as possible etc.
- Emergency Evacuations

Disaster supplies kit: Families should be encouraged to take along with them adequate supplies as a disaster supplies kit.

a. Adequate supply of water in closed unbreakable containers
b. Adequate supply of non-perishable packaged food and dry rations
c. A change of clothing and rain gear
d. Blankets and bed sheets, towels
e. Buckets, plates, glasses, mugs made of plastic
f. Soap, toothbrushes, toothpaste
g. A battery-powered radio, torch, lantern, matches
h. Cash and jewellery
i. Personal medicines
j. Important documents including samurdi card, passport, national identity card, bank passbook, address/telephone book (of relatives), certificates, driving license, property documents, insurance documents etc.
k. Special items including food for infants, elderly or disabled family members.

Following aspects too should also be covered in awareness programmes:
- Encourage people to keep fuel in their cars as petrol pumps may be closed during emergencies.
- Ask people to shut off the electricity main switches, gas and water valves, close & lock doors and windows and secure their homes before leaving.
- Ask people to listen to a battery-powered radio and follow local instructions.
- If the danger is a chemical release, then people should be instructed to evacuate immediately.
- In other cases, advise people to follow these steps:
- Wear protective clothing
- Leave early enough to avoid being trapped.
- Follow recommended evacuation routes.
- Not to move or drive into flooded areas.
- Stay away from downed power lines.
- Animals may not be allowed in public shelters.
- Community should set the livestock free
- If possible, the community may be advised to carry the livestock along with them

10.5 **The Mechanism for Implementing Training and Awareness**

The mechanism for implementation should take into account activities that have been, and are being carried out by various agencies, such as CHPB, NBRO, UDA, SLIDA, NDMC, NIE, Universities, NGOs such as SLRC & St. John’s Ambulance etc. In addition services of other newly identified agencies can be utilized:

**Meteorology Department:**
- Awareness programmes for different categories and also providing resource inputs for programs conducted by CHPB, NDMC, NBRO etc.

**GSMB, Irrigation Department, MASL, CEB etc.**
- Services of these agencies should be obtained for resource inputs as well as for direct conducting of awareness programmes, especially with their inputs for flood risk assessments mitigation and preparedness and response.

The proposed DMC should plan these activities through its proposed Education, Training and Public Awareness division, taking the role of a facilitator as well as direct trainer if and when required. Selected training activities and programmes must be entrusted to existing network of training agencies mentioned above including NGOs but with adequate monitoring. In some cases DMA can conduct the training taking resource persons from other agencies including NGOs and CBOs. For district / divisional level training, training of trainers programmes can be conducted for selected officials so that they can in turn train divisional and village level personnel.

The training courses should be well structured with specific curricula developed considering the type of target group and the subject matter. For this CHPB and SLIDA has the expertise. Curriculum committees should be appointed including training specialists as well as those familiar with the subject matter. Appropriate training methodologies should be recommended. Some Training and Awareness already conducted by above agencies indicating the target
Groups are given in **Annex 10.5-I**.

**International Training and Personnel Development**

Facilities for training and post graduate education in international universities are recommended to be utilised effectively by selecting relevant courses at reputed international universities and other specialised and professional training providing institutions. A very vital factor is the selection of relevant officials for training and further education with adequate background and prerequisite qualifications. A problem frequently encountered is that officials after training are transferred to other departments or administrative locations where the training gained cannot be utilised.

<table>
<thead>
<tr>
<th>Recommendation 10-7</th>
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<tr>
<td>The Committee recommends that proposed mechanism for implementing training and awareness takes into account activities that have been, and are being carried out by various agencies, and in addition services of other newly identified agencies to be utilised.</td>
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<th>Recommendation 10-8</th>
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<tbody>
<tr>
<td>The Committee recommends that facilities available for officials for specialised training and post graduate education in international universities be utilised effectively by selecting relevant officials with required qualifications.</td>
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<tr>
<th>Recommendation 10-9</th>
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<tbody>
<tr>
<td>The Committee recommends strengthening the capacity of Grama Niladharis (GNs) who are closest to the affected communities and facilitating building of stronger links with other disaster response actors at the district, divisional, provincial and national levels.</td>
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Chapter 11

11 Role of different Stakeholders

11.1 Private Sector

In the aftermath of a disaster, the government's primary responsibility is to restore basic public services before rendering assistance to the private sector. Direct aid to individual businesses is not on the priority list of the government response system as its priority is the community at large. In such a situation, it is evident that the private sector business community should be self-sufficient, at least for a minimum of several days after a disaster occurs. This can be achieved by organizing themselves as a private sector, self-help association funded by themselves. The Goal of such a body basically would be, "to provide a forum for information exchange to enhance emergency preparedness and contingency planning within the business community".

Such organizations in the form of Traders' Associations, Construction Contractors Association etc., are presently in existence in townships, urban areas, in districts, provinces and at national level, though not functioning with this particular goal. Such Associations particularly at urban or township level should be encouraged to reorganize themselves or to form new associations with this particular goal.

Business and Industry Council for Emergency Planning and Preparedness (BICEPP)

A similar organization is in existence and functioning in the City of Los Angeles in USA. This started as a meeting in 1983 the Mayor had with a group of business leaders to discuss disaster preparedness. This group subsequently became a steering committee and formed the Business and Industry Council for Emergency Planning and Preparedness (BICEPP). This was established as a private sector, self-help association funded by annual sponsorship donations. BICEPP later evolved into a non-profit corporation, led by an Executive Committee and a Board of Directors. It has now developed into a large organization with a Resource Library containing a multitude of books, manuals, pamphlets, articles, abstracts, and other reference materials on disaster planning, preparedness and recovery. Collected over many years, the materials range from complex corporate disaster plans and government publications to basic individual preparedness information. It sponsors seminars and workshops, on themes such as "Psychological Response to Disasters," "Exercise Design," "Lessons Learned from the Northridge Earthquake," and others. These seminars and workshops are specifically designed to promote emergency management, planning, education, and training. BICEPP has its own Website.

The Ceylon Chamber of Commerce

The Ceylon Chamber of Commerce after a recent meeting with the Parliament Select Committee Chairman has developed and circulated among its members a document on the steps to be taken to minimize risk in the event of an earthquake. The Ceylon chamber of commerce has also taken steps to form an Internal Committee to handle these issues in order to create awareness of the need to be prepared for disasters.

Recommendation 11-1

The Committee recommends promoting private sector to organize themselves in to associations with the Goal of "providing a forum for information exchange to enhance emergency preparedness and contingency planning within the business community" and also to have their own plans for responding to disasters and for rapid recovery after a disaster.

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15 Letter dated 01 June 2005 sent by the Ceylon Chamber of Commerce to Chairman, Parliament Select Committee
11.2 Volunteers

i. Promoting Culture of Volunteerism

Presently in Sri Lanka volunteer work is very informal and not organized, and does not receive any recognition. Therefore it is recommended to promote Emergency Management Volunteers to organize in a formal manner at village, LA and division levels for assisting in emergencies. These groups will be registered by the relevant administration and training provided.

Volunteers will be activated in the village on receiving warning or on occurrence of a disaster. There will be a pre-identified sequence of activities such as raising of alarm, assembling at a given place, mobilizing the volunteer force etc. Volunteer work will also include policing or providing security during a disaster time when there can be looting of houses after evacuation of people to safe places. Volunteers can enhance their capabilities, particularly in small rural communities where many of them are known and have connections. To strengthen and support volunteerism in emergency management the relationships between volunteers and the communities needs to be used.

In recruiting volunteers some consideration are, getting committed people from non-traditional sectors, including young people, culturally and linguistically diverse groups, and retired and semi-retired people.

It is also recommended to provide increased assistance to volunteer emergency management organizations and any hardship payments if considered necessary. In providing training a leader can be selected as a trainer who in turn will train the other volunteers in the village or community. A motivational allowance or an incentive may be advantageous.

Some issues in volunteerism are,
- Trauma counseling
- Compensation for injuries
- Payment for time taken off work for training and emergency response in the event of a disaster and
- Protection for dismissal by employers.

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<th>Recommendation 11-2</th>
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<tr>
<td>The Committee recommends creating a culture of volunteerism at village, LA and division levels for assisting in emergencies. To register volunteer groups by administrations at relevant levels and take action to provide training.</td>
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ii. Lessons from Australia

Lessons may be drawn from Australia where volunteerism is organized and conventionalized that the Australian Emergency Management Volunteer Forum (AEMVF) has been holding emergency management volunteers’ summits since 2001. This is organized under the sponsorship of the Emergency Management Australia of Attorney-General's Department of Australian Government, which provides all the support. The spirit of volunteerism in Australia is demonstrated by the 500,000 volunteers who form the backbone of Australia's emergency management and emergency services capabilities.

Conducting Volunteers' Forums

Learning from the Australian example, conducting Volunteer Forums will strengthen the process. These could be at national and other levels involving volunteers, employers, politicians and representatives from administrations at different levels would positively contribute to the development of volunteerism.
For promoting a culture of volunteerism following areas must be discussed and put forward for action by the government:\(^{13}\):

i. Training and information sharing
ii. Legal Protection
iii. Funding and
iv. Recognition

iii. **Rewarding volunteers at place of work and rewarding employers for promoting volunteerism**

As motivation if employees can be convinced to appreciate and reward volunteer workers, it would be beneficial for the development of the culture of volunteerism. This could be in the form of certificates of appreciation after a disaster or by way of providing leave of absence from work for training during normal times and for volunteer activities during a disaster. Promotional prospects and recognition will also be a great motivation.

Such employers who promote volunteerism too should be recognized and motivated in some form. This could be in the form of tax exemptions or similar rewards.

iv. **Volunteerism - Transcending political barriers (APOLITICAL)**

In recruiting volunteers some consideration are, getting committed people from all backgrounds, without any political bias and those who are willing to provide their service irrespective of what political parties are in power at local, provincial or national level governing bodies. Such a culture could be developed with time by inculcating attitudes through training and experience, and also through positive appreciative treatment and recognition towards them for volunteer work they provide. Condemnation or punitive actions by any politicians would be dangerous barriers for developing positive apolitical attitudes among volunteers. The politicians too would have to be made aware of this likely problem and they too would have to develop similar positive impartial and professional attitudes. With adequate willingness from their side an exemplary behaviour by political leaders this would not prove to be a difficult task.

v. **Change in volunteer sector - Australian example**

Volunteer sector is not a static, but a dynamic sector where change is taking place all the time. This change has to be assessed continually to maintain relevance, growth and sustainability. With the changes in the society/community, the relationships between volunteers and communities they serve should be analyzed, reshaped or realigned to take account of the future needs. Again taking from the Australian example the following pressures were identified by the attendees of the Volunteer Summit 2005:\(^{17}\):

- Demographics - ageing population
- Participation constraints - Family, personal, legal, time, work, nature, time sensitive, busy life style
- Community expectation - Demand for higher standards of service
- Resourcing - Funding, training, people, skills erosion, workload

11.3 **Role of Media in Natural Disaster Management**

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\(^{13}\) Natural Disasters in Australia - Reforming mitigation, relief and recovery arrangements, A report to the Council of Australian Governments by a high level officials' group, August 2002

\(^{17}\) Emergency Management Volunteers Summit 2005: Value your Volunteers, Australian Government, Attorney-General's Department, Emergency Management Australia, 6th April 2005 and 7th April 2005 (Day1 & day 2)
General media interest is to maintain audience by selling or providing information, entertainment and avenues for expression. Current treatment of natural disaster by Sri Lanka news media:

i. Focus of media attention:
   - events which are of priority interest to each media organisation's own audience
   - shock effect of an immediate disaster situation

ii. Aspects of media coverage depends on:
   ♦ Operational capacity - Best media resources are in Colombo and therefore the further away the disaster occurs, the slower and more delayed the coverage, unless the scale of disaster is of value to media; Provincial or local media reporters are often of low quality and are poorly equipped; If a distant disaster situation is not attractive, the quality of media coverage could be poor; When specialist TV teams visits disaster site, coverage could be rich and provided at national level resulting in better societal response to disaster.
   ♦ News gathering strategy - The information the media seeks out regarding a disaster are Actual nature of event or potential event (e.g., depth and scale of flooding), Victims of disaster (number affected, nature of effects - injury, death, trauma, economic deprivation, loss) and their dramatic experiences, mitigatory response by immediate community (local volunteers, medical aid, rescue) - scale, difficulties, successes and mitigatory response for national level, if required (efficiency, scale of response etc.).

Annexes 11.3-I and 11.3-II include "Media Mobilization Guidelines for Long Term - natural disaster prevention, preparedness, post disaster recovery at national and local level" and "Media Mobilisation Guidelines for Short Term - natural disaster event, immediate response, and social mobilisation at national and local level".

Using these relevant formats for briefings, press conferences etc. can be developed. Information control as necessary can be effected as well. Ways of using media effectively for long term mitigation measures as well as educating people can be organised. Other modes such as documentaries and feature videos sponsored commercially can be used for awareness.

Recommendaition 11-3

The Committee recommends recognizing the role of Media in Natural Disaster Management, providing awareness using Media Mobilization Guidelines for long term and for short term on impending or during disasters.

11.4 Role of NGOs in Disaster Management

Lakshman Gunaskera (Associated Editor of Sunday Observer), The Role of the Mass Communication Media in Natural Disaster Mitigation and Strategies for Media Mobilisation, Natural Disaster Mitigation Training Course by CHPB, 1999
The committee recommends that a framework within which Non-Governmental Organizations (NGO) and International Governmental Organization (INGO) must operate within Sri Lanka should be stipulated by government. In fact, when the committee met with selected NGO’s and INGO’s, the unanimous position taken by those who came before the select committee was that they would be willing to operate within a stipulated framework and in return, NGO’s and INGO’s should be recognized and facilitated by government. The committee has looked at the Code of Conduct used by AUSAID and would like to suggest that a Code of Conduct similar to this should be developed, preferably in consultation with NGO’s and INGO’s. The Australian Code of Conduct for NGO’s is attached as Annex 8.8-II.

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<th>Recommendation 11-4</th>
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<tr>
<td>The Committee recommends NGOs active in the area of Disaster Management be recognized and facilitated by government; and a Code of Conduct similar to that used by AUSAID be developed for adoption.</td>
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Chapter 12

12 Conclusions and Summary of Recommendations

12.1 A Five-year Programme for Strengthening Disaster Risk Management System in Sri Lanka

A Five-year Programme for setting up a comprehensive disaster risk management system in Sri Lanka will have following elements as detailed in the preceding chapters. These activities will be made mandatory Act and with the required financial allocations from the treasury and where relevant incorporated in donor funded and assisted development projects:

i. Development of an appropriate institutional framework for disaster risk management

The Disaster Management Bill provides the basic institutional framework for disaster risk management at the national level. This broad framework will have to be further developed into an institutional system that spans the national, provincial, district and division levels. Capacities will have to be developed at all these levels. This is the most crucial aspect which needs to be taken up immediately as all the other elements stems from this.

ii. Systematic Data Collection, Research and Analysis, Disaster Risk Assessment and Information Systems

Comprises the following:

- Systematic data collection
- Multi-hazard risk assessments
- Risk information system
- Inventory of past disaster impacts
- DRM Website

In Sri Lanka, while a lot of information is available on natural hazards, relatively little is available on disaster risks except for work done by NBRO on landslide hazard risks. A system needs to be developed that systematically captures the existing and emerging patterns of disaster risk. The NDMC, with support from UNDP has already initiated the development of a disaster risk information system and a DRM website. These initiatives must be taken forward with proper coordination with relevant R&D and S&T agencies and engaging specialist consultants as relevant, and if necessary international or regional experts.

iii. Integration of disaster risk management concerns with the ongoing and upcoming development policies and programmes

In order to reduce future disaster risks, specific mechanisms will have to be developed to incorporate disaster risk reduction in the planning processes of some of the key development sectors such as environment, water resources, power and energy, education and health.

Activities required by programmes of UN Agencies should also be included under this activity to ensure timely completion of as required by the respective programmes (the following list must be checked for completeness and action taken).

1.2 Mainstreaming Disaster Risk Reduction into the National Poverty Reduction Strategy
1.5 Mainstreaming Disaster Risk Reduction into In-Country Assessments and the Multi-year Program Framework of International Development Agencies

1.7 Mainstreaming Disaster Risk Reduction into the National Adaptation Plan of Action (NAPA) under the UN Framework on Convention for Climate Change

1.8 Mainstreaming Disaster Risk Reduction into the UN Common Country Assessment and UN Development Assistance Framework Process

iv. Establishment of effective early warning systems and Disaster preparedness and response systems and plans

It is important to note that Sri Lanka is prone to a range of hydro-meteorological hazards that occur with much greater frequency than tsunamis. It is therefore, important that the development of early warning systems be looked at in a multi-hazard context. The efforts on generating improved forecasts and warning need to be matched with equal (if not greater) emphasis on effective communication systems, public awareness and social infrastructure at the community level to act on those warnings and undertake life saving actions. Disaster preparedness and response systems and plans have to be set up and in action.

v. Natural Disaster Mitigation Strategy for each level of Government and Integration of DRM into development, Protection of Public Infrastructure from Impacts of Natural Disasters

There is a great need in Sri Lanka to promote risk management at the local level, which encompasses preparation and implementation of village, division, district and provincial level disaster mitigation plans. The experience of the five southern districts after the May 2003 floods can be shared and replicated in other disaster prone districts of the country. Strengthening is proposed to be implemented by promoting Emergency response systems and Disaster Risk Management Plans at all required levels made mandatory through legislation. For Protection of Public Infrastructure from Impacts of Natural Disasters action has to be taken.

vi. A national public education and awareness generation programme

The proposed public education and awareness generation programme must be implemented by proposed NDMA utilizing existing training and development agencies including NGOs and CBOs collaborating with them as partners.

A Five Year Programme can be represented in the form of an Action Plan as shown in Annex 12.1-1.

12.2 Resource mobilization and Partnership Strategy

i. Mobilizing national, regional and international resources and partnerships for disaster risk management

The implementation of the proposed road map will require additional resources as well as substantive partnerships at all levels. Systematic efforts need to be made in this direction. Regional and International Cooperation and Partnerships discussed below would be mobilized in implementing the DRM system.

ii. Regional and International Cooperation and Partnerships

Following the May 2003 floods, a number of projects were initiated, including the ADB Coast Conservation Project and rehabilitation of roads and irrigation schemes, and rehabilitation of damaged sanitation facilities by UNICEF.
The Swedish International Development Cooperation Agency, has committed approximately USD 1.3 million to support the recovery and DRM activities in affected districts of the 2003 floods, channeled through UNDP. In response to the drought of 2004, as of August, US $1.6 million was pledged for immediate mitigation by UN agencies, for water management, tube wells and water purification, seeds and fertilizers, food for work.

General relief and rehabilitation work for the drought and flood-stricken areas are underway by WFP, IFRC, Oxfam, CARE and ITDG. UNICEF, WFP, UNHCR, and FAO are supporting the government through relief activities, needs assessment, and quick impact projects.

In terms of risk reduction, from 1997 onwards USAID’s OFDA has been supporting the Sri Lanka Urban Multi-Disaster Mitigation Project (SLUMDMP) implemented by the Centre for Housing, Planning and Building (CHPB) as the Sri Lanka country project of the AUDMP, a regional programme of ADPC, Bangkok. As demonstration activities the project dealt with LA level risk and vulnerability assessment, hazard mapping and integration in land use and development plans, action planning for mitigation of disaster impact, implementation of mitigation initiatives at local government level. The project carried out demonstration activities in Ratnapura UC, Nawalapitiya UC, Kandy MC and Colombo MC areas. CHPB carried out several national level activities including training and awareness, has produced important publications, such as Guidelines for planning and construction in disaster prone areas and awareness leaflets for different hazards separately. Activities included integration of DRM in subject of Geography of school curriculum, selected University courses and social marketing activities in selected schools. As an initiative under the USAID/OFDA sponsored AUDMP, a capacity building workshop was conducted in November 2003 on Lessons Learned in the 2003 disasters and Approaches for Long-term Disaster Risk Management in Sri Lanka. ADPC played a key role in this project and the project activities were completed in March 2005. SLUMDMP has carried out a range of training programmes in collaboration with NGOs such as St. John's Ambulance, SLRC, ITDG, Oxfam etc. and a few local CBOs.

The Intermediate Technology Development Group, ITDG is a regional organization which aims to improve the technical skills of poor people through appropriately designed technology and has been working in Sri Lanka since 1989. The disaster mitigation program, which aims toward disaster prevention, works in five south Asian countries and the project director for Sri Lanka, Madhavi Ariyabandu, won the 2004 Fran Myers Award from the Gender and Disaster Network. ITDG has produced important publications, such as “Gender Dimensions in Disaster Management” (2004) and “Defeating Disasters: Ideas for Action” (1999), as well as video documentaries meant to influence policy makers. The main technology areas that ITDG works in for Sri Lanka are agro processing and food production, energy, transportation and disaster mitigation. ITDG is implementing “entry point” rainwater harvesting and micro-irrigation projects in drought prone areas.

UNDP remains committed to assisting the Government of Sri Lanka in strengthening the disaster risk management system in Sri Lanka. Implementing the provisions of the disaster management bill (when enacted) will require capacity development in a number of areas. Possible areas of UNDP support include:

- Institutional capacity building at all levels (at national level for various ministries and departments, including a National Disaster Management Centre and other appropriate levels- provincial, district, division levels)
- Mainstreaming disaster risk management in recovery and development planning processes
- Establishment of disaster risk information systems
- Strengthening local level disaster risk management systems

After the May 2003 floods and landslides, the district administration of the affected districts with the assistance of the National Disaster Management Centre (NDMCC) and UNDP have been working to capture lessons learned and to develop district and division level disaster preparedness plans. In the aftermath of the Tsunami, it is an opportune time to evaluate this work and appropriately replicate it in other districts of the country.
Under its ongoing collaboration with UNDP, the NDMC has also undertaken a stock taking study of all the past and ongoing disaster risk management initiatives in the country. This can be a useful input to capacity development initiatives that might be undertaken.

These initiatives would complement capacities currently existing in the country in the form of the government institutions like the Landslide Studies Division of National Building Research Organization (NBRO), Centre for Housing, Planning and Building (CHPB), National Aquatic Resources Research and Development Agency (NARA), Geological Survey & Mines Bureau (GSMB) etc.

The reporting and monitoring mechanism that needs to be put in place will also monitor the progress of associated regional and national Projects. Conducted on a quarterly bases, the mechanisms will identify gaps and recommend measures to fill these gaps, to enable successful implementation of the DRM Programme.

12.3 Concluding Remarks

Immediate action needs to be taken to initiate the DRM system. There could be another disaster in the country, some times in the already affected areas (just after the tsunami Ampara was again affected by a flood). Next could be a major flood or a cyclone. At least the emergency response plans should be prepared immediately to be ready to face such a calamity, possibly with an effective warning system and other essentials associated with such a system. It is also necessary to find out how the basic paradigms could be changed so that these systems that are created would function if a calamity occurs.
References


2. Wikipedia, the free encyclopaedia


5. Long-Term Risk Reduction Action Plans and Disaster Preparedness and Response Plans have already been developed for some local authorities, districts and divisions under projects of UNDP and USAID; presently either printed, being printed or in draft stage; and disaster management committees have also been established

6. Operational Procedure have already been developed for various agencies for use at district and divisional levels, and at local authority levels as a part of the preparedness plans


8. Revised Coastal Zone Management Plan Sri Lanka 2003 - Draft, Coast Conservation Department

9. ‘Disaster Management in India: A Status Report’ & ‘Disaster Management- The Development Perspective’ Govt. of India, Ministry of Home Affairs, National Disaster Management Division


11. CHPB has introduced such Standard Operation Procedures in selected local authorities under the project SLUMDMU and UNDP in selected districts after 2003 disaster.

12. CHPB has introduced such preparedness plans at selected local authorities under the project SLUMDMU and UNDP in selected districts after 2003 disaster. Divisional plans are in progress presently.

13. Natural Disasters in Australia - Reforming mitigation, relief and recovery arrangements, A report to the Council of Australian Governments by a high level officials’ group, August 2002


15. Jean-Pierre Massue , Risk Culture: Proposals on education and training, Colombo, May 2005

16. Letter dated 01 June 2005 sent by the Ceylon Chamber of Commerce to Chairman, Parliament Select Committee


18. Lakshman Gunaskera (Associated Editor of Sunday Observer), The Role of the Mass Communication Media in Natural Disaster Mitigation and Strategies for Media Mobilization, Natural Disaster Mitigation Training Course by CHPB, 1999
Institutional Framework for National Disaster Management

National Council for Disaster Management

Ministry of Disaster Management

Other Relevant Ministries Departments and Provincial Council

Technical Advisory Committees

Proposed Disaster Management Centre

Private sector, Professional Organisations, Civil Society Groups & NGOs

Provincial, Districts, Divisional, Local & Village Level Committees

Target community considered as a resource not just victims - Community Level Committees
Structure for National Level Response

1. National Council for Disaster Management
2. Ministry of Disaster Management
3. Director General Proposed Disaster Management Centre
4. National Emergency Operation Centre (EOC) – a division of DMC
   - Department of Social Services
   - Provincial, Districts, Divisional, Local level EOCs
   - EOCs of Departments & Govt. Corporations (National & Provincial)
Annexure 2.3-I

Organization Structure of the Disaster Management Centre

Director General
Disaster Management Centre

Disaster Management
Technical Division

Facilitating &
Coordinating -
Forecasting,
Early warning
and dissemination

Facilitating &
ensuring Long
term Dis. Risk
Reduction &
DRR
integration in
Development

Facilitating &
Coordinating -
Preparedness,
Response,
Rehabilitation
and Reconstruction
at National Level and

Facilitating &
Coordinating -
Preparedness,
Response,
Recovery,
Rehabilitation
and Reconstruction
at all levels

Facilitating &
Coordinating -
Training,
Education

National
Emergency
Operations Centre

Finance and
Administration

Note:

i. The main units to be headed by a Director

ii. The sub units for "Facilitating and Coordinating Research" and "Finance and Administration" can be headed by Deputy Directors (or Directors if deemed necessary)

iii. The essential staff required for the units must be assessed and placed with their duties and responsibilities well spelled out
Specific existing agencies / stakeholders that would be associated in different hazes:

Long Term and Post Disaster Risk Reduction
- National Physical Planning Department
- National Buildings Research Organization (NBRO)
- Urban Development authority
- National Physical Planning Department
- Sri Lanka Land Reclamation and Development Corporation (SLLRDC)
- Department of Agriculture
- Irrigation Department, Agrarian Services Department, Provincial Irrigation Department
- Coast Conservation Department
- Marine Pollution and Prevention Authority
- District & Divisional Secretariats
- Local Authorities
- All other line departments
- NGOs & CBOs

Hazard Analysis
- Department of Meteorology
- Irrigation Department, Agrarian Services, Provincial Irrigation
- Sri Lanka Land Reclamation and Development Corporation
- National Buildings Research Organization (NBRO)
- Geological Survey & Mines Bureau
- Central Environmental Authority
- Dept. of Health Services
- Department of Coast Conservation
- Dept. of Agriculture

Vulnerability Analysis
- National Disaster Management Centre
- Department of Social Services
- National Physical Planning Department
- National Buildings Research Organization (NBRO)
- Department of Health Services, Teaching hospitals
- Survey Department
- Urban Development Authority

Prediction & Early Warning
- Department of Meteorology
- NBRO
- Geological Survey and Mines Bureau
- Irrigation Department
- Police
- National Aquatic Resources Agency (NARA)
- Sri Lanka Navy
- Nedia - TV, Radio, Press
Preparedness
- District & Divisional Secretariats, Grama Niladharis
- Local Authorities
- All line departments
- Police
- Armed Forces
- Irrigation Department and PRDA
- NGOs & CBOs
- Local Authorities

Recovery
- District & Divisional Secretariats, Grama Niladharis
- Local Authorities - All Municipal Councils, Urban Councils and Pradeshiya Sbhas
- NGOs & CBOs
- RDA/PRDA
- National Water Supply & Drainage Board
- CEB
- Telecom
- Irrigation Department
- NHDA
- All other line departments

Response
- District & Divisional Secretariats, Grama Niladharis
- Local Authorities - All Municipal Councils, Urban Councils and Pradeshiya Sbhas
- Police
- Forces
- NGOs & CBOs
- RDA/PRDA
- Telecom
- CEB
- National Water Supply & Drainage Board
- Department of Social Services
- All other line departments

Training & Awareness
- National Disaster Management Centre (NDMC)
- Centre for Housing, Planning and Buildings (CHPB)
- Department of Education, Universities
- SLIDA
## Disaster Risk Management (DRM) Functions and Responsibilities of Agencies

(This is not an exhaustive list of functions. Refer Operations Procedures for detailed functions)

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<th>Name of the Organization</th>
<th>Functions</th>
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| **Meteorological Department** | - Identify critical locations and install rain gauges in critical upper water shed areas where rains can critically affect lower areas  
- Observation, collection and analyses of meteorological Data  
- Ensure 24 hr. staff functioning of communication facilities at these stations and direct  
- Issuing weather forecasts and bad weather warnings. Through pre-established system issue unusual weather conditions directly to Provincial Councils & District Secretaries  
- Monitoring droughts |

- **Irrigation Department**  
- **Mahaweli Authority of Sri Lanka (MASL)**  
- **Central Engineering Consultancy Bureau (CECB)**  
- **Ceylon Electricity board (CEB)** | - Identify critical locations and install river flow gauges in critical upstream stretches  
- Observation, collection and analyses of hydrological Data  
- Recording and maintenance of flood levels in river Basins  
- Flood simulation studies and prediction of floods  
- Flood hazard zone mapping  
- Issue of flood warnings  
- Regularly monitor the safety of dams of all reservoirs within the purview of the Irrigation Department and ensure their proper maintenance.  
- For possible dam breaches map down stream inundating areas in contour maps for different water levels in the reservoirs as well as different types and locations of breaches  
- Keep the authorities and communities of such areas of the possibilities and about safe areas for evacuation  
- Issue warnings in case of down stream floods |

- **National Building Research Organization** | - Landslide hazard zonation mapping  
- Create awareness among communities, village and local and district level officials about vulnerable local areas and how to be vigilant of symptoms about imminent landslides  
- Services related to landslide risk reduction  
- Conduct of R & D functions  
- Assistance for temporary evaluation during disaster times and resettlements |
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<th>Organization</th>
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| Geological Survey and Mines Bureau               | - Monitoring earthquakes, seismic levels etc.  
- Warning related to seismic activities  
- Tsunamis                                                                                                                                               |
| National Aquatic Resources Agency (NARA),        | - Ocean waves, Tsunamis                                                                                                                                                                                              |
| Sri Lanka Navy                                   | - Ocean waves, Tsunamis                                                                                                                                                                                              |
| Ceylon Electricity Board                         | - On receipt of alert warning, undertake inspection of the High tension lines, Towers, Substations, Transformers, Insulators, Poles and other equipment for any necessary action to protect such installations/equipment  
- Preparedness  
- If necessary immediate action to disconnect the main electricity supply for the affected area.  
- Emergency repairs as required                                                                                                                     |
| National Water Supply and Drainage Board         | - On receipt of warning action to protect water sources and schemes and preparedness  
- Alternate water supply and storage in all transit camps, feeding centres, relief camps  
- Identify unacceptable water sources and take necessary precautions  
- Emergency repairs of all damages to water supply systems  
- Ensure restoration of potable water supply                                                                                                           |
| Road Development Authority, PRDA and Local Authorities | - Preparedness  
- Clearing road blocks due to landslides or fallen trees due to other disasters  
- Emergency repairs of damaged roads                                                                                                                   |
| Health Department/Public Administration/ Health Officer/Dept. of Information/ Mass Media/Dept. of Social Services/ Dept. of Probation & Child Care/ Local authorities. | - On receipt of warning be prepared with necessary drugs etc.  
- Emergency Mobile Health Care Teams to affected areas  
- Assist evacuation teams on site  
- Hospitals to be ready to admit sick and injured with medical teams  
- Send medical teams to temporary camps  
- Conduct island wide immunization programmes  
- Monitoring the development of health hazards into epidemic proportions and necessary controls  
Plan and implement appropriate disaster Mitigation programmes against health hazards                                                                  |
| Police and other armed forces                    | - On receipt of warning be prepared  
- Evacuation of disaster victims in case of natural Disasters  
- Safety of evacuated houses against looting  
- Assistance for relief and rehabilitation  
- Maintenance of law and order during disasters  
- Control of road accidents  
- Assist preparedness levels                                                                                                                             |
| Agrarian Research and Training Institute (AR&TI) | - Monitoring drought situations  
- Implementation of appropriate mitigatory measures against droughts                                                                                     |
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<th>Activities</th>
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| **Central Environmental Authority**                                       | - Act as a regulatory body in connection with industrial and chemical accidents, environmental pollution, etc.  
- Implementation of appropriate mitigatory actions against above disasters |
| **Upper Watershed Management Project, Ministry of Environment & Natural Resources** | - Mitigation procedure for erosion control in the upper watershed areas  
- Identification of highly vulnerable areas for erosion and landslides  
- Relocation of people from vulnerable areas  
- Providing funds for erosion control work |
| **Centre for Housing Planning and Building**                               | - DRM Training for technical and other categories, awareness creation, assistance in long term DRR and preparedness plan preparation, Guidelines for planning and construction in prone areas |
| **Institute for Construction Training and Development**                    | - Development and necessary revisions of Codes of Practice, Guidelines etc. |
| **Sri Lanka Institute of Development Administration**                     | - DRM Training for administrative and similar categories                  |
| **Selected NGOs & CBOs**                                                   | - DRM Training, awareness, response                                       |
| **Post Graduate Institute of Management**                                 | - Training and Awareness for managers and professionals, and Publications on project management aspect of reconstruction projects in the aftermath of tsunami |
An Institutional Capacity Assessment - Natural Disaster Management under the
Stock Taking DM in Sri Lanka by UNDP

Based on experiences after May 2003 Floods and landslides disaster

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Level of involvement/participation by Institution:
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Disaster Risk Assessment Process

Study Area

The first step in the risk assessment process is to determine the Study Area by defining the boundaries of the risk assessment study area. This is an important part of determining the type and detail of data that might be available for the assessment. The study area may be defined by the boundaries of an urban area, a district, a city, etc. Different boundaries can be used to define the study area: administrative boundaries, political boundaries, geographic boundaries, a user defined grid system etc.

The selection of a study area will generally reflect the goals and objectives of the risk assessment. If the desire is to identify regional emergency response actions, the study area will need to include the areas to which emergency teams must respond. If the desire is to identify local community mitigation actions, a much smaller study area may be more appropriate.

Data Collection

Data must be complete, consistent, relevant, and organized to reveal relationships important to the goals and objectives of the study. The larger the study areas, the more data will need to be collected to define potential hazards and their associate risks. Completeness of data for specific hazards and for specific types of exposures will generally vary within the study area. It is important that the risk assessment results reflect actual risks and therefore there should not be inconsistencies or incompleteness of the data.

The second step in the risk assessment process is to identify potential sources of data needed to address the goals and objectives identified for the risk assessment.

Incomplete data on the number and type of buildings may indicate greater risks in one part of the study areas where there is data, only because other parts of the study area lack data to reveal that risk. In selecting exposure data to include in the risk assessment, available data should be reviewed with respect to its completeness and consistency over the study area. If a database of school building types, ages, and locations is readily available across the study area, then the risk assessment might be able to identify potential risks to school buildings. If data also exists on the number of students and staff located at each school, the risk assessment might also address potential numbers of casualties related to specific hazard events. When data is absent or incomplete, the data can be collected. However, the effort and expense to carry out this task requires careful consideration of the type of information required.

Potential Hazards in the Study Area

The next step in the risk assessment after defining the study area, is to systematically identify all hazards that might impact the essential exposures identified in the study area.

There are a number of sources of information on hazards, including myths and legends, newspaper articles, research reports, and public and private sector archival records. Historical records and physical evidence of previous events can be used to provide additional data or information. Although cyclones, wind storms and heavy rainfall often do not leave permanent visible evidence, national and international meteorological agencies should have records of more recent events.

As noted above, the data to define potential hazards may vary in completeness and quality. The first task in the hazard assessment is to determine what information is available, in what format, and where it is located.
Then you must consider whether this information can provide the input values needed to assess the impacts on identified exposures. If not the scope of work that is needed to collect, process, and analyze in the study area.

**Exposure Inventory (Values at Risk)**

Data on exposures in the study area may be collected in phases. After essential exposures have been identified, review what data sources are available that can provide data that is complete and consistent throughout the study area. Develop a plan for data collection. This data should include information that will be useful to assess both the vulnerability of the essential exposures and the losses that would accompany hazard impact(s) on these exposures.

Exposures are generally classified by risk managers into four groups: *property, net income, legal, and personnel exposures*. Table 4 to 6 list types of exposures in each of these groups. Selected exposure indicators for each exposure group are identified. These tables also list information sources for obtaining information needed to assign a value to these exposure indicators. The exposure indicators can be used to characterize the community’s exposure in the Risk Assessment. Focusing on exposure indicators representing community resources necessary to achieve high priority community goals helps narrow the focus of the exposure inventory. Selecting a set of essential exposure indicators limits the cost and time needed to complete the exposure inventory.

Community exposures include those owned by the local government (public sector) and those owned by individuals and corporations (private sector). Information on public sector exposures may be obtained from local government agencies, such as facilities, real estate, finance, and human resources departments. Some general community exposure information may also be available though local or national government agencies, such as population data, information on the community’s gross national product, and values of imports and exports.

Private sector exposures may be more difficult to obtain. Data collection methods that extrapolate or estimate private sector exposures from information that is more readily available may be needed.

Inventories of specific types of exposures (see Table A, B, C and D) may be necessary to collect some types of exposure data. Data collection can be a costly and time consuming activity, which is why it is important to select a limited number of exposure indicators that are most needed to achieve community goals.
<table>
<thead>
<tr>
<th>Exposure Types</th>
<th>Exposure Factors</th>
<th>Property Exposure Indicators</th>
<th>Information Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Property</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Land</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Light industry</td>
<td>Land: Replacement cost</td>
<td>• Land use maps</td>
</tr>
<tr>
<td></td>
<td>• Heavy industry</td>
<td>Size (area)</td>
<td>• Housing database</td>
</tr>
<tr>
<td></td>
<td>• Agricultural land</td>
<td>Importance</td>
<td>• Tax assessor database</td>
</tr>
<tr>
<td></td>
<td>Buildings</td>
<td>Building Values: Replacement cost</td>
<td>Property database</td>
</tr>
<tr>
<td></td>
<td>• City Hall</td>
<td>Importance to response</td>
<td>• Real estate division</td>
</tr>
<tr>
<td></td>
<td>• Police precincts</td>
<td>Size (square feet)</td>
<td>• Building inventories</td>
</tr>
<tr>
<td></td>
<td>• School buildings</td>
<td></td>
<td>• Utility system records</td>
</tr>
<tr>
<td></td>
<td>• Hospitals and clinics</td>
<td></td>
<td>• Transportation records</td>
</tr>
<tr>
<td></td>
<td>• Housing units</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Commercial buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Utilities/transportation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Power system</td>
<td>Utilities/Transportation: Size of service area</td>
<td>• Public records and archives</td>
</tr>
<tr>
<td></td>
<td>• Water System</td>
<td>Number of customers</td>
<td>• Inventories</td>
</tr>
<tr>
<td></td>
<td>• Transportation system</td>
<td>Miles of pipe line, road</td>
<td>• Databases</td>
</tr>
<tr>
<td>Tangible Personal Property</td>
<td>Furniture, equipment, &amp; supplies</td>
<td>Financial Records: Cost to reproduce</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fire suppression equipment</td>
<td>- Amount of money lost if records not available</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Agricultural machinery</td>
<td>Data Processing: Replacement cost</td>
<td></td>
</tr>
<tr>
<td>Money &amp; Securities</td>
<td>• Records of money due</td>
<td>- Mobile property</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Machinery</td>
<td>- Replacement cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Money &amp; Securities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Community goodwill</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Right to collect fees and taxes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Licenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Leases &amp; leasehold interest</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Patents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data processing hardware, software, &amp; media Papers, documents Mobile property</td>
<td>• Community goodwill</td>
<td>Value of Gem mining licenses</td>
<td>Accounting records &amp; Legislation</td>
</tr>
<tr>
<td>Intangible Personal Property</td>
<td>• Right to collect fees and taxes</td>
<td>• Business licenses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Licenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Leases and leasehold interest</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Patents</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table B - Net Income Exposures

<table>
<thead>
<tr>
<th>Exposure Types</th>
<th>Exposure Factors</th>
<th>Community</th>
<th>Central Government</th>
<th>Commercial</th>
<th>Information Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenues</strong></td>
<td>- Taxes</td>
<td>Permit Fees</td>
<td>Gross Domestic</td>
<td>Gross Domestic</td>
<td>• Trade data</td>
</tr>
<tr>
<td></td>
<td>- Fees</td>
<td>Service Fees</td>
<td>Product (GDP)</td>
<td>Product by sector</td>
<td>• Economic data</td>
</tr>
<tr>
<td></td>
<td>- Budgets</td>
<td>Taxes Earned</td>
<td>Per Capita GDP</td>
<td>Agriculture</td>
<td>• International</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Central Gov't Allocations</td>
<td>Total Foreign Trade</td>
<td>industry</td>
<td>Monetary Fund</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>National Revenues</td>
<td>services</td>
<td>• World Bank</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td>- Salaries &amp; Benefits</td>
<td>Total Salary and Benefits</td>
<td>National Expenses</td>
<td>Accounting</td>
<td>• Budget allocations</td>
</tr>
<tr>
<td></td>
<td>- Expense History</td>
<td>Operating Expenses</td>
<td>Budget Targets</td>
<td>Records</td>
<td>• Accounting records</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emergency Expenses History</td>
<td>Emergency Expense History</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table C: Legal Exposures (Duty or Responsibility Owed)

<table>
<thead>
<tr>
<th>Exposure Types</th>
<th>Exposure Factors</th>
<th>Exposure Indicators</th>
<th>Information Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal</td>
<td>Employees</td>
<td>• Work force</td>
<td>Human resource database</td>
</tr>
<tr>
<td></td>
<td>Legislation environmental worker safety</td>
<td>• Number of residents</td>
<td>Legislation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Safety regulations</td>
<td>Ordinances</td>
</tr>
<tr>
<td></td>
<td>Population exposure</td>
<td>• Number of employees</td>
<td>Policies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Land Management Requirements</td>
<td></td>
</tr>
</tbody>
</table>

### Table D - Skilled worker and leadership exposures

<table>
<thead>
<tr>
<th>Exposure types</th>
<th>Exposure factors</th>
<th>Personnel exposure indicators</th>
<th>Information Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals whose loss would be a special hardship to the community.</td>
<td>Elected officials</td>
<td>• Type and number of skilled workers</td>
<td>Human resources</td>
</tr>
<tr>
<td>Retirement, Death Disability, Resignation</td>
<td>Skilled Workers</td>
<td>• Type and number of government workers</td>
<td>Job database</td>
</tr>
<tr>
<td></td>
<td>Business leaders</td>
<td>• Type and number of business leaders</td>
<td>Accident data</td>
</tr>
</tbody>
</table>
Technological Risk Assessment and Requirement Imposed in the US

The process of identifying and assessing technological risks follows the basic sequence for any hazard analysis: (1) hazard identification, (2) vulnerability analysis, and (3) risk analysis.

1. Hazard identification
   - Identification of chemicals
   - Quantities
   - Condition
   - Location
   - Properties

2. Vulnerability analysis
   - Identify populations within possible affected areas
   - Identify essential services located within possible affected area

3. Risk analysis
   - Likelihood of release occurring
   - Security of consequences
   - Prioritized risks for planning

Planning is not a one-time activity but an ongoing, interactive process, involving the following steps:
- Annual updates after review and testing
- Revisions of standard operating procedures (SOPs)
- Repair and replacement of equipment and materiel
- Continuing training for new personnel
- Refresher training for existing personnel
- Ongoing communication with the public to ensure awareness and ability to respond.

Public Disclosure and Warning

In some communities, for example throughout the United States, there are legal requirements mandating disclosure to the public of hazards by the owner. But the various programs in the US, such as the Resource Conservation and Recovery Act, the Superfund Amendments and Reauthorization Act and the Clean Air Act, have but vague guidance about specific requirements for alerting and warning.

Public disclosure can take several forms and occur at various levels. For instance, in California, state law requires the disclosure of environmental hazards which may be found on residential property and which may affect residential real estate. Sellers of residential properties are required to disclose the presence of any known environmental hazard. Real estate agents must inform prospective homeowners of such issues as asbestos, formaldehyde, lead, radon, hazardous wastes and household hazardous waste, through provision of a guidebook developed in collaboration with the California Environmental Protection Agency and Department of Health Services. The guidebook is intended to help prospective homeowners with the information needed to make informed decisions about mitigating environmental hazards.

Early warning systems are sometimes seen as a panacea for reducing the impacts of technological hazards. However, most communities where chemical or hazardous materials hazards are located do not have special warning systems; where they do exist, they are often the result of cooperative effort between the private company housing the hazard and the surrounding community. Two notable examples in the US are in areas surrounding nuclear power plants and federally-sponsored chemical stockpiles under the Chemical Stockpile Emergency Preparedness Program (CSEPP).

In the U.S., SARA Title III requires that planning for hazardous materials emergencies address procedures for timely notification to the public in case of a release, but this depends on the facility where the release occurs making immediate notification to state and local authorities.
HAZMAT incidents generally occur without warning, and the speed at which they develop and their effects spread are highly variable. In small scale events, notifications may be made door-to-door, using mobile public address systems, or using portable megaphones. For larger incidents, a broader-reaching system must be used, such as an emergency alert system of siren horns, or whistles, and/or radio and television.

While timely and accurate information dissemination to the public is critical, another equally important issue is developing and practicing effective emergency response systems and mechanisms at the local level. Systems for mass care and sheltering, provision of health and medical services, protection of water quality and maintaining sanitary services are critical elements of emergency response.

**Planning and Preparedness for Response**

In the United States, emergency plans are typically prepared in a way that provides both "generic" and hazard-specific guidance to responding agencies, public official and the public. For instance, in FEMA's emergency planning guidance for state and local governments, there are hazard-specific annexes for:

- **Hazardous materials**, intended to include:
  - Explosive, flammable, combustible, corrosive, oxidizing, toxic, infectious, or radioactive materials
  - That, when involved in an accident and released in sufficient quantities,
  - Put some portion of the general public in immediate danger from exposure, contact, inhalation, or ingestion
- **Radiological hazards**, to address:
  - Nuclear power plant accidents
  - Nuclear conflict with another nation
  - Nuclear terrorism
- **Lethal unitary chemical agents and munitions**

**Stakeholders and Planning Participants**

The three major players in emergency preparedness planning for technological disasters are government, industry, and the public (see section below on APELL). However, a broader range of stakeholders should be involved in the planning and education process, including:

- **Elected officials**
- **Public administrators - civil servants**
- **Hospitals, emergency medical services, health departments**
- **TV, radio and other news media**
- **Fire and rescue personnel**
- **Police and security personnel**
- **Civil Defence units**
- **Transportation agencies**
- **Telephone and other communications services**
- **Power generation and transmission agencies**
- **Environmental agencies and response personnel**
- **Industry representatives including technical personnel (chemists, engineers, etc.)**
- **Schools and educational institutions**
- **Community groups**

**Public Protection through Evacuation**

The preferred method of protecting the public from the effects of a technological accident has been evacuation. Over the past two decades, however, there has been development of alternatives to evacuation, such as sheltering in place in cases where the public can be shielded from the exposure pathway (in cases of vapors, aerosols, and liquid contamination).
Hazard zonation mapping, scientific studies and investigations related to river floods, landslides, reservoir dam safety and coastal floods, and work presently done by different agencies

Hazard Zonation Mapping

Hazard occurrence probability varies from place to place. One of the most important ways of understanding the risk faced by communities or a region is to use the available data to plot hazard maps. According to the type of hazard, various types of hazard maps may be useful. Natural hazard mapping is not restricted to the delineation of occurrences of phenomena such as mass movement, flooding, earthquakes and drought in the past, but it is focused on making predictions about the occurrences of such phenomena in the future.

Hazard maps outline zones that are defined in terms of the probability of occurrence of potentially damaging phenomena within a certain span of time. For example flood hazard is often mapped so that the maximum extent of floods with different return periods are superimposed on each other.

Most of the scientific approaches on the procedure for developing hazard zonation maps are based on scientific investigations. In order to conduct such studies and to do assessments requires a team of highly skilled specialists (e.g. flood mapping will involve skilled specialists of hydraulics, hydrology, geomorphology and topographical surveying. Landslide mapping will need the skills of geologists, geo-technical engineers, geomorphology, topographical surveying etc. Geographic Information Systems (GIS) is a tool available for mapping and also Remote Sensing (RS) Imagery can be used.

Tapping local community knowledge

A simple mapping of local experience can be achieved using the local resources. The tapping of local knowledge in the preparation of rural development schemes has become professionalism over the last decade using tools known as:

♦ PRA-Participatory Rural Appraisal  
♦ RRA-Rapid Rural Appraisal

The advantage in this type of approach is its cost effectiveness and the understanding of the local viewpoint related to the hazard. The participatory approach employed will provide opportunity for leveling of the understanding among different community members on related aspects (such as how it happened, where, comparison between previous events, establish the most hazardous event in their memory, it's characteristics etc.). These maps can be used by communities to improve their preparedness level. In addition, it will provide information for the professional practitioner to use this data for correlation with data obtained using more accurate methods and to obtain data on unrecorded events. The results of PRA/RRA methods can be translated into maps by plotting them on contoured base maps.

Reservoir dam safety

As a hazard connected with infrastructure, reservoir dam safety is an aspect that should receive attention. For reservoir downstream flood monitoring and management, coordination between irrigation department, Ceylon Electricity Board (CEB) and Mahaweli Authority is needed as all reservoirs in the country come under these agencies.

Even in normal flood events radial gates will be opened for flood to pass to downstream and there could be damage to property and human life downstream. The Operation Procedures for safe passage of flood gates need to be updated for the current downstream conditions. A flood preparedness plan need to be developed for downstream is of each reservoir. Also an Action Plan for dam breach situation is required for each dam.
Simulation studies must be carried out to prepare inundation mapping and to find other parameters for the emergency plans. Dam breaches of a given size, type and location or complete dam failure, due to natural or man made reason or negligence/poor maintenance need to be taken into consideration in preparing the maps which can be used for preparing preparedness plans for downstream.

**Mapping work undertaken by the Landslide Studies & Services Division of NBRO**

NBRO is an institution to provide consultancy services while engaged in research and development activities pertaining to gamut of disciplines such as Landslide Hazard Identification, Mapping and Mitigation, Geo-technical Engineering, Quality control (Specifications) of Building Materials including concrete, Environmental Impact Assessment, with special reference to air and water pollution. NBRO must be strengthened with sufficient legal authority with a mission to carryout these studies and an institutional framework since it is not so established as at present.

**The Future Programme**

The following table explains the current and future situation of the landslide hazard zonation mapping programme in Sri Lanka undertaken:

<table>
<thead>
<tr>
<th>District</th>
<th>Areas already mapped</th>
<th>Areas to be mapped</th>
<th>Target for mapping with additional staff and other necessary resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2003</td>
</tr>
<tr>
<td>1 Matale</td>
<td>100</td>
<td></td>
<td>200</td>
</tr>
<tr>
<td>2 Ratnapura</td>
<td>760</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>3 Hambantota</td>
<td>400</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>4 Matara</td>
<td>600</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>5 Kandy</td>
<td>860</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>6 Kegalle</td>
<td>720</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>7 Nuwara Eliya</td>
<td>560</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>8 Badulla</td>
<td>920</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>9 Kalutara</td>
<td>600</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3600</td>
<td>3600</td>
<td>900</td>
</tr>
</tbody>
</table>

Source: Landslide Studies & Services Division, NBRO

**Work undertaken by the Irrigation Department**

Existing

i. Food protection schemes in Kelani Ganga, Gin Ganga, Nilwala Ganga,
ii. Kelani Ganga Flood warning system

**Reservoir dam safety by Irrigation Department, Mahaweli Authority & Ceylon Electricity Board**

As a hazard connected with infrastructure, reservoir dam safety is an aspect that should receive attention. For reservoir downstream flood monitoring and management, coordination between Irrigation Department, Ceylon Electricity Board (CEB) and Mahaweli Authority is needed as all reservoirs in the country come under these agencies. Even in normal flood events radial gates will be opened for flood to pass to downstream and there could be damage to property and human life downstream. The Operation Procedures for safe passage of flood gates need to be updated for the current downstream conditions. A flood preparedness plan need to be developed for downstream of each reservoir.
Also an Action Plan for dam breach situation is required for each dam. Simulation studies must be carried out to complete inundation mapping and to find other parameters for the emergency plans. Dam breaches of a given size, type and location or complete dam failure, due to natural or man made reason or negligence / poor maintenance need to be taken into consideration. There should a continuous dialogue with district secretaries, divisional secretaries, grama niladharis, local authorities etc. of downstream areas keeping necessary contact information for early warning in case of such situations to facilitate rapid evacuation. This aspect should be seriously dealt with in the above Emergency Plans and also at regular meetings with the respective district / divisional secretaries.

**Coast Conservation Department**

Risk Analysis and Mapping are proposed to be undertaken by the Coast Conservation Department and they need support by way of equipment and personnel. This may be undertaken in partnership with Lanka Hydraulic Institute and University of Moratuwa with cooperation from an experienced international relevant institute. Further details are in the submission to Parliament Select Committee.

The need prevails to evaluate the coastal belt through ocean topography when taking implementation polices regarding the reconstruction and rehousing effort.

On 17 February, at Cairo, the UNEP Tsunami Disaster Task Force convened a meeting to discuss Coastal Zone Rehabilitation and Management in the Tsunami Affected Regions, where CCD participated. The meeting adopted Guiding Principles for the post-tsunami reconstruction process. In the light of the adopted Principles the meeting discussed the possible follow-up actions for the first year (April 2005 – March 2006) and identified five priority areas of action as listed below.

Tsunami Draft action programme to operationally the Guiding Principles on coastal reconstruction:

A. Legitimization and dissemination of Guiding Principles
B. Capacity building
C. Technical assistance
D. Early warning
E. Regional and global cooperation.
**Some Suggestions for Survey and research for future disaster mitigation**

**Some suggested by NBRO:**

1. In order to avoid the damages, and deaths, which will be caused by a big disaster, implementation of detailed surveys, researches and development in association with an already occurred disaster must be commenced up. Identification and improvement of construction methodologies in disaster prone areas, ground improvement techniques, appropriate land use practices and guidelines must be updated in every disaster prone areas of the country. Large-scale national level investments must be made in order to establish disaster resistant structures. However, implementation of such large-scale research is a difficult task due to insufficient budgetary allocation. Even now it is not too late to implement such Long-term plans for avoiding hillside disasters, fluvial disasters and coastal disasters. Following studies must be started with immediate effect.

2. Soil conservation and erosion control projects to prevent mountainous regions from collapsing and eroding of mountain soils and sediments. Herein this case, an erosion control project called Upper Watershed Management Project has already been implemented in Sri Lanka but their objectives and strategies are still not sufficient to tackle existing problems.

3. Landslide prevention projects to prevent and decrease landslide disasters. Here in this regard, mitigation strategies of landslides and slope failures are yet to be implemented although the landslide investigation works are already in the progress.


5. Steep slope countermeasures projects to prevent rock falls. Planting of trees in a systematic way is the best solution to overcome this problem.

6. Coastline conservation projects are already under way but further researches in order to modify and improve cost effective and efficient methodologies are yet a big target to archive.

**For having a risk information system following must be facilitated and coordinated by the Disaster Management Centre to be undertaken by relevant R&D agencies**

**Conducting and examination of post event surveys**

There is a store of information accumulated in historic event surveys. The quality can vary greatly due to the varying conditions and purposes for which they were undertaken. For example, damage and loss surveys can provide very useful information on flood situation during the reporting event. But it may have been prepared just as the flood recedes. In this case, it is to serve as a basis of requests for immediate relief or for grant of financial assistance for rehabilitation work. Information may also have been obtained through site visits, telephone calls, over-flight impressions made from helicopter etc., and therefore, reliability may vary.

**Survey reports by GO and NGO**

Duty officers of department of various organizations are commissioned to carry out in-house studies for various purposes but not released to the public or not published. These reports can be studied if higher authorities can be persuaded to release them.
Research studies and surveys

Universities, government agencies, individual researchers and private sector institutions conduct research on different aspects of the nature and causes of hazards. Research is carried out using basic principles of science as they are understood at the time of the study. New information and new research results may modify past understandings but most of the present day assessments are based on research studies.

In the context of the increased hazard occurrences in Sri Lanka, further research studies, literature surveys and detailed surveys on hazards causing major disasters must be undertaken in areas that have not been taken up by previous researchers. For example, a literature survey of tsunami occurrences in Sri Lanka within the past 200 years will be most helpful in determining how tsunamis have affected different parts of the coast line.

Technical committees functioning under the NDMC may identify areas for future studies and by having partnerships with relevant departments of universities encourage students to undertake such research as graduate and masters theses / dissertations. Identification and improvement of construction methodologies in disaster prone areas, ground improvement techniques etc. can be other areas for study. These would not cause additional costs to NDMC but will provide interesting thesis topics for researchers and they would be greatly motivated as the outputs of their work would be useful as well.

Scientific investigations and instrumentation

For landslide studies common tools used are drilling, geophysical methods, field mapping and installation of instruments in most critical locations. Sophisticated methods such as electronic distance measuring (EDM); instruments such inclinometers, extensometers, strain meters, tiltmeters, and piezometers; and simple techniques such as establishing control points using stakes can also be used to determine the mechanics of landslide movement and to warn against impending slope failure.

A range of scientific methodologies is available for hazard assessment but they generally are expensive. The reliability of selected method depends on the accuracy of data. At present, accuracy can be cross checked by using computer models and simulation models. In recent years computer modeling of landslides has been used to determine the volume of landslide masses and changes in surface expression and cross section over time.

Due to the high cost, these techniques can be used in identified locations of probable landslides where relocation is not possible and monitoring of landslide movements is essential.

Computer modeling of floods has been used to determine flood peaks, probable events etc. Sophisticated methods are being developed utilizing Digital Elevation Models (DEMs) to evaluate areas quickly for their susceptibility to landslide/debris-flow events.

For river flood related studies more sophisticated equipment and technology need be obtained and detailed mapping is needed. It needs to be mentioned that river flood warning is more urgent than tsunami warning, which is very rare event, whereas floods are very frequent.

Suggestions by the Irrigation Department

Future Needs

i. Flood warning systems for Kalu Ganga basin
ii. Upper reaches of Gin Ganga, and Nilwala Ganga,

Shortcomings and measures suggested by the Irrigation Department

Some shortcomings faced by the department
- In some places instruments are not properly functioning
- Mahaweli dams are not properly maintained
- No contingency plan with regard to evacuation in case of inundation downstream due to flood water release or a breach
- Present inundation maps are not accurate
- Funds not adequate
- Flood level is gauged at Nagalagam Street gauge in Kelani river
- In Kelani River flood warning system the dangerous flood level is 12 MSL and 12 hour advance notice can be given, but still the department is using very primitive instruments
- In Colombo the flood bunds are in very bad condition mostly due to encroachment
- As flood protection in Nilwala Ganga and Gin Ganga flood bunds have been constructed, a flood monitoring system with level gauges can be accommodated

Suggestions
- More sophisticated equipment and technology to be obtained which needs more funds
- Detailed maps needed
- For reservoir downstream flood monitoring and management, coordination between irrigation department, Ceylon Electricity Board (CEB) and Mahaweli Authority is needed as all reservoirs in the country come under these agencies
- River flood warning is more urgent than tsunami warning, which is very rare event, whereas floods are very frequent.

Some new flood risk reduction proposals
- Build an upstream reservoir in Yatiyantota
- Construct Kukule high dam to protect Kalutara and Horana areas
- An integrated flood management system is imperative
- Although Gin Ganga poses no major threat, Neluwa, Tawalama and Hiniduma could be vulnerable
## Annex 5.2-I

### Functions of Agencies in relation to Early Warning (Some are already in effect)

<table>
<thead>
<tr>
<th>Name of the Organization</th>
<th>Functions</th>
</tr>
</thead>
</table>
| Meteorological Department                                    | - Keep constant coordination with regional and international systems (as presently done)  
- Identify critical locations and install rain gauges in critical upper water shed areas where rains can critically affect lower areas  
- Observation, collection and analyses of meteorological Data  
- Ensure 24 hr. staff functioning of communication facilities at these stations and direct  
- Issuing weather forecasts and bad weather warnings. Through pre-established system issue unusual weather conditions directly to Provincial Councils & District Secretaries  
- Conduct of R & D functions  
- Monitoring droughts |
| Irrigation Department, Mahaweli Authority of Sri Lanka       | - Identify critical locations and install river flow gauges in critical upstream stretches  
- Observation, collection and analyses of hydrological Data  
- Recording and maintenance of flood levels in river Basins  
- Flood simulation studies and prediction of floods and conduct R & D functions  
- Issue of flood warnings |
| Agencies responsible for all reservoir dams in the country    | - Regularly monitor the safety of dams of all reservoirs within the purview of the respective agencies and ensure their proper maintenance.  
- For possible dam breaches map down stream inundating areas in contour maps for different water levels in the reservoirs as well as different types and locations of breaches  
- Conduct of R & D functions  
- Keep the authorities and communities of such areas of the possibilities and about safe areas for evacuation  
- Issue warnings in case of down stream floods |
| National Building Research Organization                       | - Landslide hazard zonation mapping  
- Create awareness among communities, village and local and district level officials about vulnerable local areas and how to be vigilant about symptoms about imminent landslides  
- Services related to landslide risk reduction  
- Conduct of R & D functions  
- Assistance for temporary evacuation during disaster times and resettlements |
| Geological Survey and Mines Bureau                           | - Monitoring earthquakes, tsunamis, seismic activities, seismic levels etc.  
  - in constant coordination with regional and international systems  
  - as well as getting information locally regarding earth tremours |
| National Aquatic Resources Agency (NARA)                     | - Ocean waves & Tsunamis in constant coordination with regional and international systems as relevant  
- Conduct of R & D functions |
| Sri Lanka Navy                                                | - Ocean waves & Tsunamis in constant coordination with regional and international systems as relevant  
- Monitor Oceanographic sphere, on 24 hours 07 day basis, tropical cyclones and possible tsunami conditions  
- Establishment and maintain links and reliable communication systems with international and regional warning centres. (both |
<table>
<thead>
<tr>
<th>Civilian and Military)</th>
<th>Establishment and activate an effective information dissemination system through civil / military channel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public evacuation with local authorities</td>
</tr>
<tr>
<td></td>
<td>Issue early warning to ports and shipping sectors including fishery</td>
</tr>
<tr>
<td></td>
<td>Inform and coordinate disaster mitigation plan with local authorities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Police</th>
<th>Road accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Industrial and Chemical Accidents</td>
</tr>
<tr>
<td></td>
<td>Fires</td>
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</tbody>
</table>
Specific detailed activities for the agencies in early warning in different disaster situations

The Early Warning Division of the proposed DMC will be the main agency responsible for communication of early warning to the Council, but at the same time other technical agencies will have certain responsibilities to issue warning. All responsible agencies must keep constant coordination with the Early Warning Division of the proposed DMC and in instances of any imminent hazard take action to inform its responsible officers. Specific detailed activities for the agencies in early warning in different disaster situations are described below:

Early warning division of the DMC

♦ Establish coordination with regional and international early warning agencies to receive early warning of earthquakes and tsunamis due to any cause (such as an earthquake in the sea, a massive slide in the sea, a volcanic eruption, nuclear testing in the sea and a meteorite or an asteroid hitting the sea bed).

♦ Create awareness among communities and all concerned including Police that time available for evacuation is very short and the best early warning is vigilance by all concerned on the specific characteristics and dissemination of information as quickly as possible and quick evacuation to safety, including their peculiar characteristics. E.g., High speed of the sea waves, the sea receding before a killer wave to discourage people going to investigate and getting trapped in the killer wave, that the wave can be very high, to run away from the sea to safety as early as possible etc.

♦ Disseminate information through public media and inform relevant District/Divisional Secretaries of above through the established system for quick evacuation to safety

♦ Inform communities and fishermen in the sea likely to get affected for quick evacuation to safety

Floods

Department of Meteorology

♦ Keep constant coordination with regional and international systems (as presently done)

♦ Identify and establish rain gauges at appropriate critical locations (specify by name) and ensure adequate round the clock staff and that proper communication facilities are available and functioning

♦ Establish a reliable communication system (telephones, radio communication etc. from gauging stations to the Head Office and to District Control Rooms directly or through Head Office)

♦ Inform District/Divisional Secretary of above through the establish system (agreed by the Department and the District/Divisional Secretary) to inform District/Divisional Secretary of unusual whether conditions, high rain fall exceeding predetermined values (specify values as high, critical, dangerous etc.) and any cyclonic conditions or high wind etc.

♦ In instances when normal communication system is not functioning pass the communication through the Police wireless system for onward communication at local level through messengers

♦ Inform the public through electronic and print media as applicable

Irrigation Department, Mahaweli Authority, (Ceylon Electricity Board in down stream floods only)

♦ Identify critical locations and install river flow gauges in critical upstream stretches

♦ Observation, collection and analyses of hydrological Data

♦ Recording and maintenance of flood levels in river Basins

♦ Flood simulation studies and prediction of floods and conduct R & D functions

♦ Issue of flood warnings through establish system (agreed by the Department and District/Divisional Secretary) to inform District/Divisional Secretary and the communities down stream on possible occurrence of a flood due to
  o Rising of water level in rivers
  o Possible breaching of reservoir / tank bunds
  o Possible breaching of flood dykes along rivers
In instances when normal communication system is not functioning pass the communication through the Police wireless system for onward communication at local level through messengers.

**Police Department**
- Assist the District/Divisional Secretary to inform the communities about the impending floods.
- Assist early warning agencies in communication as required and at district / divisional levels in dissemination.

**Landslides**

**National Building Research Organization**
- Using the Land Slide Hazard Zonation maps, organize with District and Divisional Secretaries awareness creation among communities and Grama Niladharis in landslide prone areas how to be vigilant, observe and identify symptoms of landslides as explained above, and also how to read Land Slide Hazard Zonation maps.
- NBRO on receiving information to send a team of geologists / specialists to investigate and report back with recommendations for appropriate action, whether
  - It is safe to remain in the location *(Inform this immediately to Divisional/District Secretary)*
  - A landslide is imminent and the residents must be evacuated to a safe place indicating the urgency *(Inform this immediately to Divisional/District Secretary)*. In such cases select safe areas and paths safe to move as alternative roads
  - The situation is very serious and the residents must be permanently relocated
  - The slide can be arrested with structural mitigation measures so that the residents can return after strengthening of the slope. In such cases recommend mitigation measures

- As long term measures
  - Discourage people going to live in landslide prone areas by not providing Infrastructure facilities to such areas
  - When granting development approvals insist on adoption of appropriate guidelines for land sub division and construction in landslide prone areas
  - Preparation of Land Slide Hazard Zonation maps in areas where this is not done already, and classify land by risk levels

**Department of Meteorology**
- Establish system (agreed by the Department and the District/Divisional Secretary) to inform District/Divisional Secretary of unusually high rain fall exceeding predetermined values (specify values as high, critical, dangerous etc.) that can cause landslides.
- Inform District/Divisional Secretary of above through the established system.

**Divisional Secretary and District Secretary**
- Organize awareness programmes through NBRO for Communities and Grama Niladharis, and selected officials of District and Divisional secretaries' offices.
- Through NBRO train and keep one landslide specialist for quick and convenient action (including reading of Landslide Hazard Zonation Maps).
- Keep regular links with the NBRO.
- On hearing of such incidents, in case of minor incidents he can take action.
- If action cannot be taken by him, Divisional Secretary to inform NBRO to investigate and report.
- Divisional Secretary to make District Secretary aware of such investigations and about action taken.
- On receiving report from NBRO take action to evacuate as necessary.

**Community and Grama Niladharis**
- Receive awareness through programmes by NBRO how to read Landslide Hazard Maps, to be vigilant, observe and identify symptoms of landslides such as,
  - Sudden oozing or appearance of water springs on slopes and continuous water logging.
- Sudden movements in boulders on slopes
- Spurt of rockfall activity on unstable upper slopes
- Sudden or progressive tilting of trees/towers located on the slope
- Sudden opening and progressive widening of cracks on the slope or on walls and floors of buildings and structures
- Subsidence or heaves on the slopes
- Subsidence of roads and bulging of roadside retaining slopes

♦ Communities to inform Grama Niladhari and/or Divisional Secretary on observing signs of possible landslides

♦ Grama Niladhari on hearing of such incidents inspect the location and inform Divisional Secretary

**Police Department**

♦ Assist the District/Divisional Secretary to inform the communities of impending disastrous situations.

♦ Assist early warning agencies in communication as required and at district / divisional levels in dissemination

**Cyclones, tornadoes and high winds**

**Department of Meteorology**

♦ Keep constant coordination with regional and international systems (as presently done)

♦ Establish system (agreed by the Department and the District/Divisional Secretary) to inform District/Divisional Secretary of unusual whether conditions, rain storm, high rain fall exceeding predetermined values (specify values as high, critical, dangerous etc.) and any cyclonic conditions or high wind etc.

♦ In instances when normal communication system is not functioning pass the communication through the Police wireless system for onward communication at local level through messengers

♦ Inform District/Divisional Secretary of above through the established system

**Police Department**

♦ Assist early warning agencies in communication as required and at district / divisional levels in dissemination

♦ Assist District/Divisional Secretary to inform communities of impending disastrous situation

**Tsunami, Sea Surge, Sea Storm etc.**

**Geological Survey and Mines Bureau**

♦ Establish and keep constant coordination with regional and international early warning agencies to receive early warning of earthquakes and tsunamis due to any cause, such as an earthquake in the sea, a massive slide in the sea bed, a volcanic eruption, nuclear testing in the sea and a meteorite or an asteroid hitting the sea bed.

♦ Create awareness among communities and all concerned Police that time available for evacuation is very short and the best early warning is vigilance by all concerned on the specific characteristics and dissemination of information as quickly as possible and quick evacuation to safety

♦ Identify and establish rain gauges at appropriate critical locations (specify by name) and ensure adequate round the clock staff and that proper communication facilities are available and functioning

♦ Establish a reliable communication system (telephones, wireless systems, radio communication etc.)

♦ Inform District/Divisional Secretary of above through the established system (agreed by the Bureau and District/Divisional Secretary) to immediately inform District/Divisional Secretary of any earthquakes or other activity in the sea in the region that can cause tsunami conditions

♦ Inform communities and fishermen in the sea likely to get affected
Sri Lanka Navy
♦ Be vigilant about sea storm conditions and possible tsunami situations
♦ Establish and maintain a reliable communication system (telephones, wireless systems, radio communication etc.)
♦ Inform District/Divisional Secretary of above through the established system
♦ Inform communities and fishermen in the sea likely to get affected regarding any imminent disastrous situation

National Aquatic Resources Agency (NARA)
♦ Be vigilant about sea storm conditions and possible tsunami situations
♦ Establish and maintain a reliable communication system (telephones, wireless systems, radio communication etc.)
♦ Inform District/Divisional Secretary of above through the established system
♦ Inform communities and fishermen in the sea likely to get affected regarding any imminent disastrous situation

Meteorology Department
♦ In addition to their other responsibilities if any information is received of any possible tsunami or sea surge situations take action to inform relevant authorities
♦ Inform communities and fishermen in the sea likely to get affected

District Administration
♦ District Secretary will activate the EOC depending on the severity of the expected event
♦ As soon as District Secretary receives the message he will inform the local police station, Divisional Secretaries and Grama Niladharis accordingly.
♦ Divisional Secretaries will inform the community through Police and the Pradeshiya Sabhas. They may use mobile loudspeakers and pre-identified youth groups to give the messages to the community
♦ Warning and information will be provided through radio and television.
♦ The District Administration and EOC will appeal to all the citizens to evacuate as per the predetermined plan, of which people and all concerned have been made aware.

Police Department
♦ Assist District/Divisional Secretary to communicate the information to all the villages in the jurisdiction of the police station of the impending disastrous situation through wireless
National Proposal

Establishment of a 24-hour Operational Natural Disaster Early Warning System for Sri Lanka including Capacity Building

Proposal Submitted to UNESCO/IOC

Details of Institutions which submitted sub-proposals for inclusion in this Proposal

Department of Meteorology
383, Bauddhaloka Mawatha
Colombo 7.
Contact Person: G.H.P. Dharmaratna, Director-General
E-mail: meteo@slt.lk; meteo1@slt.net.lk

Geological Survey and Mines Bureau (GSMB)
4, Galle Road
Dehiwala.
Contact Person: S. Weerawarnakula, Director
E-mail: gsmb@slt.lk

National Aquatic Resources, Research and Development Agency (NARA)
Crow Island
Mattakuliya
Contact Person: Dr. K. Arulananthan, Head/Oceanography
E-mail: arul@nara.ac.lk

National Science Foundation
47/5, Maitland Place
Colombo 7

Contact Person: Prof. Sirimali Fernando, Chairperson
E-mail: chm@nsf.ac.lk
1. Overview

During the last century, Sri Lanka was faced with over 50 major natural disasters. More than 15 million people were affected by these natural calamities. In May 2003, Sri Lanka experienced one of the worst flood episodes in recent history resulting in a number of major landslides and severe flooding, leaving over 200,000 people homeless and 372 persons dead. Climate change with sea level rise and anticipated increases in extreme weather events is expected to aggravate this situation further.

Until recently, Sri Lanka was considered as located in a geologically stable and safe area. However, historical records show that Sri Lanka has felt about 60 tremors during the last 100 years. Nevertheless, close monitoring of seismic activities in the Indian Ocean near and far from the island during the last two decades and reports on earth tremors felt in various parts of the country are now guiding us to revise our opinion in this respect.

The Indian Ocean tsunami on 26th December 2004 which devastated many countries of the region has emphasized and reminded us the need for better preparedness in natural disaster early warning. Early Warning requires an adequate understanding of the disaster phenomenon, real time collection of relevant data, and accurate and expeditious assessment and interpolation of these data. A 24-hour, 7-days per week operational and effective disaster early warning system is a prime requirement at national level.

This proposal aims at developing a Multi Hazard National Early Warning System. The Sri Lankan Government hopes to build this early warning system as a part of the National Disaster Management System. The Operational Centre of the Early Warning System is expected to have the capacity to perform the following tasks,

- Collection and analysis of real-time data,
- Information dissemination,
- Creating public awareness and
- Conducting research and development.

The government wishes to have the active involvement of non-governmental, international and regional donors in implementing the proposal in order to have a better coordination and an end-result. The Government of Sri Lanka depends on countries with advanced technologies to render support to establish this system. As the national centre, this early warning mechanism will also integrate with the Indian Ocean Tsunami Warning System, thus making it a receiver as well as a provider of warnings.
## 2. OVERVIEW TABLE

<table>
<thead>
<tr>
<th>Implementing Organization:</th>
<th>Department of Meteorology, Sri Lanka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title:</td>
<td>Establishment of a 24-hour operational Natural Disaster Early Warning System for Sri Lanka, including capacity building</td>
</tr>
<tr>
<td>Overall Budget:</td>
<td>US $ 34.86 M</td>
</tr>
<tr>
<td>Beneficiaries:</td>
<td>People living in coastal areas of Sri Lanka and in other countries in the Indian Ocean Basin</td>
</tr>
<tr>
<td>Partners:</td>
<td>National agencies: Departments of Meteorology, Coast Conservation, Irrigation and Geological Survey and Mines Bureau, National Aquatic Resources Agency, Sri Lanka Navy, National Building Research Organization and National Science Foundation</td>
</tr>
<tr>
<td></td>
<td>International organizations: IOC/UNESCO, World Meteorological Organization, IHO, CTBTO, ISDR, UNDP</td>
</tr>
<tr>
<td>Aim:</td>
<td>Establishment of a 24-hour operational Natural Disaster Early Warning System for Sri Lanka including an operational centre catering for collection and analysis of real-time data, information dissemination, public awareness, research and development needs.</td>
</tr>
<tr>
<td>Support pledged:</td>
<td></td>
</tr>
<tr>
<td>Contact Person:</td>
<td>Director General of Meteorology</td>
</tr>
<tr>
<td>Email: <a href="mailto:meteo@slt.lk">meteo@slt.lk</a></td>
<td>Tel: 94-11-2694104</td>
</tr>
<tr>
<td>Fax: 94-11-2698311</td>
<td></td>
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<tr>
<td>Support sought:</td>
<td>To establish mechanism for monitoring, issuance and dissemination of early warnings</td>
</tr>
<tr>
<td></td>
<td>Establishment of the operational center (National Disaster Management Center)</td>
</tr>
<tr>
<td></td>
<td>Needs assessment for the National early warning system in Sri Lanka</td>
</tr>
<tr>
<td></td>
<td>Develop capacities (infrastructure, technologies and human resources) for generation, reception, monitoring and storing data and issuance of early warnings, dissemination of warnings</td>
</tr>
<tr>
<td></td>
<td>Develop capacity of the centre to establish local, regional and global networks</td>
</tr>
<tr>
<td></td>
<td>Develop capacities for creating public awareness and research and development</td>
</tr>
<tr>
<td>Financial Support Already Obtained:</td>
<td></td>
</tr>
<tr>
<td>Financial Support Being Sought:</td>
<td>US $ 34.86 M</td>
</tr>
</tbody>
</table>
3. WORK PLAN

Establishment of the Natural Disaster Early Warning System for Sri Lanka

1.1 Setting up of the Operational Centre
   1.1.1 Provision of urgently required facilities such as communication
   1.1.2 Networking with relevant international organizations/centres
   1.1.3 Networking with related local institutions
   1.1.4 Development of Operational Procedures
   1.1.4 Recruitment of staff

1.2 Development of warning dissemination methodologies
   1.2.1 Identification of primary and alternate dissemination mechanisms
   1.2.2 Operationalization of identified methodologies

1.3 Improvement of the seismic network in Sri Lanka
   1.3.1 Improving broadband and short period seismic network in Sri Lanka
   1.3.2 Establishment of a national real-time seismic data analysis centre

1.4 Enhancement of meteorological observation and prediction capabilities
   1.4.1 Strengthening meteorological observation network
   1.4.2 Improving meteorological communication system

1.5 Improvement of ocean monitoring capabilities
   1.5.1 Establishment of Sea Level Recording facilities
   1.5.2 Establishment of an offshore real time reference station
   1.5.3 Establishment of a real time display system for oceanographic data
   1.5.4 Development of infrastructure and training on prediction of coastal inundation
       and other ocean based phenomena
   1.5.5 Upgrading of Hydrographic survey equipment and cartographic capabilities

1.6 Capacity building research and development
   1.6.1 Capacity building in R&D
   1.6.2 Human resource development
   1.6.3 Improvement of numerical modeling capabilities

1.7 Conducting public awareness programs
   1.7.1 Development of resources and a strategy for public awareness programs
   1.7.2 Implementation of public awareness programs
1.1 Setting up of the Operation Centre

1.1.1 Provision of urgently required facilities such as Communication

The Government of Sri Lanka has identified the need to establish a multi hazard natural disaster management centre as a matter of urgency. This centre has to be equipped with facilities to communicate directly with international as well as related national agencies during emergencies. Therefore, equipping this centre with state-of-the-art communication and other facilities is important.

1.1.2 Networking with relevant international institutions

At present, the Department of Meteorology, Sri Lanka functions as the Interim Centre for Natural Disaster Early Warning and Mitigation. It has already established links with most of the relevant international institutions such as PTWC and JMA. However, for better end results, it is necessary to further strengthen these links.

1.1.3 Networking with relevant national institutions

In Sri Lanka issues with regard to weather related natural disasters are handled by the Meteorology Department while issues related to seismological activities and ocean wave related activities are handled by Geological Survey and Mines Bureau and National Aquatic Resources, Research and Development Agency respectively. Similarly different institutions handle issues with regards to different natural disasters. As such, a good networking facility connecting all the relevant institutions is vital.

1.1.4 Staff Training

Staff needed for the proper functioning of the Early Warning Centre have to be identified and trained.

1.2 Development of warning dissemination methodologies

1.2.1 Identification of primary and alternate dissemination mechanisms

Interim warning dissemination methodologies have already been identified. However, it is required to identify alternate methodologies in addition to fine-tuning the existing methodologies.

1.2.2 Operationalization of identified methodologies

Both primary as well as alternate methods identified need to be operationalised, making full use of the available facilities.

1.3 Improvement of the seismic network in Sri Lanka

(Proposing Institution: Geological Survey and Mines Bureau)

As a matter of urgency, it is necessary to develop and strengthen capabilities of Geological Survey and Mines Bureau (GSMB) leading to locating earthquakes at the earliest possible time. The GSMB wishes to connect this network to the proposed Central Data Processing and Archiving Unit (CDPA).
1.3.1 Improving broadband and short period seismic network in Sri Lanka

1.3.1.1 Palk Station

A broadband seismic network station, code name PALK, functions as a joint research project of Geological Survey & Mines Bureau (GSMB) and University of California San Diego (UCSD) at Pallekele in the central highlands of Sri Lanka since 2000. This station is equipped with high sensitive broadband seismometer with infrastructure facilities for transmission of near real time data. The purpose of this station is to provide continuous geophysical observations of global and regional earthquake activity. The PALK is linked with the other GSN stations via a common gateway, IDA Hub that opens a pathway to study and analyze the global seismic events.

Due to lack of necessary expertise and software at the GSMB, seismic data acquired by this station have not been processed and interpreted so far locally.

1.3.1.2 CTBTO link

The PALK has been designated as an Auxiliary Seismic Station, AS100, of International Monitoring System (IMS) of the CTBTO. The data acquired by the PALK are sent to Vienna via V-sat antenna.

1.3.1.3 University Network

A local seismic network funded by the Japanese International Cooperation Agency (JICA) has been installed at the University of Peradeniya, Peradeniya (Central Station), University of Ruhuna, Matara, Rajarata University, Mihintale and South Eastern University, Oluvil since year 2001. This network is capable of acquiring broadband as well as short period seismic data. Acquired data are transferred to the central station via dialup phone line through a data logger. However, it is reported that due to infrastructure problems, this network was not fully operational for quite some time.

1.3.1.4 Induced Seismicity

A microseismic monitoring network to monitor reservoir-induced seismicity was operational around the cascade of dams built on Mahaveli river during from 1982 to 1991. However, no significant microseismic activity was monitored except for some settlement tremors along the Mahaweli Shear Zone.

As mentioned in the introduction, with the increase of feeling ground vibrations in several parts in the country, possibly due to small tremors which have not been pointed, expert and public concern lead to restate systematic monitoring of microseismic activities in the country. In addition, major earthquakes occurred in the Indian subcontinent in recent past forced us to consider establishment of such a monitoring system. The experts of dam safety has identified the need to establish an effective seismic monitoring network to cover 32 dams and appurtenant structures, particularly tunnels, with the priority area being in Upper Mahaweli and Kelani scheme area. It has also been emphasized that the necessity of establishing an accelerometer network covering 32 dams to determine peak ground acceleration parameters to be utilized for engineering designs and risk assessments.
1.3.1.5 Proposed Work Plan

No seismological study has yet been carried out to gather, process and interpret seismic events, which are only felt in Sri Lanka. These local events can only be studied using local short period seismic network like the University network. **Therefore, it is necessary to fix any technical problem pertaining to the malfunction of existing university network and connect it to the GSMB.** Secondly, it is proposed to add 6 short period three-component seismographs to this network and **strengthen the coverage.** These 6 new stations have to be installed at suitable locations in Colombo, Jaffna, Mannar and three stations in Upper Mahaweli/Kelani major dam/reservoir scheme areas making the **total number of local short period seismometers to ten.**

As suggested by Inception Report of Mahaweli Authority in 2003, it is not required to install accelerometer network as the seismicity in Sri Lanka is low and higher cost factor. Instead, short period seismic network would be utilized to notify relevant authorities and linked to an alarm system.

1.3.2 Establishment of national real-time seismic data analysis centre

It is strongly suggested to **establish a Central Data Processing and Archiving (CDPA) Unit** at the GSMB. Seismic data acquired by the local network stations and broadband GSN Stations (PALK, MESY, DGAR, COCO and any other) have to be transmitted (preferably digitally) in near real time to the CDPA. The existing University network should also transmit near real time seismic data to the CDPA. To achieve this, data transferring system from all stations to the CDPA has to be buildup. In addition, data formats, sensor types and other technical details also considered.

The CDPA should have the following requirements:

1. Data processing facilities – require software, hardware and trained personnel
2. **Direct link with National Disaster Management Centre** – in case of hazardous event such as an Earthquake or Tsunami - require an efficient mechanism to disseminate news
3. Data archiving facilities – require software and hardware
4. Research and Development- require seismologists, geophysicists, geologists and computer scientist to utilize seismic data for crystal research and technology development

1.3.2.1 Staff Training

Since not a single seismologist is available in Sri Lanka it is necessary to **train a group of geoscientists in the field of basic seismology.** This can be achieved by hiring a foreign consultant for three months period. In addition, at least four geoscientists should be trained at the postgraduate level (MSc or PhD). Apart from that basic and advanced training in the fields of digital communication, computer hardware and software engineering and Linux have to be given.
1.4 **Enhancement of meteorological observation and prediction capabilities**

(Proposing Institution: Department of Meteorology)

Most of the natural disasters that occur in Sri Lanka are weather related. Therefore, the enhancement of the observation and prediction capabilities of the Sri Lanka Department of Meteorology is of paramount importance. Since the Department of Meteorology is the designated interim centre for natural disaster early warning and mitigation, improving its capabilities would have a great impact on minimizing the damage due to natural disasters.

At present, meteorological observational network in Sri Lanka consists of 20 synoptic meteorological stations, 35 agro-meteorological stations and approximately 300 rain gauge stations. In all these stations observations are performed manually. Neither a telemetered rain gauge network nor an AWS (Automatic Weather Stations) network is available which hinders real-time identification of weather systems. The radar and radiosonde equipments available in Sri Lanka are outdated and regular malfunctioning limits their usefulness. The communication system available is heavily dependent on public telephone lines and during bad weather situations their effectiveness is questionable. The GTS (Global Telecommunication System) which links the National Meteorological System in Colombo with Regional Telecommunication Hub in New Delhi is extremely slow and runs at a speed of 50 bauds.

1.4.1 **Strengthening meteorological observational network**

The surface meteorological observational network needs to be improved by incorporating automatic weather stations. After a study of the requirements, it has been identified that an AWS network consisting 35 automatic weather stations (inclusive of communicational facilities) would improve the capabilities to a great extent. The ageing wind finding radar and radiosonde equipments have to be replaced with state-of-the-art instruments. In addition to improve short period weather forecasting capabilities acquisition of a weather radar system is very useful. The acquisition of the weather radar would improve to a greater extent the capabilities of forecasting heavy rainfalls leading to flash floods and landslides.

1.4.2 **Improving the meteorological communication system**

Since the Department of Meteorology, Sri Lanka is the designated national focal point for receiving and disseminating tsunami early warnings/advisories, the communication system used in the Department of Meteorology is totally inadequate. The communication setup which includes not only the communication system between the National Meteorological Centre in Colombo with outstation meteorological stations but also the link with RTH-New Delhi needs to be strengthened. The practice of relying on public telephone lines should be avoided. It is proposed to upgrade the GTS link with regional telecommunication hub in New Delhi to pure TCP/IP and local communication system upgraded with state-of-the-art technology.

1.5 **Improvement of Oceanographic Monitoring capabilities**

(Proposing Agency – National Aquatic Resources, Research and Development Agency)

National Aquatic Resources, Research and Development Agency (NARA) is the apex national research institute in Sri Lanka, established by the Act No: 54 of 1981, as amended by Act. No.32 of 1996, to promote and conduct research activity directed towards identification, assessment, management, conservation and development of aquatic resources.
In order to achieve the objectives, NARA has established multi disciplinary frame work covering oceanography, hydrography, marine biological resources, inland aquatic resources and aquaculture, GIS and remote sensing, environmental science, post harvest, fishing technology and extension divisions.

Based the main office in Colombo for embarking coastal, marine and inland research and development activities, NARA has established Regional Research stations, thus infrastructures and human resources at Negombo and Kalpitya (North western province), Rekawa (Southern province), Trincomallee (Eastern Province). It is also intended to establish a station in Jaffna in the Northern province to launch its research and development activities.

Sri Lanka experiences frequent ocean based disasters such as El-Nino, storm surges, toxic algal blooms and maritime hazards, land based pollutions, destructive fishing activities and collapse of fisheries. However, recurrent of ocean based disasters are in rise on this tropical island, primarily due to the Tsunamis. Thus, the expansion of oceanographic observations and research, relevant to ocean based disasters in Sri Lanka is now at an exciting stage. This proposal aims to strengthen the technical and manpower capabilities of NARA to facilitate ocean based hazards warnings and mitigation actions.

1.5.1. Establishment of real time permanent tide gauges.

The observations of short-term and long-term sea level variability are extremely important for sustainable management of coastal environment and essential mitigation measures. Other than the local interest, the tide station represents an important component of the Global Sea Level Observing System (GLOSS). Furthermore, tide gauge networks are an important component of the Tsunami Early Warning System. They provide real-time information on the development of a tsunami following a seismic event, and thus are critical for guiding the issuance of tsunami warnings and for canceling warnings, when non-destructive tsunamis are observed.

NARA in collaboration with the University Hawaii Sea Level Center (UHSLC) have established a permanent tide station at Mutwal Fishery Harbor, Colombo in August 2004. Currently, in order to contain the entire coast under monitoring, NARA in collaboration with the Federal Maritime & Hydrographic Agency (BSH), Germany and University of Hawaii Sea Level Center (UHSLC) is to establish two more permanent tide stations at Trincomalee and Kirinda. It is also vital to install few off shore tide gauges (within the limit of continental self) around Sri Lanka. The establishment of local network covering all tide gauges will be benefited by both national and international agencies for Tsunami early warnings.

1.5.2. Establishment of offshore real time oceanographic/marine meteorological buoy

The local topography, oceanography and meteorology play are the critical parameters, which determine the magnitude ad the period of high frequency ocean waves like; Tsunamis, storms surges. Thus, oceanographic/marine meteorological buoys need to be deployed off Kirinda (southern coast), Batticaloa (eastern coast) and Colombo (western coast) to gather real time data on local oceanography and marine meteorology.

1.5.3 Strengthening of GIS and remote sensing capabilities

GIS section of the IT Division conducts mapping of sensitive habitat such as coral reefs, mangroves, sea grass, tidal flats, estuaries, etc to provide information for coastal zone planning. The section also involved in selection of suitable coastal aquaculture sites and seasonal tanks for culture based fisheries, identification of point and non-point pollution sources and potential fishing zone.
GIS is a vital tool for decision making, thus it could be used to demarcate vulnerability areas and for risk analysis. In order to minimize the cost of establishing segregated institutional GIS, a web based GIS need to be established to provide online decision making ability.

However, the available system requires strengthening by increasing the bandwidth of the dedicated line, software and hardware. Furthermore, facilities are necessary to procure satellite imageries, software for relational database (oracle) and Web GIS and pertinent hardware.

1.5.4 Establishment of online database for ocean based disasters

NARA has been gathering extensive information/data on the bio-geo-physical parameters of ocean and coastal environment and socioeconomic status of coastal community and resources. The available and real time data/information need to be made available to the national disaster warning centre and other relevant authorities for necessary decision making. Therefore, the distributed databases need to be collated. In order to achieve the above requirements, upgrading network infrastructure along with necessary training on distributed database management are required in addition to the resources indicated on the section 1.5.3.

1.5.5 Upgrading of Hydrographic survey equipment and cartographic capabilities

National Hydrographic Office (NHO) is mandated to conduct hydrographic surveys and provide information for maritime navigation safety and marine environment preservation, defense, exploration, research and management activities. In addition to these activities, high-resolution bathymetric data are vital for Tsunami Physics, particularly numerical modeling. However, more than 50% of the technical capabilities, including medium size survey vessel Sayuri, Multi-beam survey system, single beam deep water echo sounders, DGPS are lost due to 26 Dec 2004 Tsunami. Thus, in order to continue the mandate of NHO, it is necessity to re-strengthen the NHO on both technical and man power capabilities. Federal Maritime & Hydrographic Agency (BSH), Germany has provided hydrographic equipments to conduct immediate essential post Tsunami surveys. Also, European Countries (Germany, UK, France and Norway) expressed their willingness to provide financial assistance for survey platform. Pakistan and India also expressed willingness to provide partial assistance to carry out bathymetric surveys. Various foreign donor agencies expressed willingness to carry out high-resolution coastal bathymetric surveys using LIDA survey.

However, electronic nautical charting and production facilities need to be strengthened to supplement and compliment the available resources.

1.6 Capacity building research and development

(Proposing Institution: National Science Foundation)

1.6.1 Capacity building in R and D

The proposal for capacity building in research in relation to disaster mitigation and management will include capacity building in research management and monitoring, funding for existing research proposals in disaster mitigation and management, setting up of an emergency fund for research, human resource development, conducting workshops, seminars, funds for short term training essential for research capacity building and research collaboration with foreign scientists and institutions.
1.6.2 Human resource development

Human resource development to carry out research in the area of disaster mitigation and management has to be enhanced. Hence, it is proposed to support 20 doctoral and masters programmes in the fields of; disaster preparedness, GIS in disaster zones, Built environment in disaster zones, Health related issues, Seismology, Numerical modeling, Oceanography, Marine biology and Coastal engineering.

1.6.3 Improvement of numerical modeling capabilities

Numerical modeling of tsunami phenomena provides valuable information regarding the regions of Sri Lanka that could get affected by tsunamis in the future. Inundation of a landmass due to a tsunami mainly depends on the bathymetry of the continental shelf surrounding the landmass.

It also depends on the location and geometry of the collapsing of the sea floor that caused the tsunami and the obstacles in the path along which it is propagating. Different tsunamis have different source geometries and travel along different paths giving rise to different inundation patterns. Analysis of historical records therefore provides only limited information regarding tsunami vulnerable areas. Comprehensive databases compiled using results of numerically simulated tsunamis provide much better insight into the inundation patterns due tsunamis that may occur in the future. Major resources needed for this work are high-speed high capacity workstations and relevant software packages.

Some of the research topics identified for further investigation

1. Understanding the hydraulic behaviour of the tsunami wave
2. Lessons learnt from damage assessment with respect infrastructure and natural habitats leading to development and conservation guidelines.
3. To assess the bathymetric changes that have taken place in the nearshore areas arising from the tsunami, and to investigate the resulting impacts on other coastal hazards such as storm wave attack, coastal erosion and long term phenomena such as sea level rise.
4. To identify potential regions in the Indian Ocean which could generate submarine earthquakes leading to tsunami waves that will reach Sri Lanka, to assess the probability of occurrence and probable locations of such potential earthquakes.
5. To numerically model potential tsunami scenarios to understand the hydraulic impact on the coastal regions, as identified previously.
6. To understand the vulnerability of our coastline against tsunamis and other coastal hazards.
7. To study the effectiveness of countermeasures and interventions for protection using both natural and artificial methods.

1.7 Conducting public awareness programmes

(Proposing Institution: National Science Foundation)

The people of Sri Lanka although possess a high literacy rate, are not prepared properly for many natural hazards, including tsunami. Therefore, it is essential that the people are adequately informed of and prepared to face all likely disasters.
1.7.1 Development of resources and a strategy for public awareness programmes

In considering the higher literacy rate and the concerns manifested by the people, the provision of programs to educate the people on the occurrence, mitigation and facing such disasters is essential. Thus, the main thrust of the strategy adopted would be (a) to fully educate the people and (b) build up confidence amongst them to live in a geographical location with such hazards.

The following activities are planned to achieve these objectives:

- Establishment of a resource centre
- Preparation of print materials – booklets, newsletters, newspapers etc
- Development of multi-media (interactive educational CDs, videos and web sites etc in Sinhala and Tamil languages)
- Development of a national strategy for implementation of the public awareness programme in consultation with the stakeholders

1.7.2 Implementation of public awareness programs

- Segmented communication plan is proposed according to the needs of a particular area and identifying different approaches to different age and other groups in the community – through village based science & Technology Centres (Vidatha centres) and other societies
- Mobile vision programmes
- National electronic media (TV & radio)
- Seminars and workshops
- Quiz competitions
- School programmes

Target groups

- Those living in coastal areas and all associated with fisheries and ocean based industries
- School children of different age groups starting from the elementary grades
- Youth associations and clubs
## Annex A

### Activity 1 - Setting up of the Operational Centre

| 1.1.1. | Provision of urgently required facilities such as communication |
| 1.1.2. | Networking with relevant international organizations/centres |
| 1.1.3. | Networking with related local institutions |
| 1.1.4. | Development of Operational Procedures |
| 1.1.5. | Recruitment of staff |

### Activity 2 - Development of warning dissemination methodologies

| 2.1. | Identification of primary and alternate dissemination mechanisms |
| 2.2. | Operationalization of identified methodologies |

### Activity 3 - Improvement of the seismic network in Sri Lanka

| 3.1. | Improving broadband and short period seismic network in Sri Lanka |
| 3.2. | Establishment of national real-time seismic data analysis centre |

### Activity 4 - Enhancement of meteorological observational and prediction capabilities

| 4.1. | Strengthening meteorological observation network by incorporating Automatic Weather Station (AWS) capabilities |
| 4.2. | Improving meteorological communication system |
| 4.3. | Enhancement of meteorological observational and prediction capabilities |

### Activity 5 - Improvement of Ocean Monitoring capabilities

| 5.1. | Establishment of Sea Level Recording facilities |
| 5.2. | Establishment of an offshore real time reference station |
| 5.3. | Establishment of a real time monitoring/display system for oceanographic Information |
| 5.4. | Development of infrastructure and training on prediction of coastal inundation, tsunami and other ocean based phenomena |
| 5.5. | Upgrading of Hydrographic survey equipment and cartographic capabilities |

### Activity 6 - Capacity building research and development

| 6.1 | Capacity building in R & D |
| 6.2 | Human resource development |
| 6.3 | Improvement of numerical modeling capabilities |

### Activity 7 - Conducting public awareness programs

| 1.7.1 | Development of resources and a strategy for public awareness programs |
| 1.7.2 | Implementation of public awareness programs |
Annex 5.3-I

Preparation of Emergency Action Plans including Early Warning Systems for Dams

Background

Compared to other man made structures, dams have an inherently high risk for failures that will lead to potential loss of life and property. Failures can occur due to natural events in addition to the human errors. In addition ageing dams and related problems contribute to complicate the situation further. The potential threat to life and property should be sufficient to justify the careful monitoring and maintenance of these dams.

The government has the responsibility and the moral obligation towards the society to maintain safety at acceptable levels to ensure public safety. Although in some countries dams deemed to be high risk are removed; this is not an option in Sri Lanka due to the heavy impact on rural agricultural population.

Sri Lanka has a large number of dams constructed over the years and continuing to maintain. Out of 351 major/medium dams in the country 80 are categorized as “large dams” according to the International conventions. A list of major dams and a map is given at the end of this Annex. These dams are operated by Mahaweli Authority of Sri Lanka (MASL), Department of Irrigation (ID), Ceylon Electricity Board (CEB), Provincial Councils and National water Supply and Drainage Board.

The objective of this report is to present the requirement of early warning systems in dams as risk reduction measure of the dams.

Present Situation

None of the Dams have an adequate Early Warning System (EWS). The EWS system that is required should be able to cover emergencies like cyclones, floods and earthquake or all simultaneously. Further, data communication system for EWS should be able to collect information required for activation of EWS at different locations. It is, therefore, necessary to get services of an Automated Data Acquisition Systems to manage the pre-disaster situations successfully.

Until recently, Sri Lanka was considered to be located in a geologically stable and safe area with minimum earthquake related incidents. However, Geologists have recently reported a phenomenon of developing an earthquake zone about five hundred kilometers south of Sri Lanka. If there is an active plate boundary just 300 km away from Sri Lanka, an earthquake originated there could reach our dam sites within two minutes. Therefore, the people living in the area probably have a higher risk than Tsunami and we must look for equipment that can help us to activate an Early Warning System through accelerometers including piezoelectric accelerometers.

Mahaweli Authority of Sri Lanka has conducted a Portfolio Risk Assessment and Operation and Maintenance (O&M) Review of 32 key dams engaging an international consultant.

The study showed that though the modern dams have generally been built to current standards of the world’s best use practices the same cannot be said for all the other dams. The study also revealed that many dams including some of the modern dams were showing signs of aging (such as seepage, leakage, cracking and scouring).
The other significant issues were non availability of proper Emergency Action Plans (EAP), Updated Standing Operating Procedures (SOP) and legislation to ensure safe operation by dam managers. The key issue requiring prompt attention is that in number of major dams, automatic water level regulation systems for spillway operations that were in place are not functioning now. As such, the dams are posing unacceptable risk levels according to internationally accepted norms.

Presently safety of head works is to be achieved by timely maintenance, correct operation procedures, preventive maintenance and upgrading and modernization of head works periodically. Surveillance of the dam for monitoring the condition and performance of a dam is an important non-structural measure taken by dam managers to avoid potential failures and consequential disasters. Periodic and routine inspections, test operations and special evaluations are also carried out under this task.

Despite this continued efforts by all Dam managers to improve O&M practices, limited resources available for management of these dams likely to deteriorate this situation and further increase the risk levels. Therefore it is proposed that adequate attention and sufficient funds to dam safety issues be allocated to fully identify and implement a comprehensive program to rectify the risk situation highlighted above.

**Emergency Planning**

At present MASL, ID or CEB do not have an adequate Early Warning System (EWS) for dams. It is not possible to give an adequate warning to people living downstream along the Main Rivers. Correct operation of equipment alone will not minimize the consequences of dam failure. They should be integrated with Emergency Action Plans (EAP) and Early Warning System (EWS).

**Preparation of Emergency Action Plan**

The basic components of an EAP are as follows

- Notification Flowchart
- Responsibilities
- Emergency Identification, Evaluation and Classification
- Notification Procedures
- Preventive Action
- Inundation maps
- Appendix (es)

**Proposal for identification of an emergency**

Key stages in the preparation of an EAP are identification of an emergency and assessment of the potential inundated area in case of an unlikely event of a dam failure.
The failure of a dam in a cascade is the worst scenario that can occur. When the top most dam in a cascade fails, there will be severe impact on the lower dams and the downstream community. For example, in Mahaweli Ganga four major dams (Kotmale, Victoria, Randenigala and Rantembe) are in a cascade. Castlereigh, Norton, Maussakele, Canyon and Laxapana is another cascade of dams in Kehelgamu Oya and Maskeli Oya in the headwaters of the Kelani Ganga basin. Similarly in almost all the rivers dams can be found in cascade. Hence it is identified that a central data acquisition and processing system such as Supervisory Control and Data Acquisition (SCADA) system for all river basins to get the data as fast as possible.

The SCADA system has three major components.
- Remote sensors and control devices (referred to as Remote Terminal Units or RTUs) which acquire data and respond to operator commands
- Supporting two-way communication system links to transmit the data via telephone, microwave, cable or satellite circuits between the master control station and the RTUs
- Master control station where sensor information is stored in memory and displayed on central computer screens enabling operators to track the system status/problems. SCADA enables remote control of system operation either automatically or initiated by operator commands.

Preparation of inundation maps

Inundation maps are prepared by mathematical simulation of dam failure showing the area inundated and the locations of affected communities. Emergency evacuation areas will also be identified in these maps.

Dam Break modeling

Dam Break modeling is carried out by computer models simulating the dam break and propagation of flood wave following the break. Topography is represented by cross sections either from standard topographic mapping or from a specialist survey.
Since the accurate topographic data on major rivers and its flood plain is not available, we propose to use LIDAR (LIght Detection And Ranging) airborne survey method to get river cross sections. It is a rapid and inexpensive (if used on a large scale) method of topographic survey of river and coastal flood plains. The output from the dam break model will give information on velocity and depth at various locations along the river. Then maps can be prepared showing contours of flood depth or zones of varying levels of flood risks.

**Recommendations for urgent Implementation**

**Data Management, monitoring systems, Technical assistance and Training**

To achieve the above objectives we would propose following of activities

- Risk Assessment and prioritize according to the safety
- Establishment of SCADA system for acquisition of data (rainfall, water levels, discharge etc.) in major rivers
- Use LIDAR air borne survey method for Topographic Surveys in all major rivers and its flood plain.
- Acquire suitable software package with training facilities for Dam Break modeling
- Obtain expert advice on designing data communication network for emergency management of the reservoirs and for successful and sustainable implementation of the program
- Selection and installation of appropriate type of accelerometers in all major dams to monitor earthquakes
- Acquire resources required to mark on the ground the dangerous zones considering internationally accepted flood damage parameters.
- Provision for training of staff on new technology and software program.
- Strengthen the Dam Safety Management Divisions in MASL, ID and CEB and ensure continuous adequate resources.
- Obtain Technical Assistance from the reputed Dam Safety Organizations such as United States Bureau of Reclamation, US Army Corps of Engineers etc

Further to the preparation of EAP following urgent improvements has to be carried out in major dams as risk reduction measures.

**Urgent Improvements**

In addition to above following structural improvements are proposed

- Fixing of automatic control systems for spill gates of Kotmale, Randenigala and Rantambe dams.
- Rehabilitate dam safety monitoring system of Victoria dam.
- Rehabilitation of dam safety system of Kirindioya dam.
- Installation of cathodic protection system to control corrosion of gates.
- Installation of Survey monuments dams
- Installation of Instrumentation for Dam safety monitoring in selected high risk dams
### List of Major Dams in Sri Lanka

<table>
<thead>
<tr>
<th>Name</th>
<th>Completion</th>
<th>River or Basin</th>
<th>District or City</th>
<th>State</th>
<th>Dam Type</th>
<th>Height above Lowest Foundation (m)</th>
<th>Crest Length (m)</th>
<th>Dam Manager</th>
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<tr>
<td>Akkrayan</td>
<td>1962</td>
<td>Akkrayan Aru</td>
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<td>Bomurella Oya</td>
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<td>Nuwara Eliya</td>
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<td>PG/TE</td>
<td>19</td>
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<td>CP</td>
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<td>23</td>
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TE - Earth  
ER - Rock  
PG - Concrete Gravity  
Fill  
VA - Concrete Arch  
ID - ID
A Map Showing Major Dams
National Level Response Structure during Warning Stage

Proposed NDMA (Early Warning Division)

National DOC / Control Room / EOC of DMC

Research & Professional Agencies - NBRO, Irrigation Dept., Met. Dept., GSMB, Police etc.

Provincial Disaster Managers (Chief Secretaries) - Provincial Control Room / EOC

Local Authorities to be alert

LA Site Operations Centres (SOC) to be alert

District Disaster Managers (Divisional Secretaries) - Divisional Control Rooms / DOC / EOC

Media - TV, Radio, Press

Departmental Operations Centres - Police, Armed Forces, DMO, Hospital, Irrigation Dept., NWS&DB, CEB, RDA, PRDA, LAs, Telecom etc.

Provincial & District and Site Operations Centres (SOC) to be alert
Provincial Level Response Structure during Warning Stage

National DOC / Control Room / EOC of DMC

Provincial Disaster Manager (Chief Secretary)
- Provincial Disaster Control Room / DOC / EOC

Research & Professional Agencies Provincial level officials as applicable - NBRO, Irrigation Dept., Met. Dept., GSMB, Police etc.

Proposed NDMA (Early Warning Division)

Local Authorities to be alert

District Disaster Manager (District Secretary) - Divisional Control Rooms / DOC / EOC

Media - TV, Radio, Press

Departmental Operations Centres - Police, Armed Forces, DMO, Hospital, Irrigation Dept., NWS&DB, CEB, RDA, PRDA, LAs, Telecom etc. Provincial level officials as applicable

LA Site Operations Centres (SOC) to be alert

Provincial & District and Site Operations Centres (SOC) to be alert
District Level Response Structure during Warning Stage

National DOC / Control Room / EOC of DMC

Provincial Disaster Manager (Chief Secretary) - Provincial Disaster Control Room / DOC / EOC

Proposed NDMA (Early Warning Division)

Research & Professional Agencies - District / divisional level officials as applicable - NBRO, Irrigation Dept., Met. Dept., GSMB, Police etc.

District Disaster Manager (District Secretary) - District Control Room / DOC / EOC

Divisional Disaster Managers (Divisional Secretaries) - Divisional Control Rooms / EOC

Site Operations Centres (SOC) to be alert

Local Authorities to be alert

Media - TV, Radio, Press

Departmental Operations Centres - Police, Armed Forces, DMO, Hospital, Irrigation Dept., NWS&DB, CEB, RDA, PRDA, LAs, Telecom etc. District / divisional level officials as applicable

Provincial & District and Site Operations Centres (SOC) to be alert
Action Plan
for Natural Disaster Management
for Nawalapitiya Urban Council Area

Developed by
Sri Lanka Urban Multi-Hazard Disaster Mitigation Project – SLUMDMP

Partner Agencies
Urban Development Authority (UDA)
National Building Research Organization (NBRO)
Centre for Housing Planning and Building (CHPB)

A project of the Ministry of Housing and Urban Development
Action Plan

The purpose of this plan is to assist Nawalapitiya UC and associated agencies and organisations in the Nawalapitiya Disaster Management Committee to reduce the multi-hazard impact and ensure incorporation of mitigatory measures in amending the land use plan (zonal plan) for Nawalapitiya UC. The long term objectives given below cover a comprehensive action programme to reduce the risk due to multi-hazard disasters faced by the community to Nawalapitiya UC area. The objectives incorporate selected structural and non-structural measures prioritized in accordance with the rationale given below.

Rationale for selecting risk reduction options for adoption by member institutions of the Disaster Management Committee

The following are adopted as the selection criteria of the risk mitigation options from the options proposed by the participants at the risk mitigation workshop. Participants of this workshop comprise mainly planning community attached to UDA, UC officials and other partner institutions of SLUMDMP (NBRO & CHPB). The options selected should qualify against the following rationale:

1. Should be technically acceptable and feasible under all circumstances
2. The respective implementing agency/organization should have the capacity for implementation or potential for adaptation
3. Should bring positive environmental impact
4. Should be cost effective in short term as well as long term
5. Should be made socially acceptable and compatible with the farsighted community values and social ethics of the region
6. Should win the support of the political leadership for adaptation
7. Legal authority for adaptation should exist or be created

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<th>OBJECTIVES AND ACTIONS</th>
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<tr>
<td>1. Ensure suitable land use and urban development minimizing/avoiding loss and damage due to natural disasters</td>
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<td>• Prepare an integrated hazard zonation plan</td>
<td>NUC</td>
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<td>• Survey of lands belonging to govt. Institutions and see the possibility of using them for other activities (especially lands belonging to railway dept.)</td>
<td>NUC</td>
</tr>
<tr>
<td>• Demarcate the present UC boundary with the assistance of Survey Dept. And see the possibility of expansion of the UC limits into hazard free areas (Buwagama, Imbulpitiya, etc)</td>
<td>NUC</td>
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- Integrate the hazard zonation into urban development plan through zoning regulations, (issue gazette notifications) declaration of acceptable zone boundaries
- Ensure maintenance of records and information conducive to continued integration of disaster information and experience in future development.
- Convert the uncultivated pathana land in steep slopes into forest area with indigenous plants or develop other suitable agricultural projects (Kithul may be one of the suitable species)

2. **Promote construction practices to minimize hazard damage to existing and future development**

- Adopt and enforce building codes for future construction of public and private buildings and infrastructure
- Propose and enforce necessary modifications to the existing building approval procedure
- Improve knowledge and understanding of technologies for disaster reduction (among professionals, technical officers, building contractors, selected traders, businessmen, craftsmen, etc)
- Promote best engineering and environmental practices in construction and development planning (open up a technical assistance counter at UC)
- Develop incentives to encourage disaster resistant construction
- Conduct a survey of old buildings with weak structures or poorly constructed buildings, located in hazard prone areas for necessary action

3. **Ensure improvement and maintenance of infrastructure systems conducive to minimizing the damage due to natural disasters**

- Formulate and declare the policy for road development within UC area to avoid road accidents during peak hours (specially during school hours)
- Relocate power lines and transformers within the commercial area to suit the road expansions proposed
- Implementation of central sewerage disposal system
- Implementation of solid waste disposal plan (promote local level composting)
- Implementation of detailed storm water drainage master plan
- Implementation of multi-storied housing project for the use of undeserved community
- Implementation of water supply schemes for Nawalapitiya UC instead of the present reservoir at Imbulpitiya the capacity of which is insufficient; locate and construct a new reservoir at Shamrock to reduce the possibility of escalation of environmental hazards influenced by landuse in the upper catchment
- Relocate the facilities wherever possible from prone areas (eg. Anuruddha Maha Vidyalaya located in landslide prone area) and implement a suitable mitigation plan for such areas

4. Establish efficient emergency management system

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<td>Prepare and implement an emergency management and response plan</td>
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<td>Demarcate the landslide affected areas/vulnerable zones through</td>
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<td>community participation</td>
<td>NUC, NBRO</td>
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<tr>
<td>Install early warning systems at Dolosbage road at the foothill of</td>
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<td>Weekandapathana rock fall area</td>
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<tr>
<td>Demarcate reliable escape routes in case of disasters. Allocate new</td>
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<td>ward names for all electoral wards for easy identification</td>
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<td>Display escape routes in areas of public importance</td>
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5. Improve public awareness on issues related to mitigation of natural disasters and public participation therein

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<tr>
<th>Action</th>
<th>Responsible Bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make the political leadership aware of the issues related to mitigation</td>
<td>SLUMDMP, NUC</td>
</tr>
<tr>
<td>aspects of natural disasters</td>
<td></td>
</tr>
<tr>
<td>Conduct training programmes for NGOs, CBOs and volunteer organizations</td>
<td>SLUMDMP, NUC</td>
</tr>
<tr>
<td>on requirements for handling emergency situations (search and rescue</td>
<td></td>
</tr>
<tr>
<td>parties, first aid groups, trauma centres etc.)</td>
<td></td>
</tr>
<tr>
<td>Conduct public awareness programmes for community (through TV, radio,</td>
<td>SLUMDMP, NUC</td>
</tr>
<tr>
<td>press announcements etc)</td>
<td></td>
</tr>
<tr>
<td>Create disaster management circles in schools</td>
<td>SLUMDMP, NIE</td>
</tr>
<tr>
<td>Promote teacher training for execution of projects and assignments</td>
<td>SLUMDMP, NIE</td>
</tr>
<tr>
<td>on disaster related aspects under new educational reforms</td>
<td></td>
</tr>
</tbody>
</table>
• Include disaster management as a discipline in the curriculum of universities, higher technical institutions
• Hold workshop for journalists in order to promote best ways of reporting

6. **Improve long term community recovery programmes, following disaster events**

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Responsible Bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepare relief and rehabilitation options and implementation strategies</td>
<td>NDMC, SSD</td>
</tr>
<tr>
<td>Identify areas for resettlement of disaster victims and vulnerable communities</td>
<td>UDA, NBRO, NUC, PC</td>
</tr>
<tr>
<td>Restrict relief assistance for areas frequently affected by disasters</td>
<td>NUC, NDMC, SSD, NUC</td>
</tr>
<tr>
<td>Convert relief assistance programmes into action programmes aimed at reduction of impact</td>
<td></td>
</tr>
</tbody>
</table>

7. **Implement public health programmes to reduce vulnerability**

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Responsible Bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular monitoring and disinfection programmes for drinking water sources after floods</td>
<td>NUC, DMO, SHS</td>
</tr>
<tr>
<td>Regular immunization programmes</td>
<td>NUC, DMO, SHS</td>
</tr>
<tr>
<td>Regular mobile clinics for testing and treatment</td>
<td>NUC, DMO, SHS</td>
</tr>
<tr>
<td>Regular vaccination programmes for animals (anti-rabies campaign)</td>
<td>NUC, DMO, SHS</td>
</tr>
<tr>
<td>Community education programmes</td>
<td>NUC, DMO, SHS</td>
</tr>
</tbody>
</table>

8. **Reduce insecurity of resident community in vulnerable areas, through financial instruments**

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Responsible Bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote property insurance for vulnerable areas</td>
<td>Insurance Companies, SLUMDMP</td>
</tr>
<tr>
<td>Strengthen the group insurance scheme implemented by Sri Lanka Insurance Corporation</td>
<td>SLIC, SLUMDMP</td>
</tr>
<tr>
<td>Natural disaster insurance policy to be a requirement of lending institutions granting loans for construction</td>
<td>Banks, SMIB, HDFC, SLUMDMP</td>
</tr>
</tbody>
</table>

9. **Strengthen institutional capacity of all agencies involved in disaster management activities**

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Responsible Bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit additional staff</td>
<td>Respective member agencies of DMSC</td>
</tr>
<tr>
<td>Organize regular training programmes for staff</td>
<td>SLUMDMP, Member agencies of DMSC</td>
</tr>
</tbody>
</table>
- Provide necessary equipment, buildings, infrastructure facilities and communication facilities
- Have regular rehearsals and drills
- Have volunteer SAR parties established and trained
- Have first aid groups established and trained

| 10. Establish and implement an emergency security system with the assistance of police, home guards and volunteer organizations | NDMC, PC Member institutions of DMSC SLUMDMP SLUMDMP |

List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>CEB</td>
<td>Ceylon Electricity Board</td>
</tr>
<tr>
<td>CHPB</td>
<td>Centre for Housing Planning and Building</td>
</tr>
<tr>
<td>DE</td>
<td>Director of Education</td>
</tr>
<tr>
<td>DMSC</td>
<td>Disaster Management Committee</td>
</tr>
<tr>
<td>DMO</td>
<td>District Medical Officer</td>
</tr>
<tr>
<td>NBRO</td>
<td>National Building Research Organization</td>
</tr>
<tr>
<td>NDMC</td>
<td>National Disaster Management Centre</td>
</tr>
<tr>
<td>NHDA</td>
<td>National Housing Development Authority</td>
</tr>
<tr>
<td>NIE</td>
<td>National Institute of Education</td>
</tr>
<tr>
<td>NUC</td>
<td>Nawalapitiya Urban Council</td>
</tr>
<tr>
<td>NWS&amp;DB</td>
<td>National Water Supply and Drainage Board</td>
</tr>
<tr>
<td>PC</td>
<td>Provincial Council</td>
</tr>
<tr>
<td>SLIC</td>
<td>Sri Lanka Insurance Corporation</td>
</tr>
<tr>
<td>SLUMDMP</td>
<td>Sri Lanka Urban Multi-Hazard Disaster Mitigation Project</td>
</tr>
<tr>
<td>SMIB</td>
<td>State Mortgage and Investment Bank</td>
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<tr>
<td>SSD</td>
<td>Social Services Department</td>
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<tr>
<td>UDA</td>
<td>Urban Development Authority</td>
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<td>UGC</td>
<td>University Grant Commission</td>
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</tbody>
</table>
A Process for Mainstreaming of DRM in the National Development Process and some Possible Areas
(Not an exhaustive list – other areas must be taken up in a phased out manner depending on funds availability)

<table>
<thead>
<tr>
<th>A</th>
<th>Mainstreaming of Disaster Risk Management in National Development Policy, Planning and Implementation</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Integration in National Development Planning</td>
</tr>
<tr>
<td>1.1</td>
<td>Mainstreaming Disaster Risk Reduction into the National Development Plan</td>
</tr>
<tr>
<td>1.2</td>
<td>Mainstreaming Disaster Risk Reduction into the National Poverty Reduction Strategy</td>
</tr>
<tr>
<td>1.3</td>
<td>Developing the National Disaster Risk Management Plan with inputs from all Relevant Ministries and Agencies</td>
</tr>
<tr>
<td>1.4</td>
<td>A Guide to Implementing the Hyogo Framework of Action</td>
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<td>1.5</td>
<td>Mainstreaming Disaster Risk Reduction into In-Country Assessments and the Multi-year Program Framework of International Development Agencies</td>
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<td>1.6</td>
<td>Mainstreaming Disaster Risk Reduction into the National Environmental Impact Assessments for New Development Projects</td>
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<tr>
<td>1.7</td>
<td>Mainstreaming Disaster Risk Reduction into the National Adaptation Plan of Action (NAPA) under the UN Framework on Convention for Climate Change</td>
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<td>1.8</td>
<td>Mainstreaming Disaster Risk Reduction into the UN Common Country Assessment and UN Development Assistance Framework Process</td>
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<td>Institutionalizing of Community-Based Disaster Risk Management in Government Policy</td>
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<tr>
<th>B</th>
<th>Mainstreaming of Disaster Risk Management into Specific Sectors</th>
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<tbody>
<tr>
<td><strong>2</strong></td>
<td>Agriculture Sector</td>
</tr>
<tr>
<td>2.1</td>
<td>Mainstreaming Disaster Risk Reduction by Promoting Programs of Contingency Crop Planning</td>
</tr>
<tr>
<td>2.2</td>
<td>Mainstreaming Disaster Risk Reduction by Promoting Programs of Crop Diversity</td>
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<tr>
<td>2.3</td>
<td>Mainstreaming Disaster Risk Reduction by Promoting Supplementary Income Generation from Off-Farm and Non-Farm Activities</td>
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<tr>
<td>2.4</td>
<td>Mainstreaming Disaster Risk Reduction by Effective Insurance and Credit Schemes to Compensate for Crop Damage and Loss to Livelihood</td>
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<tr>
<th><strong>3</strong></th>
<th>Infrastructure (Including Public Works, Road and Construction) Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Mainstreaming Disaster Risk Impact Assessments into the Construction of New Roads and Bridges</td>
</tr>
<tr>
<td>3.2</td>
<td>Mainstreaming Disaster Risk Reduction by Promoting the Use of Hazard Risks Information in Land-use Planning and Zoning Programs</td>
</tr>
<tr>
<td>3.3</td>
<td>Mainstreaming Disaster Risk Impact Assessments into the Construction of New Roads and Bridges</td>
</tr>
</tbody>
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<tr>
<th><strong>4</strong></th>
<th>Housing (Including: Urban and Rural Housing Development) Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Mainstreaming Disaster Risk Reduction by Promoting the Increased Use of Hazard-Resilient Designs in Rural Housing in Hazard-prone Areas</td>
</tr>
<tr>
<td>4.2</td>
<td>Mainstreaming Disaster Risk Reduction by Promoting the Utilization of National Building Codes</td>
</tr>
<tr>
<td>4.3</td>
<td>Mainstreaming Disaster Risk Reduction by Promoting the Compliance and Enforcement of Local Building Laws in Urban Hazard-Prone Areas</td>
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<tr>
<td></td>
<td>Financial Services Sector</td>
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<tr>
<td>5</td>
<td>Mainstreaming Disaster Risk Reduction by Promoting the Flexible Repayments into Micro-Financing Schemes</td>
</tr>
<tr>
<td></td>
<td>Mainstreaming Disaster Risk Reduction by Encouraging Financial Services Sectors and Local Capital Markets to Finance Disaster Risk Reduction Measures</td>
</tr>
<tr>
<td></td>
<td><strong>Education Sector</strong></td>
</tr>
<tr>
<td>6</td>
<td>Mainstreaming Disaster Risk Concepts into the School Curriculum</td>
</tr>
<tr>
<td></td>
<td>Reducing Disaster Risks by Mainstreaming Higher Standards of Hazard Resilience into the Construction of New Schools</td>
</tr>
<tr>
<td></td>
<td>Reducing Disaster Impacts by Mainstreaming Disaster Contingency Features into Schools for use as Emergency Shelters</td>
</tr>
<tr>
<td></td>
<td><strong>Health Sector</strong></td>
</tr>
<tr>
<td>7</td>
<td>Mainstreaming Disaster Risk Reduction through the Analysis of External and Internal Vulnerabilities of Hospitals in Hazard-prone areas</td>
</tr>
<tr>
<td></td>
<td>Mainstreaming Disaster Risk Reduction by Development and Implementation of Disaster Preparedness Plans for Hospitals and Health Facilities</td>
</tr>
<tr>
<td></td>
<td>Reducing Disaster Risks by Mainstreaming Higher Standards of Hazard Resilience into the Construction of New Schools</td>
</tr>
</tbody>
</table>
Annex 8.1-I

Members of DMCs at national, provincial, district and divisional levels

Members of National Disaster Management Committee

- Secretary of Ministry responsible for the subject of Disaster Risk Management - Chairman
- Director, Proposed NDMA
- Deputy Director (Emergency Operations), NDMA – (Convener and Coordinator of Committee)
- Other Deputy Directors
- Highest level representatives of following agencies:
  - Irrigation Department
  - National Building Research Organization
  - Ceylon Electricity Board
  - Mahaweli Authority of Sri Lanka
  - Sri Lanka Army
  - Sri Lanka Air Force
  - Sri Lanka Telecom
  - Education Department
  - Health Department
  - Agrarian Services Department
  - National Housing Development Authority
  - National Physical Planning Department
  - Meteorology Department
  - Geological Survey and Mines Bureau
  - National Aquatic Resources Agency
  - Police Department
  - Sri Lanka Navy
  - Road Development Authority
  - National Water Supply & Drainage Board
  - Selected National NGOs
  - Agriculture Department
  - Land Use Policy Planning
  - Urban Development Authority
  - Central Environment Authority
- Chief Secretaries and District Secretaries will be members of the committee of which relevant ones will be convened for any given meeting depending on the objective of the meeting.

Constitution of the Provincial Disaster Management Committee (DDMC)

- Chief minister - Chairman
- Chief Secretary
- Deputy Chief Secretary – (Convener and Coordinator, of Provincial DMC)
- Other Deputy Chief Secretaries
- Local Authority Mayors / Chairmen
- Provincial level representatives of all national and provincial agencies as in above national committee.

Constitution of the District Disaster Management Committee (DDMC)

- District Secretary - Chairman
- Additional District Secretary
- Assistant District Secretary – (Convener and Coordinator, District DMC)
- Divisional Secretaries
- District level representatives of all national and provincial agencies as in above national committee.

Constitution of the Divisional Disaster Management Committee (Div.DMC)

- District Secretary - Chairman
- Additional District Secretary
- Assistant District Secretary – (Convener and Coordinator, District DMC)
- Divisional Secretaries
- District / divisional / local level representatives as appropriate of all national and provincial agencies as in above national committee.

Constitution of the Local Authority Disaster Management Committee (DDMC)

- LA Mayor / Chairman – Chairman of DMC
- Commissioner / Secretary
- Deputy Commissioner / Asst. Secretary – (Convener and Coordinator, of LA - DMC)
- LA section heads (Technical, Finance, Environment, Services etc.)
- District / divisional / local representatives of all national and provincial agencies as in above national committee.
Conformity of departmental, district, divisional, provincial and local level plans to the national level plans

National Level Preparedness Plan

- Ministries - plans
- Provincial Council Level plans
- District plans
- Divisional plans
- Grama Niladhari plans
- Village level plans
- Civil & Armed Forces - Plans and Operational Procedures
- All private establishments - Preparedness Plans

R&D and S&T Agencies (Early warning & Risk Assessment) - Plans and Operational Procedures

National Departments - Plans and Operational Procedures

Govt. educational establishments - Preparedness Plans

Local Authority Department - Plans and Operational Procedures

Provincial Department - Plans and Operational Procedures

Village level plans
Risks reduction and disaster management in Sri Lanka:

Local level disaster preparedness and emergency response

Report Prepared
by
Jean- Pierre Massue
European Academy of Sciences and Arts,
MISSION TO SRI LANKA
Colombo 4th May 2005
Preamble

RISKS AND SOCIETIES

Current situation

At the beginning of the 21st century, there have been a number of profound changes to the causes of risk and emergency situations which have significantly increased in frequency. These include:

1. New threats
   - conventional terrorism;
   - bio-terrorism;
   - nuclear terrorism, particularly linked to the deliberate release of radioactive substances;
   - cyber-terrorism;
   - the use of violence as a tool for specific ends;
   - The emergence of new hard drugs.

2. Increased rate of global climate change

   Climate change leading to global warming, linked to the greenhouse effect and the destruction of the ozone layer, is resulting in more frequent, more severe flooding, heat waves, droughts, storms, hurricanes, etc.

3. Development of information and communication societies

   The development of new information and communication technologies, which are not always put to sufficient use, is making it easier to mobilize populations and to reach a wider audience more quickly.

   The advantage of this is that it is technically possible to inform a large number of people about what they should do in an emergency situation.

   On the other hand, as a result of the possible distortion of the information transmitted, whether:

   - for the sake of sensationalism;
   - through a deliberate attempt to unsettle the population;
   - through ignorance; or
   - in cases of “non-information”,

   Situations can easily be misinterpreted, creating public anxiety or even panic.

4. The extent of the “domino” effect in crisis situations

   As a result of the interrelationship and interdependence between vital infrastructures in our societies, the disruption of one component of these networks will have an impact on another component, and so on. For example, natural hazards can create technological hazards, which in turn can give rise to social hazards, etc. One has only to recall the impact of the tsunamis of the 26 December 2004 affecting Sri Lanka and others countries of the South-East Asia
5. Increase in the cost of compensation

This increase affects, for example, projected State compensation budgets and the cost of insurance and reinsurance, which makes it hard for States to allocate more funding to prevention policies.

6. Emergence of new syndromes and the search for their causes

This includes, for example, SARS, AIDS and the spread of zoonotic diseases such as avian influenza (bird flu) and “mad cow disease”.

These new developments and trends have given rise to the concept of “global risk management”, based on the following three fundamental principles:

i. Consideration of all types of hazards and risks.

ii. The involvement and participation of all parties involved in the management of risk and emergency situations: local, regional, national, international administrative bodies, the private and voluntary sectors, citizens and special need groups.

iii. The concept of a disaster life cycle, the various phases of which must be taken into account in the management of risk and emergency situations:
- risk research and education
- prevention
- preparation
- warning
- Crises management : intervention
- Post-crisis analysis
- rehabilitation.

Risks and emergency situation management in Sri Lanka.

Sri Lanka is a tropical Island in the southern of the Indian sub-continent wit a population of 19.8 million of inhabitants 30% urban and 70% rural.

Sri Lanka is affected by 3 major types of risks: Natural, technological, socio-political. Most of the major natural risks are due to extreme weather conditions.

Natural risks : floods, landslides, cyclones, droughts, wind storms coastal erosion, earthquakes ,tsunamis.

Man made risks : industrial hazards mainly linked with pollution effects, sand and gem mining, deforestation and different types of pollution coming from abroad ,ethnic conflicts ,social and political violence.

In 1997 the following were set up with the help of UNDP :
- a National Disaster Management Plan,
- a draft Disaster Management Act,
- the Landslides Studies and Services Division at the National Building Research Organization (NBRO) in 1989, which is now the key actor in the landslide hazard mapping, evacuation and resettlement of communities in landslide-affected areas.

The May 2003 floods and landslides brought renewed attention to the fact that natural disasters, unless appropriately tackled, could severely erode Sri Lanka's future development. As underlined by Sita Rajapakse Secretary, Minister of Women Empowerment and Social Welfare « The absence of a disaster preparedness and response plan and mechanisms was felt to be one of the reasons for the severity of the impact »
With the help of UNDP, National Disaster Plan was launched by the National Disaster Management Center. It is interesting to mention that the « District Disaster Preparedness and response plan for Hambantota District » was published supported by the Ministry of Women Empowerment and Social Welfare and UNDP. The plan is based on:

- Risk/hazard analysis,
- Vulnerability analysis,
- Resources and capacity analysis,
- Authority for implementation of the plan and institutional arrangements,
- Basic district Disaster Preparedness Plan: Organization, responsibilities, Role of: UN system, Non Governmental Organization, Media.
- Contingency Plan for Prevailing hazards,
- Standard Operation Procedure for Line Departments.

Sri Lanka faced exceptionally low rainfall from September to December 2003, which led to severe crop failure and drought conditions in the districts of Hambantota, Moneragala, Kurunegala, Puttalam, Anuradhapura, and Mannar.

It is also interesting to mention the organization of June to July 2004 of a workshop on « Building Disaster Inventory in Sri Lanka, at the initiative of the National Disaster Management Center and UNDP in the conclusions it was underlined the importance of the setting up of a National Disaster Inventory in Sri Lanka. The following steps were planned:

- Launching of an email Information Group,
- Formulation of a Plan for building the historical Disaster database,
- Revisiting the existing Disaster management information system.

It was very beneficial for me to discuss with the Director of the National Disaster Management Center of the Ministry of Social Welfare, M. N.D. Hettiarachchi.

On the 26th December 2004 at 6.59 am a major earthquake took place in the sea off the Sumatra cost. Two hours and fifty four minutes later at 9.53 am the tsunamis touched the Sri Lanka Coasts.

75% of the 1.585 km coastline of the Sri Lanka has been inundated leaving: 31,147: dead; 23,059: injured; 4,115: missing. The Government of Sri Lanka declared the state of emergency, asking for international assistance and mobilizing its own resources.

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17 Hambantota District Disaster Preparedness and Response Plan published by the Ministry of Women Empowerment and Social Welfare.
Following Sri Lanka Governmental sources, the preliminary Estimates of losses and Financing needs in millions of dollars are:

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<thead>
<tr>
<th></th>
<th>Financing</th>
<th>Needs</th>
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<tbody>
<tr>
<td></td>
<td>Assets</td>
<td>Losses</td>
<td>Short term</td>
</tr>
<tr>
<td>Housing</td>
<td>306-341</td>
<td>50</td>
<td>387-437</td>
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<tr>
<td>Water and Sanitation</td>
<td>42</td>
<td>64</td>
<td>53</td>
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<td>Railways</td>
<td>15</td>
<td>40</td>
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<td>Education</td>
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<tr>
<td>Health</td>
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<td>Agriculture</td>
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<tr>
<td>Fisheries</td>
<td>97</td>
<td>69</td>
<td>49</td>
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<tr>
<td>Tourism</td>
<td>250</td>
<td>130</td>
<td>–</td>
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<tr>
<td>Power</td>
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<td>27</td>
<td>40-50</td>
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<tr>
<td>Roads</td>
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<td>25</td>
<td>175</td>
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<td>Environment</td>
<td>10</td>
<td>6</td>
<td>12</td>
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<tr>
<td>Social welfare</td>
<td>-</td>
<td>30</td>
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</table>
The response:

Three levels of response have been taken immediately after the tsunami:

1. **The National Response**

The local and Communities Authorities responded without delay to fit with the immediate and urgent needs of the affected citizens. Her Excellency the President Chandrika Ban Kumaratunga addressed the Nation on December 27 promising full support to the tsunami victims. At the same time the Government released 93 Million s of Sri Lanka Rupees affected to release operations. Under the President's Secretariat was created the Center for National Operations (CNO). It was established on the 29th of December 2004, less than 24 hours after Her Excellency the President directed to set up such an operation to coordinate the rescue and relief operations in a cohesive and efficient manner.

The mandate of CNO was to monitor and coordinate all initiatives taken by government ministries, agencies and other institutions relating to post-tsunami relief efforts. The purpose of CNO was to ensure that each effort fits into the overall objectives of the government relief programme, prevent the duplication of tasks and maximize the efficient utilization of resources.

The top most priority of CNO was to ensure that relief measures were directed to the affected people by identifying their needs and matching them with the available resources, thereby maximizing the utilization of relief measures. CNO was an organization that merely filled a void until the state machinery increased its capacity to meet this unexpected challenge.

This organization was born under the most trying conditions grew in strength utilizing the energy of an untiring team effort of volunteers who contributed from morning until night towards its success. However, the volunteers who were released from various organizations could not continue their services to CNO indefinitely. Various line ministries and also the task forces that were setup during the one month operational period of CNO were geared to takeover the responsibilities that CNO undertook.

Thus it was time for the volunteers to take a break and for the government institutions to step in for the volunteers. The Task force for Relief [TAFOR] is geared to fill this vacuum.

Thus all functions pertaining to relief operations are now transferred to the said task force. All inquiries, complaints should be directed to Hot Line maintained by the Commissioner General of Essential Services (CGES).

In the North East the Government has been coordinating recovers and relief operations with LTTE.

During my stay in Sri Lanka I visited the District Secretary's Office in Hambantota and discussed with M. Mahinda Manawadu Additional District secretary and I was impressed by the serious of the actions taken: for example concerning the construction of shelters units in the Division of Hambantota 158 units where required and 154 has been completed and now it is planned to built within six months 201 permanent houses for the town of Hambantota.

2. **Civil Society Response**

Many NGO's and community Groups provided health supplies, foods, water and other necessities to thousands of families throughout the Sri Lanka. In particular the red Cross Society of Sri Lanka/ICRC is playing in important role as well as the Sarvodaya Foundation planning to reconstruct 20,000 houses. Nevertheless some problems has occurred due to the lack of coordination.
between the NGO'S.an example was given : a boy receiving in total, 74 schoolbags from different NGO'S...

3- **International Community Response**

OCHA the UN Office for coordination and Humanitarian Assistance has deployed the UN Development and Assessment Coordination Team (UNDAC) to provide assistance for the management of disaster response. UNDP was providing assistance to the Government to coordinate relief activities and advised the Government in the setting up of CNO. It was very interesting during my stay in Sri Lanka to meet and discussed with an UNDP Officer M. Ramraj Narasimhan who gave me a lot of interesting information and figures.

IOM the International Organization for Migration gave a very significative contribution on temporary shelters construction, transitional accommodations, livelihood development and psychological and social activities. I visited the IOM Office in the city of Matara and met the Project Officer M. Priyantha Kulathunga the exchange of view was very fruitful for me and I have to pay tribute to the work done: the livelihood project, for example carpentry identified : 133 complete or ongoing : 78, Masonry : identified : 133 complete or ongoing : 28, sewing identified : 55 complete : 55.

The response of the International community was efficient as by January 2005 contribution in cash was around 22 millions of US dollars.

**10 Preliminary lessons learned from the Indian Ocean tsunami of the 26 December 2004.**

The Secretariat of the International Strategy for Disaster Reduction notes 10 preliminary lessons learned from the tsunami:

1- We are all vulnerable to natural disaster,

2- careful coastal land-use planning is essential to minimize the risk,

3- Public awareness and education are essential to protecting people and property,

4- Early warning saves lives,

5- Countries can work together ahead of time, as well as when disasters strikes,

6- reducing risks depends on close interaction between the scientific and technical community, Public Authorities and Community-based Organizations,

7- developing and respecting appropriate buildings codes can minimize exposure to risks,

8- Humanitarian aid needs to invest more in disaster prevention in addition to immediate relief needs,

9- Concrete actions and good coordination is vital to ensure people’s safety from disasters,

10- Telecommunications and the media have a crucial role to play in disaster risk reduction.
I Introduction

A coherent policy for disaster reduction is based on the following different steps:

1- Knowledge of risk ,and mapping of data (G.I.S.)

2- Risk prevention,

3- Early warning,

4- Crisis management,

5- Debriefing,

6- Rehabilitation.

Different fundamental principles have to be taken into account to insure an efficient implementation of such a policy namely, the importance of:

- A- The legal basis and institutional capacity building, based on a one hand on an interministerial approach and on the other one on a decentralized policy giving the prime responsibility to local authorities and moving to District and national one as a function of the level of the disaster,

- B education and research,

- C Health, nutritional and sanitary facilities ,

- D multi- hazards approach and measures to reduce risk vulnerability,

- E decentralized emergency preparedness,

- F mechanisms for risk transfer and financing,

- G International cooperation..

Decision making process.

Mechanisms has to be set up to help the Authorities at national, district and local level for decision making in risk management and management of emergency situations in providing them at the right moment ,under the right format the needed structured knowledge, necessary and sufficient to take an appropriate decision\textsuperscript{18}.

Diagram of a system for assisting decision-making:

- “Decision-making” level (top), liaison with administrative authorities, operational departments and citizens
- “Mediation” level (centre): operational mediation room
- “Knowledge” level (down) with three layers: data, processing, fusion.

When scientific uncertainty precludes a full assessment of the risk and when the Decision-makers consider that the chosen level of environmental protection or of human, animal and plant health may be jeopardy, application of the “precautionary Principle” is to be part of risk management. The precautionary Principle is relevant only in the event of a potential risk, even if this risk cannot be fully demonstrated or quantified or its effects determined because of the insufficiency or inclusive nature of the scientific data. A number of recent events has shown that public opinion is becoming increasingly aware of the potential risks to which the population or their environment are potentially exposed ...Enormous advances in communication technology have fostered this growing sensitivity to the emergence of new risks , before scientific research has been able to fully illuminate the problems. Decision-makers have to take account of the fears generated by these perceptions and to put in place preventive measures to eliminate the risk or at least reduce it to the minimum acceptable level. The Decision-Makers are constantly faced with the dilemma of balancing the freedoms and rights of individuals, industry and organisations with the need to reduce or eliminate the risk of adverse effects to the environment or to health.
The measures adopted presuppose examination of the benefits and costs of action and lack of action. This examination should include an economic cost/benefit analysis when this is appropriate and feasible. However, other analysis methods, such as those concerning efficacy and the socio-economic impact of the various options, may also be relevant. Besides the Decision-Makers may in certain circumstances, be guided by non-economic considerations such as the protection of health.

At this level it is interesting to compare the United States and European approach concerning the use of the Precautionary principle. In a paper :“Comparing precaution in the United States and Europe”19 The authors indicate that: “Conventional wisdom sees the European union endorsing the Precautionary Principle and proactively regulating uncertain risks ,while the United States opposes the Precautionary Principle and waits for evidence of harm before regulating . S.G. Richter 20 considers that “the precautionary principle is an antidote to industrialisation, globalisation, and Americanisation.” J. Redwood 21 see a statistic, technophobic, protectionist Europe trying to rise to challenge a market-based, scientific, entrepreneurial America. To these groups, the Precautionary Principle is an obstacle to Science, trade and progress.

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In our proposals we will consider a multi risk approach indeed having in mind the post tsunami problems. We will take a 2 dimensions matricidal approach:

1- The different steps of disaster reduction,
2- The « fundamental principles » defined behind

<table>
<thead>
<tr>
<th>Legal Basis: Inter-ministerial approach, Decentralized Policy,</th>
<th>knowledge</th>
<th>prevention</th>
<th>Early warning</th>
<th>Crisis management</th>
<th>Debriefing</th>
<th>Rehabilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

| Research and Education and Training                           | 2a,b       | 2a,b       | 2a,b          | 2a,b             | 2a,b       | 2a,b          |
|                                                              | 3 a,b,c,d   | 3 a,b,c,d   | 3 a,b,c,d     | 3 a,b,c,d        | 3 a,b,c,d   | 3 a,b,c,d     |

| Multi hazards approach                                        | 4          | 4          | 4             | 4                | 4          | 4             |
|                                                              |            |            |               |                  |            |               |

| Decentralized emergency preparedness                          | 2a         | 2a         | 2a            | 2a               | 2a         | 2a            |
|                                                              | 3abcd       | 3abcd       | 3abcd          | 3abcd           | 3abcd       | 3abcd         |

| Health, nutritional, Sanitary Facilities                      | 3abc       | 3abc       | 3abc          | 3abc            | 3abc       | 3abc          |

| Information and Communication                                 | 5 a,b      | 5a,b       | 5a,b          | 5a,b            | 5a,b       | 5 a,b         |

| International Cooperation                                      | 6          | 6          | 6             | 6                | 6          | 6             |
**Proposal 1 : Legal basis**

Proposal 1 is a very simple one it consist in congratulating the Sri Lanka Authorities for the content of the Draft Bill to provide for the establishment of the National Council for Disaster Management, the Disaster management Centre; the appointment of Advisory Committees; the preparation of Disaster Management Plans; the declaration of a state of disaster; the award of compensation.

Indeed this draft Bill feets perfectly with the fundamental principles presented behind in particular:

- the interministerial approach,
- a decentralized emergency preparedness and response responsibility, (like in Australia, many European Countries etc.)
- mechanisms for risk transfer and financing,
- the multi-hazards approach.

It could be interesting to consider in the draft Bill:

1. Mechanisms for the control of the application of the Law for example in creating « Inspectors for environmental security »,
2. To define more precisely the articulation of responsibility between the Division, District and national level for risk reduction and emergency management based on the principle of subsidiary i.e. transfer of responsibility from the Division level to the District level and after to the national when the means available at the lower level do not correspond to the needs.
3. To give the responsibility to the Council for Disaster Management to propose useful international cooperation concerning risk reduction and emergency situations management in particular with countries of the region envisaging to create a regional intergovernmental Agreement on Major hazards.

**Proposal 2 (Research)**

2-a Risk analysis:

Any policy or programme concerning risk prevention, management of emergency situations, or rehabilitation process is based on an risk analysis. Consequently it will be be important as it is already planned to perform systematic risk analysis concerning natural hazards and man made disasters.

Such analysis will constitute a natural risks and man made disasters data Bank and will be the basis of a « Geographical Information System » G.I.S., allowing correlation between a 3D map of the country with the different layers representing the risks.

This National GIS will be put at the disposal of the National Disaster management Center created by the new Bill as well as to each District and Municipalities Authorities.

Such GIS is a must to build a land use policy taking into account risk prevention measures in order to decrease the vulnerability toward the different type of risks.

**Proposal 2-a : Data-base/GIS**

To built the 3D mapping of the Country using space technology, a cooperation can be set up with the European Space Agency (Paris) or India (Ministry of Home Affairs) or Russia with the Institute for Disaster Reduction in Moscow.
For the specific layers concerning each type of risks must be the responsibility of specialised Departments of Universities of Sri Lanka or Department of specialised Ministries. Nevertheless a cooperation can be organized with Specialized European Centers of the Council of Europe EUR-OPA Major hazards Agreement as it was done in cooperation with IOM in the Kosovo (2000-2002).

As cultural tourism is playing an important role for the economy of the country and was severely damaged by the 26 December tsunamis it will be important to create a special layer of the GIS about the cultural heritage of the Sri Lanka: here a cooperation could be set up with the European network PACT (Sciences and techniques for the cultural Heritage and the European University Center for the Cultural heritage of Ravello (Italy)

In this context IOM is already working with the Faculty of information Technology of the University of Moratuwa to create a data Base on disaster response.

**2-B Models and simulators.**

In order to help the Authorities at National, Province, District and Division level it will be important to be able to use tools able to simulate the development of an emergency situation, helping to decide on the appropriate measures to prevent disastrous situations. For example to have models and simulators available concerning: landslides, floods, forest fires.

**Proposal 2-B : Models and simulators**

Such models are available and specialized Departments of Sri Lanka Universities can take in charge such developments. If necessary cooperation can be proposed with Universities or Civil Protections from Europe, Japan etc ...for example the Ecole of Valabre in France has created a simulator for forest fires which could be used for training and operational purposes.

**Proposal 3 Education and training**

A national policy for risk management and overcome of emergency situations is based on regulations and implies:

3- Operational actors namely a « civil protection » very often based on volunteers and organized following the same scheme at Division, District, Province level and linked to a central body belonging to the Ministry of Interior for example.

3- Inspectors in charge of the control of the implementation of the regulations, in a first step inspectors in charge of « Environmental Security »can be trained.

3- Risk prevention awareness of the citizens and in particular the children at school level. Indeed “Schoolchildren and their teachers are among the groups most receptive to disaster preparation education and training” 22

- Children represent the society of the future
- Children are more curious and less conditioned than adults and therefore more receptive to risk prevention messages
- Children are the best ‘transmitters’ of information to their families and therefore help to disseminate risk prevention messages
- From another point of view, children are most vulnerable to risk.

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22 Risk Prevention at school Nora Belayachi,Patrick Laclemence Jean-Pierre Massué Concil of Europe AP/CAT (2003) 11 rv
In a word, children are the best channel for the establishment of a risk culture.

Risk prevention should above all be learned at school, and schools should be as invulnerable as possible to the various types of risks they may face. Two major themes will be dealt with:

I. Risk culture:
   - Educating school-age children to the knowledge of risks
   - Making them aware of risk prevention
   - Teaching them how to behave in an emergency situation

II. Making schools and public places frequented by school-age children safe.

RISK CULTURE

In a school environment, risk culture comprises on the whole two types of activity:

   General education concerning the knowledge of risks
   Knowledge of the risks specific to the child’s own environment.

General education for children on the knowledge and prevention of risks and how to behave in an emergency situation.

General education on the knowledge and prevention of risks should be undertaken at two levels:

   General concepts which should form part of the “civic education” teaching programme, comprising, inter alia, the principles which presuppose sustainable development, human rights, solidarity, European construction, the knowledge of risks and their prevention. See appendix 1

   Taking into account the risk concept in specialized teaching programmes: in literature, mathematics, natural sciences, physics, chemistry, history, geography, etc…

The knowledge of risks specific to schools placed in its context

On the basis of the identification of risks specific to the school frequented by a child, sessions on raising awareness to risk prevention and on how to behave in an emergency situation should be organized in accordance with the safety plan drawn up by the school in question. See appendix 2

Proposal 3-a: CIVIL PROTECTION : School of Civil Protection.

It is proposed to create a structure of Civil Protection in Sri Lanka based on Volunteers coming from the Civil Society, the Administration, ex-combatant etc….In a first step the setting up of:

   - a central structure for Civil Protection belonging to a national Authorities: National Council for Disaster Management or Ministry of Interior.
   - a pilot structure at Provincial or District level for example: the Southern Region.
As it was done at the request of the United Nations in 2000 asking for the creation of a Civil Protection in the Kosovo, the project was implemented in the framework of a cooperation between IOM and Euro-Mediterranean Centers of the EUR-OPA Major Hazards Agreement. The same pattern could be proposed in this case. See in appendix 3 the content of the course to train the teachers of the proposed School of Civil Protection.

Proposal 3-b: Inspectors in charge of the control of the application of the Law.

In a first step it is proposed to create a Department of « Inspectors for Environmental Security ». Many countries are at the moment creating such group of Civil Servant in particular taking into account that from the first of January 2005 we are entering in the UN Decade on sustainable Development coordinated by UNESCO. Such training was organized last year in Morocco and is planned in the Caucasus countries in particular Georgia. Using the content of these programmes an adaptation of the training with a duration of one month can be proposed in the Sri Lanka for the benefit of a Province in a pilot project. Contact can be established for this purpose with the European Center REMIFOR in Draguignan and the National School of Civil Protection in France (ENSOSP).

Proposal 3-c: Training of Local and Regional Authorities on risk Management.

A cooperation can be organized with the Colombo University or Kandy University with the International School on sciences of Information processing in Cergy/Paris France. The training programme can be organized two ways:
- A Master duration one year,
- B - a permanent education programme for civil Servant and local and regional Authorities split over one year: 3-4 days per month.

Proposal 3-d: Risk awareness education for the citizens, starting with children at school level.

It is proposed to organize in a Province for example the South Province a training programme of one week for a group of teachers who will became future trainers for teachers in the Province on:
- the content of risk prevention awareness and behaviour in case of emergency situations to be transmitted to the children,
- Ways and means for security and safety of school buildings toward the different types of risks. Duration one week a pilot programme could be organized by Mrs N. Bela.yachi Programme Advisor to the FER (European Federation of Scientific Networks)

4- Reducing vulnerability

Vulnerability is defined as the level of predicted impact of a threat on a particular element in a risk situation. The main causes of a society’s vulnerability may be described as follows:

1. Basic data: poverty, ideologies, age, gender, disease, economic and political situation, civil disorder.
2. Lack of dynamic pressure: poorly functioning institutions, lack of education, inadequate information.
4. Instability: unstable buildings, housing in an advanced state of disrepair.

There are therefore two different kinds of vulnerability:

A. Internal vulnerability, which represents a feeling of insecurity and inability to respond correctly;

B. External vulnerability, which is physical exposure to risks.

Reducing vulnerability is a priority because it is clear that the increasing death toll and damage levels are due not so much to the number of disasters as to the growing vulnerability of our societies.

Education, training and information are the main tools for reducing internal vulnerability.

Creating a coherent regional planning policy and constructing more resistant buildings and structures are effective ways of reducing external vulnerability.

**Proposal 4: reducing vulnerability of building.**

Proposal to initiate a pilot project on reduction of vulnerability of building: internal land external one in focusing on Schools buildings and Hospital.

**Information and communication**

Information and communication are key issues in risk prevention, Early warning and management of crisis. No information or wrong information represent «a crisis in the crisis ». Unfortunately very often during crisis period the telecommunication systems are saturated or destroyed, it is important to envisage to have dedicated systems of telecommunication for the management of emergency situations, space telecommunications representing one solution.

**Proposal 6-a :information and communication linked with early warning system.**

In liaison with the building of a regional Early Warning System it is obvious that a dedicated telecommunication system has to be set up linkink the warning system with the national and local Authorities concerned. The system has to be reliable, secure, allowing broadband. Space telecommunication system could be a solution.

**Proposal 6-b :Information and telecommunication for children used for risk prevention awareness and preparedness for emergency situations :**

The « School Net Project »

As already mention :

- Children represent the society of the future
- Children are more curious and less conditioned than adults and therefore more receptive to risk prevention messages
- Children are the best ‘transmitters’ of information to their families and therefore help to disseminate risk prevention messages
- From another point of view, children are most vulnerable to risk.

We propose as we have done in other countries to create networks of school « Cyber-base »: permanent one for schools in town, mobile one for schools in rural and mountains areas.
At Each « Cyber-base » will be associated one or two part time animators the aims of the systems will be:
1- to -train children to use internet system for
   - the chat functions,
   - to be able to built a website,
   - to use the network to built radio and ideally Internet TV on their own,
2-to use such « School Net project » as a tool for risk prevention awareness issues,
3-in addition the children will have the possibilities to use the school-net project to build others types of radio or TV programmes: cultural, music, theater etc...

On the other hand such « School Net project » could be used to send information in case of emergency.

Such project could be launched under the auspices of IOM in liaison with the European Center REMIFOR and the Caisse des Dépots et Consignation from France (to be confirmed).

Conclusions

Different proposals has been presented feeling to the priorities. We suggest in a first step to select in a starting run, only a first « bunch » to be implemented in general at local level:

<table>
<thead>
<tr>
<th>Legal aspects</th>
<th>National level</th>
<th>Province level</th>
<th>District level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal Aspects</td>
<td>International cooperation: Regional intergovernmental Agreement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research</td>
<td>Data-Base :GIS</td>
<td>GIS</td>
<td>GIS</td>
</tr>
<tr>
<td>Research</td>
<td></td>
<td>Simulator/ models</td>
<td>Simulator</td>
</tr>
<tr>
<td>Education</td>
<td>Civil Protection Structure : Volunteers School of Civil Protection</td>
<td>Civil Protection Structure : Volunteers School of Civil Protection</td>
<td>Civil Protection Structure : Volunteers School of Civil Protection</td>
</tr>
<tr>
<td>Education</td>
<td>Master or training local and regional Authorities on risk management.</td>
<td>Master or training local and regional Authorities on risk management.</td>
<td>Master or training local and regional Authorities on risk management.</td>
</tr>
<tr>
<td>Education</td>
<td>Risk prevention at school level : training of trainers</td>
<td>The « School Net Project »</td>
<td></td>
</tr>
</tbody>
</table>
At the end of this report I would like to present my deepest thanks to the Director General of IOM M. Brunson McKinley who gave me before my departure for this mission, enlightened information and advices. I would like also to extend my gratitude to my old friends from IOM namely Pascuale Lupoli and Marco Boasso who provide me with advices and help in the present mission.

In Sri Lanka my work has been greatly facilitated by two IOM Officers Jeff McMurdo and Akira Akazawa, they will find here the expression of my thanks. Last but not least I would like to present my thanks to my IOM Driver native from Sri Lanka M. Kodilcarage Don Rupasiri who facilitated with efficiency my day to day light opening for me the doors of his beautiful country.
National Level Response Structure on Occurrence of a Disaster

- National DOC / EOC of NCDM
  - Media - TV, Radio, Press
  - Social Services Dept.

- International Aid Agencies, National Aid Agencies
  - DOC/EOC of DMC

- Divisional Disaster Managers (Divisional Secretaries) - Divisional Control Rooms / DOC
  - Provincial Disaster Managers (Chief Secretaries) - Provincial Control Room / EOC / DOC

- District Disaster Managers (Divisional Secretaries) - Divisional Control Rooms / DOC / EOC
  - Local Authorities
  - LA Site Operations Centres (SOC)
  - Divisional Disaster Managers (Divisional Secretaries) - Divisional Control Rooms / EOC / DOC
  - Provincial & District and Site Operations Centres (SOC)

- Research & Professional Agencies - NBRO, Irrigation Dept., Met. Dept., GSMB, Police etc.

- Departmental Operations Centres - Police, Armed Forces, DMO, Hospital, Irrigation Dept., NWS&DB, CEB, RDA, PRDA, LAs, Telecom etc.
Annex 8.4-11

Provincial Level Response Structure on Occurrence of a Disaster

- International Aid Agencies, National Aid Agencies
  - DOC/EOC of DMC
- Social Services Dept.
  - Divisional Disaster Managers (Divisional Secretaries)
  - Divisional Control Rooms / EOC / DOC
- National DOC / EOC of NCDM
- Media - TV, Radio, Press
- Provincial & District and Site Operations Centres (SOC)
- Research & Professional Agencies - NBRO, Irrigation Dept., Met. Dept., GSMB, Police etc.
- Local Authorities
- District Disaster Managers (Divisional Secretaries) - Divisional Control Rooms / DOC / EOC
- Provincial Disaster Managers (Chief Secretaries) - Provincial Control Room / EOC / DOC
- Provincial Dept. Operations Centres - PRDA etc.
- Media - TV, Radio, Press
- Departmental Operations Centres - Police, Armed Forces, DMO, Hospital, Irrigation Dept., NWS&DB, CEB, RDA, PRDA, LAs, Telecom etc.
- LA Site Operations Centres (SOC)
- Provincial & District and Site Operations Centres (SOC)
District Level Response Structure on Occurrence of a Disaster

National DOC / EOC of NCDM

International Aid Agencies, National Aid Agencies

Provincial Disaster Managers (Chief Secretaries) - Provincial Control Room / EOC

Local Authorities to be alert

Research & Professional Agencies - NBRO, Irrigation Dept., Met. Dept., GSMB, Police etc.

DOC/EOC of DMC

Media - TV, Radio, Press

Social Services Dept.

Departmental Operations Centres - Police, Armed Forces, DMO, Hospital, Irrigation Dept., NWS&DB, CEB, RDA, PRDA, LAs, Telecom etc.

Provincial & District and Site Operations Centres (SOC)

District Disaster Managers (Divisional Secretaries) - Divisional Control Rooms / DOC / EOC

Divisional Disaster Managers (Divisional Secretaries) - Divisional Control Rooms / EOC / DOC

Provincial Dept. Operations Centres - PRDA etc.
Annex 8.4-IV

**District level example of Activation of EOC and Vigilance**

The District Secretary is responsible for notification within the district in case of emergencies occurring within its boundaries. The EOB and DDMC will be responsible for the following:

- The flow of emergency information within the District Secretariat, Divisional Secretariat and among other relevant organizations
- Coordination between divisional secretariats and other responding agencies
- The rapid mobilization, deployment and tracking of resources

**Steps of Activation of EOC**

<table>
<thead>
<tr>
<th>Step 1:</th>
<th>On declaration of an emergency situation in the district, the EOC and relevant SOCs are opened. National level department officers manage field operations with their resources from Departmental Operation Centres (DOCs), and coordinate with the Divisional Secretaries, Chairmen and Secretaries of the local authorities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2:</td>
<td>Departmental Operation Centres (DOCs) send damage assessments and coordinate their respective interdepartmental and interagency resource requests through the EOC and their line ministries. District EOC must coordinate these.</td>
</tr>
<tr>
<td>Step 3:</td>
<td>If the District Secretariat cannot meet the required resources, the EOC must work to secure the needed resources from the National Government through the Natural Disaster Management Centre (NDMC).</td>
</tr>
</tbody>
</table>

**Early Warning Dissemination - Preparedness Responsibilities**

<table>
<thead>
<tr>
<th>PREPAREDNESS</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>To transmit information on natural calamities to District Control Room.</td>
<td>Early Warning sub committee</td>
</tr>
<tr>
<td>Coordination with relevant divisional EOCs</td>
<td>Early Warning sub committee</td>
</tr>
<tr>
<td>Assignment of duties to the District &amp; divisional Level officials</td>
<td>District Secretary</td>
</tr>
<tr>
<td>Arrangement of vehicles and public announcement system for warning dissemination</td>
<td>District Secretary</td>
</tr>
<tr>
<td>To warn people about the impending danger and to leave for safer places</td>
<td>Police / Navy / Air Force</td>
</tr>
<tr>
<td>NGO coordination and assignment of duty</td>
<td>Early Warning sub committee</td>
</tr>
<tr>
<td>Local CBO coordination trained in early warning</td>
<td>Early Warning sub committee</td>
</tr>
<tr>
<td>Proper record keeping and transmission of information to all the levels</td>
<td>Asst. Dist. Secretary / Coordinator</td>
</tr>
<tr>
<td>Early warning to fishermen</td>
<td>Provincial Ministry of Fisheries</td>
</tr>
<tr>
<td>Holding of meeting of DDMC</td>
<td>District Secretary</td>
</tr>
<tr>
<td>Ensure proper maintenance and functioning of warning &amp; communication systems</td>
<td>Early Warning sub committee</td>
</tr>
</tbody>
</table>

**Crisis Response Preparedness**

**Control Room / Emergency Operations Centre (EOC) - Preparedness Responsibilities**

<table>
<thead>
<tr>
<th>PREPAREDNESS</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>EOC setup / EOC staff called in for duty</td>
<td>District Secretary</td>
</tr>
<tr>
<td></td>
<td>Divisional Secretaries</td>
</tr>
</tbody>
</table>
- To mobilize all essential services of the district
  - District Secretary
  - Divisional Secretaries
  - Departments

- Establish communication among DDMC members, divisional EOC and other stake holders in the affected division/s
  - District Secretary
  - Asst. Dist. Secretary /Coordinator

- Ensure functioning of telephones / other communication systems
  - Asst. District Secretary
  - Divisional Secretaries
  - Asst. Dist. Secretary /Coordinator

- Control Room ready to function round the clock in case of emergency situation
  - District Secretary
  - Asst. Dist. Secretary /Coordinator

- Sign Boards along roads showing evacuation routes installed and people made aware of them and drills carried out during normal time
  - do-

- Vulnerability map of the District/Division ready
  - do-

- Resource Inventory available
  - Divisional Secretaries
  - Asst. Dist. Secretary /Coordinator

- List of cut off areas with safe route map for communication
  - -do-

- Arrangement of vehicles/boats for evacuation
  - Asst. District Secretary /Coordinator
  - Divisional Secretaries

- Pre-positioning of staff for site operation Centers
  - Divisional Secretaries
  - District Secretary

- Awareness generation among public including fishermen, on preparedness, early warning, evacuation routes shown with sign boards, drills carried out., safe shelter etc. and in general on natural hazards
  - Asst. Dist. Secretary /Coordinator
  - Training sub committee
  - NDMC, CHPB
  - Provincial Ministry of Fisheries
  - District Fisheries Department
  - Leading NGOs

### Evacuation - Preparedness Responsibilities

<table>
<thead>
<tr>
<th>PREPAREDNESS</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
</table>
| Mobilize people of unsafe areas to go to identified / safer shelters - routes shown with sign boards, drills carried out | Community & CBOs  
Leading NGOs  
Police  
Divisional Secretaries |
| Confirm readiness of evacuation camps/ temporary shelter and get location maps | Evacuation and SAR sub committee  
Relief camps, food & security sub committee |
| To co-ordinate with Civil defense – Army / Police / Navy /Air force | District Secretary  
Police / Navy / Air Force |
| Mobilize CBO groups trained in evacuation | Evacuation and SAR sub committee |
| Arrangement of boats/vehicles etc. for speedy evacuation | Evacuation and SAR sub committee |
| Evacuate people of marooned areas and administer emergent relief, and direct them to identified safe shelters - routes shown with sign boards, drills carried out | Evacuation and SAR sub committee |
| Deploy police for maintaining law & order during evacuation | Police / Navy / Air Force  
Divisional secretaries |
| Treat and transport the injured | Zonal Health Care Teams |

### Search and rescue - Preparedness Responsibilities

<table>
<thead>
<tr>
<th>PREPAREDNESS</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide &amp; arrange Rescue kits at risk areas</td>
<td>Evacuation and SAR sub committee</td>
</tr>
</tbody>
</table>
| Mobilize SAR teams trained on SAR and survival techniques (of Police/Fire Brigade and NGOs) for search and rescue – to be made available round the clock, depending on the type of impending disaster assess the type of SAR that would be required – Land, Water, Air | ▪ Evacuation and SAR sub committee
▪ Police / Navy / Air Force / Army
▪ Fire Brigade
▪ Divisional Secretaries
▪ Leading NGOs & CBOs |
| Ensure availability of earmarked basic equipment and materials for SAR | -Do- |
| Ensure readiness of identified shelter Centers with essential services | ▪ Relief camps, food & security sub committee
▪ Health and welfare sub committee
▪ Leading NGOs & CBOs |
| Keep in readiness inventory of shelter places and map indicating the shelter Centers | ▪ Relief camps, food & security sub committee |
| Respective parties to rehearse individually and jointly with other parties to minimize response time | ▪ Evacuation and SAR sub committee
▪ Police / Navy / Air Force / Army
▪ Leading NGOs & CBOs
▪ Zonal Health Care Teams |

### Medical aid - Preparedness Responsibilities

<table>
<thead>
<tr>
<th>PREPAREDNESS</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
</table>
| Zonal Committee to meet and be mobilized | ▪ Health and welfare sub committee
▪ Zonal Health Care Teams |
| Keep in readiness a mobile first aid team to be sent to disaster site | -do- |
| Emergency Health Care Teams to be mobilized | -do- |
| Deployment of Medical staff - To be made available round the clock | ▪ Director, Hospital |
| Equip and train a combined Police and Health Team on Counter chemical and Biological attacks | ▪ Police
▪ Zonal Health Care Teams |
| Stock pilling of Life saving drugs/ORS packets/Halogen tablets. | Zonal Health Care Teams / DPDHS, MOH, DMO, PHI, PHM |
| Treatment and Transportation of the injured | Zonal Health Care Teams |
| Public Awareness to stop the outbreak of epidemics | DPDHS, MOH, DMO, PHI, PHM |
| Disease surveillance and transmission of reports to the higher authorities on a daily basis. | -do- |
| Vaccination | -do- |
| Constitute mobile teams and regular visit to the worst affected areas | Zonal Health Care Teams |
| Dewatering, Cleaning, Disinfecting Drinking water sources | ▪ PHI, PHM
▪ NWS&DB |
| Identification of site operation camps | Zonal Health Care Teams |
| Advance inoculation programme in the flood/cyclone prone areas. | -do- |
| Arrangement of fodder/medicines for the animals | -do- |
| Vaccination, Carcasses disposal | -do- |
| Psychological support for victims | -do- |
Shelter management - Preparedness Responsibilities

<table>
<thead>
<tr>
<th>PREPAREDNESS</th>
<th>RESPONSIBILITY</th>
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</thead>
</table>
| Identification of Evacuation camps/Temporary shelter in elevated places and arrangement of tents etc.; Prepare inventory and map indicating shelter places | Relief camps, food & security sub committee  
Provincial Director of Education |
| Ensure readiness of identified shelter Centers with essential services (medicine, drinking water, sanitation, electricity, cooking facilities etc.) | Relief camps, food & security sub committee  
Health and welfare sub committee  
Leading NGOs & CBOs  
NWSS&DB, CEB |
| Keep in readiness inventory of shelter places and map indicating the shelter Centers and convey to Evacuation and SAR subcommittee | Relief camps, food & security sub committee |
| Allocation of responsible persons for each shelter | Relief camps, food & security sub committee |
| Arrangement of transportation | -do- |
| Arrangement for safe shelter for animals | Relief camps, food & security sub committee |
| Deployment of Police Personnel | Police |

Emergency relief / free kitchen operation - Preparedness Responsibilities

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<thead>
<tr>
<th>PREPAREDNESS</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
</table>
| Deployment of vehicles | DDMC  
Divisional Secretaries  
Police  
Leading NGOs |
| Procurement and transportation of Relief materials to affected pockets/areas/people | Relief camps, food & security sub committee  
Divisional Secretaries  
Police  
Leading NGOs  
MOH/PHI |
| Arrangement of free kitchen in the shelter camps & affected areas. | Relief camps, food & security sub committee |
| Assigning responsibilities to officials for distribution of emergency relief/running of free kitchen. | Relief camps, food & security sub committee |
| Coordinating with the civil society organizations and UN agencies for continued relief operation | DDMC |
| Monitoring | DDMC  
Divisional Secretaries  
MOH / PHI / PHM  
Police  
Leading NGOs |

Health and sanitation - Preparedness Responsibilities

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<thead>
<tr>
<th>PREPAREDNESS</th>
<th>RESPONSIBILITY</th>
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<tbody>
<tr>
<td>Relevant Zonal Committee to meet and be ready</td>
<td>Zonal Committee</td>
</tr>
<tr>
<td>Relevant Emergency Health Care Teams to be ready</td>
<td>Emergency Health Care Teams</td>
</tr>
</tbody>
</table>
- Assess the situation, prepare estimates and inform District Secretary / EOC
  - Zonal Committee
- Areas where DPDHS cannot take decisions inform District Secretary / EOC
  - DPDHS
  - Zonal Committee
- Stock pilling of medicine for animals
  - MOHs
  - PHIs
  - PHMs
- Ensuring supply of safe drinking water
  - NWSS&DB
- Stock pilling of water disinfectant
  - Municipal Councils, Urban Councils & Pradeshiya Sabhas
- Arrangement of mobile teams and assigning them with specific areas
  - Zonal Committee
  - NGOs
- Involvement of volunteers/village level workers in inaccessible pockets for generating public health awareness
  - Volunteers
  - NGOs
  - CBOs
  - Community

### Infrastructure restoration - Preparedness Responsibilities

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<tr>
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<td>Zonal Committee</td>
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<tr>
<td>Areas where DPDHS cannot take decisions inform District Secretary / EOC</td>
<td>DPDHS</td>
</tr>
<tr>
<td>Stock pilling of medicine for animals</td>
<td>MOHs, PHIs, PHMs</td>
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<tr>
<td>Ensuring supply of safe drinking water</td>
<td>NWSS&amp;DB</td>
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<tr>
<td>Stock pilling of water disinfectant</td>
<td>Municipal Councils, Urban Councils &amp; Pradeshiya Sabhas</td>
</tr>
<tr>
<td>Arrangement of mobile teams and assigning them with specific areas</td>
<td>Zonal Committee, NGOs</td>
</tr>
<tr>
<td>Involvement of volunteers/village level workers in inaccessible pockets for generating public health awareness</td>
<td>Volunteers, NGOs, CBOs, Community</td>
</tr>
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#### PREPAREDNESS

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<tr>
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<td>Involvement of volunteers/village level workers in inaccessible pockets for generating public health awareness</td>
<td>Volunteers, NGOs, CBOs, Community</td>
</tr>
</tbody>
</table>

#### RESPONSIBILITY

- DDMC
- Divisional Secretariats
- Police
- Local Authorities
- RDA/PRDA
- Railway
- TELECOM
- CEB / LECO
- Municipal Councils, Urban Councils & Pradeshiya Sabhas
- NWSS&DB
- Police
- RDA/PRDA
- Coordinate road-clearing activities to expedite relief work
- Keep National & other Highways clear from disaster effects.
- Blocked rivers and canals to be cleared
- Damage assessment
- Monitoring
Format of the Village Level Plan

Main details covered in the plan are as follows:

i. Details of Demographic details, Livelihood and facilities of the Grama Niladhari Division
ii. Details of Topography, Lands and Cropping Pattern
iii. Vulnerability analysis
iv. Risk analysis
   - Risk groups
   - Risk prone assets and infrastructure
v. Mitigation strategies
   - Short term
   - Long term
vi. Village response plan
vii. Village disaster management committee (VDMC):
viii. Development initiatives/ linkages
   - Training
   - Village Contingency Fund
   - Mock Drill Plans
   - Inter Village Linkages:
   - Plan Update:

Annexes:
Important Names and Phone Numbers useful in disaster management
Offices in the Village
Bus Owners in the village
Truck Owners in the Village
Van and Car Owners in the Village
Tractor Owners in the Village
Boat Owners in the Village
Jeeps Owners in the Village

Maps
1. Social/Resource Map
2. Hazards Specific Map
3. Risk & vulnerability Map
4. Opportunity/Safety Map
5. Seasonality Hazard calendar
Annex 8.7-II

Coverage of Disaster Preparedness Plans at Other Levels
(Given in the format of the report)

Part I - Institutional Arrangements
1.0 Introduction
   - District Disaster Preparedness and Response Plan
   - General Background of the District
   - Policies
   - Operational Priorities
   - The Planning Process
   - Main Disasters Prevalent in the District
   - Activities identified for Emergency Response
2.0 Hazard and Vulnerability Analysis
3.0 Authority for Implementation of the Plan and Institutional Arrangements
   - Emergency Operations Centre (EOC)
   - District Disaster Management Committee (DDMC)
   - Institutional Arrangements for Emergency Operations
   - Disaster Preparedness / Emergency Operations Organization and coordination structure at different levels
   - Functioning of the Emergency Operations Board (EOB) / Emergency Operations Centre (EOC)
   - Sub-committees Responsible for various functions
     - Constitution of sub-committees
     - Responsibilities of sub-committees on different tasks
   - Reporting Procedure at different stages
     - District Level Reporting Formats
     - Divisional Level Reporting Formats
     - G.N. Level Reporting Formats
     - Reporting Formats for Infrastructure service and Public Utilities
4.0 Resources and Capacity Analysis
   - Resources
   - Locations Identified for Temporary Shelter and Transit Camps
5.0 Involvement of Non-governmental Agencies, Voluntary Agencies and Community Based Organizations in Initial Response
   - Non-Governmental Organization (NGOs)
   - Voluntary Agencies
   - Community Participation in preparedness
   - NGOs and CBOs identified for Response Activities at Divisional Level
6.0 Crisis Response
   - Activation Steps
   - Early warning
   - Crisis Response Preparedness
7.0 Contingency Plan for Specific Hazards
   - Contingency Plan for Floods
     - Agencies Responsible for Early Warning
     - Activities for which the respective agencies are responsible in case of flood warning
     - Evacuation – alternative routes, sign boards etc.
     - Search & Rescue, Relief & Food Supply, Recovery and Rehabilitation
Contingency Plan for High Winds, Tornados and Cyclones
- Agencies Responsible for Early Warning
- Activities for which the respective agencies are responsible in case of High Winds, Tornados and Cyclone

Contingency Plan for Landslides
- Agencies Responsible for Early Warning
- Activities for which the respective agencies are responsible in case of flood warning
- Evacuation – alternative routes, sign boards etc.
- Search & Rescue, Relief & Food Supply, Recovery and Rehabilitation

Contingency Plan for Tsunami, Sea Surge, Sea Storm etc.
- Agencies Responsible for Early Warning
- Activities for which the respective agencies are responsible in case of flood warning
- Evacuation – pre-identified high ground and temp. shelter, road signs on pre-identified routes etc.
- Search & Rescue, Relief & Food Supply, Recovery and Rehabilitation

Part II - Operational Procedure
a. Operating Procedure for Warning
b. Operating Procedure for Evacuation
c. Operating Procedure for Health Sector (Health Department, hospitals and other relevant units, such as DMO, MOH, PHI etc.)
d. Standards for Relief work, Transit and Relief Camps and Feeding Centres
e. Procedure for Training and Awareness
f. Operating Procedure for Department of Meteorology
g. Operating Procedure for National Building Research Organization
h. Operating Procedure for Irrigation Department
i. Operating Procedure for Police
j. Operating Procedure for Telecommunication
k. Operating Procedure for RDA
l. Operating Procedure for CEB
m. Operating Procedure for National Water Supply and Drainage Board
n. Operating Procedure for Transport Authorities

List of Annexures

Annexure I (A)  Map showing the Hazards affecting the respective Divisions of the District
Annexure I (B)  Map showing the sensitive areas in the District
Annexure II/1 District Disaster Management Committee (DDMC) of the District
Annexure II/2 Sub-committees for Different Tasks
Annexure III Particulars of Staff of the Emergency Operations Center in the District
Annexure IV Particulars of Other Important Agencies and Individuals in the District
Annexure V Particulars of the Emergency Operations Organization – Relevant Province
Annexure VI Other Resources in the District
- Police Stations
- Hospitals, Dispensaries, Health Centers etc.
- Fire Station Information
- Transportation (Government)
- Cooperatives shops
- Post Offices (A) Grade
- Fuel Stations
- Traders
- Strength of Teachers & Students
- District NGOs
- Storage Facilities with Capacity
- Tippers
- Bowsers
- Cleaning and Cutting Equipments
- Catamarans (Angul)
Planning for Involvement of Community Based Organizations in the Initial Response and after Occurrence of a Disaster

1. Community Participation in preparedness

In most disasters, community members are the first to respond before any outside assistance can reach the disaster site. Therefore, in certain disaster prone areas a group of young volunteers can be formed and trained to undertake essential tasks, which would reduce loss of life and property and at the same time, build confidence in self-management. They can contribute in the following areas:

- Organizing training and preparedness at the community level
- Ensuring family preparedness on the receipt of warning
- Ensuring communication links, both within the community and with the administration
- Controlling rumors and panicky behavior and undertaking confidence building activities
- Mobilizing youth and able-bodied persons from the community to provide volunteers support, wherever required.
- Organizing local work teams for immediate rescue and relief e.g. cooked food, first aid, assistance in law and order etc.
- Assisting the handicapped, the elderly, children and women who need special help
- Facilitating movement of relief teams during evacuation and relief and ensuring appropriate tagging as and when necessary
- Guarding major installations and evacuated properties till the administration takes over

These Community groups are expected to support the efforts of the Grama Niladhari and Samurdhi officers, wherever relevant.

2. Areas of Community Participation during a disaster

At the disaster site, Grama Niladhari and the divisional administration should ensure maximum community participation in all stages of operation in order to maintain community morale and confidence, maximize the use of local resources, reduce costs of operation and promote a faster recovery. It is important to note that the so-called “victims” are not all that helpless but offer a tremendous manpower resource and ingenuity to overcome the crises. Disaster management situations offer a wide range of choice and demands immediate decision making. The participation of communities and their representatives would reduce the pressures on administration with regard to the choice and uncertainties of community’s response to the decision making process.

Community participation is being ensured by:

- Identification of situational, opinion and position leaders in the community and voicing administration’s confidence in their capabilities to undertake the tasks.
- Consultations and dialogues expressly indicating the need for assistance, which would encourage the community and its leaders to come forward.
- Regular feedback meetings and an open book approach to demonstrate transparency
- Involving community in decision making at local levels

The major areas of community participation include the following:

- self-help in every activity of their day-to-day living
- assistance for location and identification of dead, disposal of dead bodies, disposal of damaged food stocks
- contribution of labour. (loading, unloading distribution, temporary constructions, salvage and restoration of water supplies, food distribution, relief camps cattle camps etc.
- assistance for updating records of damages and losses
- assistance in maintaining law and order
- assistance in maintaining sanitation standards and disposal of waste
- cultural and recreational activities in order to protect the mental health and sustain the ethical and moral values
-
3. **Encouraging Family Level Preparedness**

In order to assist the families to prepare themselves, community education programmes must be undertaken to acquaint members of the community with the nature of each disaster, the type of damage that can occur, the demands it would generate both at family and community level and how to respond to it. Even with the best of planning, it is difficult to assess the exact impact of the disaster and the response time. Under the circumstances the families have to prepare themselves for a prolonged period before the administration can reach them. Although collective efforts of the community can reduce the hardship to some extent, a large part of the burden would be on the family itself.

4. **Emergency Planning and Checklists for families**

Families need to prepare themselves for any kind of disaster. This would require specific information about emergency water and food and a recommended checklist of emergency supplies, which enable the family to sustain itself till adequate facilities for relief is organized.

**Emergency checklist for families:**

- Find out which disasters could occur in the area
- Ask how to prepare for each disaster
- Know the community leaders helping in response
- Ask how warnings are given in an emergency
- Learn about the community’s evacuation routes
- Learn about designated shelters
- Ask about special assistance for elderly or disabled persons
- Learn about emergency plan at the workplace
- Learn about emergency plans for the children’s school or day-care centre

**Create an Emergency Plan for the household:**

- Meet with household members. Discuss with children the dangers of fire, severe weather, floods, cyclones, landslides, earthquakes and other emergencies
- Discuss how to respond to each disaster that could occur
- Talk to children about the likely disasters
- It is easier for children to understand what is happening during a disaster if they already know what can take place. Point out that some of the disasters are indeed natural events and although they are dangerous, they do not have to be life threatening if adequate precautions are taken. Try not to alarm the children in discussing possible disasters.
- Teach children about the safety precautions for each disaster
- Learn how to turn off the water and electricity at main switches
- Create a network of relative, friends or co-workers to assist the disabled in an emergency
- Provide for medical alert tags or bracelets to identify the handicapped persons

5. **Disaster supplies kit for families**

For emergency evacuations, the families should be encouraged to take along Disaster Supplies Kit comprising the following:

- Adequate supply of water in closed unbreakable containers
- Adequate supply of non-perishable packaged food and dry rations
- A change of clothing and rain gear
- Blankets and bed sheets, towels
- Buckets, plates, glasses, mugs made of plastic
- Soap, toothbrushes, toothpaste
- A battery-powered radio, torch, lantern, matches
- Cash and jewelry
- Personal medicines
- A list of important family documents including samurdi card, passport, national identity card, bank passbook, address/telephone book (of relatives), certificates, driving license, property documents, insurance documents etc.
- Special items including food for infants, elderly or disabled family members.
6. Evacuation Preparedness

When community evacuation becomes necessary, local officials would provide information to the public through the media. Government agencies and other disaster relief organizations would provide emergency shelter and supplies. The amount of time the families have to evacuate will depend on the disaster. If the event can be monitored, like a cyclone, families could have a day or two to get ready. But many disasters offer no time for people to gather even the most basic necessities. This is why an evacuation plan is necessary.

The checklist for emergency planning given above would be useful for evacuation planning as well. Additionally, families should also get their disaster supplies kit organised for evacuation and follow the procedure for evacuation as outlined in the previous section.

7. Emergency Shelter

Taking shelter is critical in times of disaster. This may mean staying in an enclosed structure during a severe storm without electricity for days. In many emergencies, local authorities would set up public shelters in schools, council buildings and places of worship. While they often provide water, food, medicine and basic sanitary facilities, families should plan to have their own supplies as well.

Living in Designated Emergency Shelters

1. Stay in the shelter until administration authorities say it’s okay to leave. The length of the stay can range from a few hours to few days.
2. Restrict smoking to well-ventilated areas. Ensure that smoking materials are disposed of safely.
3. Cooperate with local authorities and others staying in the shelter. Living with many families in a confined space can be difficult and unpleasant.
4. Listen to radio broadcasts
5. Watch for fires
6. Assist local authorities as volunteers in the management of water, cooked food and other relief supplies including medical care, if required
7. Make arrangements for pets and cattle before going to a public shelter. They are not allowed in a public shelter due to health reasons
8. Organize recreation for children
9. Assist local authorities with assistance of community members law and order.

8. Helping after a Disaster

When disaster strikes, people everywhere want to help those in need. To ensure that this comparison and generosity are put to good use, the media can highlight these facts:

- Financial aid is an immediate need of disaster victims. Financial contributions should be made through local administration or a well-known voluntary organization to ensure that contributions are put to their intended use.
- Before donating food or clothing, wait for instructions from local officials. Immediately after a disaster, relief workers usually do not have time or facilities to setup distribution channels and too often these items go to waste.
- Volunteers should go through a well-known voluntary agency since these agencies will know what is needed and are prepared to deal with the need. Local authorities also co-ordinate volunteer efforts for helping in disasters.
- Organizations and community groups wishing to donate items should first contact local officials and voluntary agencies working on relief to find out what is needed and where to send it. Be prepared to deliver the items to different places, tell officials when you will be there, but do not expect them to provide for transportation, driver and unloading.
9. Format - Contributions identified for support in identified activities during preparedness and after occurrence of a disaster

<table>
<thead>
<tr>
<th>Activities Identified</th>
<th>Identified CBOs, businessmen and well wishers</th>
<th>Contributions agreed by each identified party</th>
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<tbody>
<tr>
<td>Early warning</td>
<td>1. E.g. Loud speakers</td>
<td>• Transport</td>
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<td>• Support groups</td>
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<tr>
<td>Evacuation</td>
<td>1. E.g. Transport</td>
<td>• Support groups</td>
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<td>• Boats and boatmen</td>
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<td>2.</td>
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<tr>
<td>Search and rescue</td>
<td>1. E.g. vehicles and drivers</td>
<td>• Boats and boatmen</td>
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<tr>
<td>Identification of detention camps and providing necessary facilities</td>
<td>1. E.g. For identified temporary shelter – water tanks, toilets, water pipes, taps etc., to be provided beforehand</td>
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<td>• Electricity supply, bulbs etc. to be provided beforehand</td>
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<td>• Buckets, basins for use by the displaced</td>
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<td>• Lanterns, petromax lights etc.</td>
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<td>• Kitchen utensils, fire wood etc.</td>
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<td>Emergency relief</td>
<td>1. E.g. Cooked food, bread etc.</td>
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<td>Survivor responses and coping</td>
<td>1. E.g. Medicine / drugs</td>
<td>• Medical facilities</td>
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<td>• First aid</td>
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<td>• etc.</td>
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ACFID CODE OF CONDUCT

For Non Government Development Organizations

This Code of Conduct sets out standards and requirements to which signatories to the Code are bound and against which complaints and compliance is assessed.

I Preamble

1.1 This Code of Conduct defines standards of governance, management, financial control and reporting with which non government development organizations (NGDOs) should comply. It identifies mechanisms to ensure accountability in NGDO use of public monies, The Code aims to maintain and enhance standards throughout the NGDO community, ensuring public confidence in, the integrity of individuals and Organizations comprising the NGDO community; and quality and effectiveness of NGO programs.

1.2 Organizations which are signatories to this Code aim to build creative and trusting relationships with people of developing countries and to meet program standards which:

- give priority to the needs and interests of the people they serve;
- encourage self help and self-reliance among beneficiaries and thus avoid creating dependency;
- involve beneficiary groups to the maximum extent possible in the design, implementation and evaluation of projects and programs
- respect and foster internationally recognized human rights, both socio-economic and civil-political;
- seek to enhance gender equity, and
- are based on an understanding of the history and culture of the people served.

NGO’s are required to meet a range of state and federal legal obligations. These obligations may include corporations laws, rules of post incorporation of associations, fundraising and charitable institutions legislation, privacy legislation, equal employment opportunity principles, occupational health and safety standards, anti discrimination legislation, intellectual property and copyright legislation and other codes of ethics.

ACFID Code of Conduct - Amended 5 October 2004

Organizational Integrity.

2.1 In all of its activities and particularly its communications to the public, the Organization will accord due respect to the dignity, values, history, religion, and culture of the people with whom it works consistent with principles of basic human rights.

2.2 The Organization will be formed voluntarily and be not-for-profit.

2.3 The Organization will oppose and not be a willing party to wrongdoing, corruption, bribery, or other financial impropriety in any of its activities. It shall take prompt and firm corrective action whenever and wherever wrongdoing is found among its Governing Body, paid staff, contractors, volunteers and partner Organizations.

2.4 The Organization will have a policy to enable staff confidentially to bring to the attention of the Governing Body evidence of misconduct on the part of anyone associated with the Organization. All reports must be channeled through the Chief Executive Officer unless it is an issue concerning the Chief Executive Officer which should be taken directly to a member of the Governing Body.

2.5 The Organization will conduct itself in ways that do not denigrate other agencies, or make misleading or false public statements regarding other agencies.

2.6 The Organization will have policies and procedures to promote the safety and well being of all children accessing their services and programs, particularly to minimize the risk of abuse of children.
2.7 Funds and other resources designated for the purposes of aid and development, it will be used only for those purposes and will not be used to promote a particular religious adherence or to support a political party, or to promote a candidate or organization affiliated to a political party.

Governance

3.1 An Organization's governing instrument (constitution, articles of association, rules, by laws or similar documents) will be consistent with legislative requirements and set forth the Organization's basic goals and purposes, define membership, governance structure of the Organization including the frequency of meetings (at least two a year) and the size of a quorum.

3.2 Each Organization will have a governing body elected appointed by members from within the membership/supporters. The Governing Body will approve the annual budget and may delegate authority to staff or others but must accept ultimate responsibility for governance over all aspects of the Organization. There should be clearly defined lines of authority between the Governing Body and management.

3.3 There will be written policies covering appointment, termination and, where applicable, remuneration of members of the Governing Body. The Organization will have policies restricting the number of paid staff who are voting members of the Governing Body.

3.4 Members of the Governing Body, paid staff, and volunteers will make known to the Governing Body any conflict of interest or any affiliation they might have with an actual or potential supplier of goods and services, recipient of grant funds or Organization with competing or conflicting objectives. Members of the Governing Body and paid staff will absent themselves from discussion and abstain from voting or otherwise participating in the decision on any issue in which there is a conflict of interest. Large or otherwise inappropriate gifts to members of the Governing Body or staff for personal use shall be forbidden.

3.5 The Governing Body will commit the Organization to open and accurate disclosure of information concerning its goals, programs, finances and governance. Due regard will be given to the human rights and personal safety of staff, partners and aid recipients, legal requirements regarding privacy and confidentiality, proprietary information and personnel matters.

3.6 The Organization will hold an annual general meeting of its members as defined in its governing instrument and which meets the requirements of the legislation under which the Organization is incorporated. The AGM will receive the annual audited financial statements and appoint an independent auditor for the subsequent year.

Communication with the Public

4.1 An Annual Report is to be produced and made available to the organizations own members, supporters and members of the public upon request.

4.2 Fundraising solicitations will be truthful, will accurately describe the Organization's identity, purpose, programs, and needs and will only make claims which the Organization can fulfill. There will be no material omissions or exaggerations of fact, no use of misleading photographs, nor any other communication which would tend to create a false impression or misunderstanding.

4.3 In all fundraising activities initiated or authorized by it, the Organization will have policies (consistent with the Privacy Act 1988) set up to provide donors' rights to:
   - have their names deleted from mailing lists;
   - have their names deleted from mailing lists the Organization may intend to share
   - be informed whether those seeking donations are volunteers, paid staff or agents of the Organization;
   - be informed about the causes for which funds are being raised;
   - get information on the application of their donation; and
   - be able to identify collectors and have documentation confirming the bona fides of the Organization.
4.4 The Organization will be responsible for all fundraising activities outsourced to a third party and will put all such contracts and agreements in writing.

Finances

5.1 The Organization will have internal control procedures which minimize the risk of misuse of funds. Reporting mechanisms which facilitate accountability to members, donors and the general public will be used. The Organization will have adequate procedures for the review and monitoring of income and expenditure, Loans to and transactions with Governing Body members shall be publicly disclosed, Loans to staff shall be disclosed to the Governing Body.

5.2 Notwithstanding any other legal requirements, the Organization must publish in their Annual Report, financial statements prepared in accordance with the Code of Conduct Summary Financial Report Format found in the Guidance Document to the ACFID Code of Conduct. Additionally, organizations may choose to publish their Full Financial Statements within their Annual Report;

5.3 Code of Conduct Summary Financial Reports and Full Financial Reports must be audited by at least a qualified accountant who is a member of the Australian Society of Certified Practising Accountants, the Institute of Chartered Accountants in Australia or by a Registered Company Auditor. The Auditors statement must accompany the financial report in the Annual Report.

5.4 Where an Organization chooses to publish only their Code of Conduct Summary Financial Reports in their Annual Report and not the organizations Full Financial Report, the Annual Report must make reference to the fact that the Full Financial Report is available on request. Any other organizational publications that detail, summaries, or comment on financial performance must also indicate that the Full Financial Report is available on request.

5.5 Donations shall be used as promised or implied in fundraising appeals or as requested by the donor. When funding is invited from the general public for a specific purpose, the Organization shall have a plan for handling any excess and shall make this known as part of the appeal. Organizations shall substantiate; upon request, that their application of funds is in accordance with donor intent or request.

5.6 The use of ratios in publications shall at all times be accompanied by a note explaining how these have been determined.

Personnel and Management Practice

6.1 The Organization will seek to achieve best practice in its personnel policies in response to initiatives in the aid sector and to changes in working and legal environments. The Organization will have well defined policies and procedures relating to paid staff including expatriate and local staff employed overseas and volunteers working in Australia or overseas. These policies and procedures will clearly define and protect the rights and safety of personnel assuring fair treatment in all matters. Policies and procedures relating to staff and volunteers based outside Australia will be informed by the People in Aid: Code of best practice in the management and support of aid personnel.

6.2 The Organization’s expectations of its employees and volunteers’ professional conduct shall be clearly communicated and consistent with the requirements of the ACFID Code of Conduct.

6.3 The Organization will be committed to continuous improvement in its management practice including the provision of regular opportunity to employees for training and professional development.

6.4 The Organization will have policies and strategies to promote gender equity especially in senior positions in the management and governance of the Organization.

Reference to Other Codes and Standards

7.1 Organizations that are signatories to the ACFID Code of Conduct are guided by the strategies and standards of engagement for program management in the ACFID NGO Effectiveness Framework.
7.2 Organizations which are signatories to this Code, will also be informed by the following codes and standards where they are relevant to the work of the Organization-

The Code of Conduct for the International Red Cross and Red Crescent Movement and NGOs in Disaster Relief;

Sphere Humanitarian Charter and Minimum Standards in Disaster Response

Complaints Handling and Compliance Monitoring Process.

8.1 Complaints made against a signatory Organization must be in writing and must specify the section of this Code that the Organization is alleged to have breached. Complaints will be investigated by the ACFID Code of Conduct Committee according to the Complaints Handling Process detailed in the Guidance Document to the ACFID Code. Information on how to make a complaint may be obtained from ACFID and is accessible on the ACFID website.

8.2 In the event of a complaint being brought against an Organization under the terms of this Code, signatories to the Code shall co-operate with the Code of Conduct Committee's inquiry described in the Complaints Handling Process. Failure to cooperate with the inquiry and reconciliation process will constitute a breach of the Code.

8.3 Compliance to the reporting requirements in this Code is monitored by the ACFID Code of Conduct Committee according to procedures detailed in the Guidance Document to the ACFID Code.

Amending the ACFID Code of Conduct and the Guidance Document

9.1 The ACFID Code of Conduct may only be amended by ACRID Council according to the procedures in the ACFID Rules and Objects. The consent of non-members of ACFID which are signatories to this Code is not required for amendment of the Code of Conduct.

9.2 The Guidance Document to the ACFID Code of Conduct may be amended by ordinary resolution of the ACFID Council or by the ACFID Executive Committee on the recommendation of the ACFID Code of Conduct Committee.

10. Definitions

ACFID Code of Conduct

The standards and requirements set out in this Code to which signatories to the Code are bound and against which complaints and compliance is assessed.

Annual Report

The annual report is one of the principal windows of Organizational performance, activity and accountability. It should be both reflective of the pursuits, issues and achievements for the period being reported and be predictive on future directions and activity. It shall contain, as a minimum:
- a statement of the Organization's goals or purposes;
- a summary of overall program activities by country or region;
- the names, qualifications and experience of current members of the Governing Body as well as those who served at any time during the period being reported on;
- financial statements using the Code of Conduct Summary Financial Report Format and an audit opinion on the financial statements, clearly identifying the auditor (name, company, address and signature).

Code of Conduct Summary Financial Report

Full Financial Report

Organizations Full Financial Report (inclusive of statements, notes and auditors report) as approved by the organizations Governing Body and presented to Members.

The Governing Body

The Governing Body is the authority ultimately responsible for governance over all aspects of the Organization and is the responsible for the Organization’s signature to and compliance with this Code of Conduct. The Governing Body must be elected or appointed by members from within the membership or support base of the Organization.

Guidance Document

The guidance document to the ACRID Code provides guidelines on how signatories maintain adherence to the ACFID Code of Conduct. It includes the Code of Conduct, the Financial Report Format, the Complaint Handling Process, explanatory notes and other documents which the Code of Conduct Committee recommend as useful to inform and guide the application of the ACFID Code to the work of signatories,

Organization

A Non Government Development Organization (NGDO), which is a signatory to this Code
A Report on Internally Displaced Persons in Sri Lanka in the Context of the Tsunami Disaster that occurred 26\textsuperscript{th} December 2004

\textbf{24\textsuperscript{th} March 2005}

Prepared by:

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Introduction and Context

At 06.59am on the morning of 26th December 2004 a massive earthquake occurred in the sea off the Sumatran coast. Two hours and fifty four minutes later at 9.53 am the effects were first felt on the coast of Sri Lanka. By the end of the day some 75% of the 1,585 km coastline had been inundated leaving 31,147 dead, 23,059 injured and 4,115 missing. In addition 546,509 people had been displaced from their, either partially or totally destroyed, homes. The scale of the disaster was unprecedented. The Government of Sri Lanka (GoSL) declared a state of emergency and invited international assistance whilst mobilizing its own available resources.

It is a credit to these resources and to GoSL that after the initial and terrible impact few, if any, people died either from their injuries, disease, exposure or lack of food and water.

The reaction of the international community, both government and individual donors, around the world in terms of their response to this disaster was beyond anything experienced previously in the history of natural disaster response.

At the time of writing the immediate relief phase is over. All emergency humanitarian needs have, generally, been met in terms of quantity although there is still a question of achieving international standards in certain sectors, notably shelter and water/sanitation and there are issues surrounding the equity of distributions with needs oversubscribed in the easy to reach, particularly, southern areas whilst remote and particularly sensitive areas, notably in the north and east have received minimal assistance.

The disaster is now entering the new and more complex phase of recovery and reconstruction which will take years rather than months to complete. Some estimates suggest three to five years whilst others suggest as long as seven to ten.

It is important to note at this point the context in which this disaster occurred. Although unprecedented in terms of scale, it is neither the first nor will it be the last tsunami to affect Sri Lanka - There appears to be something in the order of a 50 year pattern although most create minimal damage - it must also be noted that Sri Lanka is no stranger to other forms of displacement disaster having experienced a civil war for some 30 years which has left some 352,374 people still, today, in a condition of displacement. Further, in 2003 some 137,221 families (720,500 people) were affected by flood. Sri Lanka has experienced a total of 33 major disasters in the past 10 years. In addition to flood, Sri Lanka experiences cyclones, landslip and tornadoes all of which have a tendency to displace numbers of people.

It is in this context that this report has been commissioned, to review response to the tsunami disaster thus far and also as a means of encapsulating lessons learned that can be brought, not only to the next phase of this disaster but also to future disasters that will affect the country.

There are many issues of disaster management (DM), particularly early warning, to be addressed in the aftermath of a disaster of this magnitude but the scope of this report is focussed on Internally Displaced Persons (See Terms of reference Annex 1) and the majority of these issues will be left for other experts. Some general DM issues have been included as they do relate directly to IDPs but they are general and without detail.

Caveat

This report was commissioned at short notice allowing minimal preparation. Further, the time frame for its production has been exceedingly short with little opportunity for field visits and extensive consultation. Therefore it cannot be seen as a comprehensive assessment but merely a review of the overall situation. There will be gaps.

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23 Figures as at 21st February 2005 Source UNHCR
24 Figures as at 31st December 2004 Source UNHCR
25 Source Sri Lanka National Disaster Management Centre (NMDC)
26 Source NMDC
Legal Norms and International Standards

Guiding Principles on Internal Displacement

As nationals of their own country, IDPs are entitled to the same rights, freedoms and protection as others in their country without discrimination. They are also entitled to the benefit of international human rights standards and law as well as International Humanitarian Law (IHL) in situations of armed conflict. Sri Lanka has acceded to the majority of these conventions, notably the International Convention on Economic and Social Rights (ICESC) and the International Convention on Civil and Political Rights (ICCPR). Even where Sri Lanka has not acceded or signed a particular convention, the very fact of that convention having entered into force is sufficient to bind the government to its principles, if not the detail. Certain International Principles particularly, in the case of IDPs, the Principle of Non-refoulement (prohibition of forcible return) are considered customary law and thus binding on states again regardless of their accession to a particular convention or treaty.

In reality, IDPs are separated from their homes, communities and livelihoods and thus the mechanisms that the rest of the community relies on for protection and assistance in times of difficulty. Often out of sight and out of mind, IDPs are more invisible and thus more vulnerable in the aftermath of disaster. Death rates among the internally displaced are reckoned to be sixty times higher than among the non-displaced within a country. Particularly affected have been women and children.

In light of what was a growing problem and at the request of the Commission on Human Rights (CHR), the Secretary General of the United Nations (UN) appointed a Representative for the Internally Displaced to act as an advocate for their rights and as a catalyst within the UN System. The first Representative, Dr Francis Deng, developed a conceptual and normative framework for dealing with the problem. IDPs, unlike refugees do not benefit from any form of international protection but, as stated earlier, are first and foremost the responsibility of the State in which they are residing. Dr Deng put forward the concept of sovereignty as responsibility - the responsibility for providing safety and security for people within the borders of the state regardless of their situation. In the event a state is unable or unwilling to fulfill that responsibility, it is expected to request and accept outside assistance.

IDPs also differ from refugees in that they have no particular international agency or authority mandated with the task of their protection. As far as the international community is concerned there is no lead agency for the issue and matters are dealt with by what is known as the “Collaborative Response”. This concept means that each agency is expected to provide its own area of expertise as and where it can and to co-ordinate that response with others. The concept is managed and co-ordinated overall by the Emergency Response Co-ordinator (ERC). The ERC is an Under Secretary General of the UN who also has the responsibility for heading the UN Office for the Co-ordination of Humanitarian Affairs (OCHA). The ERC’s mechanism for this task is the Inter Agency Standing Committee (IASC) a committee comprising UN operational agencies, the International Organization for Migration (IOM), the Red Cross/Red Crescent Movement and NGOs through their co-ordinating bodies; the International Council of Voluntary Agencies (ICVA) the Steering Committee for Humanitarian Response (SCHR) and Interaction representing American NGOs. This is the only mechanism within the UN system whereby these humanitarian actors all meet together.

In 1998 and following a long process by a team of experts under the direction of the Representative as well as extensive consultation within the international community, a normative framework known as the Guiding Principles on Internal Displacement (Guiding Principles) was presented to the CHR as a way of promoting the concepts he had espoused. The document was immediately adopted by the CHR by consensus.

The Guiding Principles, although comprising only 30 short articles, set forth, in a comprehensive way, the rights of the internally displaced and the obligations of governments and non-state actors toward these people. Laid out in five sections, the Guiding Principles cover all aspects of displacement starting with prevention and ending with return resettlement and reintegration.

27 Report on the Expert Group Meeting on Internal Displacement in the Commonwealth 19.05.03
28 The Current Representative is Dr Walter Kalin, a Swiss national who has visited Sri Lanka
The five sections are:

1. General principles
2. Principles relating to protection from displacement
3. Principles relating to protection during displacement
4. Principles relating to humanitarian assistance
5. Principles relating to return, resettlement and reintegration

In addition there is a very important introduction outlining the scope and purpose of the document. This includes a description of the internally displaced which includes two very important points as regards tsunami victims, these are:

- The application of the Guiding Principles to individuals as well as groups
- The specific inclusion of natural disaster as a cause of displacement

For ease of reference, the full text of the Guiding Principles is attached as Annex 2.

Of particular note in this situation are the following:

- Relocation should be voluntary (Guiding Principle 14, 15 (d), 28.1)
- Access to information and participation in decision making by the displaced (Guiding Principle 28.2)
- Access to humanitarian assistance and services (Guiding Principle 18)
- Access to education (Guiding Principle 23)
- Access to means of livelihood (Guiding Principle 22)
- Respect for family unity (Guiding Principle 17)
- Protect women, children and groups with special needs (Guiding Principle 4.2)
- Right to documentation (Guiding Principle 20)
- Protect the civilian character of all IDP camps (Guiding Principle 24)
- Avoid multiple relocations (Guiding Principle 7, 8)
- Respect cultural and conflict sensitivity (Guiding Principle 22.1 a)
- Respect for property rights (Guiding Principle 29.2)
- Discrimination and impartiality (Guiding Principle 4.1, 24.1)

The Guiding Principles are not “hard law” in the sense of a convention or treaty but they are based on and are consistent with existing international human rights law, IHL and refugee law (by analogy). They bring together all the relevant provisions of international law that relate to IDPs and situations of displacement in one compact document. Existing law is clarified; gaps and grey areas are filled including, for example, compensation and property rights, documentation, the right not to be arbitrarily displaced and the right not to be forcibly returned to places of danger within the country.

Despite not having the status of a treaty or convention, since their adoption by the CHR, the Guiding Principles have won wide recognition and have even been adopted into law by certain states e.g. Angola. They have been acknowledged by the General Assembly of the United Nations as well as being described by that body as a “standard” and “important tool”

Importantly for Sri Lanka, in 1996 the Commonwealth Secretary General established a 16 member group on refugees and displaced persons (IGRDP). In a report issued in 1997 the group made, inter alia the following recommendation:

The Commonwealth should lend its support and contribute to international efforts to develop a normative framework to address the lacunae in the protection of internally displaced persons and should endeavour to promote the implementation of relevant human rights and humanitarian instruments. Where applicable and feasible the normative framework should be implemented by national legislation.

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29 General Assembly Resolution A/RES/58/1/77 12th March 2004
This recommendation was made before the presentation of the Guiding Principles to the CHR and thus does not refer to them by name. The recommendation was however given substance through the publication by the Human Rights Unit of the Commonwealth Secretariat of an expert paper\(^{30}\) which clearly endorses the adoption and application of the Guiding Principles in all Commonwealth countries where internal displacement is an issue. For ease of reference this document is attached as Appendix 3.

It should also be noted that the Guiding Principles are available in many languages including Sinhalese and Tamil and thus can (and should) be disseminated widely and with ease.

**The Sphere Standards in Disaster Relief**

Whilst the Guiding Principles cover the rights of individuals and the obligations of States, they provide no detail or guide to the implementation of the Principles and thus it is important that they are used in conjunction with other documents that do provide such detail. Important among such documents is the *Sphere Standards in Disaster Relief* (Sphere Standards)\(^{31}\). The Sphere Standards comprise a Humanitarian Charter which is basically an expression of the rights based approach to humanitarian assistance based on three specific principles of international law as well as a series of important standards and indicators for the application humanitarian assistance. These standards and indicators fall under four sections which are:

1. Water, Sanitation and Hygiene
2. Food Security, Nutrition and Food
3. Shelter, Settlements and Non-Food Items
4. Health Services

The Sphere standards have won extensive recognition by states and donors as well as implementing (intergovernmental and non governmental) entities. It is important to note that GoSL in its publication of Transitional Shelter Guidelines not only referred to Sphere but also imported its standards and indicators. Many donors now impose the application of adherence to Sphere Standards as a condition when making a grant.

**The Code of Conduct for the International Red Cross & Red Crescent Movement and NGOs in Disaster Relief**

Following the Rwandan refugee crisis of 1994 the international community and particularly the implementing agencies were severely criticized for the manner in which they applied humanitarian assistance. Following this criticism, the Red Cross/Red Crescent Movement caused to be published 10 Principles and three recommendations controlling the behaviour of agencies, donors and governments as regards disaster assistance particularly in terms of the humanitarian imperative, impartiality and the total ban on any political or religious bias in the delivery of assistance. This document, known as *The Code of Conduct for the International Red Cross & Red Crescent Movement and NGOs in Disaster Relief* (Code of Conduct) is attached as Appendix 4. The Code of Conduct has been signed not only by many NGOs and Red Cross Red Crescent National Societies (as well as ICRC and the International Federation) but also donors and even members of the private sector providing relief goods.

**Recommendation**

That the GoSL adopts the Guiding Principles, Sphere Standards and the Code of Conduct as binding guidelines for the delivery of humanitarian protection and assistance by its own resources as well as that by indigenous Non-governmental Organizations (NGOs) and the International Community in any disaster situation.

**Internal Displacement in Sri Lanka in the aftermath of the Tsunami**

Following the inundation of 26\(^{th}\) December 2004, 66,681 houses were destroyed and a further 41,467 damaged thus displacing 549,509 people of which 96,769 were accommodated in Welfare Centres (WC)

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30 Report of the Expert Meeting on Internal Displacement in the Commonwealth: common Themes and Best Practice
31 The full text can be found at [www.sphere.org](http://www.sphere.org) (check web address)
- public buildings converted temporarily for the purpose - whilst a further 449,740 found refuge with relatives and friends (host families). At this point those displaced from their homes fell into two categories:

- People displaced from their permanent homes whether formal or informal (i.e. illegal squat)
- IDPs displaced by the conflict who were further displaced by the tsunami

Unlike many IDP situations a high proportion of the initial victims of the inundation were women and children thus an unusually high proportion of survivors who became displaced were men. Men, who are to regain their livelihoods but have lost spouses and thus the traditional means of care for children and other dependent family members, should be considered a vulnerable group in this context.

In addition to the displaced themselves, there is a concern as to the increased vulnerability of the large numbers of families who have taken the displaced into their homes. These people too have the potential to increased vulnerability as a result of their generous act and should be included in any needs assessment.

The initial response to the disaster was excellent and few if anybody died in the immediate post disaster phase either from their injuries or from lack of food, water and shelter.

The very generosity of this response has itself created issues. Notably the inequality of response as between IDPs displaced prior to the tsunami and those displaced by the tsunami. It is of concern that such disparity (and often the different groups are within sight of one another) will foment discord and possibly even violence.

It needs to be noted that every kind of ethnic and religious group was displaced as well as individuals with different inherent characteristics i.e. caste and in the resettlement of IDPs such issues must be taken into account.

Also of concern is the cessation of IDP status and its timing which presumably cannot happen unless and until the IDPs have regained residency on a permanent site and regained the opportunity for livelihood. The time scale for this is likely to be up to ten years if transitional shelters are not created at the site identified for permanent settlement.

**Recommendations**

That a policy of equity be adopted as between IDPs displaced prior to the tsunami and those displaced by the inundation as well as respect for different cultural groupings. That donors and implementing agencies be requested in the strongest possible terms to respect this policy of equality.

That the situation of host families be taken into account in needs assessment.

That single male headed households be included in the definition of especially vulnerable groups

That transitional shelters be built on or very close to the land identified for final settlement

**GoSL Disaster Response Structure and Mechanisms**

One of the principle reasons for the success of the initial response lies with the decentralized structure of the GoSL which broke down responsibility in the following way:

- Central government represented by a new structure, the Committee for National Operations (CNO)
- Provincial level managed by a Government Agent (GA)
- District level managed by a District Secretary (DS)
- Village level managed by a Grama Niladari (GN)

32 Figures as at 21st February 2005 Source UNHCR
Whilst the structure enabled a very rapid initial response which was assisted in no small part by the GoSL armed forces who gained substantial praise for their rapid and courageous efforts in saving people. Also local civil society mobilized and played a significant role in the initial aftermath. However, several substantial disadvantages soon became apparent.

- CNO was newly formed and thus had little experience of disaster management and no institutional memory
- Existing disaster management institutions such as the NDMC whilst having the advantage of an institutional memory have few resources, no mandate in law and are positioned in a ministry with comparatively little access to the centre of government and were thus bypassed by new entities closer to the centre
- GoSL had no national disaster plan and few, if any, policies for the implementation of disaster relief, particularly shelter
- The government system in Sri Lanka is highly bureaucratized and driven by process
- The ability and skills of incumbents in the various positions below central government level were and are uneven
- Government processes are influenced by the polarization of politics in the country

The effect of these disadvantages soon became apparent:

- There were no policies or DM plan on which the CNO could base decisions and set standards
- Decisions (including those at the highest level) were taken and then changed leading to delay and confusion
- GAs, DSs and GNs failed to make decisions in a timely manner or changed decisions already made
- When decisions that were taken (often relying on higher authority) beneficiaries were neither consulted nor informed
- Decisions were changed following intervention by local and powerful political influences
- There was a lack of co-ordination

During February 2005 CNO was disbanded and replaced by three further structures:

- The Task Force for Relief (TAFOR)
- The Task Force for Reconstruction of the Nation (TAFREN)
- The Task Force for Logistics and Law and Order (TAFLOL)

This was possibly premature in that CNO had begun to develop relationships and build (albeit short term) an institutional memory as well as some skill in co-ordination of the various resources.

There was however a very positive impact created by the introduction into these new entities of personnel of a very high calibre from both the public and the private sector as well as their having a direct line of responsibility to the President through the Secretary to the President.

Unfortunately, the GNs, DSs and the GAs have no direct reporting line through this structure and thus there is the potential for further confusion and lack or transparency.

TAFOR is also responsible for a structure known as the Transitional Accommodation Project (TAP) which will be discussed further below under sectoral considerations.

TAFREN has a limited life and will be wound up as soon as the relief and transition phase is completed. TAFREN is a permanent structure.

Given the dearth of DM structures at the time of the disaster, co-ordination of the resources made available for this disaster have been good but tend to be localized and contained within silos. To a large extent, co-ordination was damaged by the arrival of the international community who tended to ride rough shod over exiting mechanisms and entities without any analysis of ability and impact.
There needs to be co-ordination at three levels:

- Strategic
- Planning
- Implementation

Whilst co-ordination between various actors within the same structure has been quite good there has been little cross structural communication between the three levels mentioned above as well as between the various types of implementing actors themselves. As an example of the latter, The Sri Lankan Special Task Force (STF), which has responsibility for managing a number of WCs does not attend the same co-ordinating meetings as the international community despite the fact that co-ordination for everybody is managed by the GA and DS. Thus many WCs have become short of potable water simply because the lead agency for water and sanitation (UNICEF) is unaware of the need.

**The International Community**

The international community responded in an unprecedented manner and this level of response may have changed the character of international assistance forever. Some 180 NGOs responded to the crisis (some having operated in the country for many years whilst others are newly arrived). The calibre of these entities is uneven - some are highly experienced and professional whilst others are no more than groups of concerned people who responded to images in the media, probably as much for their own gratification as for any altruistic purpose. These organizations came armed with large amounts of money, a great part contributed by individual donors as opposed to government structures.

There is also the issue of qualification both of organizations and of individuals within these organizations. Given the high proportion of ex patriots currently present in Sri Lanka, organizations have found it difficult to recruit suitable personnel and thus a significant number are inexperienced ill-qualified for their tasks.

A question that remains unanswered by many organizations is that of long term commitment for the full duration of the reconstruction phase (maybe up to 10 years).

There are also suggestions that a number of faith based agencies have been promoting the idea that the tsunami is a divine punishment and even making assistance conditional upon service attendance and even conversion.

The result of this has been confusion, a lack of accountability - particularly to beneficiaries - and extremely uneven standards of work. There has also been considerable inequity in terms of the assistance people received - some received too much and are selling this on the market, others, particularly in difficult areas, received minimal assistance. This is a recipe for dissent and conflict.

**Recommendations**

In the short term i.e. as regards the tsunami disaster

That the communication lines from TAFOR and TAFREN to both other Ministries with responsibilities under the disaster and the GA, DS, GN structure be clarified in order to allow rapid and consistent decision making. Decisions should be made in consultation with those affected and widely disseminated.

That, policies regarding recovery and reconstruction are adopted formally by the GoSL and widely disseminated not only amongst service delivery actors but also the IDPs themselves. Dissemination should not only include the policy itself but, in the interests of transparency, should also include the reasoning behind the decision. Policies should be based on and take into account the provisions of the Guiding Principles, Sphere Standards and the Code of Conduct.

That co-ordination mechanisms at all levels are formalized and that all actors (whether local NGO, international NGO (INGO), Intergovernmental Organization (IGO) or GoSL are aware of each other’s roles and responsibilities and have a mechanism by which to communicate both needs and measures undertaken.
That registration of international NGOs be made tighter and subject to their adherence to the Guiding Principles, Sphere Standards and Code of Conduct described above as well as participation in co-ordination mechanisms.

That a monitoring and evaluation system for performance and impact of the various entities contributing to the recovery of the country be instituted in order that organizations may be held to account.

In the longer term (i.e. as regards future disasters)

That a DM plan is drawn up and that a specialist and sufficiently resourced office with full responsibility for managing the disaster and its response is created and legally mandated. Such an entity should have a direct reporting line to the centre of government. The regional and local entities should have a direct reporting line to such an entity in the event of a state of emergency or disaster being declared.

Local DM plans should be reviewed and altered in light of the new structure

Sectoral Considerations

Food

It was fortunate that the World Food Programme (WFP) which has been working in Sri Lanka for many years had considerable stocks available for distribution. It was also fortunate that the international community was able to mobilize food stocks quickly and thus there was sufficient food for distribution immediately.

In addition because of the high level of food distribution before the tsunami to some 38% of the population\(^{33}\) an efficient and effective government mechanism and structure at the GN level was available for distribution - the Multi-Purpose Co-Operative Societies (MPCS)

An added advantage of this structure has been that WFP's strategy (agreed with donors) for post tsunami food distribution was based on areas as opposed to individuals. This enabled conflict IDPs (but not tsunami affected) residing within an affected area to be issued with a ration card thus alleviating considerable distress

An unfortunate corollary of this policy is the lack of benefit felt by conflict IDPs residing outside the tsunami affected areas and thus again there is an issue of equity.

There is also an issue within Sri Lanka of nutritional knowledge particularly as regards especially vulnerable groups such as pregnant and lactating women.

It is notable that no comprehensive needs assessment has been undertaken other than that undertaken in the immediate aftermath of the disaster and it is possible that a number of IDPs have slipped through the distribution net, particularly those who may have fled to areas not affected by the tsunami.

Recommendation

That, NGOs and other actors are tasked to increase nutritional information and training to especially vulnerable groups in order that they derive the greatest benefit from their own food resources as well as distributed rations.

That a comprehensive needs assessment be undertaken in all areas with a view to a more targeted food distribution policy being implemented. Such an assessment should be followed by a comprehensive registration process.

\(^{33}\) Source WFP
**Non Food (but excluding shelter)**

The distribution of Non-food items (NFI) has been largely undertaken by NGOs. Large quantities of NFIs have been imported by NGOs as well as purchased locally on the market. Distribution has been uneven with much duplication and some gaps. Such inequality leads to dissent and conflict. There is a further issue of dependency with beneficiaries sitting around and waiting to see what turns up next rather than getting on with their lives.

The effect has also been to distort market prices in Sri Lanka thus causing hardship to those not directly affected by the tsunami.

In the initial aftermath, distribution was managed by local NGOs to a very high standard but these organizations were overwhelmed by incoming NGOs who saw them as no more than implementing partners at the lowest level.

**Recommendation**

That, whilst the emergency and thus the majority of NFI distributions are complete, it is still worth requiring NGOs to mark what they have distributed in detail on ration cards as well as requiring a detailed report to co-ordination bodies.

That GoSL should limit the registration of NGOs who do not meet standards nor agree to a co-ordination mechanism.

That GoSL should invest in local NGOs and civil society in terms of financial support and training thus reducing dependency on the international community for the future.

**Health Water and Sanitation**

There has been insufficient time to study these sectors in detail and therefore comment will be restricted to a few observations;

- Health provision in the aftermath proved adequate and the evidence for this is the lack of epidemic and any general increase in mortality.
- The arrival of the international community would appear to have been pre-emptive and, in the early stages, not helpful.
- Water and sanitation is generally available to standards but there is some unevenness in delivery particularly in hard to access areas
- There appears to be few garbage facilities or collection in WCs, emergency and transitional shelters
- There are co-ordination issues between GoSL WCs and the international community responsible for providing services
- There is considerable inequality between that provided to tsunami victims and other displaced
- Health structures is non tsunami affected areas suffered due to the transfer of caseloads from the coast and as a result require medium and long term support
- INGOs providing clear up services on roads and in towns have, to a large extent ignored the activities of local structures causing them to believe that they have not been acting correctly and thus they have desisted from clearing up their own vicinities. This is a dignity and dependency issue and needs to be handled with more sensitivity
- There have been a number of psychosocial interventions; some appear to be very superficial. Given the depth of this tragedy it is unlikely if all psychosocial issues have manifested themselves. The overall psychological health of the affected population, particularly children and other vulnerable groups, requires extensive monitoring in order that appropriate support may be given
- In a number of interviews with IDPs a common theme has been the inability to sleep. This, in part, must be due to overcrowding, proximity and lack of privacy but is also indicative of psychological disturbance

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Recommendations

No specific recommendations are made but it is requested that these observations be passed on to more specifically qualified individuals and organizations.

Shelter

The initial response to so many people losing their homes and thus becoming displaced was to utilize public buildings as WCs.

This initial response was effective and saved many lives but it soon became obvious that the situation could only be maintained on a temporary basis - many of the WCs were schools and there was pressure to vacate these buildings in time for the commencement of the school year at the end of January. In addition the WCs provided little, if any, privacy and in many cases were extremely crowded, uncomfortable and were thus unsuitable for anything other than a short-term solution. However, the GoSL had no policy or strategy nor any legally mandated or resourced structure to smoothly handle the temporary accommodation of more than half a million people and thus some confusion arose.

In an initial attempt to solve the problem GoSL called for the donation of 50,000 tents before realizing that tents are unsuitable for use in a country subject to high temperatures, high humidity and severe rainfall. This call for tents was rescinded although many had arrived in country and had been distributed. By this time, co-ordination had been vested in TAFOR under the direction of the President’s office. TAFOR changed the strategy to one of emergency shelter (with an anticipated life span of six months) with a further move to transitional shelter (with an anticipated lifespan of four years) as soon as possible. The completion of sufficient housing to enable final settlement is by definition likely to take a long time and the most pessimistic estimates are seven to ten years.

At a point following the disaster the GoSL published a regulation imposing a residential buffer zone of between 100 and 200 metres from the Mean High Tide Line. This regulation, at the time of writing, has not been gazetted and thus does not have the force of law. It is of note that an earlier regulation providing for a 300 metre buffer zone was gazetted but was largely ignored as regards implementation. This in itself is grounds for confusion.

This buffer zone policy and the fact it has not been supported by any kind of information campaign or published technical support has caused confusion, dissent and unevenness in application. In some places both temporary and permanent housing are being built in the buffer zone and in other areas the policy is strictly enforced.

The effect of the buffer zone is two fold;

- IDPs are being arbitrarily deprived of their original home (although not title to the land) which being sited on the beach is potentially (at least) attractive and probably the subject of considerable appreciation in value as a residence over time as tourism develops in the country.

- Land in Sri Lanka is at a premium particularly in coastal areas. The majority of employment is in the fishing industry. The reduction in available land for residential construction means that final residences for resettling IDPs are likely to be at a distance from their means of livelihood i.e. the ocean. Not to mention the opportunities for a secondary income through tourism. There is also the issue of settling different ethnic and religious groups in proximity. Something which is already causing discord.

The combination of a confused shelter policy and the introduction of what appears to be an arbitrary buffer zone policy have caused many issues and difficulties including:

- Multiple relocations - IDPs are being moved from WCs to tents to emergency shelters to transitional shelters and finally (and hopefully) to permanent homes. Unless and until an IDP is settled at his/her final location (whether in transitional shelter or other), s/he will be unable to resume any kind of a normal life.
Difficulties in identifying sufficient land for transitional shelters and thus delays in providing sufficient weather proof shelter built to international shelter standards in the short term. At the time of writing, approximately one month into the three month transitional shelter programme and according to TAP only 1,860 out of a total projected total of 30,000 transitional shelters have been completed.

Unevenness in the standard of construction of both emergency and transitional shelter with little regard for ventilation and safety (particularly fire) and in some cases a weather tight roof.

Delays in final settlement/resettlement of IDPs and the opportunity for them to regain control of their lives.

Lack of consideration as to the setting of different ethnic and religious groups and members of different castes as well as a lack of consultation in the overall process.

Lack of consideration of cultural considerations in the construction of emergency, transitional and permanent settlements e.g. the Buddhist injunction against the rebuilding of a house on its original footprint.

Also of concern is the strategy for final settlement into permanent homes. The concerns include:

- The long time frame for providing sufficient permanent residences (probably unavoidable)
- The distance of permanent dwellings from livelihoods
- The construction of suitable infrastructure in the proximity of new homes (schools market, clinics etc.,)
- The policy of relying on international humanitarian (emergency relief orientated) actors to provide and construct permanent dwellings and thus:
  - The quality, suitability, desirability and potential resale value of the finished product
  - The ability of potentially inexperienced entities (with young and inexperienced staff) to deliver a final product on time, within budget and to standard

**Recommendations**

That all WCs be closed as soon as possible and that residents be transferred directly to transitional shelters located on the same land or within the immediate vicinity of their allocated permanent shelter

That multiple relocations be kept to a minimum by sighting both emergency and transitional shelters either on or as close as possible to the final settlement site even if this means increasing the size of permanent sites.

Resettling of IDPs should take strict account of their livelihood (primary and secondary) requirements

That a process of consultation with the IDPs be adopted and strictly adhered to

That, ethnic, religious and cultural concerns are taken into account

That, standards of construction for transitional shelters be strictly enforced to include standards for materials used (particularly in the roof), ventilation, insect infestation and safety (particularly as regards the threat of fire). No shelter should be constructed without adequate and separate kitchen facilities and separate storage for kerosene. Fire breaks between structures should be strictly enforced and fire equipment (extinguishers and buckets) provided.

That the buffer zone policy be revisited and if it is to be maintained then a technical justification of the policy be published and widely disseminated.
That a policy of consultation is introduced between the government, those who have pledged permanent construction and the future residents to ensure that standards are understood and to avoid housing that is unsuitable and unattractive for the resident.

That those pledging to construct permanent housing should be checked as regards their long term commitment, credentials and ability to deliver sound structures that are attractive for residents, constructed on time, to standards and within budget.

That, a government monitoring system is introduced to ensure standards of both transitional and permanent construction.

That a policy of equity is introduced in order that one group of people is not seen to benefit more advantageously than another

That policy is clearly articulated, accompanied by reasoning and widely disseminated.

Livelihoods

Once again it proved impossible to go into any detail in the time provided but nevertheless this is an area of considerable concern. Observations are as follows:

- The introduction of livelihood programmes appears to have been very slow
- There appears to be little activity outside the fishing industry
- Bearing in mind the high proportion of male survivors, livelihood is a dignity as well as an income issue. Lack of an occupation is causing dependency and enforced idleness may well lead to an increase in domestic violence.
- There is some discussion of trying to shift day fisherman into larger boats in order to preserve inshore stocks. If this is the case then wide consultation and the interests of survivors needs to be taken into account.
- There appears to be little recognition of the needs for secondary income activities particularly amongst women.
- The issue of location and proximity has been discussed elsewhere but is reinforced here
- There are issues of mobility and thus access to livelihoods and MPCSs
- There appear to be issues as to the quality of the staff of NGOs undertaking livelihood programmes

Recommendations

Once again there are no specific recommendations other than to bring these substantial concerns to the attention of qualified and responsible entities and to ensure qualified and timely programmes that take into account dignity issues as well as income generation.

Documentation

It has been estimated that identity and title document loss among the tsunami displaced exceeds 70%. Loss of documentation can lead to denial of access to public services such as health and education and will cause problems in resolving issues of property restitution and compensation.

It is also understood that the Sri Lanka Human Rights Commission has been active amongst conflict related IDPS by providing mobile teams to assist with the process of obtaining replacement documents.

Recommendation

That this process be extended and made available to tsunami related IDPs and that the process be sufficiently resourced to enable a rapid outcome.
Monitoring and evaluation

The recovery and reconstruction phase of any disaster is more difficult and more complex than the initial relief phase. Concern has been expressed throughout this document as regards:

- Standards
- Qualification of operational entities for specific tasks
- Reporting lines and structures
- Equity

In addition there is a concern that responsible authorities will be satisfied with a written pledge thus absolving them from responsibility. In such a crucial time in the history of Sri Lanka this is insufficient and all the various actors need to be held to account. This can only be achieved by continuous, effective and constant monitoring of activity and impact.

Recommendations

That a qualified monitoring and evaluation commission be set up and mandated to ensure compliance with standards and policies and to ensure the best level of impact for the survivors of this disaster.

That the Select Committee to Recommend Steps to Minimize Damage from Natural Disaster take evidence from the Sri Lanka Commission for Human Rights which is the ombudsman responsible for complaints by tsunami survivors and that the Commission also have a role in the overall monitoring and evaluation process.

RFT 24th March 2005
Appendix 1

TERMS OF REFERENCE

FOR THE CONSULTANCY CONTRACT OF Mr. Robbie Thomson

1. **Nature of the consultancy:** Advisory services on migration to officials of the Government of Sri Lanka

**Objective:** To assist the *Parliamentary Select Committee on Disaster Preparedness* to achieve its objectives.
(The Sri Lankan Parliament has set up a Select Committee on Natural Disasters of 21 members “to investigate whether there was a lack of preparedness to meet an emergency of the nature of the Tsunami that struck Sri Lanka on December 26, 2004.” The Select Committee is also directed “to recommend what steps should be taken to ensure that an early warning system be put in place and what other steps should be taken to minimize the damage caused by similar natural disasters.”)

**Target:** To provide a written and oral report on IDPs in the context of the tsunami disaster and the Select Committee’s terms of reference with attention to IDP emergency response, care, protection, and voluntary return issues as defined and provided for in international agreements including the UN Guiding Principles.

2. **IOM Project to which the Consultancy is contributing:** Capacity Building for Disaster Preparedness in Sri Lanka.

3. **Tasks to be preformed under this contract:**

   a. Carry out consultations in Sri Lanka that provide a diverse range of Sri Lankan viewpoints regarding tsunami-affected IDPs in Sri Lanka such as: IDPs, community residents, community leaders, civil society organizations, academics, governmental officials.

   b. Consult officials of governmental authorities directly engaged in the post-tsunami response to tsunami-affected IDP relief such as the Ministry for Social Affairs, Centre for National Operations (CNO), Task Force for Reconstruction (TAFOR), Commissioner General for Essential Services (CGES) and Task Force for Rebuilding the Nation (TAFREN) and the Ministry of Relief, Rehabilitation and Reconstruction (MRRR), the Sri Lankan Disaster Management Centre and district level officials.

   c. Consult international and national staff of organizations active in tsunami-affected IDP relief and protection in Sri Lanka such as IOM, UNHCR, OHCHR, ICRC, local Red Cross and Red Crescent associations and international and national NGOs and human rights agencies.
Tangible and measurable output of the work assignment.

Prepare and submit to IOM and the Parliamentary Select Committee a detailed written report which describes:

a. The location of responsibility for the different physical and legal needs of tsunami-affected IDPs within the governmental ministries and according to different levels of government: central, district and division;

b. The actual immediate and medium term preparedness and response to the different physical and legal needs of tsunami-affected IDPs and delivery gaps that may have occurred;

c. The coordination mechanisms responsible for tsunami-affected IDP relief and protection and coordination gaps that may have occurred;

d. Issues of immediate and long term concern regarding tsunami-affected IDPs including their eventual voluntary return or resettlement according to international standards;

e. Recommendations for future preparedness by emergency response mechanisms and risk management systems for the relief, care, protection and voluntary return or resettlement of natural disaster-generated IDPs in Sri Lanka;

Prepare and deliver a maximum 15 minute oral brief on the main points of the written report to the Parliamentary Select Committee on Natural Disasters as presently scheduled to take place on March 24, 2005 and respond to questions that may follow from committee members;

4. Realistic delivery dates and details as to how the work must be delivered.

The written report and oral report are to be delivered to IOM Colombo by Thursday, March 24, 2005. The written report of at least 3,000 words (with any relevant annexes) will be submitted in electronic form and in three paper bound copies.

The oral report to the Select Committee can be delivered as a power point presentation at the consultant’s discretion.

5. Performance indicators for evaluation of results (value of services rendered in relation to their cost).

- Observations and recommendations accurately conform with international standards on IDP care and protection including the IDP Guiding Principles;
- Content of report is representative of the target community (government, non-government, media citizens);
- The consultant’s report is included in the Select Committee’s formal submission to Parliament;
- Commentary and interest is generated within elements of the Select Committee and the target community;
- Recommendations are accepted by the Government of Sri Lanka and acted upon;
Appendix 2

Guiding Principles on Internal Displacement

Foreword to the Guiding Principles
by Under-Secretary-General for Humanitarian Affairs
Mr. Sergio Vieira de Mello

The humanitarian community is increasingly aware of the crisis of internal displacement which affects over 20 million people worldwide. While responsibility for the protection of IDPs rests first and foremost with national governments and local authorities, it is important for the international community to see how best it can contribute to enhancing the protection of IDPs in conflict and crisis situations. We must also design humanitarian assistance in such a way that it will promote the protection of IDPs.

Within the United Nations system, significant steps have been taken to enhance an effective and timely response to the needs of internally displaced persons (IDPs). The Inter-Agency Standing Committee (IASC) has entrusted me with the responsibility to act as Focal Point within the UN system for issues relating to the internally displaced. In discharging this mandate, I am committed to enhancing the capacity of the United Nations as a whole to respond to situations of internal displacement as well as to promoting strong coordination and a clearer division of institutional responsibilities and adequate support to operational agencies.

In this context, I welcome the issuance by the Secretary-General's Special Representative on IDPs of the Guiding Principles on Internal Displacement. These Principles, which are based upon existing international humanitarian law and human rights instruments, are to serve as an international standard to guide governments as well as international humanitarian and development agencies in providing assistance and protection to IDPs.

The IASC fully supports the Guiding Principles and has encouraged its members to share them with their Executive Boards and with their staff, especially those in the field, in order to ensure that the Principles are applied in their activities on behalf of internally displaced persons.

I believe that the Guiding Principles can play a significant role in raising awareness of the needs of IDPs, mobilizing support within the humanitarian community and helping field colleagues to find solutions when confronted with the protection and assistance needs of the internally displaced. The Principles will also assist governments in providing for the security and well-being of their displaced populations.

I hope that each of you will work to ensure the widest possible dissemination and application of the Guiding Principles, in order to achieve the much needed improvement in the status and treatment of internally displaced persons.
Introductory Note
by the Representative of the Secretary-General
on Internally Displaced Persons
Mr. Francis M. Deng

The international community is confronted with the monumental task of ensuring protection for persons forcibly uprooted from their homes by violent conflicts, gross violations of human rights and other traumatic events, but who remain within the borders of their own countries. Nearly always they suffer from severe deprivation, hardship and discrimination. It is to meet this challenge that the Guiding Principles on Internal Displacement were developed.

The Principles identify the rights and guarantees relevant to the protection of the internally displaced in all phases of displacement. They provide protection against arbitrary displacement, offer a basis for protection and assistance during displacement, and set forth guarantees for safe return, resettlement and reintegration. Although they do not constitute a binding instrument, these Principles reflect and are consistent with international human rights and humanitarian law and analogous refugee law.

The Principles were developed over several years pursuant to the mandate given to me in 1992 by the Commission on Human Rights and reinforced by subsequent resolutions of both the Commission and the General Assembly. Initially I was asked to study the causes and consequences of internal displacement, the status of the internally displaced in international law, the extent to which their needs are being addressed under current institutional arrangements, and ways to improve protection and assistance for them.

Accordingly, developing needed legal and institutional frameworks for the internally displaced and undertaking country missions to engage Governments and others in a dialogue on their behalf have been the main activities of my mandate. In collaboration with a team of international legal experts, I examined the extent to which internally displaced persons receive adequate coverage under international law and produced a "Compilation and Analysis of Legal Norms" (E/CN.4/1996/52/Add.2). The study found that while existing law provides substantial coverage for the internally displaced, there are significant areas in which it fails to provide an adequate basis for their protection and assistance. Subsequently, the Commission and the General Assembly requested me to prepare an appropriate normative framework for the internally displaced. This led to the drafting of the Guiding Principles which both restate existing norms and seek to clarify grey areas and fill in the gaps.

After I presented the Guiding Principles to the Commission in 1998, the Commission adopted a resolution taking note of the Guiding Principles and of my stated intention as the Representative of the Secretary-General to use them in my ongoing dialogue with Governments and all those whose mandates and activities relate to the needs of the internally displaced. The Commission also took note of the decision of the Inter-Agency Standing Committee, which had welcomed the Principles and encouraged its members to share them with their Executive Boards and staff, especially in the field, and to apply them in their activities on behalf of the internally displaced.
The Guiding Principles should provide valuable practical guidance to Governments, other competent authorities, intergovernmental organizations and NGOs in their work with internally displaced persons. It is my hope that they will be widely circulated and given practical application in the field.

Guiding Principles on Internal Displacement

Introduction - Scope and Purpose

1. These Guiding Principles address the specific needs of internally displaced persons worldwide. They identify rights and guarantees relevant to the protection of persons from forced displacement and to their protection and assistance during displacement as well as during return or resettlement and reintegration.

2. For the purposes of these Principles, internally displaced persons are persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border.

3. These Principles reflect and are consistent with international human rights law and international humanitarian law. They provide guidance to:

   (a) The Representative of the Secretary-General on internally displaced persons in carrying out his mandate;

   (b) States when faced with the phenomenon of internal displacement;

   (c) All other authorities, groups and persons in their relations with internally displaced persons; and

   (d) Intergovernmental and non-governmental organizations when addressing internal displacement.

4. These Guiding Principles should be disseminated and applied as widely as possible.

Section I. General Principles

Principle 1

1. Internally displaced persons shall enjoy, in full equality, the same rights and freedoms under international and domestic law as do other persons in their country. They shall not be discriminated against in the enjoyment of any rights and freedoms on the ground that they are internally displaced.

2. These Principles are without prejudice to individual criminal responsibility under international law, in particular relating to genocide, crimes against humanity and war crimes.
Principle 2

1. These Principles shall be observed by all authorities, groups and persons irrespective of their legal status and applied without any adverse distinction. The observance of these Principles shall not affect the legal status of any authorities, groups or persons involved.

2. These Principles shall not be interpreted as restricting, modifying or impairing the provisions of any international human rights or international humanitarian law instrument or rights granted to persons under domestic law. In particular, these Principles are without prejudice to the right to seek and enjoy asylum in other countries.

Principle 3

1. National authorities have the primary duty and responsibility to provide protection and humanitarian assistance to internally displaced persons within their jurisdiction.

2. Internally displaced persons have the right to request and to receive protection and humanitarian assistance from these authorities. They shall not be persecuted or punished for making such a request.

Principle 4

1. These Principles shall be applied without discrimination of any kind, such as race, colour, sex, language, religion or belief, political or other opinion, national, ethnic or social origin, legal or social status, age, disability, property, birth, or on any other similar criteria.

2. Certain internally displaced persons, such as children, especially unaccompanied minors, expectant mothers, mothers with young children, female heads of household, persons with disabilities and elderly persons, shall be entitled to protection and assistance required by their condition and to treatment which takes into account their special needs.

Section II. Principles Relating to Protection From Displacement

Principle 5

All authorities and international actors shall respect and ensure respect for their obligations under international law, including human rights and humanitarian law, in all circumstances, so as to prevent and avoid conditions that might lead to displacement of persons.

Principle 6

1. Every human being shall have the right to be protected against being arbitrarily displaced from his or her home or place of habitual residence.

2. The prohibition of arbitrary displacement includes displacement:
(a) When it is based on policies of apartheid, "ethnic cleansing" or similar practices aimed at/or resulting in altering the ethnic, religious or racial composition of the affected population;

(b) In situations of armed conflict, unless the security of the civilians involved or imperative military reasons so demand;

(c) In cases of large-scale development projects, which are not justified by compelling and overriding public interests;

(d) In cases of disasters, unless the safety and health of those affected requires their evacuation; and

(e) When it is used as a collective punishment.

3. Displacement shall last no longer than required by the circumstances.

*Principle 7*

1. Prior to any decision requiring the displacement of persons, the authorities concerned shall ensure that all feasible alternatives are explored in order to avoid displacement altogether. Where no alternatives exist, all measures shall be taken to minimize displacement and its adverse effects.

2. The authorities undertaking such displacement shall ensure, to the greatest practicable extent that proper accommodation is provided to the displaced persons that such displacements are effected in satisfactory conditions of safety, nutrition, health and hygiene, and that members of the same family are not separated.

3. If displacement occurs in situations other than during the emergency stages of armed conflicts and disasters, the following guarantees shall be complied with:

   (a) A specific decision shall be taken by a State authority empowered by law to order such measures;

   (b) Adequate measures shall be taken to guarantee to those to be displaced full information on the reasons and procedures for their displacement and, where applicable, on compensation and relocation;

   (c) The free and informed consent of those to be displaced shall be sought;

   (d) The authorities concerned shall endeavour to involve those affected, particularly women, in the planning and management of their relocation;

   (e) Law enforcement measures, where required, shall be carried out by competent legal authorities; and

   (f) The right to an effective remedy, including the review of such decisions by appropriate judicial authorities, shall be respected.
**Principle 8**

Displacement shall not be carried out in a manner that violates the rights to life, dignity, liberty and security of those affected.

**Principle 9**

States are under a particular obligation to protect against the displacement of indigenous peoples, minorities, peasants, pastoralists and other groups with a special dependency on and attachment to their lands.

**Section III. Principles Relating to Protection During Displacement**

**Principle 10**

1. Every human being has the inherent right to life which shall be protected by law. No one shall be arbitrarily deprived of his or her life. Internally displaced persons shall be protected in particular against:

   (a) Genocide;
   
   (b) Murder;
   
   (c) Summary or arbitrary executions; and
   
   (d) Enforced disappearances, including abduction or unacknowledged detention, threatening or resulting in death.

   Threats and incitement to commit any of the foregoing acts shall be prohibited.

2. Attacks or other acts of violence against internally displaced persons who do not or no longer participate in hostilities are prohibited in all circumstances. Internally displaced persons shall be protected, in particular, against:

   (a) Direct or indiscriminate attacks or other acts of violence, including the creation of areas wherein attacks on civilians are permitted;
   
   (b) Starvation as a method of combat;
   
   (c) Their use to shield military objectives from attack or to shield, favour or impede military operations;
   
   (d) Attacks against their camps or settlements; and
   
   (e) The use of anti-personnel landmines.
Principle 11

1. Every human being has the right to dignity and physical, mental and moral integrity.

2. Internally displaced persons, whether or not their liberty has been restricted, shall be protected in particular against:

   (a) Rape, mutilation, torture, cruel, inhuman or degrading treatment or punishment, and other outrages upon personal dignity, such as acts of gender-specific violence, forced prostitution and any form of indecent assault;

   (b) Slavery or any contemporary form of slavery, such as sale into marriage, sexual exploitation, or forced labour of children; and

   (c) Acts of violence intended to spread terror among internally displaced persons.

Threats and incitement to commit any of the foregoing acts shall be prohibited.

Principle 12

1. Every human being has the right to liberty and security of person. No one shall be subjected to arbitrary arrest or detention.

2. To give effect to this right for internally displaced persons, they shall not be interned in or confined to a camp. If in exceptional circumstances such internment or confinement is absolutely necessary, it shall not last longer than required by the circumstances.

3. Internally displaced persons shall be protected from discriminatory arrest and detention as a result of their displacement.

4. In no case shall internally displaced persons be taken hostage.

Principle 13

1. In no circumstances shall displaced children be recruited nor be required or permitted to take part in hostilities.

2. Internally displaced persons shall be protected against discriminatory practices of recruitment into any armed forces or groups as a result of their displacement. In particular any cruel, inhuman or degrading practices that compel compliance or punish non-compliance with recruitment are prohibited in all circumstances.

Principle 14

1. Every internally displaced person has the right to liberty of movement and freedom to choose his or her residence.

2. In particular, internally displaced persons have the right to move freely in and out of camps or other settlements.
**Principle 15**

Internally displaced persons have:

(a) The right to seek safety in another part of the country;

(b) The right to leave their country;

(c) The right to seek asylum in another country; and

(d) The right to be protected against forcible return to or resettlement in any place where their life, safety, liberty and/or health would be at risk.

**Principle 16**

1. All internally displaced persons have the right to know the fate and whereabouts of missing relatives.

2. The authorities concerned shall endeavour to establish the fate and whereabouts of internally displaced persons reported missing, and cooperate with relevant international organizations engaged in this task. They shall inform the next of kin on the progress of the investigation and notify them of any result.

3. The authorities concerned shall endeavour to collect and identify the mortal remains of those deceased, prevent their despoliation or mutilation, and facilitate the return of those remains to the next of kin or dispose of them respectfully.

4. Grave sites of internally displaced persons should be protected and respected in all circumstances. Internally displaced persons should have the right of access to the grave sites of their deceased relatives.

**Principle 17**

1. Every human being has the right to respect of his or her family life.

2. To give effect to this right for internally displaced persons, family members who wish to remain together shall be allowed to do so.

3. Families which are separated by displacement should be reunited as quickly as possible. All appropriate steps shall be taken to expedite the reunion of such families, particularly when children are involved. The responsible authorities shall facilitate inquiries made by family members and encourage and cooperate with the work of humanitarian organizations engaged in the task of family reunification.

4. Members of internally displaced families whose personal liberty has been restricted by internment or confinement in camps shall have the right to remain together.
Principle 18

1. All internally displaced persons have the right to an adequate standard of living.

2. At the minimum, regardless of the circumstances, and without discrimination, competent authorities shall provide internally displaced persons with and ensure safe access to:

   (a) Essential food and potable water;

   (b) Basic shelter and housing;

   (c) Appropriate clothing; and

   (d) Essential medical services and sanitation.

3. Special efforts should be made to ensure the full participation of women in the planning and distribution of these basic supplies.

Principle 19

1. All wounded and sick internally displaced persons as well as those with disabilities shall receive to the fullest extent practicable and with the least possible delay, the medical care and attention they require, without distinction on any grounds other than medical ones. When necessary, internally displaced persons shall have access to psychological and social services.

2. Special attention should be paid to the health needs of women, including access to female health care providers and services, such as reproductive health care, as well as appropriate counselling for victims of sexual and other abuses.

3. Special attention should also be given to the prevention of contagious and infectious diseases, including AIDS, among internally displaced persons.

Principle 20

1. Every human being has the right to recognition everywhere as a person before the law.

2. To give effect to this right for internally displaced persons, the authorities concerned shall issue to them all documents necessary for the enjoyment and exercise of their legal rights, such as passports, personal identification documents, birth certificates and marriage certificates. In particular, the authorities shall facilitate the issuance of new documents or the replacement of documents lost in the course of displacement, without imposing unreasonable conditions, such as requiring the return to one's area of habitual residence in order to obtain these or other required documents.

3. Women and men shall have equal rights to obtain such necessary documents and shall have the right to have such documentation issued in their own names.
**Principle 21**

1. No one shall be arbitrarily deprived of property and possessions.

2. The property and possessions of internally displaced persons shall in all circumstances be protected, in particular, against the following acts:

   (a) Pillage;

   (b) Direct or indiscriminate attacks or other acts of violence;

   (c) Being used to shield military operations or objectives;

   (d) Being made the object of reprisal; and

   (e) Being destroyed or appropriated as a form of collective punishment.

3. Property and possessions left behind by internally displaced persons should be protected against destruction and arbitrary and illegal appropriation, occupation or use.

**Principle 22**

1. Internally displaced persons, whether or not they are living in camps, shall not be discriminated against as a result of their displacement in the enjoyment of the following rights:

   (a) The rights to freedom of thought, conscience, religion or belief, opinion and expression;

   (b) The right to seek freely opportunities for employment and to participate in economic activities;

   (c) The right to associate freely and participate equally in community affairs;

   (d) The right to vote and to participate in governmental and public affairs, including the right to have access to the means necessary to exercise this right; and

   (e) The right to communicate in a language they understand.

**Principle 23**

1. Every human being has the right to education.

2. To give effect to this right for internally displaced persons, the authorities concerned shall ensure that such persons, in particular displaced children, receive education which shall be free and compulsory at the primary level. Education should respect their cultural identity, language and religion.
3. Special efforts should be made to ensure the full and equal participation of women and girls in educational programmes.

4. Education and training facilities shall be made available to internally displaced persons, in particular adolescents and women, whether or not living in camps, as soon as conditions permit.

**Section IV. Principles Relating to Humanitarian Assistance**

*Principle 24*

1. All humanitarian assistance shall be carried out in accordance with the principles of humanity and impartiality and without discrimination.

2. Humanitarian assistance to internally displaced persons shall not be diverted, in particular for political or military reasons.

*Principle 25*

1. The primary duty and responsibility for providing humanitarian assistance to internally displaced persons lies with national authorities.

2. International humanitarian organizations and other appropriate actors have the right to offer their services in support of the internally displaced. Such an offer shall not be regarded as an unfriendly act or an interference in a State's internal affairs and shall be considered in good faith. Consent thereto shall not be arbitrarily withheld, particularly when authorities concerned are unable or unwilling to provide the required humanitarian assistance.

3. All authorities concerned shall grant and facilitate the free passage of humanitarian assistance and grant persons engaged in the provision of such assistance rapid and unimpeded access to the internally displaced.

*Principle 26*

Persons engaged in humanitarian assistance, their transport and supplies shall be respected and protected. They shall not be the object of attack or other acts of violence.

*Principle 27*

1. International humanitarian organizations and other appropriate actors when providing assistance should give due regard to the protection needs and human rights of internally displaced persons and take appropriate measures in this regard. In so doing, these organizations and actors should respect relevant international standards and codes of conduct.

2. The preceding paragraph is without prejudice to the protection responsibilities of international organizations mandated for this purpose, whose services may be offered or requested by States.
Section V. Principles Relating to Return, Resettlement and Reintegration

**Principle 28**

1. Competent authorities have the primary duty and responsibility to establish conditions, as well as provide the means, which allow internally displaced persons to return voluntarily, in safety and with dignity, to their homes or places of habitual residence, or to resettle voluntarily in another part of the country. Such authorities shall endeavour to facilitate the reintegration of returned or resettled internally displaced persons.

2. Special efforts should be made to ensure the full participation of internally displaced persons in the planning and management of their return or resettlement and reintegration.

**Principle 29**

1. Internally displaced persons who have returned to their homes or places of habitual residence or who have resettled in another part of the country shall not be discriminated against as a result of their having been displaced. They shall have the right to participate fully and equally in public affairs at all levels and have equal access to public services.

2. Competent authorities have the duty and responsibility to assist returned and/or resettled internally displaced persons to recover, to the extent possible, their property and possessions which they left behind or were dispossessed of upon their displacement. When recovery of such property and possessions is not possible, competent authorities shall provide or assist these persons in obtaining appropriate compensation or another form of just reparation.

**Principle 30**

All authorities concerned shall grant and facilitate for international humanitarian organizations and other appropriate actors, in the exercise of their respective mandates, rapid and unimpeded access to internally displaced persons to assist in their return or resettlement and reintegration.
Report of the Expert Group Meeting

On
Internal Displacement in the Commonwealth: Common Themes and Best Practice Guidelines

Marlborough House
19 - 21 May 2003

Human Rights Unit
COMMONWEALTH SECRETARIAT
Preface

The Commonwealth is a voluntary organization of 53 sovereign independent states and is committed to fundamental human rights principles enshrined in the Harare Declaration. These principles include international peace and order, liberty of the individual under the law, human dignity and equality for all. Commonwealth Heads of Governments have pledged to vigorously pursue the protection of the fundamental political values of the organization, fundamental human rights, and equality of women, sustainable development and alleviation of poverty.

The issue of internal displacement is of concern for the Commonwealth as there are approximately 3 million internally displaced people in the Commonwealth. In 1995 Commonwealth Heads of Government recommended that the Commonwealth should look into ways in which the work of UN agencies and NGO’s working in this area, as well as international principles and norms, may be reinforced and applied to bring practical help to alleviate the burdens to the affected countries and persons. In pursuance of this recommendation, the Commonwealth Secretary General set up an Inter governmental Group on Refugees and Displaced People in 1996 to study the tragic problem of growing numbers of refugees and internally displaced persons in the Commonwealth. The Group came up with a number of recommendations in 1997 notably that the Commonwealth should lend its support and contribute to international efforts to develop a normative framework to address the ‘lacunae’ in the protection of internally displaced persons, and should Endeavour to promote the implementation of relevant human rights and humanitarian instruments.

In May 2003, the Human Rights Unit convened an Expert Group Meeting to examine the issue further and make practical suggestions on how the problem should be tackled from the perspective of the Commonwealth and its membership. The Expert Group maintains that interventions to address the issue must be mainstreamed at all levels of government in the development of policies and programmes. Co-ordinated efforts at national, regional and international levels should also be undertaken. The Guiding Principles on Internal Displacement developed by the Representative of the UN Secretary General on Internally Displaced Persons serve as ‘best practice’ reference for governments and organizations responsible for protecting internally displaced persons.

We acknowledge the following people who gave their time, expertise and experience freely in participating in the Expert Group Meeting:

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They were assisted by officers of the Human Rights Unit of the Commonwealth Secretariat.
Introduction

The Commonwealth is a voluntary association of 53 states, which share similar values and principles. From May 19 - 21, 2003, its Human Rights Unit held an Expert Group meeting in London to examine internal displacement in the Commonwealth and develop best practice guidelines for dealing with such situations. The meeting was convened pursuant to a recommendation of the Commonwealth’s Intergovernmental Group on Refugees and Displaced Persons that called upon the organization to lend its support to national and international efforts to address and resolve problems of internally displaced persons (IDPs).

Within the Commonwealth, at least 12 countries are affected by internal displacement. This means that millions of people are uprooted within the borders of their own countries by internal conflicts, communal strife, human rights violations and natural and human-made disasters. Often, they receive the bare minimum of assistance and protection.

Since the problem of internal displacement is both a humanitarian and human rights one, involving violations of international human rights and humanitarian law, it was considered important for the Commonwealth to examine the issue more fully and provide guidance to its member countries on how most effectively to deal with it.

Commonwealth Commitment to the Promotion of Human Rights

The promotion and protection of human rights is a central commitment of the Commonwealth. Indeed, the association’s aims are to promote international cooperation and peace, democracy and good governance, respect for human rights and the rule of law, and poverty alleviation through sustainable economic and social development. The Commonwealth’s fundamental values are expressed in two landmark declarations: the Declaration of Commonwealth Principles, agreed to by the Heads of Government of member countries in 1971 in Singapore, and the Harare Commonwealth Declaration (henceforth the Harare Declaration) agreed to in 1991 in Zimbabwe.

Under the Declaration of Commonwealth Principles, Heads of Government pledged to concentrate on the following areas: promotion of fundamental political values; equality of women; the provision of universal access to education; the promotion of sustainable development; protection of the environment; action to combat drug trafficking and abuse and communicable diseases; help for small states in tackling their particular economic and security problems; support for the United Nations and other international institutions in the search of peace; and the promotion of international consensus on global issues.

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34 Although membership initially was restricted to former British colonies, the Commonwealth has accepted membership of former non-British colonies, such as Mozambique. The Commonwealth accounts for 1.7 billion in population, or 30 percent of the world’s population.

35 See the Chart below. It should be noted that Pakistan has been suspended from membership, and that IDPs are no longer counted in Mozambique.
The 1991 Harare Declaration focused specifically on human rights. Commonwealth Heads of Government pledged to work in the following areas with renewed vigour:

- protection and promotion of the fundamental political values of the Commonwealth;
- democracy, democratic processes and institutions which reflect national circumstances, the rule of law, the independence of the judiciary, and just and honest government;
- fundamental human rights including equal rights and opportunities for all citizens regardless of race, colour, creed or political belief;
- equality for women so that they may exercise their full and equal rights;
- universal access to education;
- promotion of sustainable development in the alleviation of poverty;
- extension of the benefits of development within a framework of respect for human rights.

Addressing the Rights of IDPs

Falling within the Commonwealth's human rights framework are internally displaced persons, who count among the world's most vulnerable people. Worldwide, there are more than 25 million IDPs, largely the result of the growing number of civil wars, which have replaced interstate wars as the main source of conflict in the post cold war period. In addition, there are an estimated 20 to 30 million persons forcibly displaced by natural disasters and development projects who remain uprooted within their own countries. Within the Commonwealth, the total number of IDPs is estimated at 2 to 3 million uprooted by conflict, and millions more by natural and human made disasters.

As nationals of their own countries, IDPs are entitled to the same rights and freedoms as others in their country, without discrimination. They also benefit from the protection of international human rights law and in situations of armed conflict, international humanitarian law, which is binding on both states and rebel groups. However, the challenge lies in making these rights and protection guarantees a reality in practice. IDPs, it must be underscored, are separated from their homes, communities and livelihoods, and often have no one to turn to for fundamental protection and assistance. Often trapped in the midst of conflicts, they are more likely to be deprived of shelter, food and health services than other members of the population, and they are especially vulnerable to arbitrary detention, forced conscription, sexual assault, physical attack and other forms of human rights abuse. Death rates among the internally displaced have counted as much as sixty times higher than those among the non-displaced within the same country. In fact, the highest mortality rates ever recorded during humanitarian emergencies have been among internally displaced populations. Particularly affected have been women and children who form the vast majority of the displaced.

In contrast to refugees, persons in “refugee-like” conditions in their own countries do not benefit from the legal and institutional arrangements set up after the Second World War to protect persons who flee into other countries.
Neither the Refugee Convention nor the United Nations High Commissioner for Refugees (UNHCR) was intended to protect or assist persons who remain displaced and at risk within the borders of their own countries. It was expected that their governments would provide for their security and well being. However, governments in many instances have failed to provide basic protection and assistance, in some cases because they do not have the capacity to do so, in other cases because in internal conflicts, governments are often at war with different ethnic and minority groups on their territory and IDPs are often identified with “the enemy”. As United Nations Secretary-General Kofi Annan has pointed out: “Internal displacement has created an unprecedented challenge for the international community: to find ways to respond to what is essentially an internal crisis.”36 In recognition of the problem, the Commonwealth’s Intergovernmental Group on the Emergence of a Global Humanitarian Order recommended to Commonwealth Heads of Government at their meeting in Auckland in November 1995 that the Commonwealth “address the tragic problem of the growing number of refugees and displaced persons worldwide,” and set up an intergovernmental group to study the problem.

**Intergovernmental Group on Refugees and Displaced Persons**

In November 1996, the Commonwealth Secretary-General established a 16-member Intergovernmental Group on Refugees and Displaced Persons (IGRDP) whose objective was “to study the problem of refugees and displaced persons and to publicise the impact on developing countries afflicted by large scale movements of refugees and displaced persons fleeing their homes to escape anarchy, civil war, foreign occupation, economic deprivation, poverty, environmental degradation or natural disasters.” The Group was asked to pay special attention to the needs of women and children.

In a report, issued in 1997, the Group made the following recommendations with regard to internal displacement:

(a) The Commonwealth should reaffirm its commitment to the principles in the Harare Declaration and continue its initiatives to address problems in member countries before they erupt into conflict and consequent large-scale population movements.

(b) The Secretary-General should continue his good offices role aimed at facilitating the resolution of conflict and reducing tensions, especially where these have the potential to create mass refugee flows or significant internal displacement.

(c) The Commonwealth should recognise the burden borne by countries that have to deal with refugees and internally displaced persons, the strains placed on their capacities and the urgent need to develop effective measures to rectify the situation.

(d) The Commonwealth should lend its support to the work of the Representative of the UN Secretary-General on Internally Displaced Persons and to other UN agencies, national, international and non-governmental organisations in their endeavours to address and resolve problems of internally displaced persons, and encourage member countries to continue supporting this work.

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(e) Heads of Government should encourage Commonwealth countries, including through their membership in regional organisations, to adopt regional approaches to the problem of refugees and displaced persons.

(f) The Commonwealth should lend its support and contribute to international efforts to develop a normative framework to address the lacunae in the protection of internally displaced persons and should endeavour to promote the implementation of relevant human rights and humanitarian instruments. Where applicable and feasible the normative framework should be implemented by national legislation.

(g) Women and children refugees and displaced persons should be treated as a priority. To this end, Commonwealth countries should implement international and regional instruments on human rights, adopt and actively support UNHCR guidelines for the protection of refugee and displaced women, raise awareness among refugee and displaced women of their rights and provide safe avenues of reporting and redress for those whose human rights have been violated.

**Unique Role of the Commonwealth**

In 2000 the Commonwealth (Legal Division) participated in an International Colloquy on the Guiding Principles on Internal Displacement, held in Vienna and hosted by the Government of Austria. The purpose of the Colloquy was to discuss and further promote the Guiding Principles on Internal Displacement - the first international standards applicable to IDPs, developed under the direction of the Representative of the UN Secretary-General on Internally Displaced Persons and presented to the UN Commission on Human Rights in 1998.

At the Colloquy, the Commonwealth was acknowledged to be a particularly important forum for addressing the internal displacement issue because of its unique structure and membership, spanning all continents affected by internal displacement. In addition, because the Asian region lacked a regional human rights organisation akin to those in Africa, the Americas and Europe, the role of the Commonwealth was considered significant with regard to internal displacement in that part of the world.

In its report, the Colloquy suggested that the Commonwealth promote awareness of the Guiding Principles on Internal Displacement and encourage its members to incorporate their provisions into national legislation and into the work of national human rights commissions and ombudspersons. It also suggested that the Commonwealth assume a greater role itself in regard to the problem of internal displacement through the good offices of its Secretary-General. Commonwealth political bodies, it was pointed out, had undertaken to prevent conflicts by early warning and to monitor and identify the root causes of mass displacement, activities pertinent to a human rights focus on internal displacement.
In addition, United Nations resolutions of both the General Assembly and the Commission on Human Rights have expressly highlighted the role of the Commonwealth. Specifically, resolutions have called upon the Representative of the Secretary-General on Internally Displaced Persons to work closely with intergovernmental organisations, including the Commonwealth, and jointly to promote the dissemination and application of the Guiding Principles. They have welcomed the initiatives undertaken by organisations, including the Commonwealth, to address the protection, assistance and development needs of IDPs, and have called upon the Commonwealth and other organisations to strengthen their activities and cooperation with the Representative.

In December 2002, the Commonwealth Human Rights Unit participated in an International Symposium on the Mandate of the Representative of the UN Secretary-General on Internally Displaced Persons, held in Vienna and hosted by the Governments of Austria and Norway. The Symposium inter alia discussed ways in which international organisations, including the Commonwealth, could promote the Guiding Principles on Internal Displacement and enlarge their roles with regard to internal displacement.

In May 2003, the Commonwealth undertook its first meeting exclusively devoted to the subject of internal displacement. Its Expert Group Meeting on Internal Displacement in the Commonwealth, held in London, brought together government officials, international organisation officials, including the Representative of the Secretary-General on Internally Displaced Persons, international and local NGOs, and research institutions. The meeting examined internal displacement worldwide and in the Commonwealth, discussed the steps that member governments could take to more effectively address the problem, and explored the role that the Commonwealth as an institution could play with member governments and with the international community to deal with mass displacement. Specifically, the discussions and recommendations made at the meeting aimed to identify best practices to guide both Commonwealth countries and the association itself with regard to internal displacement.

**Nature of the Problem in the Commonwealth**

There are between 2 and 3 million internally displaced persons forcibly uprooted by interstate and internal conflict in Commonwealth countries – see Chart below. Additional millions are estimated as having been displaced by natural and human made disasters, and also by development projects.

Conflict-induced displacement has often had its roots in power struggles among different ethnic, religious and linguistic groups or between governments and minorities over greater access to economic resources and power. In other cases, the level of human rights abuse in a country has been so pervasive that it has been the principal cause of displacement. Interstate conflicts or internal conflicts over which outside powers have a strong influence have produced significant displacement as well. (For further discussion of causes, see below.)

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Impact of Conflict-Induced Displacement

The impact of conflict and displacement on developing countries within the Commonwealth has been considerable. It has seriously undermined the internal stability of many countries. Moreover, governments, instead of prioritising economic and social development, have found it necessary to divert their meagre resources from development goals towards the protection and management of displaced populations. The disruption of social and economic, and also political, order has led to undesirable and serious consequences for the population.

Indeed, studies have shown that the impact of large-scale displacement extends well beyond the numbers counted as displaced. Entire communities or even entire regions may be depopulated, as was the case in parts of Mozambique, when large numbers departed from rural areas. The human resources needed to maintain adequate levels of cultivation dwindle and areas fall into disrepair while community organisation, local leadership patterns and dispute prevention, management and resolution mechanisms fall apart. Long term, negative effects can also take place on the environment when the displaced flee to rural areas. When they flood into cities, major urban centres can suffer serious consequences. Urban populations may double or triple in size and the numbers may overload social services, thereby hastening the deterioration of urban infrastructure.

When mass displacement lasts for long periods, even decades, it becomes impossible to return to previous patterns of community life. The codes of social behaviour and social institutions that held society together no longer exist. With this collective breakdown of social relationships, confidence in the institutions of the society disappears and post conflict reintegration and development become far more complicated than the mere rebuilding of the physical infrastructure.

Conflict and displacement in one country can also spill over borders and destabilize neighbouring countries and entire regions. Conflict and displacement in Sierra Leone and in Uganda, for example, were heavily influenced by events in neighbouring states. Both West Africa and the Horn of Africa exemplify the harmful impact internal displacement can have on entire regions.

Vulnerable Groups

Women, children, the elderly and persons with disabilities often experience the most serious consequences from internal displacement. In the case of women, family patterns and gender roles change as fathers, husbands and brothers become separated from their households, either searching for work or joining up with or being recruited into military forces. The result is that many women become heads of household, although they soon find that economic opportunities are limited and discriminatory practices are widespread. In general, the majority of internally displaced persons in camps are women. In Uganda, with an absence of protection from male members of the family, displaced adolescent girls have been particularly vulnerable to abductions and sexual abuse by rebel forces.
The severe effects of displacement on children and their development are well documented. Most notable are the problems caused by lack of shelter, warmth, proper food, and health care; separation from families; and the absence of protection. Educational opportunities are also in short supply. When displacement endures for long periods, it can produce an entire generation of uneducated children, many of who may have become combatants, witnessed atrocities against their families, or have themselves committed atrocities against others.

The impact of displacement also extends to the many families who “host” IDPs; too often insufficient attention is paid to their capacity to sustain IDP relatives and friends while at the same time trying to support their own families.

**Contrasts and Similarities in Commonwealth Experience**

Of the 53 member states in the Commonwealth, the 12 included in the chart below have all experienced or are currently experiencing internal displacement. As Commonwealth members, they have a common historical linkage, but as states with their own distinct characteristics, there are marked differences in the stages and severity of internal displacement in their countries. In Mozambique, for example, there were more than 4 million IDPs during the height of the civil war whereas in India, conflict and communal strife have displaced comparatively smaller numbers. In Mozambique, displacement is now considered to have ended, since IDPs have returned home or resettled following the end of the civil war, whereas in Sri Lanka, programs to resettle IDPs are only just now beginning. The situation is again different in Uganda where plans for return programs are continually stalled by the further displacement of civilians by conflict in the North.

Nonetheless, there are many common themes and ideas that can be drawn from the experiences of Commonwealth countries.

**Ethnic Conflict**

The prevalence of ethnic conflict as a root cause of displacement in Commonwealth countries is a consistent theme. Overall, the ethnic divides within these states have often been identified as a legacy of colonialism and of the artificial borders created by colonizing states. In addition, political changes and evolving democracy in different countries have intensified these divides, such as in Kenya and Nigeria, where ethnic violence and displacement have been increasing. Militant groups responsible for causing displacement have also regularly been linked to ethnic divisions. This can be seen in Uganda. In Bangladesh and India, disputes among ethnic and religious groups have also caused mass displacement; in Sri Lanka civil war fought on ethnic lines has produced large scale displacement; and in the Solomon Islands the outbreak of inter-ethnic violence has been the primary cause of displacement. At the same time, it is seldom the mere differences among ethnic groups that generate conflict, but the consequences of those differences when it comes to sharing power and distributing the nation’s resources and opportunities.

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Need for Protection in All Phases of Displacement

The prevalence of violence against civilians is another common theme emanating from conflicts, especially among ethnic groups. Indeed, one of the key motivating factors behind the flight of civilian populations is the search for protection from violence. During the Mozambique civil war, violence against civilians was a deliberate tactic used by fighting groups. However, even after flight, violence can continue and has been known to increase as displaced people become exposed to new risks. In Sierra Leone, for example, the atrocities committed by rebel forces spurred mass displacement, but violence continued against civilians during their displacement. In Northern Uganda, IDPs displaced by violent rebel attacks on their villages were later subjected to rebel attacks against their camps, forcing them to continue to move and to remain displaced.

Not only does lack of security and protection cause and frequently characterize situations of displacement but also affects the ability of IDPs to return or resettle. Indeed, protection problems are often cited as reasons why internally displaced persons can not return to their original homes and in some cases why displacement does not end. In both Sierra Leone and the Solomon Islands, a collapse of the basic protection institutions, such as a functioning police force, has made returns and resettlement more difficult. In India, the security situation in Kashmir has not allowed for the safe return of IDPs. In Sri Lanka the threat of landmines has posed a significant challenge to the successful return of IDPs. Durable solutions for IDPs thus depend heavily on the creation of a secure environment, enabling return, local integration or resettlement.

Land and Resources

Still another common feature of displacement in Commonwealth countries is conflict over land. In Kenya, disputes over land ownership and land use were considered a main reason behind the violence and displacement. In Bangladesh a land commission was created to address the restitution of land to returning refugees and IDPs. However, while at least half of the refugees have received entitlements to their former land, the majority of IDPs are still waiting for their land issues to be addressed.

Disputes over access to and use of resources are prevalent in many Commonwealth countries. In Nigeria, conflict over oil has led to violent clashes and subsequent displacement. In Eastern Uganda, the raiding of villages in search for cattle and goods has caused displacement.

The Challenge of Returns

The question of return or resettlement is important for every situation of internal displacement in the Commonwealth. A survey of how this question has been addressed yields varied responses. Many returns, of course, occur spontaneously and lack organization. When returns are to areas where there are security problems and there has been no preparation for reintegration, the returns may be temporary. In other cases, where planning is done, sometimes in co-operation with the international community, more sustainable returns result, as in Mozambique, where the largest number of returns took place. At the same time, there were significant differences in
the rates of return in Mozambique between refugees and IDPs because many of the internally displaced who had fled to urban areas had adapted to urban ways of life and did not want to return to their rural communities. They therefore resettled in other parts of the country. In Sri Lanka, developments in the peace process have allowed for returns to begin, but policies and plans need to be developed to ensure that barriers to return, including landmines, high security zones and property issues, are addressed.

Security problems in areas of return, as noted above, heavily affect the success of returns. In Uganda, for example, problems with the demilitarization process have significantly slowed down the process of returns. In Kenya, where resettlement has occurred, there are still significant numbers who remain displaced and fearful of return. Indeed, an independent commission in Kenya recently called for the return of thousands who had become displaced prior to elections. In Cyprus, the situation is quite unique in that the displaced in both sections of the island are considered by many international organizations to be fully integrated; however, those who have been displaced continue to advocate for their return home almost 30 years later. The reasons humanitarian organizations still count them as IDPs are because the conflict causing their displacement has not been resolved and because of the presumed wish of many to return to their original homes.

**Comparative Chart**

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>CURRENT NUMBER OF internally displaced persons (as of July 2003)</th>
<th>CAUSES OF DISPLACEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>60,000 (USCR)-500,000 (Chittagong Hill Tracts Commission)</td>
<td>cyclones and floods; civil conflict (especially in Chittagong Hill Tracts); targeting of indigenous population</td>
</tr>
<tr>
<td>Cyprus</td>
<td>165,000-200,000 in Greek South; 45,000-65,000 in Turkish North</td>
<td>Conflict (1974 invasion by Turkey) and de facto partition of the island between Greece and Turkey</td>
</tr>
<tr>
<td>India</td>
<td>650,000 (conflict); 21-33 million (development projects)</td>
<td>armed conflict (ethnically based inter-communal strife in Kashmir and in the Northeast); development projects</td>
</tr>
<tr>
<td>Kenya</td>
<td>230,000 (in 1992 there were 300,000, in 1998 tens of thousands and in 2002, 2000)</td>
<td>ethnic violence linked to political elections; natural disasters; homes destroyed to force people to move prior to elections</td>
</tr>
<tr>
<td>Mozambique</td>
<td>Internally displaced persons no longer counted following peace agreements; from 1977-1992, there were 3.5-4.5 million; in 1993, 2 million returned and returns continued following the end of the civil war</td>
<td>civil war, violence against civilians, drought</td>
</tr>
<tr>
<td>Country</td>
<td>Estimated Number of IDPs</td>
<td>Causes of Internal Displacement</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Nigeria</td>
<td>50,000-100,000 (in 1967-70 there were 10 million, and in 2002, 250,000)</td>
<td>Biafran war (the 60s); ethnic violence and conflict</td>
</tr>
<tr>
<td>Pakistan*</td>
<td>Around 45,000 in Pakistani controlled Kashmir – unclear how many have returned</td>
<td>Conflict over Kashmir with India</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>End 2002 officially declared no IDPs (in 1991-2002, there were 4.5 million with resettlement beginning in 2001); about 10-20,000 unofficial internally displaced persons remain</td>
<td>Civil war with direct targeting of civilians</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>1,800 (OHCHR) (especially displaced in 2003); in 1998-99, there were 35,000 and in 2002, 3000</td>
<td>Inter-ethnic violence</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>600,000 (from 1983-2002 there were 1 million)</td>
<td>Ethnic conflict, civil war</td>
</tr>
<tr>
<td>Uganda</td>
<td>840,000 (in early 1990s there were hundreds of thousands displaced and returned; in 2002, there were 550,000)</td>
<td>Separate armed conflicts in south and north; targeting of villages and IDP camps; looting and cattle raids</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>20,000 – 50,000 (May 2002, OCHA); 50,000 end of 2001 (USCR)</td>
<td>Political violence; economic hardship; land reforms</td>
</tr>
</tbody>
</table>

Figures taken from the Norwegian Refugee Council’s Global IDP Database, unless otherwise noted.

**National Response**

The national response to internal displacement within the Commonwealth has varied. Some governments have drafted policies on the subject and have established offices to deal with the problem. For example, the Government of Uganda has drafted a national policy on internal displacement while the Government of Sri Lanka created a Ministry of Rehabilitation, Resettlement and Refugees to co-ordinate assistance to IDPs. The Solomon Islands formed a department in the Repatriation and Rehabilitation Committee to deal with IDP returns, including the provision of housing and agricultural tools. At the same time, the implementation of the policies and programmes in the different countries has sometimes been problematic, undermined by a lack of capacity, political will or a reluctance to fully involve civil society.

In other instances, governmental policies and attitudes have been neglectful of IDPs and also have proved directly harmful to them. Some governments, for example, have failed to develop national policies on behalf of IDPs or even acknowledge their

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*Pakistan was suspended from the Commonwealth in October 1999.
Zimbabwe was suspended from the Commonwealth in March 2002.
existence. In one instance, a government categorized a group of IDPs as “migrants,” presumably to avoid its responsibility toward these populations. In another instance, the Parliament of a country voted against a resettlement policy for IDPs. In still other cases, governments have forced internally displaced persons to return home instead of promoting voluntary returns in accordance with international standards.

Whereas some governments have worked closely with the United Nations and other international humanitarian organizations in addressing the crisis of internal displacement, others have resisted doing so. Mozambique is an example of a Commonwealth country that has strongly cooperated with the international community. It allowed for the deployment of UN peacekeepers, which facilitated the return home of millions of Mozambicans, and it collaborated with the UN High Commissioner for Refugees (UNHCR) and other international humanitarian and development organizations to bring in material support, which helped make the returns of refugees and IDPs more sustainable. The Government of Sri Lanka has also worked closely with international organizations in providing material assistance to IDPs. Further, the Governments of Mozambique, Sri Lanka and Uganda have invited the Representative of the Secretary-General on Internally Displaced Persons to visit their countries. However, the international community has sometimes paid little attention to some emergency situations despite the willingness of the concerned governments to collaborate with humanitarian organizations. In still other instances, governments have resisted or obstructed international involvement either because they feared international aid would fortify dissident groups or because they felt it would constitute interference in their internal affairs. The result is a great inconsistency with regard to the role of international organizations in assisting and protecting IDPs in Commonwealth countries.

A diversity of response can also be seen in the case of national human rights institutions and the non-governmental sector. In some countries, national human rights institutions, civil society and NGOs have been active and vibrant, focusing attention on IDP needs, advocating for their rights and pressing their governments to protect and assist these populations. In other countries, national human rights institutions have not addressed internal displacement in their countries, and local groups have responded inadequately as well. They have lacked resources and capacity, or governments may have deliberately undermined their work, not trusting the non-governmental sector.

**International Response**

The appointment in 1992 of a Representative of the UN Secretary-General on Internally Displaced Persons, at the request of the Commission on Human Rights, established an advocate and catalyst within the UN system for the internally displaced, although the position is a voluntary one with few human and material resources at its disposal. The Representative chosen, Dr. Francis M. Deng, developed a conceptual and a normative framework for dealing with the problem of internal displacement, both of which have received broad acceptance. Conceptually, the Representative put forward the concept of sovereignty as a form of responsibility. Acknowledging that primary responsibility for the internally displaced rests with their governments, he emphasized that responsibility means providing for the security and well being of one’s population, in particular the marginalized and the displaced. Should governments not have the capacity or otherwise prove unable to fulfill their responsibilities, they are expected to request and accept outside offers of aid. Should they refuse, or deliberately obstruct access and put large numbers at risk, the international community has a right, possibly even a responsibility, to express its concern and to take steps to try to assist populations at risk.
In all his dialogues with governments, the Representative has emphasized the importance of exercising sovereignty as a form of responsibility in order to safeguard IDP protection.

The development and dissemination of the Guiding Principles on Internal Displacement (see Annex) has proved another important way of promoting the concept of sovereignty as a form of responsibility. Developed by a team of international legal experts under the direction of the Representative, the Principles are based on this concept.

**The Guiding Principles on Internal Displacement**

Composed of 30 principles, the Guiding Principles set forth the rights of the internally displaced and the obligations of governments and non-state actors toward these populations. They also provide guidance to all other organizations and groups in their dealing with the displaced, including inter-governmental associations like the Commonwealth, in their dealings with the displaced.

Although not a binding instrument like a treaty, the Guiding Principles are based on and are consistent with international humanitarian law, international human rights law and refugee law by analogy. They bring together into one compact document all the relevant provisions of international law applicable to the internally displaced and in all phases of displacement -- before internal displacement occurs, during situations of displacement, and during return and reintegration. In doing so, they tailor existing law to the needs of IDPs and fill gaps and grey areas found in the law, for example with regard to compensation and property rights, documentation, the right not to be arbitrarily displaced or the right not to be returned to places of danger within one’s own country.

In their introduction, the Guiding Principles provide a definition of internally displaced persons, which has become widely used internationally:

> persons or groups of persons who have been forced or obliged to flee their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflicts, situations of generalized violence, violations of human rights or natural or human made disasters, and who have not crossed an internationally recognized state border.

Although those displaced by conflict are generally the most readily identified as IDPs, displacement can also be induced by natural disasters, human-made disasters and by development projects. All the different forms of displacement can be found in Commonwealth countries.

The Guiding Principles pay special attention to the needs of vulnerable groups among the displaced, in particular expectant mothers, mothers with young children, and female heads of household, children, including unaccompanied minors, persons with disabilities, and elderly persons.
Since their presentation to the Commission on Human Rights in 1998, the Guiding Principles have gained a great deal of standing and authority. They have been acknowledged by the United Nations and various regional organizations, endorsed by international humanitarian organizations and NGOs and are being applied by a number of governments, including several in the Commonwealth. Indeed, a 2003 UN General Assembly resolution welcomes the fact that “an increasing number of States, United Nations agencies and regional and non-governmental organizations are applying” the Guiding Principles as “a standard” and describes them as an “important tool” for dealing with situations of internal displacement.  

In a related development, a resolution on internally displaced persons, the UN Human Rights Commission on 20 April 2004 requested the Secretary-General to establish a new mechanism to address the problem of internal displacement. The resolution, which was adopted by consensus, recommended that the mechanism mainstream the human rights of IDPs into all relevant parts of the UN system, engage in international advocacy and action for improving protection of IDPs, and continue and enhancing dialogues with governments, NGOs and other relevant actors. The Commission requested the Secretary-General to provide the mechanism with all necessary assistance and ensure the support of the Office of the High Commissioner for Human Rights. The specific nature and set-up of the mechanism, which will report annually to the General Assembly and the Human Rights Commission, has yet to be determined by the Secretary-General. It will replace the existing special procedure, the Representative on Internally Displaced Persons, which was established under the Human Rights Commission in 1992.

At the same time because the Guiding Principles have no formal implementation machinery, it is essential that international organizations, among them the Commonwealth, and non-governmental organizations promote and disseminate them and encourage their broad implementation.

**Role of International Organizations in Providing Protection, Assistance and Development Aid**

Over the past decade, many humanitarian, human rights, and development organizations have expanded their areas of operation in order to respond more effectively to the needs of IDPs. These organizations include the World Food Programme (WFP), the United Nations High Commissioner for Refugees (UNHCR), the International Committee of the Red Cross (ICRC), United Nations Children’s Fund (UNICEF), the United Nations Development Programme (UNDP), the International Organization for Migration (IOM), the World Health Organization (WHO) and the Office of the UN High Commissioner for Human Rights (OHCHR). The International Federation of Red Cross and Red Crescent Societies and a large number of NGOs work alongside these organizations.

Coordinating UN efforts is the UN Office for the Co-ordination of Humanitarian Affairs (OCHA), under the direction of the Under Secretary-General for Humanitarian Affairs, who is also the Emergency Relief Coordinator (ERC), who acts as the focal point within the UN system for the provision of assistance and protection to internally displaced persons. In an effort to improve the international response to IDP situations, in 2002 OCHA set up an IDP Unit, which advises the ERC and seeks to ensure that UN agencies collaborate more closely and develop strategies to better protect and assist IDPs.

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42 General Assembly Resolution A/RES/58/1/77, 12 March 2004 (updated citation)
The Unit has also been working with governments to help them develop national policies on IDPs and provides training to UN staff, NGOs and government officials in the Guiding Principles.

Many Commonwealth countries have benefited from the programmes and activities of the international system. However, the “collaborative approach,” in which all organizations work together under OCHA coordination, has not always proved as effective as it might. Too often international organizational response to situations of internal displacement remains unpredictable with many IDPs receiving insufficient assistance or protection. The ERC does not always have sufficient authority to assign responsibilities to the different agencies and hold them accountable. Instead, organizations often pick and choose the situations in which they wish to become involved on the basis of their mandates, available resources or other criteria. There is also insufficient understanding on the part of many international staff of the steps that should be taken to protect the physical safety of civilian populations, with the result that protection is often identified as the major gap in addressing IDP situations.

Another question deserving attention is how international aid is provided. Humanitarian and development organizations are under a duty to carry out their activities in a neutral, independent and impartial manner without discrimination of any kind. At a minimum, they are expected to “do no harm” when helping beleaguered populations. Indeed, international codes of conduct have been developed to try to ensure that aid agencies abide by agreed upon standards, such as the Code of Conduct for the International Red Cross and Red Crescent Movement and Non Governmental Organizations in Disaster Relief.

Since access to IDP populations is critical to their receiving assistance, the security of humanitarian staff—- an increasing problem worldwide—must also be assured. Over the past decade hundreds of humanitarian staff have been assaulted, kidnapped and even killed while trying to protect and assist IDPs. The development of strategies to protect personnel has therefore become a major goal of the humanitarian community. Governments have repeatedly been urged to promote security for humanitarian staff.

The criteria used to provide aid to IDPs is a related question that merits attention. Some organizations, in particular the ICRC and the Red Cross Movement, seek to alleviate human suffering on the basis of greatest need rather than predefined categories of persons. Other organizations and aid providers consider that certain groups merit special attention because of their overall vulnerability, whether women, children, refugees or internally displaced persons. In the case of IDPs, their displacement is considered a prima facie case of vulnerability. However, as the Representative of the Secretary-General regularly has pointed out, the purpose of acknowledging the special needs of IDPs and other groups is not to confer on them a privileged status but to ensure that in a given situation their unique needs are addressed along with those of others. Helping IDPs, moreover, can be an entry point to reaching other affected populations.

Regional organizations, it should be noted, also have become involved in focusing attention on situations of internal displacement and urging member governments, which include Commonwealth governments, to address the problem.
In particular, the African Union, the Council of Europe, the Economic Community of West African States (ECOWAS), the Inter-American Commission on Human Rights of the Organization of American States, the Inter-Governmental Authority on Development (IGAD) and the Organization for Security and Cooperation in Europe (OSCE), have adopted decisions, held seminars and published reports on internal displacement. Regional bodies, which have not yet taken positions on the subject, need to be encouraged to do so as well. Indeed, among the recommendations of the Commonwealth’s Intergovernmental Group on Refugees and Displaced Persons was that Commonwealth countries, including through their membership in regional organizations, should be encouraged to adopt regional approaches to displacement issues.

The strengthening of local groups, in particular of NGOs, is also an essential part of dealing effectively with internal displacement. Local groups generally have access to IDPs, ready understanding of their environment, and can act as credible watchdogs of the role that governments and the international community play. However, international groups too often bypass them, pay insufficient attention and resources to helping them develop their skills. Donor policy is therefore needed to concentrate more fully on building local capacity.

By and large donors have been generous with their aid but have often been found to disburse aid disproportionately without sufficient attention paid to the overall needs of a country or its national institutions and NGOs. They also have been found to provide the majority of funds to a few countries in which they have political interests while neglecting others that may be in greater need. Better coordination among donors in disbursing aid and developing common programming is needed. So too is a more comprehensive approach that includes not only emergency aid as the international community’s primary response but also reintegration and development support, capacity building, and most importantly, the facilitating of political processes to achieve peace.

Best Practice Guidelines

A set of best practices can readily be drawn from Commonwealth countries’ own experiences with internally displaced persons as well as those of international and non-governmental organizations. The following guidelines are based on the discussions at the expert meeting, an examination of experiences in Commonwealth countries, and the findings of international organizations, in particular a report of the International Organization for Migration, covering national responsibility toward IDPs.

Sovereignty as a concept of Responsibility

The first step that a government confronted with the problem of internal displacement needs to take is to acknowledge that the problem exists on its territory and to assume national responsibility for dealing with it. That in particular means:

43 See, for example, Manual on Field Practice in Internal Displacement: Examples from UN Agencies and Partner Organizations of Field-based Initiatives Supporting Internally Displaced Persons, OCHA, 1999.
- Raising national awareness of the problem through public pronouncements, meetings, use of media and other means;

- Collecting data on the numbers, whereabouts and conditions of IDPs; and

- Developing strategies for providing protection, assistance and reintegration and development support for the displaced.

- Taking steps to address the root causes of displacement.

When governments do not have the capacity to deal with the problem, they are expected to turn to the international community for support and work together with international humanitarian and development organizations in providing protection and assistance and in identifying solutions.

**Promoting the Guiding Principles on Internal Displacement**

Promoting and disseminating the Guiding Principles on Internal Displacement, is an important way to give recognition to the rights and special needs of IDPs and reinforce government obligations toward these populations.

To begin with, the Principles should be translated into local languages and widely distributed to local and national officials, non-state actors, and NGOs. So too should the *Handbook for Applying the Guiding Principles*, which contains practical steps for making the Principles operational.⁴⁵ In Sri Lanka, the Consortium of Humanitarian Agencies (CHA) has developed a *Toolkit* ⁴⁶ in local languages based on the Guiding Principles and the Handbook, which it uses to train government officials, NGOs, non-state actors and the displaced themselves in how to effectively address the needs of IDPs. Developing booklets, power point presentations, even comic strips to explain the Principles are important ways of disseminating their message.

Convening national seminars on internal displacement is another helpful way of raising awareness of the Guiding Principles. Such seminars should seek to bring together local and national government officials, international organisations, NGOs and research institutions to discuss the different aspects of internal displacement in terms of the Principles and promote joint strategies for addressing the problem.

Training sessions in the Guiding Principles and on international humanitarian and human rights law have also proved valuable. In India, the Norwegian Refugee Council and Jadavpur University have organised training sessions in the Principles, and the Calcutta Research Group will be organising training sessions in all South Asian countries affected by internal displacement.

The Principles have in addition served as an important framework for monitoring conditions in different countries and developing national policies and laws to address internal displacement (see below).

**Developing Policies and Plans of Action on Internal Displacement**

Readiness to develop policies and plans of action on internal displacement demonstrates the willingness of governments to acknowledge and deal with the problem. Using the Guiding Principles as a framework, a national policy or plan of action should spell out national and local institutional responsibilities for responding to internal displacement and cover all phases of displacement, ranging from preventive actions to protection and assistance once displaced, to return or resettlement. It should include special protections for ethnic, religious and linguistic minorities as well as for vulnerable members of the displaced population, most notably among displaced women and children.

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National policies, it should be emphasised, serve the important function of raising national awareness to the needs of the displaced and signal both nationally and internationally that addressing the plight of the displaced is a national priority. Around the world, a few countries have begun to adopt national policies or plans of action on internal displacement. As earlier noted, in Uganda, a national policy on internal displacement has been drafted and is currently awaiting adoption. UN resolutions have encouraged national plans or initiatives to provide protection and assistance to IDPs.

Creating National Legal Frameworks

The adoption of laws on internal displacement has proved valuable in defining IDPs, setting forth their rights, and establishing the obligations of governments to these populations. In some instances, governments have adopted laws on a specific phase of displacement, such as return and resettlement, which have spelled out minimum standards to be observed.

In other instances, governments have adopted comprehensive national laws on internal displacement, covering all phases of displacement.

Another approach has been to review and analyse existing national legislation in terms of its compatibility with the Guiding Principles on Internal Displacement and to revise legal and administrative regulations accordingly. Local lawyers groups and NGOs have conducted such surveys in some countries, using the Annotations to the Guiding Principles as a guide, and then worked with their governments to bring their laws into line with the Principles.

Whichever approach is taken, creating a national legal framework upholding the rights of IDPs is an important basis for discharging national responsibility for the displaced. Governments worldwide, in UN resolutions, have encouraged strengthened legal frameworks for the protection of IDPs. At the regional level, member states of the Economic Community of West African States (ECOWAS) have recommended the development of national laws on internal displacement using the Guiding Principles as a framework and also have suggested that the development by ECOWAS of draft model legislation could provide useful guidance in this regard.

Devoting Special Attention to Women and Children

Many steps have been identified to protect displaced women and children. What is clearly needed is better implementation. Commonwealth governments in particular should seek to:

- Promote the rights of displaced women and children in accordance with international law, in particular the Geneva Conventions and Protocols (for situations of armed conflict), the Convention on the Elimination of all Forms of Discrimination against Women, the Convention on the Rights of the Child, and the Guiding Principles on Internal Displacement;

- Take steps to raise awareness among women of their rights, and ensure that there is judicial or other redress when rights are violated;

- Ensure that gender-specific information is collected as the basis for policies and programs for IDPs and that a gender sensitive approach is followed;

• Ensure that assistance programmes are designed to enhance protection for women and children and that they are closely monitored;

• Involve internally displaced women in decision-making at all levels and designate women as food distribution points in IDP camps to prevent their having to trade sexual favours for food or receive inadequate portions;

• Increase presence in the field when serious protection problems are reported for women and children and develop preventive and protection strategies with them;

• Provide free and compulsory primary level education to internally displaced children and as many educational opportunities as possible for adolescents, with special efforts made to ensure the full and equal participation of women and girls in educational programmes.

• Provide greater opportunities for women in areas such as health education and training, and include women, especially women heads of household, in income generating programmes.

**Establishing National Institutions for IDPs**

Designating a national institutional focal point for IDPs can promote greater attention to the problem and also serve to facilitate coordination within the government and with local and international partners.

In some countries, responsibility for the internally displaced has been added to the government body charged with refugee issues. In other countries, a body has been designated to exclusively focus on IDPs. For example, in Sri Lanka, in the 1990s, the Ministry of Reconstruction, Rehabilitation and Social Welfare, through its Emergency Reconstruction and Rehabilitation Programme, coordinated relief effort for IDPs and maintained hundreds of camps and “welfare centres” for more than a quarter of a million displaced persons. Governments have also created working groups or committees on IDPs that regularly bring together officials from the various ministries and departments to jointly discuss IDP needs, facilitate coordination including with the international community, and develop strategies for ensuring an effective response.

Whichever institutional option is selected, it is important that the focal point have a mandate for both protection and assistance. This means that staff should be trained on issues of internal displacement, in particular the Guiding Principles, and be expected to play a leading role in national efforts to ensure that the rights of IDPs are respected and their needs addressed. This would also include assuring that IDPs have options when internal displacement ends, namely return or resettlement, and that they not be pressured to return or resettle in areas where conditions are insecure or unsustainable.

**Integrating Internal Displacement into National Human Rights Institutions**

The importance of national human rights institutions in promoting and protecting human rights has been recognized internationally and also by the Commonwealth in its meetings and reports. Indeed, national institutions enjoy official recognition by governments and also often command respect within national societies as they are headed by influential and eminent people including retired judges or respected human rights activists.

The Commonwealth report, *National Human Rights Institutions: Best Practice*, endorsed the involvement of these institutions with the issue of internal displacement. In particular, the report recommended that national human rights institutions assist in the implementation of the Guiding Principles on Internal Displacement.
Since national human rights institutions are mandated to promote and protect not only the human rights set forth in national constitutions but also in international human rights agreements, they have the responsibility to remind governments to abide by international law, including on internally displaced persons.

Although many national institutions, especially in developing countries, lack capacity, they are beginning increasingly to focus attention on the issue of internal displacement. This is especially true in Sri Lanka, where a report on the Sri Lankan commission’s experience recently has been published.49 It is also true in India. The Asia Pacific Forum of National Human Rights Institutions in 2003 developed a project to assess the capacities of its member institutions with regard to internal displacement and mobilize assistance to help them enhance their capacities.

Best practice in dealing with internal displacement would mean acknowledging the issue as a human rights issue that belongs within the mandate of national human rights institutions and apportioning greater attention and resources to the subject. Among the steps that national institutions could take would be to:

- Monitor IDP conditions, especially the ability of the displaced to have access to and receive basic services, conduct inquiries as needed and mediate when there are serious violations of human rights.

- Recognize the Guiding Principles on Internal Displacement as a useful framework for policy and programmes.

- Act as an adviser to the government on IDP rights and in this capacity, develop legislation for the displaced, together with national legislative bodies, based on the Guiding Principles, and help frame policies, in collaboration with government officials, to take into account the rights and needs of the displaced.

- Promote the implementation of the Guiding Principles to ensure that IDPs enjoy the same rights as other citizens in the country and do not face discrimination in seeking to access their rights. Among these is the right to vote. In most jurisdictions in the Commonwealth, internally displaced persons are only entitled to vote if they have been resident in one place continuously for not less than 6 months.

- Undertake educational activities and training programs, especially for state institutions, the military and law enforcement agencies, based on the standards contained in the Guiding Principles, with special attention paid to the problems of women, children and vulnerable groups.

- Ensure that internally displaced persons themselves are informed about the initiatives being taken on their behalf and are invited to contribute ideas and participate in the decision-making.

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• Allocate adequate resources to address the problem of internal displacement. Under international law, and in most cases national law, governments have obligations to adequately fund these institutions.

• Strengthen relationships with NGOs and international humanitarian agencies so that their work is complementary and the most effective use of scarce resources is made.

• Network with national human rights institutions in other countries and relevant regional bodies to share information and experiences on internal displacement with a view to developing best practices.

**Allocating Adequate Resources for IDPs**

Carrying out policies and programmes for IDPs and creating institutional focal points require human and material resources. Moreover, providing IDPs with necessary assistance – food aid, shelter, medical care, education – as well as physical security can be resource-intensive. In particular in countries afflicted by protracted crises of internal displacement, governments should be expected to devote resources to address the needs of IDPs in the national budget and other financial planning. Some countries have made efforts to do so by specifically earmarking funds in the national budget for IDP programmes. Governments can also create special "IDP funds" where they have the benefit of revenue from oil or other resources.

Where a government lacks the capacity to address the needs of the internally displaced, its indication, through small budget allocations or policy and programme initiatives, that the issue of internal displacement constitutes a national priority can be important in attracting international commitments to provide financial support to national efforts.

**Partnerships with Civil Society and Local NGOs**

In carrying out policies and programmes for IDPs, it is important for governments to work closely with civil society and non-governmental organizations. Generally, internally displaced persons are on the receiving end with no power to influence policy formulation and often with little capacity to voice their concerns over the problems they are facing. NGOs close to the ground are in a position to reflect the aspirations of IDPs and provide a voice for their views while at the same time helping to formulate plans and programmes and influence decisions through advocacy and lobbying.

Because NGO partners are also critical to the implementation of IDP plans, collaboration with NGOs and other groups in civil society should be an integral component of these plans. Both national and international responses to situations of internal disablement are better informed, assisted and enhanced when partnerships are forged with civil society groups working with the internally displaced. Such partnerships are also cost-effective, given that bringing in “experts” from abroad can be highly expensive; moreover the experts often depart after a short period of time without leaving local capacity any stronger. Building local capacity and further developing the skills of NGOs and other groups in civil society should be built into all plans and programmes for helping IDPs.
Ensuring the Participation of IDPs in Decision-Making

Consultation with the displaced is also critical to the effectiveness of programme design and implementation. IDPs generally develop “coping skills” for dealing with their situation.50 They are in the best position to decide when assistance is appropriate and what kind best meets their needs. To build upon and reinforce their skills, governments should encourage and facilitate the participation of IDPs in the planning and implementation of policies and programmes and ensure IDPs play strong roles in camp management.

As noted above, special attention should be paid to ensuring the participation of internally displaced women in IDP consultations and any formal decision-making structures. As primary care-providers for their families, displaced women have the best sense of what is needed to ensure their own and their families’ welfare and security as well as how best to respond to these needs. In particular, women’s input should be sought with regard to food distribution and the contents of the food basket, the design and layout of camp facilities or other shelter, and water and firewood collection or distribution. Decisions on these issues are important not only for the delivery of these services but also for the physical security of the women and children involved.

Supporting Durable Solutions

National responsibility for durable solutions means making every possible effort to facilitate the return or resettlement of displaced persons in accordance with their human rights, as set forth in the Guiding Principles. Overall, national authorities have the responsibility to establish the conditions, as well as provide the means, to allow IDPs to return voluntarily, in safety and dignity, to their places of habitual residence or to resettle voluntarily in another part of the country. Further, the authorities have a responsibility to assist IDPs to recover property and possessions of which they were dispossessed as a result of their displacement and, when this is not possible, to obtain compensation or another form of just reparation. A number of recent studies can prove valuable for best practices with regard to return or resettlement.51

Supporting durable solutions for IDPs also means: providing assistance and protection to IDPs who have returned or resettled; rebuilding infrastructure (schools, medical clinics, roads etc) in areas of return and resettlement; clearing landmines; re-establishing the rule of law, taking measures to ensure respect for human rights; and restoring judicial processes that can resolve property and other disputes.

With regard to assisting IDPs who have returned or resettled, so long as specific needs and vulnerabilities resulting from their displacement persist, IDPs should continue to receive special attention.

51 See, for example, Consortium of Humanitarian Agencies, Practitioner’s Kit for Return, Resettlement and Rehabilitation, Colombo, 2004; and OCHA, No Refuge: the Challenge of Internal Displacement, United Nations, 2003, pp. 97-117.
The nature of the assistance nonetheless could change from strictly emergency humanitarian aid to strategies supporting self-sufficiency and enabling the economic and social reintegration of the IDPs. Such measures should be undertaken in step with initiatives to assist other populations in need and support the rebuilding of war-affected communities and societies as a whole.

Finally, commitment to durable solutions would mean ensuring that conflicts are truly resolved, and that the root causes of the conflicts are seriously addressed.

Co-operating with International Organizations

When governments themselves do not have the capacity or willingness to provide for the security and well being of their displaced populations, they should as an exercise of responsible sovereignty cooperate with the international community. Indeed, the Guiding Principles emphasise the importance of granting “rapid and unimpeded access” to international humanitarian organizations so that they might reach IDP populations and provide them with needed assistance. These organizations under international law have the right to offer their services; therefore such offers should not be regarded as unfriendly acts or as interference in a state’s internal affairs.

Accepting international aid should also mean providing security and protection for the humanitarian staff who deliver the aid. Persons engaged in humanitarian assistance, their transport, and supplies should be respected and protected, according to international humanitarian law and the Guiding Principles. To prevent attacks on staff and assist personnel who are in danger, governments should take steps to strengthen security measures and prosecute those who act violently against such staff. According to reports of the UN Secretary-General, the perpetrators in many cases are known. When governments are unable to discharge their responsibility, they should devise, together with the international community, alternative arrangements to ensure better protection for humanitarian staff.

Inviting the Representative of the Secretary-General on IDPs to visit is another important way governments can demonstrate their cooperation with the international community. Visits enable the Representative to dialogue with governments and directly review first hand the conditions of IDPs. Generally they raise national awareness to the problem of internal displacement in the country, stimulate policies and programmes on behalf of the displaced and strengthen cooperation between governments and the international community.

Expanding the Commonwealth’s Role

A role for the Commonwealth in seeing that the rights of IDPs and their humanitarian needs are met within the countries of the Commonwealth would be highly desirable. As earlier noted, other intergovernmental organizations have begun to become active on the question of internal displacement, and their activities could serve as a guide for Commonwealth programmes. Some, for example, have begun to monitor conditions in different countries, undertake missions to affected areas, issue reports, hold seminars, provide technical assistance to governments with national laws and policies, and even deploy field staff to enhance security for IDPs.
Based on a review of these organisations and the discussions at the experts meeting, the following are steps the Commonwealth as an organisation could take with regard to situations of internal displacement:

- Use its good offices to encourage dialogue, reduce tensions and resolve the conflicts that cause displacement.

- Bring situations of internal displacement to the attention of heads of government, especially at Commonwealth Heads of Government Meetings, to enable governments to seriously consider the problem and the need to allocate sufficient resources towards addressing it.

- Encourage Commonwealth governments to develop policy frameworks and laws to address the needs of IDPs and ensure that national action plans on human rights incorporate internal displacement issues.

- Undertake country missions to assess how best the Commonwealth can assist in tackling the problem at the national level and undertake research programmes to determine the nature and extent of the problem in particular countries.

- Actively engage with the international community, in particular the Representative of the UN Secretary-General on Internally Displaced Persons and humanitarian offices and organisations such as OCHA, UNHCR, the ICRC, international NGOs and others involved in internal displacement issues with a view to encouraging Commonwealth member states to become more engaged in promoting effective international arrangements for IDPs.

- Develop a Commonwealth plan on this issue in collaboration with the office of the Representative of the UN Secretary-General on Internally Displaced Persons and with OCHA's IDP Unit.

- Collaborate with regional organisations on the issue of internal displacement and encourage Commonwealth countries that are members of these organisations to support greater regional involvement with the issue of internal displacement.

- Encourage donor governments to promote a fairer and more equitable international response to situations of internal displacement.

- Develop close working relationships with national human rights institutions to encourage their greater involvement in promoting the rights of the internally displaced.

- Increase collaboration with national Red Cross societies, local NGOs and civil society, which are plentiful and vibrant in a number of Commonwealth countries on the subject of internal displacement.

- Consider setting up within the Commonwealth Secretariat a focal point to coordinate work on internal displacement in the Commonwealth. The focal point could network among national agencies that deal with the problem and collaborate in the development of policies and programmes.
Such programmes might include promotion, dissemination and implementation of the Guiding Principles, technical assistance in formulating national policies and laws, training in human rights protection for IDPs with special attention paid to IDP women and children, and working with the media to increase awareness of IDP issues throughout the Commonwealth. It should be noted that a special rapporteur exists within the Inter-American Commission on Human Rights of the Organisation of American States and in the Council of Europe’s Parliamentary Assembly. A focal point could be established within the Human Rights Unit or the Social Transformation Division of the Commonwealth Secretariat, both of which are already doing work on internal displacement.

The greater involvement of the Commonwealth in addressing the problem of internal displacement will bolster national, regional and international efforts underway to deal with the question and in particular lend support to the millions of persons uprooted and in desperate conditions in Commonwealth countries.
Appendix 4

Code of Conduct
for The International Red Cross and Red Crescent Movement and NGOs in Disaster Relief

Introduction
The Code of Conduct for The International Red Cross and Red Crescent Movement and NGOs in Disaster Relief, was developed and agreed upon by eight of the world's largest disaster response agencies in the summer of 1994 and represents a huge leap forward in setting standards for disaster response. It is being used by the International Federation to monitor its own standards of relief delivery and to encourage other agencies to set similar standards.

Throughout the 1980s and 1990s there has been a steady growth in the number of non-governmental organizations (NGOs), both national and international, involved in disaster relief. In the autumn of 1994 there were over 120 NGOs registered in Kigali, the war ravaged capital of Rwanda.

Many of these agencies, including National Red Cross and Red Crescent Societies, the church agencies, Oxfam, the Save the Children Fund or CARE, have a history going back many decades and have gained a reputation for effective work. Others, more recently formed, such as Médecins Sans Frontières, have rapidly evolved to become respected operators. Along with these large and well-known agencies there are today a multitude of small, newly-formed groups, often coming into existence to assist in one specific disaster or in a specialized field of work.

What few people outside of the disaster-response system realize is that all these agencies, from the old to the new, from multi-million dollar outfits to one-man shows, have no accepted body of professional standards to guide their work. There is still an assumption in many countries that disaster relief is essentially “charitable” work and therefore anything that is done in the name of helping disaster victims is acceptable.

However, this is far from the truth. Agencies, whether experienced or newly-created, can make mistakes, be misguided and sometimes deliberately misuse the trust that is placed in them. And disaster relief is no longer a small-time business. Today, even if those caught up in war are excluded, something in the region of 250 to 300 million people a year are affected by disasters, and this figure is growing at a rate of around 10 million a year. The Federation alone assisted some 19.4 million disaster victims during 1994.

The immediacy of disaster relief can often lead NGOs unwittingly to put pressure on themselves, pressure which leads to short-sighted and inappropriate work. Programmes which rely on foreign imports or expertise, projects which pay little attention to local custom and culture, and activities which accept the easy and high media profile tasks of relief but leave for others the less appealing and more difficult ones of disaster preparedness and long-term rehabilitation.

All NGOs, big and small, are susceptible to these internal and external pressures. And as NGOs are asked to do more, and the incidence of complex disasters involving natural, economic and often military factors increases, the need for some sort of basic professional code becomes more and more pressing.

It is for all these reasons that six of the world’s oldest and largest networks of NGOs came together in 1994 with the Red Cross and Red Crescent Movement to draw up a professional Code of Conduct to set, for the first time, universal basic standards to govern the way they should work in disaster assistance.

The Code of Conduct, like most professional codes, is a voluntary one. It is applicable to any NGO, be it national or international, small or large. It lays down 10 points of principle which all NGOs should adhere to in their disaster response work, and goes on to describe the relationships agencies working in disasters should seek with donor governments, host governments and the UN system.

The Code is self-policing. No one NGO is going to force another to act in a certain way and there is as yet no international association for disaster-response NGOs which possesses any authority to sanction its members.

It is hoped that NGOs around the world will find it useful and will want to commit themselves publicly to abiding by it. Governments and donor bodies may want to use it as a yardstick against which to judge the conduct of those agencies with which they work. And disaster-affected communities have a right to expect those who seek to assist them to measure up to these standards.
**Code of Conduct** for the International Red Cross and Red Crescent Movement and NGOs in Disaster Relief

**Principle Commitments:**

1. The Humanitarian imperative comes first.
2. Aid is given regardless of the race, creed or nationality of the recipients and without adverse distinction of any kind. Aid priorities are calculated on the basis of need alone.
3. Aid will not be used to further a particular political or religious standpoint.
4. We shall endeavour not to act as instruments of government foreign policy.
5. We shall respect culture and custom.
6. We shall attempt to build disaster response on local capacities.
7. Ways shall be found to involve programme beneficiaries in the management of relief aid.
8. Relief aid must strive to reduce future vulnerabilities to disaster as well as meeting basic needs.
9. We hold ourselves accountable to both those we seek to assist and those from whom we accept resources.
10. In our information, publicity and advertising activities, we shall recognize disaster victims as dignified human beings, not hopeless objects.

**Annex I**

Recommendations to the governments of disaster affected countries

1: **Governments should recognize and respect the independent, humanitarian and impartial actions of NGHAs**

NGHAs are independent bodies. This independence and impartiality should be respected by host governments.

2: **Host governments should facilitate rapid access to disaster victims for NGHAs**

If NGHAs are to act in full compliance with their humanitarian principles, they should be granted rapid and impartial access to disaster victims, for the purpose of delivering humanitarian assistance. It is the duty of the host government, as part of the exercising of sovereign responsibility, not to block such assistance, and to accept the impartial and apolitical action of NGHAs. Host governments should facilitate the rapid entry of relief staff, particularly by waiving requirements for transit, entry and exit visas, or arranging that these are rapidly granted. Governments should grant over-flight permission and landing rights for aircraft transporting international relief supplies and personnel, for the duration of the emergency relief phase.

3: **Governments should facilitate the timely flow of relief goods and information**

Annex II

Recommendations to donor governments

1: **Donor governments should recognize and respect the independent, humanitarian and impartial actions of NGHAs**

NGHAs are independent bodies whose independence and impartiality should be respected by donor governments.

2: **Donor governments should provide funding with a guarantee of operational independence**

NGHAs accept funding and material assistance from donor governments in the same spirit as they render it to disaster victims; one of humanity and independence of action. The implementation of relief actions is ultimately the responsibility of the NGHA and will be carried out according to the policies of that NGHA.

3: **Donor governments should use their good offices to assist NGHAs in obtaining access to disaster victims**

Donor governments should recognize the importance of accepting a level of responsibility for the security and freedom of access of NGHA staff to disaster sites. They should be prepared to exercise diplomacy with host governments on such issues if necessary. **During disasters**

Relief supplies and equipment are brought into a country solely for the purpose of alleviating human suffering, not for commercial benefit or gain. Such supplies should normally be allowed free and unrestricted passage and should
not be subject to requirements for consular certificates of origin or invoices, import and/or export licences or other restrictions, or to importation taxation, landing fees or port charges.

The temporary importation of necessary relief equipment, including vehicles, light aircraft and telecommunications equipment, should be facilitated by the receiving host government through the temporary waving of license or registration restrictions. Equally, governments should not restrict the re-exportation of relief equipment at the end of a relief operation.

To facilitate disaster communications, host governments are encouraged to designate certain radio frequencies, which relief organizations may use in-country and for international communications for the purpose of disaster communications, and to make such frequencies known to the disaster response community prior to the disaster. They should authorize relief personnel to utilize all means of communication required for their relief operations.

4: Governments should seek to provide a co-ordinated disaster information and planning service
The overall planning and co-ordination of relief efforts is ultimately the responsibility of the host government. Planning and co-ordination can be greatly enhanced if NGHAs are provided with information on relief needs and government systems for planning and implementing relief efforts as well as information on potential security risks they may encounter. Governments are urged to provide such information to NGHAs.

To facilitate effective co-ordination and the efficient utilization of relief efforts, host governments are urged to designate, prior to disaster, a single point-of-contact for incoming NGHAs to liaise with the national authorities.

5: Disaster relief in the event of armed conflict
In the event of armed conflict, relief actions are governed by the relevant provisions of international humanitarian law.

Annex III
Recommendations to intergovernmental organizations

1: IGOs should recognize NGHAs, local and foreign, as valuable partners
NGHAs are willing to work with UN and other intergovernmental agencies to effect better disaster response. They do so in a spirit of partnership which respects the integrity and independence of all partners. Intergovernmental agencies must respect the independence and impartiality of the NGHAs. NGHAs should be consulted by UN agencies in the preparation of relief plans.

2: IGOs should assist host governments in providing an overall co-ordinating framework for international and local disaster relief
NGHAs do not usually have the mandate to provide the overall co-ordinating framework for disasters which require an international response. This responsibility falls to the host government and the relevant United Nations authorities. They are urged to provide this service in a timely and effective manner to serve the affected state and the national and international disaster response community. In any case, NGHAs should make all efforts to ensure the effective co-ordination of their own services.

In the event of armed conflict, relief actions are governed by the relevant provisions of international humanitarian law.

3: IGOs should extend security protection provided for UN organizations, to NGHAs
Where security services are provided for intergovernmental organizations, this service should be extended to their operational NGHA partners where it is so requested.

4: IGOs should provide NGHAs with the same access to relevant information as is granted to UN organizations
IGOs are urged to share all information, pertinent to the implementation of effective disaster response, with their operational NGHA partners.
Some Examples of Generic Mitigation Measures

Preventive measures

- Using city zonation maps, carry out an audit of all infrastructure to identify elements at risk.
- Identify key components of each system, particularly in installations and buildings of post disaster significance and infrastructure linking them. Nominate strategic components for upgrading or re-routing away from vulnerable areas.
- Upgrade all vulnerable strategic structures: eg. pylons
- Where it is impossible to avoid hazard-prone areas: design, detail or retrofit systems to minimize the effects of hazards and enable a rapid return to normal operation.
- Review design standards, specifications and good practice guides and revise them according to the priority of the component and the level of finance available.
- Provide protection for sensitive plant and equipment. For example, raise items above flood or surge level, fix and brace free-standing equipment in earthquake areas, insulate computer hardware and control equipment from the effects of volcanic dust.
- Keep records on a database secure from damage, and ensure that maps of primary systems and district by district records of secondary systems are retained and accessible to users.

Spread the risk

- Avoid dependence on single facilities and transport routes
- Introduce redundancy into distribution systems for re-routing operations
- Provide, where possible, alternative sources of electricity supply.

Spread the responsibility

- Widen ownership of the urban systems, particularly for maintenance and operation, but hold under regulatory control of local authority
- Help informal communities to install and manage local systems, subject to regulations on minimum standards for security and quality of supply.
- Encourage user participation by promoting public/private partnership in community-based projects.

Cover or minimize the impact

- Insurance for physical loss of mechanical and electrical plant, to facilitate rapid decommissioning of the system.
- Encourage strategic users to install and regularly test standby power generation equipment and ensure that there is adequate fuel for, for example, 30 days continuous operation
- Hold spares to replace critical items
- Establish procedures for system failure and minimizing the effect of pollution.

Plan disaster management

- Plan to minimize the time taken to return to normality
- Arrange regular workshops and training programmes for the continuing education of staff in hazard preparedness and mitigation.
Land Planning and Land Use Measures

Preventive measures
- Ensure that plans and designs for new development take account of any hazardous characteristics of the area.
- Implement preventive or protective measures where practicable.
- Discourage development in hazard-prone areas, and provide protection for vulnerable locations and facilities of post-disaster significance.

Spread the risk
- Encourage decentralization of commercial and industrial sectors, while acknowledging transport implications.
- Develop alternative power supplies
- Ensure a range of suppliers and routes for delivery of natural resources and raw materials

Spread the responsibility
- Encourage political and administrative urban decentralization.
- Encourage local communities and administrations within the city to manage the provision of subsidiary and distributive infrastructure and services within their area.

Cover or minimize the impact
- Plan evacuation routes and emergency vehicle access routes.
- Identify buildings for designation as emergency shelters, such as schools and gymnasium (suitably upgraded).

Plan disaster management
- Minimize the time taken to return to normality, and plan evacuation and re-occupancy procedures.
### Potential Impacts of Natural Hazards on Highways and Railways

<table>
<thead>
<tr>
<th>Component</th>
<th>Effects</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High winds</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Overhead signs</td>
<td>Blown over</td>
<td>Highway restricted</td>
</tr>
<tr>
<td>• Electricity and telephone cables</td>
<td></td>
<td>Electricity failure</td>
</tr>
<tr>
<td>• Suspension and cables stay bridges</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Storm surge</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Underpasses</td>
<td>Flooded</td>
<td>Closed to traffic</td>
</tr>
<tr>
<td>• Embankments and bridges</td>
<td>Scoured or washed away</td>
<td>Closed to traffic</td>
</tr>
<tr>
<td>• Cuttings</td>
<td>Landslide</td>
<td>Closed to traffic</td>
</tr>
<tr>
<td>• Roads at grade</td>
<td>Temporarily flooded</td>
<td>Temporarily closed</td>
</tr>
<tr>
<td><strong>Heavy rain and flooding</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Underpass</td>
<td>Flooded</td>
<td>Closed to traffic</td>
</tr>
<tr>
<td>• Bridges</td>
<td>Scoured at foundations</td>
<td>Closed to traffic</td>
</tr>
<tr>
<td>• Roads at grade</td>
<td>Temporarily flooded, culverts washed</td>
<td>Temporarily closed, roads severed</td>
</tr>
<tr>
<td>• Embankments</td>
<td>Liquefaction, landslide, washout</td>
<td>Road closed</td>
</tr>
<tr>
<td>• Cuttings</td>
<td>Liquefaction, landslide</td>
<td>Road closed</td>
</tr>
<tr>
<td>• Drainage systems</td>
<td>Scour damage, collapse, pollution</td>
<td>Road closed</td>
</tr>
<tr>
<td><strong>Earthquake</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Embankments</td>
<td>Settlements foundation failure and liquefaction</td>
<td>Closed to traffic</td>
</tr>
<tr>
<td>• Bridges and flyers</td>
<td></td>
<td>Closed to traffic</td>
</tr>
<tr>
<td>• Tunnels</td>
<td>Failure of abutment, failure of columns, displacement of deck Portal failure Lining failure Ground failure and liquefaction</td>
<td>Closed to traffic Partially or completely closed</td>
</tr>
<tr>
<td>• Roads at grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Landslides</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Embankment</td>
<td>Ground failure</td>
<td>Closed to traffic</td>
</tr>
<tr>
<td>• Roads at grade</td>
<td>Ground failure</td>
<td>Closed to traffic</td>
</tr>
<tr>
<td>• Tunnels</td>
<td>Portal blocked</td>
<td>Closed to traffic</td>
</tr>
</tbody>
</table>

**Additional vulnerability of railways (including light and underground)**

| Earthquake | | |
| • Track | Distortion | Closed, no service |
| • Portals | Collapse | Closed, no service |
| • Station and tunnels | Fire | Closed, no service |

| Floods | | |
| • Tunnels and underground railways | Flooded | Closed, no service |
Mitigation Measures for Water Supply Systems

Preventive measures
- Enforce adequate (i.e. international) engineering design and construction codes
- Establish procedures to conserve existing water storage after a hazard event, such as manual or automatically controlled shut-off valves
- If not already in place, provide urban district shut-off valves, controlled by district operators, to limit leakage. (Also advisable for sound operation of the system, easier repairs and loss reduction).
- Ensure valves are in place on mains either sides of bridges and fault crossings
- Where possible, locate installations in less vulnerable areas.
- Use ductile materials such as steel or polyethylene to replace cast iron mains in soils which could be subject to liquefaction or strong movement.

Spread the Risk
- Develop alternative sources of supply and localize storage for urban districts/sectors

Spread the responsibility
- License and regulate the provision of tanker water supplies

Cover or minimize the impact
- Strengthen policies to conserve water, reduce demand and re-use of treated wastewater
- Identify potential sources of water for fire fighting and provide dead storage tanks in areas with limited emergency supplies.
Mitigation Measures for Solid Waste

Preventive measures
- Local treatment facilities and collection points on less vulnerable sites.
- Minimize dependence on mechanical and electrical equipment i.e. local use of cycle carriers for refuse
- Organize frequent inspection and clearance of storm water open drains.

Spread the risk
- Plain collection and disposal routes, with alternative options for vulnerable sections.
- Store collection vehicles in several locations, rather than a central depot.

Spread the responsibility
- Encourage informal communities to arrange collection and delivery to an agreed point on the border of the area, for compaction and final disposal.
- Encourage or require manufacturers and suppliers to collect, re-use or dispose of their own waste products.

Cover or minimize the impact
- Adopt a proactive policy for re-use and recycling of waste materials.
- Adopt a long-term proactive policy to gradually reduce quantities of waste, for example by reducing packaging.
### Potential effects of natural hazards on electricity generation and distribution

<table>
<thead>
<tr>
<th>Natural hazard</th>
<th>Component</th>
<th>Effects</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>High winds</td>
<td>Transmission tower and lines</td>
<td>Collapse</td>
<td>Loss of supply</td>
</tr>
<tr>
<td></td>
<td>Generating stations, cooling towers, substations</td>
<td>Damage and partial collapse</td>
<td>Loss of supply</td>
</tr>
<tr>
<td></td>
<td>Distribution lines (overhead)</td>
<td>Collapse</td>
<td>Loss of supply</td>
</tr>
<tr>
<td>Sea surge</td>
<td>Generating stations, other facilities</td>
<td>Equipment flooded</td>
<td>Shut down</td>
</tr>
<tr>
<td></td>
<td>Distribution cables (underground)</td>
<td>Flooded</td>
<td>Loss of supply</td>
</tr>
<tr>
<td>Heavy rain</td>
<td>Reservoirs</td>
<td>Overtopping of dams</td>
<td>Possible progressive failure</td>
</tr>
<tr>
<td></td>
<td>Generating stations, other facilities</td>
<td>Flooded</td>
<td>Loss of supply</td>
</tr>
<tr>
<td>Landslide</td>
<td>Dams</td>
<td>Failure from overtopping</td>
<td>Loss of supply</td>
</tr>
<tr>
<td></td>
<td>Generating stations, other facilities</td>
<td>Failure by ground movement</td>
<td>Loss of supply</td>
</tr>
<tr>
<td></td>
<td>Transmission lines</td>
<td>Failure by ground movement</td>
<td>Loss of supply</td>
</tr>
<tr>
<td>Earthquake</td>
<td>Dams</td>
<td>Damage from ground failure and motion</td>
<td>Loss of supply</td>
</tr>
<tr>
<td></td>
<td>Generating stations, sub stations, other facilities</td>
<td>Damage from ground failure and motion, e.g. isolators, equipment support frames</td>
<td>Loss of supply</td>
</tr>
<tr>
<td></td>
<td>Distribution lines (overhead)</td>
<td>Collapse of lines and pole mounted transformers</td>
<td>Local loss of supply</td>
</tr>
<tr>
<td>Volcanoes</td>
<td>Transmission lines</td>
<td>Swept away by lahar flows and short-circuited by ash deposits</td>
<td>Loss of supply</td>
</tr>
</tbody>
</table>
### Mitigation Measures for electricity generation and distribution

<table>
<thead>
<tr>
<th>Preventive measures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Locate facilities in less vulnerable sites.</td>
<td></td>
</tr>
<tr>
<td>• Protect equipment where practicable (e.g. bunding substations) against flood</td>
<td></td>
</tr>
<tr>
<td>• Install more plant, hold spares, rehabilitate power generation installations, substations and electricity distribution, brace equipment</td>
<td></td>
</tr>
<tr>
<td>Spread the risk</td>
<td></td>
</tr>
<tr>
<td>• Develop alternative sources of main power supplies</td>
<td></td>
</tr>
<tr>
<td>• Avoid dependence on one main substation</td>
<td></td>
</tr>
</tbody>
</table>
Risk Culture: Proposals on education and training:

1-Children at school level,
2-Operationnal level: School of Civil Protection,
3-Local and regional Authorities,
4-Inspectors on Environmental Security: control of the application of the new Law on disaster Management

by
Jean- Pierre Massue
European Academy of Sciences and Arts,
Jeanpierre.massue@free.fr
1-Children at school level,

- Children represent the society of the future
- Children are more curious and less conditioned than adults and therefore more receptive to risk prevention messages
- Children are the best ‘transmitters’ of information to their families and therefore help to disseminate risk prevention messages

From another point of view, children are most vulnerable to risk.

Proposal 1  Risk awareness education for the children at school level.

It is proposed to organized Province by Province a training programme of one week for a group of teachers who will became future trainers for teachers in the Province on:

- the content of the training programme is given in appendix 1.

Countries which can be interested : France, India (the Central Board of secondary Education)

Proposal 2 : The « School Net Project »

We propose as we have done in other countries to create networks of school «Cyber-base» : permanent one for schools in town, mobile one for schools in rural and mountains areas.

At each « Cyber-base » will be associated one or two part time animators the aims of the systems will be:

1- to - train children to use internet system for
   - the chat functions,
   - to be able to built a website,
   - to use the network to built radio and ideally Internet TV on their own,

2-to use such « School Net project »as a tool for risk prevention awareness issues ,
3-in addition the children will have the possibilities to use the school-net project to built others types of radio or TV programmes : cultural, music, theater etc...

   On the other hand such « School Net project » could be used to send information in case of emergency.

   Such project could be launched under the auspices of IOM in liaison with the European Center REMIFOR and the Caisse des Dépots et Consignation from France (to be confirmed).

Countries which can be interested: France, Morroco
Proposal 3: **School of Civil Protection.**

It is proposed to create a structure of Civil Protection in Sri Lanka based on Volunteers coming from the Civil Society, the Administration, ex-combatant etc. In a first step the setting up of:

- The School for Civil Protection belonging to a national Authorities: the future National Council for Disaster Management

As it was done at the request of the United Nations in 2000 asking for the creation of a Civil Protection in the Kosovo, the project was implemented in the framework of a cooperation between IOM and Euro-Mediterranean Centers of the EUROPA Major Hazards Agreement. The same pattern could be proposed in this case.

See in appendix 2 the content of the course to train the teachers of the proposed School of Civil Protection.

Countries which can be interested: France, Australia, Ukraine, Bulgaria, Romania, Belgium, Armenia.

Proposal 4: **Inspectors in charge of the control of the application of the Law.**

In a first step it is proposed to create a Department of « Inspectors for Environmental Security ». Many countries are at the moment creating such group of Civil Servant in particular taking into account that from the first of January 2005 we are entering in the UN Decade on sustainable Development coordinated by UNESCO. Such training was organized last year in Morocco and is planned in the Caucasus countries in particular Georgia. Using the content of those programmes an adaptation of the training with a duration of one month can be proposed in the Sri Lanka for the benefit of a Province in a pilot project. Contact can be established for this purpose with the European Center REMIFOR in Draguignan and the National School of Civil Protection in France (ENSOSP).

Countries which can be interested: France, Belgium, Morocco, Georgia.

Proposal 5: **Training of Local and Regional Authorities on risk Management.**

A cooperation can be organized with the University of PERADENIYA, Department of Geology; Prof. Kapila Dahanayake with the International School on sciences of Information processing in Cergy / Paris France, contact: Jean Pierre Massue.

The training programme can be organized two ways:
- A Master duration one year,
- A permanent education programme for civil Servant and local and regional Authorities split over one year: 3-4 days per month.

Countries which can be interested: France.
Appendix 1

Element for risk awareness education of children at school level

Natural risks

Earthquakes

1. The effects of earthquakes

- harm to humans connected with:
  - direct and indirect effects: collapse of buildings, destruction of industrial infrastructure and roads, bursting of dams, etc; insalubrity: transmission of diseases, viruses, etc
  - tsunamis (tidal waves: lake).

2. The messages to be transmitted

- Earthquakes are sudden occurrences since, in the current state of knowledge, it is not possible to predict them and there is therefore no operational warning.
- During an earthquake

  Within a building:
  - Place yourself near a wall or a load-bearing pillar, under a strong piece of furniture (a table), keep away from windows,

  Outside a building:
  - Do not stand under electric cables or anything that may collapse, stay in your vehicle,

  Always be aware of the danger of falling objects.

- During an earthquake
  - Listen to the radio,
  - Do not light any type of flame, turn off gas, heating, electricity, ventilators,
  - Do not enter a damaged building,
  - Follow security procedures (schools, public buildings, etc).

Flooding: of plains, after torrential rains

1.a. The effects of flooded plains:

- harm to humans: drowning, isolation; lack of food and medication; insalubrity, risk of epidemics,
- damage to property: infrastructure (pipes, roads, electricity cables, overturning of vehicles and other equipment, destruction of bridges, etc.)

1.b. The effects of flooding after torrential rains
• Harm to humans: injury as a result of overturned material, insalubrity, etc, problems connected with dead and injured animals, etc
• Damage to property: destruction of buildings and infrastructure, destruction and/or obstruction of bridges and pipes, overturning of material and equipment, etc.

2. **The messages to be transmitted:**

   **During flooding:**
   - listen to the radio, turn off electricity, move to previously identified high points, upper floors of houses, hills
   - avoid telephoning
   - only evacuate if the authorities order you to do so or if the flood forces you to do so.

   **After the flood:**
   - Air rooms
   - Disinfect
   - Only switch on the electric current if electrical installations are dry
   - Do not go into a flooded area on foot or in a vehicle.

**Fires**

1. **The effects of fire:**

   - Harm to humans: burns, intoxication, injuries connected with the collapse of burned structures, etc
   - Damage to property: destruction of buildings and infrastructure.

2. **The messages to be transmitted:**

   - attack the fire at the base of the flames with water or an extinguisher; in the event of fire in an electrical installation, first turn off the current; stifle burning oil or petrol with a damp cloth
   - to assist someone whose clothes are on fire: lay the person on the ground and stifle the flames with material made of natural fibres
   - if you cannot put the fire out, leave the room, shutting the door tightly
   - if you are hemmed in by fire and smoke: shut yourself in, block the space under the door with damp cloths, water the door, avoid creating draughts; show yourself at the window.

**Tsunami**

The effects,

The message to be transmitted

**Volcanic eruption**

1. **The effects of volcanic eruptions**

   - harm to humans generally connected with the consequences of lava and toxic gas emissions, landslides, tsunamis (tidal waves), insalubrity: transmission of diseases, viruses, etc
   - damage to property connected with the engulfing and destruction of buildings and infrastructure (water and electricity distribution, roads, etc)
   - environmental damage: flora and fauna. The 'positive' aspects connected with the fertility of volcanic soils should be noted, however.
2. The messages to be transmitted

- Listen to the radio and follow the instructions given,
- Follow the instructions on relevant notice boards,
- In the event of gas or ash emissions, protect your nose and mouth, preferably with a damp cloth,
- Keep away from the volcano,

Only evacuate when ordered to do so by the authorities, following emergency procedures.

➢ Technological risks: industrial risk

A major industrial risk is an accidental event on an industrial site which results in immediate serious consequences for staff, neighbouring communities, property and the environment.

1. The various possible effects:

- mechanical effects as the result of an explosion: effects on human beings – lungs and eardrums
- effects of heat on human beings, property and the environment connected with the combustion of an inflammable substance or an explosion
- the toxic effects of inhalation of a toxic chemical substance - chlorine, ammonia, phosgene, etc - following a leak.

2. The messages to be transmitted:

- listen to the radio
- evacuate or stay indoors according to the nature of the risk
- turn off ventilators, gas, electricity and heating
- do not go to pick children up from school

➢ The risks of everyday life

These types of risks account for a very high percentage of injuries and deaths. They are connected with ordinary everyday situations at home and in the street.

In the home

- connected with the use of electricity: electrocution when touching sockets or using defective domestic electrical appliances
- burns when upsetting receptacles put on hot plates or gas burners
- inhalation or absorption of toxic household products
- starting fires through misuse of heating equipment or matches
- falling down stairs, etc.

In the street

- traffic accidents, etc

The messages to convey involve making children and parents aware of measures to prevent everyday risks at home and measures to prevent traffic-related accidents.
Making schools safe from major accidents

Objective: Developing measures to enable schools to deal with the gravity of a major accident or disaster while awaiting the arrival of the emergency services.

Implementation is in three stages:
- preparation
- realization
- maintenance

A school safety plan should, when drafted, include the following:
- definition of the various tasks that have to be done when managing a crisis and the formation of an emergency team among whom these tasks will be distributed
- allowing for the possible degrees in the scale of an accident and its consequences
- special considerations in respect of:
  - activities taking place outside the school premises (sports, walks, etc)
  - premises where there are boarders
  - school communities that include pupils or adults with disabilities
  - informing the partners involved: the authorities, civil protection services, etc

I. Preparatory phase

A. Identifying potential risks to the school

The table of risks should be drawn up in co-operation with the authorities responsible for the locality in which the school is situated, the relevant scientific circles and the civil protection services.

B. Making contact with local authorities in order to link up the school safety plan with the emergency plans made by the authorities.

C. Formation of an emergency team responsible for:
- supervising pupils and staff,
- liaising with families, the authorities, civil protection and emergency services.

D. Prior information to pupils and parents

Emergency team: distribution of responsibilities

Head teacher:
- activating the alarm
- activating the safety plan
- ensuring the various posts are set up
- establishing contact with the authorities and transmitting their instructions to the staff
- drawing up a list of members of the emergency team and assigning one or more of the following tasks to them:

Internal organization:
1. seeing that assembly operations run smoothly
2. establishing and maintaining internal contacts
3. supervising pupils and assembly operations
4. making a list of those absent
5. identifying people who are injured or trapped
6. managing the waiting period
7. ensuring internal logistics
8. turning off ventilation, heating, gas and electricity, if necessary
9. controlling access to the school
Contact with the emergency services

- informing the emergency services of developments in the situation: numbers, where people are confined, assembly points, any injuries
- meeting and accompanying the emergency services when they arrive: information on persons injured or trapped, and those who are safe
- handing over the plans of the building indicating master switches and places with specific functions: electrical, storage, etc.

Contact with families

- reminding them not to come to collect their children, to avoid telephoning, to listen to the radio: in order to follow instructions
- reassuring and informing them, following the head teacher’s instructions

Relations with the press

- follow the head teacher’s instructions as to what information is to be given to the press

Prior information to staff and pupils about the school safety plan and the various phases of its implementation

Information to parents

- in the event of an alarm, do not go to the premises affected
- listen to the radio and follow the authorities’ instructions
- do not go to collect children from school: there is a plan to ensure their safety
- do not telephone, do not swamp the networks
- treat with caution often fragmentary or subjective information that does not come from the authorities
II. Implementing the school safety plan

When should the alarm be sounded?

The head teacher will sound the alarm and activate the safety plan:

- when he or she is alerted by the authorities
- when he or she witnesses an accident which may have a major effect on the school or its environment

How should the alarm be sounded?

How the alarm is to be sounded will have been decided in advance by setting up an internal mode of alarm: human voice, alarm mechanism, loudspeaker, etc.

The sounding of the alarm will result in the immediate activation of the school safety plan and the application of all instructions: emergency team, etc.

What instructions should be applied immediately?

- listen to the radio: in order to obtain official information and any instructions about the risk or accident,
- Emergency team: go to the place corresponding to the tasks assigned to them
- For staff
  - Continue to supervise the pupils,
  - see that the assembly operation runs smoothly
  - think about groups with special needs: pupils and staff with disabilities or who are trapped
  - make a list of those absent
  - indicate incidents
  - manage the waiting period
- For pupils
  - Calmly proceed to the planned internal or external assembly point(s)

Where and how are pupils and staff to be placed in safety?

According to the school’s lay-out and environment, one or more internal or external points will be chosen to place pupils and staff in safety.

Selection criteria:
- ease of access
- location: upstairs in the event of flooding
- orientation: windows not exposed to prevailing winds in the event of storms or major pollution
- quality of the building
- possible confinement: accessibility of water and sanitation, with as few openings to the outside as possible, an area of about $1m^2$ per person, the maximum capacity of which has been calculated in advance
- means of internal communication
Possible places:
- classrooms
- assembly hall(s)
- external assembly point(s) which may be different from those to be used in the event of fire
- appoint a person responsible for each place or point

**How to manage communication with the outside**

When there is an alert the members of the emergency team formed during the preparatory phase of the safety plan have a special part to play, along with the head teacher, as regards communication where it has been maintained or re-established.

**Liaising with the authorities:**

- gather, note and pass on to the authorities concerned any information about the situation and its development,
- pass on the instructions of the administrative authorities.

**Liaising with the emergency services:**

- inform the emergency (civil protection) services at regular intervals of any developments in the situation: numbers of people, places of confinement or external assembly points, those injured, etc,
- meet and accompany the emergency services when they arrive.

**Liaising with families:**

If they make contact:

- remind them not to come to collect their children and that they should avoid telephoning
- tell them which radio station is broadcasting locally the information given by the authorities
- inform them tactfully, respecting the authorities’ instructions.

**Relations with the press:**

These must comply with the instructions and directives given by the authorities
Essential documents and resources

- list of members of the emergency team (with replacements) and details of their responsibilities
- plans of the school with access, entrances, exits, important points: electricity meter, taps, lavatories, etc
- selection of assembly point(s) and plan of access
- list of people: pupils and staff so that those absent can be easily identified.

Ongoing vigilance and updating of the safety plan

On the basis of regular drills: at least one a year

Regular updating.

Appendix 2

Content of a programme to train the trainers of a School of Civil Protection in Sri Lanka.

Civil Protection Handbook

The handbook is composed of six blocks which can be used independently:

Block 1: “Risk and Emergency Management, Human Rights Aspects, Ethical Aspects” by Zora MILUTINOVIC from Skopje, Victor POYARKOV from Kiev, Antoine LAHAM from Bern, Caroline ALLIBERT from Lyon and Jean-Pierre MASSUE, Council of Europe, Strasbourg.

Block 2: “Natural Hazards, Technological Risks and Effects” by Zoran MILUTINOVIC from Skopje, Victor POYARKOV, Alexander GOLUB, Oleg GAYDUK and Dmytro HORDYNSKY from Kiev.

Block 3: “Medical Aspects of Disasters and Emergency First-Aid Provision. Epidemiology and Sanitary Action” by Mustapha DENIAL and Mohamed NESH NASH from Rabat and Paola BIANCO from Torino.


Block 5: “Organization of Relief. Current Risks” by Vijachslav HAROUTYUNYAN and Stefan BADALYAN from Yerevan and Rene CARRILLO from Montpellier.

Block 6: “Civil Protection Training and Education - Pedagogical Aspects. Information and Education” by Kolio KOLEV and Dimitar YONCHEV from Sofia.

This handbook is the result of an international approach and co-operation leading to training material which can be easily adapted to any country independent of its socio-cultural characteristics, risk specificity and state organization. The only remaining barrier is the language and the process of translation is underway.

We hope that this School of Civil Protection Handbook, the fruit of co-operation between in particular the International Organization for Migration (IOM) and the Council of Europe’s EUR-OPA Major Hazards Agreement, will contribute to the welfare of the population in a peaceful approach by helping to train the trainers of schools of civil protection.
Annex 10.5-I

Training and Awareness already conducted and Target Groups
(Not an Exhaustive List)

It is recommended that the proposed DMC facilitates these training and awareness programmes to be conducted utilizing the services of already existing training agencies that have been conducting such training and awareness programmes in the past, such as, SLDA, CHPB, NBRO, UDA, NGOs such as SLRC & St. John's Ambulance, NDMC, NIE and other newly identifies agencies.

NDM, CBDM, and other overview courses (These have been already developed and conducted by CHBP)
1. Community Based Disaster Management (CBDM), 6-day course - Sinhala & Tamil languages for Members from NGOs & CBOs, Government officials, others (Already developed and being conducted by CHPB)
2. Natural Disaster Mitigation (NDM), 6-day course for Technical Officers from NHDA, UDA, NPPD, LAs, RDA, NBRO, Engineers, architects, planners, doctors, and Armed Forces and other (Already developed and being conducted by CHPB)
3. Managing Disasters / Natural Disaster Mitigation (NDM), 3-day course for Administrators (Already developed and being conducted by SLDA in Sinhala & English)
4. Integration of Natural Disaster Mitigation in the university curriculum for Staff of relevant Faculties of Universities
5. Overview of Disaster Preparedness, Mitigation, and Hazard Assessments for SLAS officers

Technical training (These have been already developed and conducted by CHPB & NBRO)
6. Construction Considerations in Natural Disaster prone Areas for Engineers and Technical Officers attached to Municipal Councils, Urban Councils and other Local Authorities
7. Craftsmen Training for Craftsmen involved in construction activities in Landslide, Flood, Cyclone and other prone areas
8. Crisis Management for Engineers and Technical Officers attached to Municipal Councils, Urban Councils and other Local Authorities
9. GPS and GIS for Land Use Planning Officers
10. Integration of Hazard Maps into Urban Development Plans for UDA & NPPD Planners
11. Integration of Natural Disaster Aspect in Urban Planning and Development for UDA & NPPD Planners
12. Land Use Planning and Landslides Mitigation for Land Use Policy Planning Division of the Ministry of Lands
13. Landslide Hazard Mitigation and Construction in Plantation Sector for Surveyors, Officials of Plantation Sector
15. Natural Hazards Mitigation for Heads, Administrators and Technical Staff attached to the Local Authorities in prone Districts
16. Probabilistic Analysis in Geo-technical Engineering and Analysis of Landslides Risk for SLUMDMP partner organizations: CHPB, NBRO, UDA
17. Proposed Guidelines for planning in Disaster prone Areas for UDA & NPPD Urban Planners
18. Risk-Based Mitigation Planning for UDA & NPPD Planners and other professionals
19. Search and rescue (SAR) Parties for RMC, NGOs and volunteers of Sri Lanka Red Cross
20. Soil Erosion and Mitigatory Measures for LAs, government agencies, NGOs
21. Technical skills for officers of Local Authorities for Technical Officers of LAs
22. Use of Hazard Zonation Maps in Land Use Planning for Land Use Planning Officers, UDA & NPPD Planners

Training for policy-makers, technical personnel and civil society (These have been already developed and conducted by CHPB & NBRO)
23. Hazard Identification for La elected officials, administration, NGOs, representatives of disaster management related organizations
24. EMRP for LAs for Volunteers attached to LAs, CBOs etc.
25. Guidelines for construction in disaster prone areas for Politicians, Administrators and Technical Officers attached to Local Authorities
26. Infrastructure Development and Maintenance in areas prone to natural hazards for Professionals from Public and private Sector Organizations
27. Media Workshop for Journalists for Practicing journalists in leading press and electronic media
28. Natural Hazard Consideration in Development Projects Members of IESL
29. Overview of Disaster Preparedness, Mitigation, and Hazards Assessments for Cadet Officers of the Sri Lanka Administrative Service (SLAS)
30. Research and Development (R&D) Institutions in Disaster Management for Local and International Participants
31. Risk Assessment and Identification of Elements at Risk for SLUMDMP partner organizations: CHPB, NBRO, UDA
32. Training of Trainers on Disaster Preparedness with special emphasis on Flood / Landslides / Cyclones / High Winds / Tsunamis for Red Cross Volunteers

**Awareness programmes** (These have been already developed and conducted by NDMC, CHPB & NBRO)
33. Awareness on Building Informational Research for Development Efforts for R&D agencies
34. Awareness for Environmental Officers
35. Awareness Creation among Govt. Officials for Govt. Officials
36. Awareness Creation on Disaster Preparedness for Representatives of NGOs
37. Awareness Creation on Forest Fire for Villagers in areas prone to forest fire
38. Awareness on Project Identification related to natural hazards for Students and Teachers in charge of guiding Projects and Assignments
39. Awareness on Rain Induced Natural Disasters for Officials and Field Officers attached to Divisional Secretaries' Divisions in prone areas
40. Awareness on Environmental Protection through Natural Disaster Mitigation for School Teachers and Students of Schools in prone areas
41. Awareness for newly elected Politicians to Local Authorities for Newly elected politicians of Local Authorities located in disaster prone areas
42. Awareness for Planners for Planners of UDA, NPPD, Land Use Policy Planning Division of Ministry of Lands
43. Awareness for Political Leadership for Political leaders of Local Authorities
44. Awareness on causes for Natural Disasters and Mitigation of the impact for School-children and teachers
45. Awareness on disaster mitigation and land use planning within Divisional Administrative System for Divisional Secretaries
46. Awareness on EMRP and Action Plan on Kelani River Flood Mitigation for Political Heads, Secretaries and Technical Officers of Local Authorities, Divisional Secretaries whose divisions are prone to River Flood and Representatives of other relevant service providing organizations
47. Awareness on Identification of Projects relevant to Natural Disasters for G.C.E. (A/L) Students, Buddhist Priest, Parents and Teachers from selected zones

**Training for schools** (These have been already developed and conducted by NDMC, CHPB & NBRO)
48. Awareness on Landslides for School Children
49. Role and responsibility of School Children in Creating a Disaster Safety Culture for Representative group of school children from schools
50. School Teacher Training for Selected School Teachers
**Annexes 11.3-I**

**Media Mobilization Guidelines**

Some media input & methods (tentative - could be elaborated according to specific needs)

**A - Long Term:** natural disaster prevention, preparedness, post disaster recovery at national and local level

<table>
<thead>
<tr>
<th>Methods</th>
<th>Activity / Technique</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish standard operational Procedure for use</td>
<td>Media briefing formats: press conferences, disaster warning bulletins</td>
<td>Disaster warning bulletins, disaster event bulletins, public statements and standard data forms drafted for media / general release: public safety or prevention measures, legal prohibitions for eco-safety etc.</td>
</tr>
<tr>
<td>Information control: to prevent public confusion and ensure appropriate behaviour - e.g., correct safety / prevention measures</td>
<td>Sequencing of information releases with content according to each stage of evolving situation; accurate targeting intended audience according to message</td>
<td>Data / announcements pre-drafted in readiness for each stage; content as relevant to each stage, accurately drafted for intended audience / purpose</td>
</tr>
<tr>
<td>Media education: informing media professionals of nature of possible / anticipated disasters, and contingencies arising thereof; ensuring selected media people (concerned reporters / videographers, news decision makers - e.g., editors, news directors)</td>
<td>Specific prevention-related training and briefing of media people; provision of informational material on prevention and long term rehabilitation</td>
<td>Training materials, disaster news coverage guide manuals, instructional audio / video cassettes, photographic briefs, briefing dockets, posters</td>
</tr>
<tr>
<td>Long term public awareness via media</td>
<td>Distribution of material via media: obtaining airtime slots, newspaper space for prepared material; regular participation in and contributions to TV / radio programmes or newspaper columns; advertiser sponsorships</td>
<td>Documentary / feature videos (e.g., commercially sponsored teledrama), prepared material / data</td>
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</tbody>
</table>
Media Mobilization Guidelines

Some media input & methods (tentative - could be elaborated according to specific needs)

**B - Short Term:** natural disaster event, immediate response, social mobilization at national and local level

<table>
<thead>
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<th>Materials</th>
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<tbody>
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<tr>
<td>Long term public awareness via media</td>
<td>Prior arrangements with media organizations for airtime slots, newspaper space for prepared material</td>
<td>Video warning / instruction messages, prepared print material for public instructions on disaster response measures</td>
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## Five-year Programme for Strengthening Disaster Risk Management in Sri Lanka

<table>
<thead>
<tr>
<th>Activity</th>
<th>Year</th>
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<tbody>
<tr>
<td>1</td>
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<tr>
<td>Development of an appropriate institutional framework for disaster risk management</td>
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<tr>
<td>- A national disaster management policy</td>
<td>1</td>
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<tr>
<td>- Approval for DRM system</td>
<td>2</td>
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<tr>
<td>- Establish DMC</td>
<td>3</td>
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<tr>
<td>- Legal empowerment for the agencies involved in the process</td>
<td>4</td>
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<tr>
<td>- A national disaster management plan as an action plan (This may be entrusted with DMA under supervision of Council)</td>
<td>5</td>
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<tr>
<td>- The Plan to have Government sanction by a Cabinet decision and delegated to DMC to monitor and supervise implementation</td>
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<tr>
<td>2 Disaster Risk Assessments</td>
<td></td>
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<tr>
<td>- Setting up the system for risk assessments and the Inventory</td>
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<tr>
<td>- Multi-hazard risk assessments</td>
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<tr>
<td>3 Systematic Data Collection, Research and Analysis</td>
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<tr>
<td>- Setting up of the system for Data Collection, Research and Analysis</td>
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<tr>
<td>- Setting up Data Collection Centre within the DMC</td>
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<tr>
<td>- Research, Inventory of past disaster impacts and Website</td>
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<tr>
<td>Activity</td>
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<tr>
<td>4 Setting up early warning system for the following</td>
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<tr>
<td>- Earthquakes and tsunamis/sea surges</td>
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<tr>
<td>- Other weather related hazards</td>
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<tr>
<td>- Institutional Capacity building</td>
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<tr>
<td>- Training and development</td>
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<tr>
<td>5 Natural Disaster Mitigation Strategy for each level of Government</td>
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<tr>
<td>- Setting up the requirements and circulars to all concerned</td>
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<td>making it compulsory for all agencies to follow</td>
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<tr>
<td>- Identify mitigation strategies and develop action plans</td>
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<td>- Implementation of plans</td>
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<td>6 Integration of DRM into development</td>
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<tr>
<td>- Mainstreaming Disaster Risk Management into the National Development Process</td>
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<tr>
<td>- Integrating DRM in National Land Use Policy</td>
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<tr>
<td>- Streamline Data Base of Lands indicating proneness of lands</td>
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<td>to various hazards</td>
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<tr>
<td>7 Disaster preparedness and response systems and plans</td>
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<td>- Setting up the requirements and circulars to all concerned</td>
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<tr>
<td>- Develop plans</td>
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<td>- Implementation the system at all levels</td>
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<td>Activity</td>
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<tr>
<td>8 Protection of Public Infrastructure from Impacts of Natural Disasters</td>
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<tr>
<td>- Setting up the requirements and circulars to all concerned making it compulsory for all agencies to follow</td>
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<tr>
<td>- Implementation the system at all levels</td>
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<td>9 A national public education and awareness generation programme</td>
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<td>- School education</td>
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<td>- University integration</td>
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<td>- Training</td>
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<td>- Public Awareness</td>
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<td>10 Organize and strengthen involvement of different stakeholders</td>
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<td>- Private Sector</td>
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<td>- Volunteers</td>
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<td>- Media</td>
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<td>- Non-Governmental Organizations</td>
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Appendix I

Reports of Study Visits by the Parliament Select Committee - Local and Foreign

Foreign Visits

Appendix 1 - 1

Appendix 1 -1 (a)

Report on the Study Tour to Indonesia of the
Chair of the Sri Lanka Parliamentary Select Committee

On Disaster Preparedness

April 6 - 7, 2005

The visit to Jakarta of the Honourable Mr. Mahinda Samarasinghe, M.P. on April 6 and 7, 2005 was considered a timely opportunity for mutual exchanges on each country’s experience of the humanitarian response to the tsunami disaster response. It also enabled contacts to be made for future reference and dialogue between the two countries.

Objective:

To explore issues concerning natural disaster response management common to the governments of Sri Lanka and Indonesia.

Meetings:

- **Alwi Shihab**
  Coordinating Minister for People's Welfare

- **Sri Mulyani Indrawati**
  State Minister for National Development Planning

- **Sujana Royat**
  Director, Tsunami National Reconstruction Masterplan
Findings:

1. Both Sri Lanka and Indonesia have experienced similar difficulties in coordinating relief and response activities with local and foreign NGOs. It was learned that in Indonesia AusAID has provided assistance to enable the screening of all NGOs according to basic criteria. The Indonesian government will forward to Sri Lanka a copy of the criteria.

2. Both governments found a common experience of pledged funds not being realized. Only Australia, Japan and Denmark have fully delivered on their pledges to tsunami relief and response efforts in Indonesia.

3. The government of Indonesia promised to provide Mr. Samarasinghe with a digital copy of their national reconstruction plan.

4. Regarding the coastal buffer zone, the following process has been followed in Indonesia:

   • There is no established buffer zone. People are allowed to rebuild on their land;

   • An environmental / coastal zone survey is being carried out to identify areas that have been rendered unfit for human habitation due to the tsunami. The general cause is contamination of the natural water sources by seawater;

   • There is a general problem of proper identification and replacement of property title deeds;
PARLIAMENTARY SELECT COMMITTEE ON NATURAL DISASTERS
Draft Report of the visit by Sri Lankan Delegation to Australia (April 11-15, 2005)

(Members of the Delegation: Hon Mahinda Samarasinghe MP- Committee Chair and Delegation Leader, Hon Jayathissa Ranaweera MP and Deputy Minister of Provincial Councils and Local Government, Hon Lakshman Seneviratne MP, Hon Nadarajah Raviraj MP, Prof. Kapila Dahanayake, Senior Professor of Geology, University of Peradeniya and Ms Ramani Jayawardene, Principal Officer, Committee Office, Parliament of Sri Lanka)

Monday 11th April  2005

In Melbourne, Victoria

VISITS

Office of the Emergency Services Commissioner, Victorian Emergency Council and Meeting with Mr Bruce Esplin, Commissioner, Emergency services
Meeting with Mr Rhys Maggs, Director
Victorian State Emergency Services (SES) Commissioner-

Bureau of Meteorology-
Meeting with Dr Geoff Love, Director

Victoria Premiers Office-
Meeting with Hon. Steve Bracks, Premier

Working Dinner with Representatives of Victorian State Government and City of Melbourne- meeting with Dr Peter Frost, Director, Tsunami Relief, Department of Premier and Cabinet

Important observations/Propositions

SES plays a key role countering the effects natural and man-made emergencies. It is essentially administered with a large number of volunteers (5500). They are above 18 years of age and are not paid by the state government but have wide range of opportunities to develop new skills, form new friendships and accept high responsibility and enjoy team spirit of a tightly knit unit.
SES activities involve flood, windstorms, earthquakes, road rescue, emergency planning and preparedness, search and rescue and support and relief roles particularly to Victoria Police. SES coordinates its activities with relief agencies such as Red Cross and Salvation Army.

The visit to the Bureau of Meteorology helped to get an overall view of its activities. The bureau operates with a staff of some 1400 throughout Australia supported by several thousands of volunteers providing forecasting, warning, information and advisory services for the general public in different sectors including natural disaster mitigation.

It was reported that using radar facilities rainfall intensity could be predicted for the next two hours. Such information could serve as early warnings for potential floods and landslides. Warning systems take many forms and can be as simple as flood height warning indicators or fire danger levels on roadside boards.

A warning system can comprise a multi-agency, multi-disciplinary approach to severe weather warnings and tsunami warnings. Australia, though a party to the Pacific Ocean Tsunami warning system, related facilities were not available on the Indian Ocean coastal region of Australia. However, even on the Pacific side, an elaborate monitoring of the sea level rise is not carried out during earthquakes since they depend on tsunami warnings given by the Hawai Tsunami Early Warning Center at Honolulu.

During the meeting with the Premier of Victoria, Hon. Steve Bracks, it was announced that the state government could offer financial and technical assistance to implement a disaster management system in Sri Lanka. He mentioned the assistance already given to the development of the village of Seenigama. In Victoria, local government plays a significant role in emergency management. Natural disaster management is one aspect of emergency management, the basis on which each state and territory government organizes its approach to all hazards and risks whether natural (e.g., bush fires, earthquakes, floods, storms, cyclones, storm surges, landslides, tsunamis, meteorite strikes or tornadoes), technological or human-induced.

Tuesday 12th April 2005

VISITS

In Burwood

Country Fire Authority (CFA) –
Meetings with Mr Neil Bibby CEO – CFA and Mr Len Foster, CEO of Australian Fire Authorities Council (AFAC) and Mr Graham Thiessen, General Manager (Operations)

Important Observations/Propositions

An overview briefing of CFA activities were given. CFA is one of the world’s largest volunteer based emergency management organizations with a volunteer force of 59,000 out of 60,000 people (Of the CFA team 98% are volunteers!).
CFA stresses the need to educate its people and is one of the largest providers of tertiary level training in rural Australia. It has more than 1200 brigades and 2300 trucks. CFA performance is in four key areas: Prevention, Preparedness, Response and Recovery.

CFA brigades respond to a variety of situations such as bush fires, structural fires, industrial fires, road accidents etc., School children of 11-16 years in age form junior brigades of young volunteers. Mobile Education Units and Juvenile Fire Awareness are also targeted for young Australians. The possibility of providing training and services (and fire fighting trucks) to Sri Lankan local authorities was discussed and prospects are promising.

In Melbourne

Lunch with Victorian Parliament and tour of its different locations
Lunch hosted by Speaker of the Legislative Council (Mrs Judy Maddigan MP) and President of Legislative Council (Hon Monica Gould). Several MPs from Labor and Liberal Parties (Ms Liuz Beattie, Mr Jude Perera and Hon David Davis) and Clerk of the Legislative Council (Mr Wayne Tunnecliffe) attended.

Important Observations/Propositions

During discussions over lunch, Ms Judy Maddigan agreed to assist in the post-tsunami development efforts and asked that requests be channeled through Australian High Commission in Colombo.

Tuesday 12th April 2005

In Canberra, NSW

Dinner with H.E Sri Lankan High Commissioner (Rtd Major General Janaka Perera). Mr Don Randall MP, Mr John Griffin, Assistant Secretary, Mainland SE Asia and S Asia branch, Dept. of Foreign Affairs and Trade (DFAT) and Dr Peter Howarth, Director, India and S Asia section, DFAT also attended.

Wednesday 13th April 2005

In Canberra
VISITS

Briefing and tour of the Crises Center-
Meeting with Simeon Gilding, Assistant Secretary, Consular Branch

Briefing on Australia’s Tsunami Early Warning Center-
Meeting with Zena Armstrong and Craig Chittick

Briefings on Disaster Victims Identification (DVI) at Australian Federal Police Victim Identification Unit –
Meetings with Julian Slater, Director, Forensic Operations and David Royds, Coordinator –Forensic Counter Terrorism

Important Observations/Propositions

The resource persons of the unit have carried out extensive DVI activities in Bali, Marriott Hotel, Jakarta Embassy, Banda Aceh and at other sites of closed disasters (e.g. airplane crashes, building collapse etc.,) and open disasters (bomb explosions, tsunami floods etc.,) using primary identifiers such as dental records, fingerprints and DNA studies and secondary identifiers such as medical incidents (sutures from surgery etc., personal property (from IDs etc.,).

It was reported that they have now undertaken a regional DVI capacity building project. The Director Mr Julian Slater invited Sri Lankan Parliamentary Select Committee to send 3 or 4 suitably qualified young participants (less than 45 years preferably) from among Forensic medical personnel, police officers and scientists with a degree in Medicine or Chemistry for the short term training programs on DVI to be held shortly in Canberra. (Their expenses could be borne by Australian Government through negotiations with the Colombo High Commission)

Briefings on Earthquakes, Tsunamis and Bush Fires at Geoscience Australia-
Meetings with Dr Phil McFadden, Chief Scientist/Geophysicist, Dr Trevor Jones, Leader, National Risk Assessments Project, Geohazards Division and Dr Spiro Spiliopoulos, Seismologist, Earth Monitoring Group, Geohazards Division

Important Observations/Propositions

Geoscience Australia conducts investigations on bush fires, earthquakes and tsunamis. The delegation was informed about the activities regarding bush fires and predictions about this disaster using hydrogeological and humidity status studies. Geoscience Australia monitors the earthquake and tsunami situations in and around Australia. The delegation was briefed about possible future earthquakes and tsunamis in the Indian Ocean coastal regions of Australia and the proposed extension of existing Pacific Tsunami Network to their Indian Ocean coastal area.
The scientists expressed their willingness to cooperate with Sri Lanka in its efforts to set up a Tsunami Early Warning System. They also agreed to provide hands-on training in seismology for two suitably qualified Sri Lankan geoscientists to be identified from the GSMB and the University of Peradeniya.

Briefing at Emergency Management Australia (EMA)

Briefing on EMA – Meeting with Mr David Templeman, Director General (DG), EMA Ms Kerry Groves, Regional Program Manager (S Asia), S Asia and Africa Section, AusAID, Canberra, Ms Margery Webster, Director, Education and Training , EMA and Ms Judy Parker, EMA also attended.

Important Observations/Propositions

EMA established in 1993 is the successor to the former Natural Disasters Organization (NDO) that existed since mid 1974. Today EMA embraces broader concepts of emergency management – prevention, preparedness, response and recovery. In addition to the natural disasters, today EMA’s new scope encompasses natural, technological and human-caused disasters under Attorney- General’s Department. EMA’s mission is to provide national leadership in the development of measures to reduce risk to communities and manage the consequences of disasters. The EMA conducts a postgraduate 2-year Certificate Course in Emergency Management for those with a Bachelor’s degree and an Advanced Diploma of Public Safety (Emergency Management).

During the discussions it was agreed to obtain the services of EMA resource persons to conduct the relevant courses of the proposed 2-year MSc program in Disaster Management scheduled to commence soon at the Postgraduate Institute of Science (PGIS) affiliated to the University of Peradeniya. Course contents of the certificate Course and Diploma were also requested. Books and videos for educating people about Emergency Management under the Ministry of Local Government and Assistance was also solicited to give state-of-the-art training for Sri Lankan fire brigades. It was agreed to make the said requests through the Australian High Commission in Colombo under the AusAID programme. Ms Webster and Ms Judy Parker agreed to facilitate the said arrangements on behalf of the EMA.

Dinner hosted by Mr Templeman, DG EMA.
Attended by Mr Ron Randall MP, Mr Robert Cornall, Secretary, AG’s Department and Mr Doug Chester, Deputy Secretary, Dept. of Foreign Affairs and Trade

Thursday 14th April 2005

In Brisbane, Queensland
VISITS

Briefing and Tour of Kedron Complex, State Disaster Coordination Center
Meeting with Mr Alan Brunner, Executive Director, Counter Disaster and Rescue Services
Meeting with Hon. Chris Cummins, Minister for Emergency Services
Morning Tea by the Minister and Mr Michael Kinnane DG, Dept. of Emergency Services (DES), Queensland and attended by representatives of Counter Disaster and Rescue Services, Queensland Fire and Rescue Service and Queensland Ambulance Service

Important Observations/Propositions

Queensland is said to have the best emergency model in Australia. About 40,000 volunteers take part in Fire Fighting for urban and rural fire brigades. DES has divisions for Ambulance, Fire and Rescue, Counter Disaster and Consolidated support. Queensland University of Technology trains personnel and offers programs leading to Diploma... Queensland Fire and Rescue Authority has a modern fire and emergency training facility. DES has about 85,000 volunteers and 7800 employees. Collaboration, Coordination and Co-operation are the 3 Cs governing the vision of the DES. DES has good relationships with the Meteorology, Police and Health Departments and also with the NGOs. The funding for NGOs comes through the government.

Hon. Minister agreed to provide assistance to Sri Lanka to develop a modern Emergency Management training program and in the conduct of the proposed MSc program in Disaster Management. Formal requests to be forwarded through the Australian High Commission in Colombo.

VISITS

In Brisbane, Queensland

Tour of Special Operations Centre
Tour of Whyte Island Facility
Meetings with Mr Gerry Rabelink, Manager, Special Operations and Mass Casualty Planning Unit, Queensland Ambulance Service
Mr Chris Maguire, Manager, Special Operations, Queensland Fire and Rescue Service
Meeting with the Department of the Premier and Cabinet
Discussion of the Queensland Government’s tsunami-related assistance
Meeting with Dr Evelyne Meier, Director, Market Strategy, Trade and International Operations Division; Mr Patrick Vidgen, Executive Director, State affairs and Mr Steve Maguire, Director Multicultural Affairs Queensland

University of Queensland
Meetings with Prof. Mick Keniger, Executive Dean, Faculty of Engineering, Physical Sciences and Architecture
Professor Peter Mora, Director, Earth Science Systems Computational Centre and Director, Queensland University Advanced Centre for Earthquake Studies
Dr Basil van Horen, Head, Development Planning Program

Important Observations/Propositions

Prof. Mora explained how seismologists working in the QUAKES research center at the Department of Earth Sciences, University of Queensland use computer models to simulate different earthquake processes. Their results indicate that seismicity evolves in a predictable manner and further research with different types of computer models could eventually lead to earthquake forecasting. The QUAKES center works in collaboration with earthquake researchers from different parts of the world (e.g. USA, Japan and China). It was agreed to invite two Sri Lankan geoscientists with physics background (preferably from the GSMB and University of Peradeniya) to work in the QUAKES project and familiarize with the new technology while getting a training in the field of seismology. Dr van Horen who has already worked with social scientists from Peradeniya agreed to assist in identifying suitable resource persons to conduct relevant courses in the proposed MSc programme in Disaster Management at the University of Peradeniya. This program is proposed for middle level administrators with a bachelor's degree working in the disaster-prone areas. It was agreed to correspond with the Executive Dean through the Australian High Commission in Colombo.

Friday 15th April 2005

In Sydney, NSW

VISITS

Briefings at Sydney Police Centre
Meetings with Major General B.W. Howard, Chairman, NSW State Emergency Management Committee
Dr Michael Flynn, NSW Department of Health, Tsunami Operations
Mr Murray Nott, Disaster Welfare, Department of Community Services
Mr Duncan Sutherland, Director, Business Development, Rural Fire Service (RFS)
Mr Brenden Beckett, Planning Officer Government Services, State Emergency Management Committee
Important Observations/Propositions

The discussions centered on emergency arrangements in NSW and their response to tsunami operations. The role played by community groups in emergency response activities was highlighted. Common management mistakes during the two types of crises—(1) natural disasters such as floods, earthquakes etc., and (2) Induced catastrophes such as terrorist acts, hostage situations etc., Media lessons such as the need for realistic training and not overplaying the crisis situation were dealt with. The steps taken in Crisis Communication Planning Process were explained in detail. The delegates were given a tour of the State Emergency Operations Center.

It was reported that the Australian Institute of Police Management (AIPM) conducted a Post Graduate Diploma in Executive Leadership with emphasis on public safety and emergency services for police officers and executives. Mr Beckett promised to provide details of course contents of the Diploma and looked into the possibility of identifying suitable resource persons in the relevant area of study for the proposed MSc in Disaster Management at the Peradeniya University.

The visit at Sydney ended with a lunch at the Wharf Restaurant hosted by Hon. Paul Edward McLeay MP, member of the NSW Legislative Assembly and a tour of the Rural Fire Service facility.
Presented by:

Hon. John Amarathunga, M.P. (Group Leader)
Hon. Rauff Hakeem, M.P.
Hon. Mahinda Wijesekara, M.P.

Report to be presented to: Hon. Mahinda Samarasinghe

Chairman,
Select Committee on Natural Disasters.

Date of Completion: 30th April 2005
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Introduction

The Select Committee of Parliament to Recommend Steps to Minimize the Damages From Natural Disasters visited Turkey and Germany to study and gather information on national level risk management structures, early warning systems, local level preparedness and emergency response mechanism.

This tour was sponsored by International Organization for Migration (IOM) and the following were participated in this tour:

Hon. John Amarathunga, M.P.
Hon. Rauff Hakeem, M.P.
Hon. Mahinda Wijesekara, M.P

Mr. Anil Hewawasam – Secretary to the Delegation
Country Briefing

Location: South- Eastern Europe and South-Western Asia (that portion of Turkey west of the Bosporus is geographically part of Europe), bordering the Black sea, between Bulgaria and Georgia and bordering the Aegean sea and the Mediterranean Sea, between Greece and Syria.

Area: Total 780,580 sq km  
Land 770,760 sq km  
Water 9,820 sq km

Climate: Temperate; hot, dry summers with mild, wet winters, harsher in interior

Terrain: Mostly mountains; narrow coastal plain, high central plateau (Anatolia)

Natural Hazards: Very severe earthquakes especially in Northern Turkey, along an area extending from the Sea of Marmara to Lake Van

Government Type: Republican Parliamentary Democracy

Population: 65,666,677 (July 2000 est)

Capital: Ankara

On 11th April 2005 the group visited to- Republic of Turkey Prime Ministry Turkey Emergency Management General Directorate at Ankara.

Activities and Findings

The group were addressed by the following experts on the subjects indicated against their names:

Mr. Selahattin Durmaz, Head of Department of Turkey Prime Ministry ,Turkey Emergency Management General Directorate (TEMAD) at Ankara - Framework of Emergency Management in Turkey.

Mr. Mehmet Yilmaz, Deputy General Director, General Directorate of Civil Defence - Organisation of Civil Defence in Turkey.
Framework of Emergency Management in Turkey.

Two consecutive major earthquakes took place in 1999 became the turning point to the disaster management in Turkey. An integrated approach has been adapted at the levels of prevention, response and recovery by revised legislation and administrative restructuring.

Legislative Changes

- Obligatory earthquake insurance
- Control of construction processes
- Proficiency in constructional professions

Organizational Changes

- General Directorate of Emergency Management attached to the Prime Ministry was established
- Ministry of the Interior has set up regional centers for relief and emergency operations
- Independence National Earthquake Council was set up
- Local authorities’ responsibilities for disaster mitigation were extended

Turkish Prime Ministry Crisis Management Center has been established at the central level, to manage all co-ordination, co-operation and all activities between general staff of Military and other associated Ministries, in a crisis.

Emergency Management of Turkey takes necessary measures in order to provide an effective emergency management through nation wide in case of earthquake, landslides, rock falls, fires, meteorological disasters and population movements which are in such a scale that threatens national security and to provide co-ordination between agencies that are parts of emergency management such as the ones that are active either in precaution before emergencies or in search and rescue operation during emergencies or in recovery and reconstruction activities after emergencies.

Tasks of Turkish Prime Ministry Crisis Management Center

- to ensure the establishment of emergency management centers at governmental agencies and departments
- to monitor and evaluate the taking of the necessary measures
- to conduct the activities of co-ordination in the utilization of all type of land, sea and air transport vehicles and rescue and relief equipment
- to make arrangements that encourage voluntary organizations and individuals providing relief in emergency situations
- To carry out other duties which may be assigned by the Prime Minister
The Organization of Civil Defence in Turkey.

There are two main types of threats facing Turkey.

a. **Natural Disasters**
   - Earthquakes
   - Floods
   - Fires
   - Avalanches
   - Landslides

b. **Technological Hazards**
   - Industrial Hazards
   - NBCR Threats
   - Accidents
   - Environmental Pollution

The Earthquake that took place on 17th August 1999 in Marmara region and the next one that took place on 12th November 1999 in Bolu-Duzce caused major damage to people and infrastructure. During Earthquake, Civil Defence Organization operated with the Armed Forces, teams of Public Establishments, NGO’s and International Teams.

**Experience of the Marmara Earthquake**

1. To provide the uninterrupted communication between disaster region and related centers
2. To provide rapid transportation, to determine the alternative roads, to make use of alternative transportation means and to control the Traffic jam in disaster region.
3. To detail duty on expertise fields of relief team who come from abroad and domestic to the disaster region
4. To provide co-ordination among the search and rescue teams
5. To register live, injured and deceased people’s identification extracted from the debris
6. To deploy sufficient search and rescue teams to disaster areas, at least for two weeks
7. To ensure to send specialists on rescue tasks and full equipped teams for activities under the debris
8. To take all required security measures in the active working area
9. To review all kind of plans disaster
10. To re-mark the damaged buildings

**The Civil Defence Search and Rescue Unit/Teams**

This organization is a civil establishment that performs the duties of Search and Rescue, First aid and other moral services behind the front. 92% of Turkey’s territories are under the risk of earthquake. As the Turkey’s territories did not have the required mechanism during the Marmara earthquake the need for the restructuring has become very essential. Therefore the Civil Defence Search and Rescue teams were formed.
There main objective of the Team are;
♦ To provide all required facilities to the affected area (Buildings, equipment, personnel)
♦ To provide the standardization of equipment according to the direction of Organization
♦ To develop and install the capacities of mobile communication facilities
♦ To train the personnel in the special fields such as mountaineering, diving and rescue in the water etc.,

These teams are ready to assist the other countries also.

**Civil Defence College**

Civil Defence College was established in order to educate and train the Civil Defence staff, training of Trainers for Civil Defence, the Fire Brigade, Public and NGO’s under the authorities of the General Directorate of Civil Defence which is located in Ankara. It is the only Education and Training Institution which provides wide knowledge in Civil Defence issues to the relevant personnel.

The Main training subjects in college are basic training on the Civil Defence, NBC, search and rescue, fire disaster risk and protection methods, planning of mobilization and war situation.

The Turkish Civil Defence trains civil defence trainers and personnel who come from foreign countries.

**Demonstration at the Civil Defence Search and Rescue Unit**

The Civil Defence Search and Rescue Unit – Demonstration-

They have demonstrated how to react on a disaster when it occurs and showed their modern equipment such as rescue vehicles, ambulance, mobile kitchen, Water purify remark, rescue boat, fresh air breathing device, communication devices, searching dogs etc. to the delegation
**Demonstration at the Earth Quake Simulation Centre**

Earth Quake Simulation Center has set up a platform which can move with 3 dimensions and equipped with last version technology. It can simulate more strong earthquakes than 8 magnitude by carrying the weight between approximately 2000 to 6000 kg.

They have demonstrated how they will protect themselves at the time of earthquake.

Simulation center is designed to train the personnel of their Organization, Scouts, Students, Military Personnel, NGO’s and also Foreigners.

**Visit to Turkish Grand National Assembly (TBMM)**

On 12\(^{th}\) April 2005 the delegation visited Turkish Grand National Assembly (TBMM) and had discussions with on general issues with the following :-

Mr. Mustafa Demir, Deputy of Samsun, Head of Commission for Public Work, Transportation and Tourism and other 10 senior members of TBMM.

Prof. Dr. Cevdet Erdot, Deputy for Trabzon, Head of Commission for Health, Family, labour and Social Affairs.

Mr. Ali Dincer, Deputy Speaker of the Grand National Assembly of Turkey.
Study Tour- Germany (Conventional long form – Federal Republic of Germany)

**Country Briefing**

**Location:** Central Europe, bordering the Baltic Sea and the North Sea, between the Netherlands and Poland, South of Denmark

**Area:** Total 357,021 sq km  
Land 349,223 sq km  
Water 7,798 sq km

**Climate:** Temperate and Marine; cool, cloudy, wet winters and Summers; occasional warm mountains (Foehn) wind

**Terrain:** Low land in North, upland in center, Bavarian Alps in south

**Natural Hazards:** Flooding,

**Government Type:** Federal Republic

**Population:** 82,424,609 (July 2004 est)

**Capital:** Berlin

On 14th April, 2005 the delegation visited the Federal Office of Civil Protection and Disaster Assistance (BBK) at Bonn.

**Activities and Findings**

The delegation were addressed by the following personnel on the subjects indicated against their names: –

Mr. Unger, President of BBK. - The introduction speech

Mr. Molitor - Legal Basis Assignment and Co-ordination Structure

Mr. Krik - Systematic of Vulnerability analysis

Mr. Bytomski – Local Level Assignment preparedness
Federal Office of Civil Protection and Disaster Assistance (BBK)

The Federal Office of Civil Protection and Disaster Assistance (BBK) was established after the famous attack on the World Trade Centre, New York on 11th September 2001 and the dangerous Elbe floods.

As a result of above, the Federal Minister of Interior and his colleagues in the Federal states have agreed to work together with the State Government with a view to manage all level of disasters at the state and federal level at the time of crisis. This is a joint task that calls for the co-operation of all the States as a new strategy for protecting the people of Germany.

The Federal Ministry of Interior has also considered the following facts when established the BBK:-

1. Fire Services and Relief organizations are to be co-ordinated more effectively.
2. Co-ordination of the information and communication systems between the Federal and The States.
3. National Security Systems (Police, the Bundeswehr, and Services)

The new Federal Office provides the Federal Republic of Germany with a central organizational element for civil security that encompasses all the appropriate tasks in one location. This means that there is one authority for –

- performing the German government’s civil protection tasks
- coordinating the protection of critical infrastructures
- collecting, evaluating, and presenting all types of information sources to define one single hazard situation
- coordinating the German government’s task of informing the federal states and communities, the private sector and the people about emergency planning and current threats,
- supporting the management of deployed federal state forces and other public and private resources in large-scale hazard situations
- coordinating the protection of the people against weapons of mass destruction
- providing personnel in leadership positions at all administration levels in civil protection with the appropriate training to cope with threats
- national co-ordination in the field of civil preventive security within the framework of the European integration process
- coordinating the German government, federal states, fire services and private aid organizations when assuming international humanitarian tasks and when civilians and the military work together.
In addition to above the BBK has the following responsibilities:

- to ensure that all public and private officers involved in the protection of critical infrastructures are closely inter-linked from a technical point of view,
- to compile short, medium, and long term risk analyses for critical infrastructures,
- to develop specific hazard registers from the risk analyses
- to compile crisis and hazard prevention plans for infrastructure
- to advise state, other public and private offices on prevention and defence planning issues in order to protect critical infrastructures – also via a hotline,
- to agree to develop, implement and permanently foster a security partnership between the state and the economy.

**Legal basis of the Civil Protection and Disaster Control in Germany**

The significant feature of the German system is that it differentiates the tasks of the disaster/state of tension between wartime and peacetime.

During peacetime, the *Land* (States) have exclusive regulatory competence for preparedness measures to provide against and the management of emergencies and disasters. They have delegated execution of the relevant tasks to municipalities and relief organizations. In case of wartime the Federation has exclusive regulatory competence. The *Land* are obliged to execute the civil protection tasks of the federal commission.

While legislative power rests with the *Land*, the regional and local authorities (Municipalities) are responsible for the organization of disaster control. For fulfilling the various tasks, the latter have established various groups, i.e. “Units and Facilities” such as fire protection, paramedical services, water rescue services etc.

The exact organizational set up and strength of each specialized service is defined in the relevant administrative regulations under Land Law.

Material resources are jointly provided by the *Land*, Municipalities and Relief Organizations. Human resources are rendered by volunteers of private humanitarian relief organizations.

Any regular command and control posts would be overtaxed with the command of such a broad relief potential. Therefore, in case of disaster, a Special Disaster Operations Command and Control Post will assemble which comprises high qualified and specifically trained staff member of the local administration. They are supported by liaison officers from the main institutions and public utilities.

In the Civil Protection Act, the Federation has committed itself to use its civil protection potential also to support disaster control and emergency management authorities.
In addition, facilities and personnel of the Federal Disaster Relief Organization (THW), Federal Armed Forces and Police Officers of the Federal Border Police to be deployed in several large-scale emergencies, on the basis of the constitutional principle of Administrative assistance (Article 35 of the Basic Law)

**The German Federal Agency for Technical Relief (Technisches Hilfswerk) – THW**

THW is the Federal Agency for Technical Relief of the Federal Republic of Germany. THW is only federal part of the civil protection mechanism in Germany, based under direct command of the German Ministry of Interior. Its statutory tasks includes the provision of technical assistance at home and humanitarian aid abroad.

It is a national requirement that all male Germans have to serve in the Army. THW is an alternative for technicians, who do not want to serve in the Army. They can stay in their jobs and serve on a 6 year voluntary basis in THW (mainly evenings and weekend, except of alarm and deployment). This system enables THW to have highly skilled technicians, who only need additional training for special tasks. The main asset of THW is the professional knowledge of its volunteers. These volunteers represent a wide scope of technical and other professions on various levels of expertise and experience. All THW members receive a special training in several stages in the local sections and at the two THW training centers. The training is concentrated on skills needed for national and international relief missions. The unique feature of THW is that it’s a governmental organization which has been operating mainly with volunteers (98.8%), serving partly as part of national duty or real volunteers after the 6 year duty.

Volunteers receive special training based on their future role in the units and special sections from these 2 federal academies. Within a period of 3 years every volunteer gets the training which is needed to be a functional part within a technical squad. The training includes theory as well as drill and field exercises. It is gradually training system, starting with basic lessons about command lines and deployment and finally giving specially made courses.
On 15th April, 2005 the group visited the German Committee for Disaster Reduction (DKKV) and United Nations University Institute for Environment and Human Security (UNU-EHS) at Bonn.

**Activities and Findings**

The delegation were addressed by the following personnel on the subjects indicated against their names:

- Mr. Karl-Otto Zentel, Secretary General of DKKV - basic introduction and Activities of German Committee for Disaster Reduction
- Prof. Dr. Janos J. Bogardi, Director, United Nations University, Institute for Environment and Human Security (UNU-EHS) – Activities of UNU-EHS
- Dr. Fabrica Renaud, Scientific Advisor (UNU –EHS) – Tsunami impact on soil and water resources
- Mr. Yuichi Ono, Programme Officer. UN/ISDR Platform for the Promotion of Early Warning – Early Warning

**German Committee for Disaster Reduction (DKKV)**

This is a non-governmental organization. The members of DKKV and the board members work here on a voluntary basis. This is a National platform for disaster reduction in Germany. The national link to international organizations and initiatives active in disaster reduction and a center with a good reputation of providing qualified information on all aspects of national and international disaster reduction.

**Activities of DKKV –**

- Improvement of disaster management.
- International program for risk and vulnerability indexes.
- Interdisciplinary research in the area of disaster reduction and prevention.
- Development of instruments for disaster reduction and prevention and measures for firmly establishing them in other specialized sections and political spheres.
- Dissemination of information about disaster reduction in training and education.
• The development of media related strategies for promoting and bolstering society’s awareness for disaster reduction and prevention.

United Nations University- Institute for Environment and Human Security (UNU- EHS)

UNU-EHS has been created to assess the vulnerability and coping capacity of Societies facing natural and human-induced hazards in a changing environment. The institute will support policy and decision makers. UNU-EHS is supported by Federal Ministry of Education and Research and the Ministry of Science and Research of the State of North Rhine- Westphalia.

UNU-EHS will explore threats to human security:

  From environmental degradation
  Unsustainable land use practices and
  From natural and man-made hazards

The institute will spearhead UNU’s research and capacity building activities in the broad interdisciplinary field of “risk and vulnerability”.

Conclusion

Both Turkey and Germany have decided to establish all the above mentioned institutions after the severe damages caused by the natural disasters that they have faced. eg -: Mamara earthquake in 1999 in Turkey and Elba floods in 2002 in Germany.

When establishing the institutions on disaster reduction, they have taken to consideration the lessons and the experiences that they have faced from the previous disasters. They identified their loopholes and shortcomings and planned to develop and expand the resources and activities to get maximum advantage from the available resources.

According to these findings, the following steps have been taken by them with regard to national disasters:-

- Decentralization of the administrative structure
- Assessment missions are to be planned early
- At the national level, one authority should be responsible for issuing warning
- Strengthen disaster preparedness for effective response at all levels
- Provide information through easy access to all stakeholders and uninterrupted communication system
- Effective early warning systems
- Country needs to make sure the warning message is quickly disseminated to right place/people, including Local Authorities and the Public in and understandable manner.
- Local Authorities to take actions based on the developed guidelines/manuals (siren, dispatch Police, evacuation etc.)
- Planning alternative roads to access the affected areas

Suggestions

1. **Establishment of a Organization for Civil Defence** – An Organization to be established under the Ministry of Defence or Interior to cope up with the national disasters when it occurs

2. **Establishment of a National Volunteer Force for Disasters** – An Institution to be set up to train volunteers in all related fields with regard to national disasters

3. **Establishment of a Center for Effective Early Warning System** – It is essential to have a center with well equipped facilities and expertise to warn the nation on natural disaster

4. **Educate public on natural disasters**: Seminars or workshops to be organized from the grass root level to educate public on natural disasters and the precaution measures
5. **Inclusion of Natural Disasters to the school curriculum:** It is important to educate the children about the natural disasters and as to what steps should be taken to minimize the damages and therefore it is pertinent to have Natural Disaster as a Subject.

6. **Establishment of a Government Organization to co-ordinate with Foreign Countries** – At a time of national level disaster it is important that a Governmental Organization should communicate with foreign countries with regard to the necessary assistance and aid and therefore it is important to have such an organization.

**Appreciation**

The delegation of the Select Committee on Natural Disasters wishes to place on records their gratitude and sincere appreciation for the co-operation extended by the following individuals and institutions that helped to make this study tour a success:

- The Government of Turkey
- The Government of Germany
- Mrs. Mary Shehan, Chief of Mission, IOM – Colombo, for organizing and sponsoring a valuable and interesting study tour.
- Mr. Jeff McMurdo, Program Development Officer, IOM – Colombo, for the special support and co-operation extended in every possible way.
- Mr. Yasar Ogul, IOM Representative, Turkey and Mr. Reiner Schmitz, IOM Representative, Germany for their generous assistance.
- All the Heads and the Members of the following institutions in Turkey and Germany for their immeasurable support to make the study tour a success.

- Turkey Prime Ministry, Turkey Emergency Management General Directorate
- Turkey General Directorate of Civil Defence
- Turkey Civil Defence Search and Rescue Unit
- Earth Quake Simulation Center, Turkey
- Federal Office of Civil Protection and Disaster Assistance, Germany
- The German Federal Agency for Technical Relief
- German Committee for Disaster Reduction
- United Nations University Institute for Environment and Human Security (UNU-EHS) at Bonn
SRI LANKA PARLIAMENTARY SELECT COMMITTEE ON NATURAL DISASTERS

STUDY TOUR TO

JAPAN
&
KOREA
Names of the Participant

Hon. (Prof.) Tissa Vitharana, MP (Group Leader)

Hon. Rajavarothiam Sampanthan, MP

Mr. Jayasiri Samaraweera, Assistant Director
SRI LANKA PARLIAMENT SELECT COMMITTEE ON
NATURAL DISASTERS

STUDY TOUR TO JAPAN

Meeting Report

Date : 11th April, 2005
(10.00 a.m. to 11.30 a.m.)
Place : N. H. K. (Japan Broadcasting Corporation) with
Mr. Tomio Kojima, Executive Director

Information Provided

Japan Broadcasting Corporation (N.H.K) plays a key role in the national early
warning system and is responsible for the provision of information to the general
public when there is a warning of a Natural Disaster. Besides, it gives information
regarding an ongoing natural disaster interrupting its scheduled programmes
when necessary.

To provide information to the general public, the N.H.K. uses eight channels i.e.
5 T.V. channels and 3 Radio Channels.

When there is an anticipation/forecast of a natural disaster, the information
regarding such an incident is brought to the notice of the people promptly.

Some of the warnings telecast/broadcast by the N.H.K. are as follows ;

* Stay away from the shore lines
* Turn off all gas appliances
* Remain clam
* Don't rush out immediately

The N.H.K. is considered a Media Centre and it provides training facilities to the
selected bodies to make announcements quickly and make the situation known
immediately. The news broadcasters have a daily rehearsal.
Date: 11th April, 2005
(13.00 - 14.00 hours)
Place: Cabinet Office, Government of Japan

Five presentations were made on the Disaster Management System of Japan.

1st one with Mr. Shuhei Kazusa, Director for Earthquake and Volcanic Disaster Management.

**Information Provided:**

Definition of Disaster and the responsibility of each sector were explained.

Accordingly two types of disasters are defined i.e. (i) Natural Disasters such as earthquakes, heavy rains, tsunami etc. and

(ii) Accidental Disasters such as large scale accidents i.e. conflagration, explosion, ship wrecks and massive release of radioactive substances.

Implementation of the Disaster Management Plan is the main responsibility of this institution. For the smooth implementation of disaster management, the Central Disaster Management Council and Headquarters for Emergency Disaster Management function at Central Government level and the Prefectural (District) Disaster Management Council and Municipal Disaster Management Councils functioning under the Local Government act together in a coordinated manner.

The initial response is at Local Government level and depending on the magnitude of the disaster the other levels more in.

15.00 to 16.00 hours.

With Mr. Makoto Nakamura, Director Disaster, Prevention & Relief Division, Ministry of Land, Infrastructure & Transport (MLIT)

**Information provided:**

An Emergency Operation Centre has been established under the Ministry of Land, Infrastructure and Transport (MLIT). It functions as the Central room for the disaster management. It decides the immediate response in case of large scale disasters such as big earthquakes or typhoons.
This centre, based on the latest IT technology has a comprehensive role to collect, integrate, understand and disseminate the disaster information and damage conditions.

The main function of the Emergency Operation Centre are -

(i) Collection of disaster information;
(ii) Collection of damage information; and
(iii) The basic function of activity.

In the Emergency Operation Centre, the Executive Members and core staff of the Ministry should be immediately assembled to seek for the comprehensive disaster countermeasures, especially at the time of the establishment of headquarters for disaster management operation.

This centre should provide the information to the Prime Minister and other related Organizations. Furthermore, this centre through a digital circuit, TV conferences are performed with regional organizations.

The following machinery and materials are used for disaster management.

- Helicopters
- Drainage Pomp Trucks
- Lighting Trucks
- Satelite Communication Cars
- CCTV cameras

2.3 Radio Communication Systems for Disaster Prevention in Japan
With Mr. Shinji Watanabe, Director, Fixed Radio Communication Division.

The Objectives of the Tsunami Warning System:

"Warning" is not the objective, it is the preparation for action. The objective is "the evaluation of residents to safety" before a tsunami reaches land at 800km/hour!

Municipalities Wireless Simultaneous Transmission Systems in Japan

- Set up speakers all over the town/village and make announcements to the citizens at once.
Private wireless link between the Headquarters and Speakers

Why private? Can transmit information without relying on public networks

Why wireless? Difficult to interrupt/cost effective

- Can connect from on-site to the Headquarters
- Can use everyday as well as during emergencies

Samples of announcements to residents (1)

Broadcasting

- Broadcasting is the maximum-ranging communication means.
- It requires reliable system coordination for TV telops and TV/radio newsflashes

Tsunami Warning for Evacuation

Information circulation to residents of each country - to be reviewed

(1) By telephone: each country's disaster prevention agencies - Central Government - local governments - local communities

Measures required for the unavailability of contact points, busy lines and communication breakdowns by earthquake

(2) By Officials circulating warning and evacuation instructions by car - to be discussed.

Information provided

- Quick and steady communication is important to minimize the damages by disasters like tsunamis and earthquakes;
- establish and ensure viability of various, means of communication. (fixed, mobile, satellite, broadcast, etc.)
in particular, information circulation to residents is crucial - wireless simultaneous transmission system is effective.

- necessity of close cooperation, in system development, disaster situations and so on, among government bodies and infrastructure entities, including telecommunications companies.

16.00 - 17.00 hours

Place: Tokyo Metropolitan Disaster Prevention Centre
With: Mr. Masaharu Nakamura, Senior Director.

Tokyo has long been struck by a wide variety of disasters, which include earthquakes - the most disastrous was the Great Kanto Earthquake in 1923, typhoons, heavy rain and floods and volcanic eruptions. Because of this, it has been the earnest wish of Tokyo and its citizens to make the metropolis a city that is highly resistant to disasters. To realize this goal, many countermeasures have been taken; among these are construction of shelters, storing of food, drinking water and other emergency supplies, reinforcement of fire fighting and first-aid systems, and conversion of buildings into earthquake resistant and fire-resistant structures.

The Tokyo Metropolitan Disaster Prevention Center works in cooperation with the government and the wards and municipalities of Tokyo and neighbouring prefectures, as well as with the citizens of the metropolis, to protect the people and their assets.

Role of the Disaster Prevention Center

In the event of an actual or threatened disaster, the Disaster Prevention Center collects and analyzes information from wards and municipalities and disaster prevention organizations, and then reports to the Governor of Tokyo. Based on the information received, the Governor of Tokyo will decide whether to establish a Tokyo Metropolitan Disaster Prevention Headquarters.

- Composition of the Disaster Prevention Headquarters

  Head: Governor of Tokyo

  Deputy Heads: Vice Governors, Comptroller General, Superintendent-General of the Metropolitan Police Department
Directors General : Directors General of Bureaus of the Tokyo Metropolitan Government (TMG)

Staff members : Directors General of TMG’s Bureaus and those appointed by the Head

District heads : Chiefs of the Oshima, Miyake, Hachijo and Ogasawara Island(s) Branch Offices

Dispatched : Staff members : The chiefs and representatives of the following organizations :

1. Designated local administrative organs
2. Self-Defense Forces
3. Ward and municipal governments
4. Designated public institutions and designated local public institutions.

The Disaster Prevention Headquarters discusses the following matters and take measures to deal with problems.

* Collection and communication of disaster information and reports  
  * Fire-fighting activities  
  * First-aid and rescue activities  
  * Rescue and medical treatment  
  * Patrols and traffic control  
  * Evacuation and protection of residents  
  * Cooperation on aid/requests for dispatching rescue squads

* Emergency transportation  
* Securing and supplying drinking water, food, and necessities of life  
* Trash, sewage, and debris disposal  
* Temporary shelter measures  
* Restoration of lifelines and public facilities  
* All other measures to reduce damage and to guarantee the stable lives of residents

II. The Disaster Prevention Centre collects and communicates disaster information, process and analyzes the information and give necessary instructions and make requests on activities to disaster prevention organizations so that the above-mentioned steps may be taken effectively and efficiently.
Disaster Drills

To enable staff members and other citizens of Tokyo to act quickly and effectively in the event of a disaster, the following disaster drills are held.

Regular radio communication drills. ............................................twice a month

Regular drills on the Disaster information system ........................................ once a month
Regular image communication drills;
............................................ once a month

Regular mobile stations (satellite relay vehicle mobile multiplexer radio vehicles) operation drills
............................................once a month
Regular operation drills of the Earthquake Damage Interpretation System
............................................eight times a year.

Special drills for those living in housing for disaster prevention staff members twice a year.
Drills on communicating information on damage from storms and floods;
............................................once a year.

Tokyo metropolitan comprehensive disaster drills ;
............................................once a year
Other drills ....................from time to time.

Date : 12th April, 2005.
Place : Fire and Disaster Management Agency

With : Mr. Shogo Hayashi, Commissioner of the Fire and Disaster Management Agency

Information provided :

Fire is very frequent in Japan. Hence, there is a Fire Brigade in every local authority. If the local authority is unable to cope up, it contacts the national level institutions.

Fire & Disaster Management Agency formulates various measures to prevent disasters not only fire, but, also earthquakes, storms and flood etc.
It also functions as the contact in the national government for local autonomous bodies and fire defence related organizations, while promoting fire defence administration in a manner comprehensible to the public in general. It ensures the security of peoples lives through various fire defence and disaster prevention measures including public relation activities, education and training of fire service personnel as well as member of Volunteer Fire Corps.

Boats and helicopters are used by the Fire Department to rescue the people when there is a flood etc. 70 Helicopters are available for the purpose.

**Asian Disaster Reduction Center (ADRC)**

The Asian Disaster Reduction Center has been established in July 1998, with a mandate to facilitate multinational cooperation for disaster reduction in the Asian region. Along with 24 member countries, ADRC pursues activities leading to further prosperity and safe, peaceful, and comfortable lives in Asia.

ADRC also addresses issues of concern related to disaster reduction from a global perspective, in cooperation with international organizations and initiatives.

**Main Activities**

- **Information Sharing**
- **Human Resource Development**
- **Building Communities Capabilities**

**Member Countries :**

Armenia  Mongolia  
Bangladesh  Myanmar  
Cambodia  Nepal  
China  Papua New Guinea  
India  Philippines  
Indonesia  Russian Federation  
Japan  Singapore  
Kazakhstan  Sri Lanka  
Republic of Korea  Tajikistan  
Kyrgyz  Thailand  
Lao PDR  Uzbekistan  
Malaysia  Viet Nam

**Advisor Countries :**

Australia, France, New Zealand, Switzerland, United States of America
SRI LANKA PARLIAMENT SELECT COMMITTEE ON NATURAL DISASTERS

STUDY TOUR TO KOREA

Meeting Report

Date : 14th April 2005
Place : National Emergency Management Agency
With : Mr. Park, Chang Soon
       Deputy Commissioner Gene

Participants :

Hon. Rajavarothiam Sampanthan, MP
Mr. Jayasiri Samaraweera, Assistant Director

NOTES : information provided

The Republic of Korea is located east of the Asian continent (33-43° N, 124-132° E).

The Korean Peninsula faces the Yellow Sea and the Chinese Continent on its west, the East Sea and the Japanese Archipelago on its east and the South China Sea and the Pacific Ocean on its south.

Its topography is characterized by "a high east and low west" as its western coastal areas consist of gentle sloping terrain while its eastern coastal areas consist of steep gradients.

About 50-70% of Korea's annual precipitation flows into the sea as rivers have short watercourses and riverbeds have a steep gradient.

Korea has a temperate climate with four distinct seasons characterized by many arid days in spring, substantial rainfall summer, and heavy snowfall in winter.

Average annual precipitation is 1,274mm with approximately 50 or 60 % of the annual precipitation concentrated during the summer.
The average number of annual natural disasters hitting Korea is placed at seven with annual average property loss and death toll standing at 1.6 million won and 136 deaths respectively. Korea spends about 2.6 million won on recovery of devastated areas per year.

**The National Emergency Management Agency (NEMA)**

The National Emergency Management Agency (NEMA) was established as the first specialized national disaster management organization in history of Korea on June 1, 2004 in accordance with external and internal environmental changes, the public demand to reform disaster management systems and the Participatory Government's policy goal of realizing a "Safe Korea".

NEMA serves as an official government agency charged with oversight and management of such areas as fires, rescue operations, emergency aid regarding radioactive exposures, storms, and other natural disasters and incidents. The agency supervises establishment of guidelines on safety management systems of national and local governments and all matters related to disaster management, including taking preventive measures, making provisions for and responding to disasters, restoring disasters sites and post-disaster appraisals.

Since establishment of a comprehensive anti-disaster management system to quickly respond to such large-scale disasters such as large-scale earthquake is imperative, NEMA is putting forth a lot of energy into aggressively dealing with such problems to ensure the safety of the people.

**Disaster Status Control Centre**

The Disaster Status Control Center under NEMA is on 24 hour alert status and receives reports on disasters and damages from cities, provinces, countries, districts and fire stations across the country on a real time basis. It also analyzes disaster reports received through 119 Safety Reporting Centers and cyber disaster monitoring from people and sends them on to related organizations and local governments for appropriate action. In the event of an emergency, the center sets up the National Disaster and Safety Countermeasure Headquarters made up of 24 government agencies and related organizations totaling 58 officials and operates it as a pan-national and expanded disaster response unit.

In case of national security and when public lives are gravely affected by large-scale disasters, local governments cannot handle, the disaster-affected area will be declared as a special disaster zone as a pan-national move designed to stabilize public lives quickly cope with the situation effectively and conduct recovery work.
The government will provide administrative, budgetary, financial, tax and medical support necessary for recovering the declared special disaster zone as well as offering disaster relief in consideration of damages the massive disasters inflicted on public lives.

**WHAT IS A TSUNAMI?**

A tsunami is a series of large waves that are caused by a major disturbance of the sea floor. The disturbance can be a strong and shallow earthquake, a submarine landslide, or a submarine volcanic eruption. *Tsunami is the Japanese word for harbour wave.*

**SAFETY AT SEA.** In the deep ocean a tsunami travels harmlessly and at high speed. It becomes dangerous only when it approaches the cost and enters shallow water. There the waves slow and become steeper.

**SAFETY ON LAND.** Tsunami waves travel at 10-15 metres per second, faster than most people can run. The waves can smash houses and boats and up-root trees. People caught up in

The wave can swallow sea water and may be hurt by logs and roofing iron that are carried by the wave. In the Aitape tsunami

Some people were carried forcefully into mangrove swamps and others were buried under piles of logs.

Tsunami damage at Warupu village, Sandaun Province, 1998

Tsunami damage Warupu village, Sandaun Province, 1998

**BACKWASH.** Another danger from tsunami waves is that they bring a large volume of seawater on to the land. When the water flows back to the sea it may carry people out to sea.

**OFFICIALS CANNOT GIVE WARNINGS OF NEARSOURCE TSUNAMIS.** If a tsunami originates in PNG waters, for example in the Bismarck or Solomon Sea or offshore from New Ireland, it is said to be a near-source tsunami. Most PNG tsunamis are of this type. A near-source tsunami will reach the cost within 10-20 minutes. For example, the Aitape tsunami arrived less than 20 minutes after people felt the strong earthquake. In this case, **there is no time for officials to give a warning.**
PEOPLE MUST MAKE THEIR OWN WARNINGS.

Because there is no time to give an official warning, people must make their own decision. That is why it is important that each person in your school, village or town knows the warning sings and knows what to do. Probably fewer people would have died in the Aitape tsunami if they had recognized the warning signs and started to move inland as soon as they felt the strong earthquake.

PREPARE ESCAPE PATHS AND SAFE AREAS.

Communities and schools on the coast should plan and prepare for tsunamis. Prepare a safe area, and prepare escape paths so that people can reach the safe area. The safe area should be on high ground, or 1 km from the coast.

WE CAN GIVE WARNINGS OF FAR-SOURCE TSUNAMIS. If a tsunami originates on the other side of the Pacific, for example from a strong earthquake off South America, it will take almost a day reach PNG and Solomon Islands. there will be time to issue a warning. An example is the tsunami that originated off Chile in 1960. This reached the New Guinea Islands and the East Sepik coast 22 hours later as a series of waves 1-2 m high. The same tsunami continued across the pacific and caused damage and loss of life in Japan.

ANY MOVEMENT OF THE SEA FLOOR CAN CAUSE A TSUNAMI

THE WARNING SIGNS OF A TSUNAMI ARE

1. AN EARTHQUAKE

2. ANY UNUSUAL CHANGE IN SEA LEVEL
   (Commonly the sea level drops before the TSUNAMI wave arrives)

3. A ROARING NOISE

IF YOU NOTICE ANY OF THE WARNING SIGNS
- RUNS TO SAFE PLACE
- DO NOT WAIT TO BE TOLD
- DO NOT WAIT UNTIL YOU SEE THE WAVE THAT IS TOO LATE, BECAUSE THE WAVE TRAVELS AS FAST AS A SPEEDING CAR

YOU ARE SAFE FROM THE WAVE IF YOU ARE MORE THAN 800 METERS FROM THE WATER’S EDGE, OR ARE ON THE HIGH GROUND.
MOST TSUNAMI WAVES ARE 1 TO 2 METRES HIGH, LESS COMMONLY THE 3 TO 4 METERS HIGH, AND RARELY 10 TO 20 METRES HIGH. THE 1998 AITAPI TSUNAMI WAVES WERE 10 TO 15 METERS HIGH.

IF YOU CANNOT RUN AWAY TO A SAFE PALACE, CLIMB A TREE. PROBABLY YOU WILL BE SAFE.

WAIT AT THE SAFE PALACE FOR SEVERAL HOURS. USUALLY THE TSUNAMI WILL ARRIVE WITHIN 20 MINUTES OF THE EARTHQUAKE OR OTHER WARNING SIGN.

PUBLIC BUILDINGS SUCH AS SCHOOLS, HOSPITALS, POWER STATIONS AND TELEPHONE EXCHANGES SHOULD BE BUILT IN A SAFE PLACE.

HOW TO SAVE YOUR LIFE

BEFORE A TSUNAMI COMES
- TALK WITH FAMILY AND FRIENDS ABOUT TSUNAMI SAFETY. THIS COULD SAVE THEIR LIVES.
- KNOW THE WARNING SIGNS: SHAKE... DROP... ROAR... RUN!
- WHEN YOU ARE NEAR THE SEA THINK AHEAD:
  WHAT WOULD I DO IF A TSUNAMI CAME?
  WHERE WOULD I RUN TO?

IF YOU BECOME AWARE OF ANY OF THE WARNING SIGNS
- RUN TO THE SAFE PLACE, IMMEDIATELY!
- IF TRAPPED ON LOW GROUND NEAR THE SEA, CLIMB A TREE; YOU MAY BE SAFE.
- STAY AT THE SAFE AREA FOR SEVERAL HOURS. REMEMBER MORE WAVES MAY COME.
- DO NOT STAY IN A CAR NEAR THE SEA. THE WAVE CAN CARRY THE CAR ALONG, LIKE ANOTHER PLACE OF DEBRIS.

IF YOU ARE ON A BOAT
- IF YOU ARE AT SEA, DO NOT RETURN TO THE COAST UNTIL THE WAVES HAVE CEASED. STAY OUT IN THE OPEN SEA. THERE YOU ARE SAFE.
- IF YOU ARE ON THE SHIP AT A WHARF OF JETTY AND THERE IS NO TIME TO TAKE THE SHIP OUT TO SEA, LEAVE THE SHIP AND RUN TO A SAFE PLACE.

IF YOU ARE CAUGHT BY A TSUNAMI WAVE
- SWIM AS STRONGLY AS YOU CAN!
- FIND SOMETHING THAT FLOATS AND HANG ON TO IT.
Appendix I - 1 (e)

Draft Report

VISIT OF PARLIAMENTARY SELECT COMMITTEE ON NATURAL DISASTERS

United States Department of State
Bureau of Educational and Cultural Affairs
International Visitor Leadership Program
Disaster Preparedness
A Single Country Voluntary Visitor Project
Sri Lanka
May 7 – 14, 2005

Arranged by
United States Department of State

The Honourable Mahinda Samarasinghe (Leader of the Delegation)
Member of Parliament
Chairman, Parliamentary Select Committee on Natural Disaster

The Honourable Muthu Sivalngam
Minister of Estate Housing, Infrastructure and Community Development

The Honourable John Amaratunga
Member of Parliament

The Honourable Wijeyadasa Rajapakshe
Member of Parliament

Sunday 8th May 2005

Topic: GLOBAL SEISMOGRAPHIC NETWORK

The Cecil H. and Ida M. Green branch of the University of California Systemwide Institute of Geophysics and Planetary Physics (IGPP) is located in La Jolla, and is strongly linked to Scripps Institution of Oceanography (SIO) through joint faculty appointments, research interest and shared facilities. Other IGPP branches can be found at the Los Angeles, Irvine, Santa Cruz and Riverside campuses and at the Los Alamos and Lawrence Livermore National Laboratories.
IGPP research in La Jolla covers many fields, including global seismology, marine seismology and geodesy, geodynamics, high frequency seismology and arrays, geomagnetism, nonlinear dynamics, sea floor electromagnetic sounding, geodesy including satellite geodesy, information technology, geophysical fluid dynamics, seagoing experiments, geophysical inverse methods, acoustical oceanography, marine acoustics, planetary physics, and physical oceanography.

Scientists at the Institute of Geophysics and Planetary Physics are at the forefront of both experimental and theoretical seismology. They operate Project IDA, a global network of 33 broadband seismometers that forms a key part of the Global Seismic Network. They also operate two smaller seismic arrays in the tectonically active regions of southern California and Kyrgyzstan.

Their marine seismology group conducts frequent seagoing experiments along oceanic ridges and fracture zones, and builds, maintains and deploys a national NSF funded Ocean Bottom Seismography Instrument Pool (OBSIP).

A group of Academics led by Mr. Jonathan Berger met with the delegation and had lengthy discussions. The unmanned Seismographic Centre at Pallekelle and its linkages to the Global Seismic Network (GSN) was a topic of discussion. The delegation stated that it was absolutely necessary to establish a National Data Collection & Research Centre linking both Pallekelle and the University of Peradeniya Seismology Centre. Mr. Berger undertook to assist in an appropriate manner on behalf of the Scripps Institute of Oceanography, UCSD when an official request is made. There were several presentations made by the academics who were present at the meeting. Copies of these presentations have been used wherever relevant in the course of the compilation of the Committee Report.

**Topic: LOCAL SRI LANKAN TSUNAMI RELIEF EFFORTS**

In January, Dr. Rahmi MOWJOOD and three other Muslim Southern California doctors spent 2 ½ weeks providing medical aid to residents of Sri Lanka, splitting the time between Trinocomalee in the northeast and Galle in the south. Dr. Mowjood established the non-profit organization Tomorrow Starts Today: Aid for Sri Lanka. The site also lists organizations in Sri Lanka and the U.S. which have been working to give to those who need long before the Tsunami disaster.

Dr. Rahmi Mowjoood has been in touch with the Chairmen and plans on visiting Sri Lanka in July 2005 with a team of doctors to conduct immunization clinics, psychological counselling and medical care.

Monday 9th May 2005
Topic: PRIVATE SECTOR ASSOCIATION

For many years, emergency preparedness and contingency planning were thought of as a luxury. Corporations were reluctant to allocate the necessary time, staff or funds to prepare for the possibility of emergencies such as earthquakes, hurricanes, tornadoes, fires, or floods. Many chief executives mistakenly believed that the sheer size of a corporation would ensure survival. In 1983, the Mayor of Los Angeles and a group of business leaders met to discuss disaster preparedness. This group subsequently became a steering committee and formed the Business and Industry Council for Emergency Planning and Preparedness (BICEPP).

BICEPP is a private sector, self-help association funded by annual sponsorship donations. BICEPP later evolved into a non-profit corporation, lease by an Executive Committee and a Board of Directors. The goal remains the same: To provide a forum for information exchange to enhance emergency preparedness and contingency planning within the business community.

Education is another BICEPP priority. Since 1984, BICEPP has sponsored ongoing seminars and workshops, such as “Psychological Response to Disasters,” Exercise Design,” “Lessons Learned form the Northridge Earthquake,” and others. These seminars and workshops are specifically designed to promote emergency management, planning, education, and training.

Jim GOLTZ, Board member of BICEPP and Staff member of the California Governor’s Office of Emergency Services, provided us with an overview of BICEPP.

A proposal for private sector Disaster mitigation risk management & preparedness, response and recovery have been suggested by the Committee using BICEPP as a model. The Committee has had a dialogue with the different Chambers in Sri Lanka and have informed them of BICEPP’s willingness to assist the Sri Lankan private sector.

Topic: EMERGENCY OPERATIONS CENTER

The mission of the Los Angeles County Emergency Operations Center, EOC is to develop, assemble and maintain information that may be needed during future emergencies. Information includes Emergency response plans, Mutual Aid plans, operations Plans, available resource lists, demographics and geographic information systems mapbase reference files. CEOC maintains a state of readiness, respond effectively to an emergency, and react in a timely and efficient manner to the needs of country residents. Los Angeles County covers 4,083 square miles and 9+ million residents.
The EOC ensures command, control, coordination and communication during crisis response and long term recovery form every major emergency. CEOC serves to collect and disseminate information about the emergency to all concerned parties; to coordinate the utilization of all available resources; coordinate operations conducted by local governments in accordance with mutual aid agreements; and distribute emergency information and instructions to the public. The CEOC developed the Emergency Survival Program, ESP, formerly known as the Earthquake Survival Program, which is an awareness campaign designed to increase emergency preparedness at home, in the community at work and at school.

Lee SAPADAN, Senior Program Manager, provided a tour and overview of the Center’s administration. This was a very productive and useful visit. Many of the features of the Center have been incorporated in the draft report.

Tuesday 10th May 2005

Topic: SEISMOLOGICAL LABORATORY

The California Institute of Technology (Caltech) is an independent, privately supported university, whose educational mission has not changed since it was stated by the original trustees in 1921: “to train the creative type of scientist or engineer urgently needed in our educational, governmental and industrial development.” Caltech conducts instruction at both the undergraduate and graduate levels, and with its off-campus facilities, is one of the world’s major research institutions. The Institute is organized into six divisions: Biology; Chemistry and Chemical Engineering, Engineering and Applied Science; Geological and Planetary Sciences; Humanities and Social Sciences; and Physics, Mathematics and Astronomy.

Caltech’s Seismological Laboratory established in 1921, has a distinguished history of contributing to science and serving the public interest. Being internationally recognized for excellence in geophysical research and academics makes this an ideal place for study. The lab also serves as a focal point for earthquake information in Southern California and the world.

Margaret VINCI, manager, coordinated our visit to the Lab.

Topic: EMERGENCY PREPAREDNESS DEPARTMENT

EH City of Los Angeles Emergency Preparedness Department (EPD) includes the Emergency Operations Organization (EOO) and Emergency Operations Center. The Emergency Preparedness department provides citywide emergency management program leadership, continuity, and direction to enable the City of Los Angeles and its partners to respond to, recover from, and mitigate the impact of natural, manmade, or technological disasters upon its people or property.
The Mayor and City Council established the “new” Emergency Preparedness Department in July 2000 to improve the direction and control of local emergency preparations, response and recovering activities and to ensure that the needs of all the citizens of Los Angeles are met in the event of a local emergency. Previously, the department was known as the Emergency Preparedness Division. The department coordinates the interdepartmental preparedness, planning, training and recovery activities of the Emergency Operations Organization, its divisions, and all City departments. Additionally, it serves as a liaison with other municipalities, state and federal agencies and the private sector; and performs related public education and community preparedness activities.

Mark DAVIS, EPD staff provided a presentation and took the delegation through the Emergency Operations Center.

Mr. Mark Davis also provided the delegation with the master plan for the City of Los Angeles which was very useful to us.

**HONOLULU VISIT**

The **Pacific Tsunami Warning Center** was established in 1949. The Pacific Tsunami Warning Center (PTWC) in Ewa Beach, Hawaii, provides warnings for tsunamis to most countries in the Pacific Basin as well as to Hawaii and all other US interests in the Pacific outside of Alaska and the US West Coast. Those areas are served by the West Coast / Alaska Tsunami Warning Center WC/ATWC in Palmer, Alaska. PTWC is also the warning center for Hawaii’s local and regional tsunamis. The Director of the Centre Dr. Charles S. McCreary personally briefed the delegation and assured the delegation of the availability of contact persons and their telephone numbers in Sri Lanka so that future warning could be disseminated on time.

The **Hawaii State Civil Defense** (SCD) which serves as the coordinating entity for the State of Hawaii during times of emergency that affects one or more counties in Hawaii. SCD interacts with the county government civil defense agencies and with the Federal Emergency Management Agency (FEMA). The delegation was briefed by Major General Robert G.F. Lee, Adjutant General, Department of Defense, State of Hawaii.

The **Center for Excellence in Disaster Management and Humanitarian Assistance** (COE) is a federally funded project given a mandate by the US Congress to improve the coordination and integration of the world’s response to natural disasters, humanitarian crises and peace operations. COE helps those active in the provision of relief or security, in the case of the military, to coordinate better, to learn about the role of the other actors in the humanitarian field so that they may perform their own roles better. Therefore, the work of COE is behind the scenes, helping the responding organizations to do their own jobs better through education, training, research and information management activities, many in a multinational, multidisciplinary setting.
The **East-West Center** which is an internationally recognized education and research organization established by the U.S. Congress in 1960 to strengthen understanding and relations between the United States and the countries of the Asia Pacific regions. The Center helps promote the establishment of a stable, peaceful and prosperous Asia Pacific community in which the United States is a natural, valued and leading partner. The Center carries out its mission through programs of cooperative study, training and research. Professionals and students from the United States, Asia and the Pacific study and work together at the East-West Center to better understand issues of common and critical concern and explore mutually beneficial ways of addressing them.

The delegation was received and briefed by the President of the East-West Centre Charles E. Morrison and several other leading academics and officials including Dr. Jim Buika of the Pacific Disaster Centre.

The **Pacific Disaster Center**. Its mission is to provide applied information research and analysis support for the development of more effective policies, institutions, programs and information products for the disaster management and humanitarian assistance communities of the Asia Pacific region and beyond. The PDS promotes proactive, rather than reactive, planning that includes hazard mitigation as a key element of sustainable development. It works to increase efficiency of operational organizations by introducing innovative, and appropriately scaled, information resources, tools, and analyses.

Since coming back the delegation has been successful in arranging a visit for the PDC. Dr. Allan Clark, Executive Director of the Center came before the select Committee and make a comprehensive presentation.

PDC has also been put in touch by the Committee with the University of Peradeniya, so that the PDC could assist the University in the development of its Masters Degree Course for mid level administrators/officials on Disaster management which is to commence in September 2005.
Field Visits (Local)  

Appendix I - 2

Appendix I - 2 (a)

Report on the Field visit to Kandy

The following members participated.

Hon.Mahinda Samarasinghe  
Hon.John Amaratunga  
Hon.Rauf Hakeem  
Hon.Nadaraja Raviraj  
Hon.Mahinda Wijesekera

Recognizing the need to further look into what resources Sri Lanka needs in regard to technology, the Select Committee, along with the media personnel, paid a field visit to the Geology Department of the University of Peradeniya, the Pallekele Seismological Center and Kuliatta, an identified landslide prone region in Kandy. Udeni Amarasinghe, Senior Lecturer in Engineering, Geology Department explained how the Geology Center at the University of Peradeniya works. The Seismic Station donated by the Japanese International Cooperation Agency (JICA), was set up at the University under proposals made by him.

Mr. Amarasinghe stated that the main objective on having a geology center there was for academic and research purposes but now it had reached national significance.

He added that there are three other seismic stations located throughout the country, which are operated by the University of Peradeniya. All the data is collected in Peradeniya but it cannot be read because the equipment is not designed to do so.

The Select Committee recognized the need for both the government and the university to link their seismic monitors for an emergency alert-oriented system.

Amarasinghe also stated that it is impossible for seismometers to predict tsunami’s since the relevant equipment can only measure vibrations generated by earth quakes. The lack of tsunami detection buoys in the Indian Ocean poses a major problem and he recommended that with the help of UNESCO, an investment should be made to have them in place on a regional level.

The next site was the official seismic center located in Pallekele. operated by the Geological Survey and Mines Bureau (GSMB), the station relays seismic information to the GSMB head office in Colombo.

The Select Committee met with the experts running the station including Dr. N P Wijeyananda, Former Director of the GSMB. The recommendations made were the need to have trained seismologists in Sri Lanka, a link up between the GSMB and the University of Peradeniya, and for resources that are in place to be developed into a national data center.

The last leg of the tour was at Kuliatta, a landslide prone site. A meeting was held at the Waldambala Maha Vidyalaya with the attendance of all relevant officials to investigate whether the area and Kandy district as a whole was prepared for any emergency.
Prof. Kapila Dahanayake, Senior Professor of Geology of the University of Peradeniya headed the discussion and stated that science needs to be used to safeguard the lives of humans and to help utilize the advances made by it. The entire Central Province was prone to landslides and the professor stressed the need for a mechanism for the people in the region to be informed of natural disasters.

He also spoke about the signs of a landslide and stated that this type of practical information should be incorporated into the school curriculum.

The provisions of building licenses with the consultancy of geophysicists and the lands department so that vulnerable areas are identified was the main issue for the representatives of that area. The haphazard building of houses and livelihoods have worsened the issue needlessly endangering lives. Provincial council members recommended setting up a better-coordinated system for the Central Province.
Report on the field visit to Balapitiya, Hikkaduwa and Matara on the 1st June 2005

The following Members participated.

Hon. Mahinda Samarasinghe
Hon. John Amaratunga
Hon. Mahinda Wijesekera

Mr. Neil Iddawela, Assistant Secretary General of Parliament and Secretary to the Committee.

Meeting with the Fisheries Community of Balapitiya

On the 1st June 2005 at 11.00 a.m. the delegation held discussions with the Fisheries Community of Balapitiya at the Auditorium of the Divisional Secretariat, Balapitiya. The representatives of the Fisheries Societies, NGOs, Business Community and a clergy were present.

The Chairman of the Committee outlined the purpose of the field visit. He explained in details the Terms of Reference of the Select Committee and invited the people to express their views. He stated that the suggestions and comments on the buffer zone would be most welcome.

At the commencement of the session, Mr. A Dayaratna de Silva, President of the Balapitiya Fisheries Society stated that the feelings of the fisheries folk of the area. He stated that most of the fishermen are willing to resettle at the locations where they were before the Tsunami.

Thereafter, Dr. Samaranayake, Director General of the Coast Conservation Department explained the provisions laid down in the Coast Conservation Act with regard to the preparation of a coastal zone management plan and development activities within the coastal zone.

Hon. Mahinda Wijesekera also made submissions.

At the conclusion of the meeting the Chairman stated that the Select Committee understood the plight of the people of the area. He stated that an institutional framework had to be made to prevent such incidents in the future.
Meeting at the Divisional Secretariat, Hikkaduwa at 12.00 noon on 1st June 2005.

After the discussion with the Fisheries Community of Balapitiya, the delegation left for Hikkaduwa to have a discussion with the persons who are engaged in tourism. On the arrival of the delegation, the Divisional Secretary, Hikkaduwa warmly welcomed the members of the Committee and the gathering.

Thereafter, the floor was open to the public who had gathered there.

Mr. Harischandra de Silva, the President of the Small Tourist Hotel Owners Association stressed the need of renovation or/and reconstruction of the small scale tourist Hotels. He stated that the small scale tourist hotels provide lodging for 60% of the tourists and requested for an urgent remedy.

The delegation decided that the Select Committee should consider ways and means of providing tourism businessmen in Hikkaduwa, facilities to restart their business.

Meeting at the District Secretariat, Matara with the Divisional Secretaries of Galle, Matara and Hambantota at 1.30 p.m. on 1st June 2005.

The delegation thereafter, paid a field visit to Matara where they met the District Secretaries of Matara, Galle and Hambantota, Divisional Secretaries of the Southern Province, representatives of the NGOs, Members of the armed forces, Police and the Grama Seva Niladaries.

The three District Secretaries brought to the notice of the delegations the statistics with regard to the number of deaths and number of houses totally destroyed as a result of the tsunami.

The people gathered there stated that action is taken to withhold the interim payment of Rs. 5000/= allowance and requested not to withhold it.

Mr. H G S Jayasekera, District Secretary, Matara thereafter informed that by a circular, the Treasury has issued instructions to ensure that only the families who have lost their regular income due to the Tsunami disaster should be selected for the interim payment. He added that the families with a permanent source of income including income from government employment are not entitled to this payment according to that circular.
However, the delegation noted that there is no criteria to analyze the word 'regular income'.

Hon. Mahinda Yapa Abeywardena who was present at the meeting informed the public that the matter is brought to the notice of the government.

The delegation is of the view that the government servants who are engaged in disaster management service should be paid a risk allowance.

At the conclusion of the meeting, the head of the delegation offered his sincere thanks to the District Secretaries of Galle, Matara and Hambantota and other dignitaries.

At 3.00 p.m. the delegation concluded the proceedings.
Appendix I-2 (c)

Report on the field visit to Ampara and Kalmune on the
2nd June 2005

The following Members participated.

Hon. Mahinda Samarasinghe (Chairman)
Hon. John Amaratunga
Hon. MM Musthafa
Hon. Mahinda Wijesekera

Mr. Neil Iddawala, Assistant Secretary General of Parliament and
Secretary to the Committee

Meeting at the District Secretariat, Ampara

At the beginning of the Meeting, the District Secretary, Ampara welcoming the
members of the Committee offered his gratitude for the Committee for their
arrival to Ampara.

Thereafter, the Chairman outlined the purpose of this visit and briefed the
gathering on the Terms of Reference of the Committee. He stated that this
meeting is held under the provisions of the Standing Orders of the Parliament of
Sri Lanka and nobody is allowed to make comments according to their political
consensus.

The Chairman added that the report of the Select Committee would be presented
in Parliament before the end of this month and stated that the recommendations
made therein would be considered by the Parliament.

Thereafter, the floor was open to the general public. Scarcity of the lands in the
Ampara area was brought to the notice of the Committee.

The Committee also noted the non-availability of the Fire Brigade in Ampara and
directed the District Secretary to make available of a Fire Brigade very early.

After the meeting was over, the Committee visited the refugee camps at
Kalmune and had discussions with the refugees.

At 6.00 p.m. the Committee concluded its proceedings.
Appendix A

Statistics on Impact of Tsunami in some districts

The statistics on impact of Tsunami submitted by some District Secretaries are appended below.

Tsunami Devastation 2004.12.26
Ampara District

<table>
<thead>
<tr>
<th>Division</th>
<th>Deaths</th>
<th>Missing</th>
<th>Injured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalmunai (T)</td>
<td>1364</td>
<td>-</td>
<td>1080</td>
</tr>
<tr>
<td>Kalmunai (M)</td>
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<td>25</td>
<td>1036</td>
</tr>
<tr>
<td>Sainthamaruthu</td>
<td>770</td>
<td>-</td>
<td>3092</td>
</tr>
<tr>
<td>Ninthavur</td>
<td>124</td>
<td>01</td>
<td>150</td>
</tr>
<tr>
<td>Akkarapattu</td>
<td>18</td>
<td>-</td>
<td>37</td>
</tr>
<tr>
<td>Karathivu</td>
<td>824</td>
<td>09</td>
<td>853</td>
</tr>
<tr>
<td>Thirukkovil</td>
<td>433</td>
<td>15</td>
<td>91</td>
</tr>
<tr>
<td>Alayadivembu</td>
<td>149</td>
<td>01</td>
<td>301</td>
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<tr>
<td>Pottuvil</td>
<td>211</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lahugala</td>
<td>01</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Addalachchenai</td>
<td>15</td>
<td>03</td>
<td>55</td>
</tr>
<tr>
<td>Irakkamam</td>
<td>02</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Ampara</td>
<td>06</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Uhana</td>
<td>02</td>
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<td>-</td>
</tr>
<tr>
<td>Damana</td>
<td>01</td>
<td>02</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td><strong>56</strong></td>
<td><strong>6705</strong></td>
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No. of Children who lost Parents

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<tr>
<td>Mother</td>
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<tr>
<td>Father</td>
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</tr>
<tr>
<td>Both Parents</td>
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<td><strong>Total</strong></td>
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House damages beyond 200 m and payments of Rs. 250000 and Rs. 100000.

<table>
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<tr>
<th>Division</th>
<th>Fully damaged</th>
<th>Paid</th>
<th>Partly damaged</th>
<th>Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalmunai (T)</td>
<td>1288</td>
<td>716</td>
<td>1178</td>
<td>535</td>
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<tr>
<td>Kalmunai (M)</td>
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<td>376</td>
<td>2467</td>
<td>1169</td>
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<td>Sainthamaruthu</td>
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<td>107</td>
<td>1586</td>
<td>1131</td>
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<tr>
<td>Ninthavur</td>
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<td>43</td>
<td>779</td>
<td>779</td>
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<tr>
<td>Akkaraiyapattu</td>
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<td>120</td>
<td>686</td>
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<td>Karathivu</td>
<td>757</td>
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<td>Thirukkovil</td>
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<td>135</td>
<td>135</td>
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<td>-</td>
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<tr>
<td>Ampara</td>
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<tr>
<td>Uhana</td>
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<td>-</td>
</tr>
<tr>
<td>Damana</td>
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<td><strong>Total</strong></td>
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<th>Affected Persons</th>
<th>No. of camps</th>
<th>No. persons in camps</th>
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<td>Lahugala</td>
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<tr>
<td>Damana</td>
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<tr>
<td><strong>Total</strong></td>
<td>51392</td>
<td>192607</td>
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**Education**

- No. of schools affected = 41
- No. of schools should be relocated = 20
- No. of temples affected = 00
- Other religious places = 102
# Tsunami Devastation 2004.12.26
## Batticaloa District

<table>
<thead>
<tr>
<th>Division</th>
<th>Deaths</th>
<th>Missing</th>
<th>Injured</th>
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<tr>
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<tr>
<td>Kattankudy</td>
<td>84</td>
<td>13</td>
<td>615</td>
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<tr>
<td>Manmunai South west –</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Paddipalai</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Porativu Pattu - Vellavely</td>
<td>37</td>
<td>05</td>
<td>09</td>
</tr>
<tr>
<td>Manmunai Pattu Arayampathy</td>
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<td>07</td>
<td>113</td>
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<tr>
<td>Koralai Pattu North - Vaharai</td>
<td>314</td>
<td>17</td>
<td>164</td>
</tr>
<tr>
<td>Koralai Pattu West –</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ottamavady</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Koralai Pattu South - Kiran</td>
<td>94</td>
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<td>25</td>
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<tr>
<td>Valaichenai - Koralai Pattu Central</td>
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<td>02</td>
<td></td>
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<tr>
<td>Eravur Pattu - Chankalady</td>
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<td>114</td>
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<tr>
<td>Koralai Pattu - Valaichenai</td>
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<td>41</td>
<td>162</td>
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<td>35</td>
<td>293</td>
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<tr>
<td>Eravur Town, Eravur</td>
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<td>-</td>
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<tr>
<td>Manmunai West Vavunathivu</td>
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<tr>
<td>Total</td>
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### No. of Children who lost Parents

<table>
<thead>
<tr>
<th></th>
<th>Mother lost</th>
<th>Father lost</th>
<th>Both Parents lost</th>
</tr>
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<tbody>
<tr>
<td>Total</td>
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### House damages beyond 100 m and payments of Rs. 250000 and Rs. 100000

<table>
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<tr>
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<th>Fully damaged</th>
<th>Paid</th>
<th>Partly damaged</th>
<th>Paid</th>
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<tbody>
<tr>
<td>Manmunai North</td>
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<td>1,091</td>
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<td>Valaichenai</td>
<td>281</td>
<td>14,050,000</td>
<td>108</td>
<td>5,400,000</td>
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<tr>
<td>Kattankudy</td>
<td>474</td>
<td>23,700,000</td>
<td>328</td>
<td>16,400,000</td>
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<td>176</td>
<td>8,800,000</td>
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<td>-</td>
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<td>Manmunai Pattu</td>
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<td>8,050,000</td>
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<td>-</td>
</tr>
<tr>
<td>Vaharai</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kaluwanchikudy</td>
<td>245</td>
<td>12,250,000</td>
<td>99</td>
<td>4,950,000</td>
</tr>
<tr>
<td>Total</td>
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346
<table>
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<th>D.S. Division</th>
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<th>Affected Persons</th>
<th>No. of camps</th>
<th>No. persons in camps</th>
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<td>53,400</td>
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<tr>
<td>Kattankudy</td>
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</tr>
<tr>
<td>Paddipalai</td>
<td>1,000</td>
<td>3,500</td>
<td>07</td>
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<tr>
<td>Vellavely</td>
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<td>1116</td>
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<td>9634</td>
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<td>Oddamavady</td>
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<td>860</td>
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<tr>
<td>Kiran</td>
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<td>4,540</td>
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<td>Koralai Pattu Cent</td>
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</tr>
<tr>
<td>Chenkalady</td>
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<td>42,708</td>
<td>08</td>
<td>414</td>
</tr>
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<td>Valaichenai</td>
<td>5,850</td>
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<td>747</td>
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<td>08</td>
<td>674</td>
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<tr>
<td>Eravur Town</td>
<td>609</td>
<td>2,929</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>Vavunathivu</td>
<td>827</td>
<td>2,717</td>
<td>-</td>
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<td><strong>Total</strong></td>
<td><strong>64,151</strong></td>
<td><strong>257,097</strong></td>
<td><strong>93</strong></td>
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</table>

**Education**

No. of schools affected =
No. of schools should be relocated =
No. of temples affected =
Other religious places =
Tsunami Devastation 2004.12.26
Colombo District

<table>
<thead>
<tr>
<th>Division</th>
<th>Deaths</th>
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<th>Injured</th>
</tr>
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<td>-</td>
</tr>
<tr>
<td>Thimbirigasyaya</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Moratuwa</td>
<td>47</td>
<td>09</td>
<td>-</td>
</tr>
<tr>
<td>Rathmalana</td>
<td>23</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dehiwala</td>
<td>04</td>
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</tr>
<tr>
<td>Total</td>
<td>131</td>
<td>09</td>
<td>-</td>
</tr>
</tbody>
</table>

No. of Children who lost Parents

- Mother lost: 09
- Father lost: 01
- Both Parents lost: 04
- Total: 14

House damages beyond 100 m and payments of Rs. 250000 and Rs. 100000.

<table>
<thead>
<tr>
<th>Division</th>
<th>Fully damaged</th>
<th>Paid</th>
<th>Partly damaged</th>
<th>Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombo</td>
<td>-</td>
<td>05</td>
<td>-</td>
<td>-</td>
</tr>
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D.S. Division

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## Tsunami Devastation 2004.12.26
### Galle District

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### No. of Children who lost Parents

- Mother lost: 205
- Father lost: -
- Both parents lost: 126

**Total**: 331
House damages beyond 100 m and payments of Rs. 250000 and Rs. 100000

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<th>Affected Persons</th>
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<th>No. persons in camps</th>
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**Education**

- No. of schools affected = 25
- No. of schools should be relocated = 18
- No. of temples affected = 38
- Other religious places = 11
## Tsunami Devastation 2004.12.26
### Gampaha District

<table>
<thead>
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<td>15</td>
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<tr>
<td>Katana</td>
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<td>13</td>
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<tr>
<td>Ja-ela</td>
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<tr>
<td>Meegama</td>
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<tr>
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### No. of Children who lost Parents

- Mother Lost: 25
- Father Lost: 34
- Both Parents Lost: 07

**Total: 66**

### House damages beyond 100 m and payments of Rs. 250000 and Rs. 100000.

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**Education**

- No. of schools affected = 02
- No. of schools should be relocated = 01
- No. of temples affected = 02
- Other religious places = -
Tsunami Devastation 2004.12.26
Hambantota District

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<td>00</td>
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No. of Children who lost Parents

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House damages beyond 100 m and payments of Rs. 250000 and Rs. 100000

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**Education**

- No. of schools affected = 06
- No. of schools should be relocated = 02
- No. of temples affected = 14
- Other religious places = 02
Tsunami Devastation 2004.12.26
Jaffna District

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<tr>
<td>Chankanal</td>
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No. of Children who lost Parents

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<table>
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<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother lost</td>
<td>54</td>
</tr>
<tr>
<td>Father lost</td>
<td>38</td>
</tr>
<tr>
<td>Both parents lost</td>
<td>36</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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House damages beyond 100 m and payments of Rs. 250000 and Rs. 100000

<table>
<thead>
<tr>
<th>Division</th>
<th>Fully damaged</th>
<th>Paid</th>
<th>Partly damaged</th>
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<tbody>
<tr>
<td></td>
<td>Rs. 250,000/=</td>
<td>Rs. 100,000/=</td>
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</tr>
<tr>
<td>Point Pedro</td>
<td>1607</td>
<td>32</td>
<td>18</td>
</tr>
<tr>
<td>Maruthankerny</td>
<td>2008</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(inside the buffer zone)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>626</td>
<td>-</td>
<td>-</td>
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<tr>
<td>(Outside the buffer zone)</td>
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<tr>
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### D.S. Division

<table>
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<th>Affected families</th>
<th>Affected Persons</th>
<th>No. of families in camps</th>
<th>No. persons in camps</th>
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</thead>
<tbody>
<tr>
<td>Point Pedro</td>
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<td>3608</td>
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<td>1962</td>
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<td>0</td>
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<td>660</td>
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<td>1903</td>
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<td>3276</td>
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<tr>
<td>Delft</td>
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<td>08</td>
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<td>0</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>14051</strong></td>
<td><strong>52505</strong></td>
<td><strong>3199</strong></td>
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### Education

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<tr>
<td>No. of schools affected</td>
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</tr>
<tr>
<td>No. of schools should be relocated</td>
<td>11</td>
</tr>
<tr>
<td>No. of temples affected</td>
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</tr>
<tr>
<td>Other religious places</td>
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## Tsunami Devastation 2004.12.26
### Kalutara District

<table>
<thead>
<tr>
<th>Division</th>
<th>Deaths</th>
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<th>Injured</th>
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<tbody>
<tr>
<td>Kalutara</td>
<td>70</td>
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</tr>
<tr>
<td>Beruwala</td>
<td>105</td>
<td>07</td>
<td>239</td>
</tr>
<tr>
<td>Panadura</td>
<td>65</td>
<td>12</td>
<td>200</td>
</tr>
<tr>
<td>Dodangoda</td>
<td>17</td>
<td>07</td>
<td>--</td>
</tr>
<tr>
<td>Matugama</td>
<td>14</td>
<td>--</td>
<td>01</td>
</tr>
<tr>
<td>Bandaragama</td>
<td>09</td>
<td>03</td>
<td>--</td>
</tr>
<tr>
<td>Agalawatta</td>
<td>03</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Bulathsinghala</td>
<td>05</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Horana</td>
<td>08</td>
<td>01</td>
<td>--</td>
</tr>
<tr>
<td>Walallavita</td>
<td>03</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Palindanuwara</td>
<td>02</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Millaniya</td>
<td>03</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Ingiriya</td>
<td>08</td>
<td>04</td>
<td>--</td>
</tr>
<tr>
<td>Maduruwala</td>
<td>02</td>
<td>03</td>
<td>--</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>314</strong></td>
<td><strong>38</strong></td>
<td><strong>841</strong></td>
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</tbody>
</table>

### No. of Children who lost Parents

- Mother lost: 07
- Father lost: 18
- Both parents lost: 06

**Total**: 31

### House damages beyond 100 m and payments of Rs. 250000 and Rs. 100000

<table>
<thead>
<tr>
<th>Division</th>
<th>Fully damaged</th>
<th>Paid</th>
<th>Partly damaged</th>
<th>Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalutara</td>
<td>732</td>
<td>31</td>
<td>1027</td>
<td>253</td>
</tr>
<tr>
<td>Beruwala</td>
<td>891</td>
<td>324</td>
<td>1560</td>
<td>747</td>
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<tr>
<td>Panadura</td>
<td>1060</td>
<td>91</td>
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<td>950</td>
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<td><strong>Total</strong></td>
<td><strong>2683</strong></td>
<td><strong>446</strong></td>
<td><strong>3835</strong></td>
<td><strong>1950</strong></td>
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## D.S. Division

<table>
<thead>
<tr>
<th>Division</th>
<th>Affected families</th>
<th>Affected Persons</th>
<th>No. of families in camps</th>
<th>No. persons in camps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalutara</td>
<td>2683</td>
<td>11078</td>
<td>26</td>
<td>102</td>
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<tr>
<td>Beruwala</td>
<td>4831</td>
<td>11810</td>
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<td></td>
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<tr>
<td>Panadura</td>
<td>3351</td>
<td>11783</td>
<td>98</td>
<td>392</td>
</tr>
<tr>
<td>Dodangoda</td>
<td>25</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matugama</td>
<td>102</td>
<td>361</td>
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<td></td>
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<tr>
<td>Bandaragama</td>
<td>12</td>
<td>36</td>
<td></td>
<td></td>
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<tr>
<td>Agalawatta</td>
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<td>43</td>
<td></td>
<td></td>
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<tr>
<td>Bulathsinghala</td>
<td>05</td>
<td>07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horana</td>
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<tr>
<td>Walallavita</td>
<td>03</td>
<td>03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palindanuwara</td>
<td>02</td>
<td>03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Millaniya</td>
<td>11</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ingiriya</td>
<td>13</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maduruwala</td>
<td>10</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11672</strong></td>
<td><strong>35262</strong></td>
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</tbody>
</table>

### Education

- No. of schools affected = 07
- No. of schools should be relocated = 02
- No. of temples affected = 05
- Other religious places = 06
### Tsunami Devastation 2004.12.26
#### Kilinochchi District

<table>
<thead>
<tr>
<th>Division</th>
<th>Deaths</th>
<th>Missing</th>
<th>Injured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karachchi</td>
<td>11</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kandavalai</td>
<td>20</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Poonakary</td>
<td>02</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pachchilaipalli</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>33</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### No. of Children who lost Parents

- Mother lost: -
- Father lost: -
- Both parents lost: -

**Total**

#### D.S. Division

<table>
<thead>
<tr>
<th>D.S. Division</th>
<th>Affected families</th>
<th>Affected Persons</th>
<th>No. of camps</th>
<th>No. persons in camps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karachchi</td>
<td>104</td>
<td>423</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kandavalai</td>
<td>830</td>
<td>4980</td>
<td>01</td>
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</tr>
<tr>
<td>Poonakary</td>
<td>1534</td>
<td>7670</td>
<td>01</td>
<td>756</td>
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<tr>
<td>Pachchilaipalli</td>
<td>286</td>
<td>1277</td>
<td>-</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>14350</strong></td>
<td><strong>02</strong></td>
<td><strong>2138</strong></td>
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</table>

#### Education

- No. of schools affected = -
- No. of schools should be relocated = 01
- No. of temples affected = -
  - Other religious places = -
Tsunami Devastation 2004.12.26
Matara District

<table>
<thead>
<tr>
<th>Division</th>
<th>Deaths</th>
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<th>Injured</th>
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<tbody>
<tr>
<td>Devinuwara</td>
<td>63</td>
<td>01</td>
<td>752</td>
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<tr>
<td>Dickwella</td>
<td>194</td>
<td>12</td>
<td>1200</td>
</tr>
<tr>
<td>Matara</td>
<td>494</td>
<td>38</td>
<td>2850</td>
</tr>
<tr>
<td>Weligama</td>
<td>469</td>
<td>28</td>
<td>1850</td>
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<td>Others</td>
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<td><strong>6652</strong></td>
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</table>

No. of Children who lost Parents

Mother lost | 200
Father lost | 134
Both parents lost | 52
**Total** | **386**

House damages beyond 100 m and payments of Rs. 250000 and Rs. 100000.

<table>
<thead>
<tr>
<th>Division</th>
<th>Fully damaged</th>
<th>Paid</th>
<th>Partly damaged</th>
<th>Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devinuwara</td>
<td>38</td>
<td>37</td>
<td>63</td>
<td>64</td>
</tr>
<tr>
<td>Dickwella</td>
<td>44</td>
<td>39</td>
<td>212</td>
<td>188</td>
</tr>
<tr>
<td>Matara</td>
<td>173</td>
<td>151</td>
<td>1334</td>
<td>1248</td>
</tr>
<tr>
<td>Weligama</td>
<td>271</td>
<td>268</td>
<td>1364</td>
<td>1334</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>526</strong></td>
<td><strong>495</strong></td>
<td><strong>2973</strong></td>
<td><strong>2834</strong></td>
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<tr>
<td>D.S. Division</td>
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<td>Affected Persons</td>
<td>No. of camps</td>
<td>No. persons in camps</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------</td>
<td>------------------</td>
<td>--------------</td>
<td>---------------------</td>
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<tr>
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<td>07</td>
<td>1315</td>
</tr>
<tr>
<td>Weligama</td>
<td>7826</td>
<td>32864</td>
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<td>1663</td>
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<td>Devinuwara</td>
<td>4791</td>
<td>18623</td>
<td>03</td>
<td>339</td>
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<tr>
<td>Dickwella</td>
<td>4370</td>
<td>16621</td>
<td>03</td>
<td>291</td>
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<tr>
<td>All Other</td>
<td>82</td>
<td>3885</td>
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<td>94,280</td>
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</table>

**Education**

No. of schools affected = 13
No. of schools should be relocated = 03
No. of temples affected = 25
Other religious places = 02
### Tsunami Devastation 2004.12.26

#### Mullaitivu District

<table>
<thead>
<tr>
<th>Division</th>
<th>Deaths</th>
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<th>Injured</th>
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<td>38</td>
<td>2590</td>
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Total: 3352 38 2590

#### No. of Children who lost Parents

<p>| | |</p>
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<tr>
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</thead>
<tbody>
<tr>
<td>Mother lost</td>
<td>347</td>
</tr>
<tr>
<td>Father lost</td>
<td>134</td>
</tr>
<tr>
<td>Both parents lost</td>
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Total: 556

#### House damages beyond 200 m and payments of Rs. 250000 and Rs. 100000

<table>
<thead>
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<th>Division</th>
<th>Fully damaged</th>
<th>Paid</th>
<th>Partly damaged</th>
<th>Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maritimepattu</td>
<td>2022</td>
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<td>424</td>
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Total: 2022 - 424

#### D.S. Division

<table>
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<th>D.S. Division</th>
<th>Affected families</th>
<th>Affected Persons</th>
<th>No. of camps</th>
<th>No. persons in camps</th>
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<tbody>
<tr>
<td>Maritimepattu</td>
<td>7421</td>
<td>27604</td>
<td>21</td>
<td>8212</td>
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</table>

Total: 7421 27604 21 8212

#### Education

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<tr>
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</thead>
<tbody>
<tr>
<td>No. of schools affected</td>
<td>14</td>
</tr>
<tr>
<td>No. of schools should be relocated</td>
<td>03</td>
</tr>
<tr>
<td>No. of temples affected</td>
<td>16</td>
</tr>
<tr>
<td>Other religious places</td>
<td>14</td>
</tr>
</tbody>
</table>
Tsunami Devastation 2004.12.26
Trincomalee District

<table>
<thead>
<tr>
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<th>Deaths</th>
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<th>Injured</th>
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</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>Mutur</td>
<td>294</td>
<td>23</td>
<td>-do-</td>
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<tr>
<td>Kinniya</td>
<td>377</td>
<td>10</td>
<td>-do-</td>
</tr>
<tr>
<td>Kuchchaveli</td>
<td>158</td>
<td>-</td>
<td>-do-</td>
</tr>
<tr>
<td>Seruvila</td>
<td>05</td>
<td>-</td>
<td>-do-</td>
</tr>
<tr>
<td>Verugal</td>
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<td>-</td>
<td>-do-</td>
</tr>
<tr>
<td>Total</td>
<td>969</td>
<td>45</td>
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No. of Children who lost Parents

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother lost</td>
<td>222</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Father lost</td>
<td>202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both Parents lost</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>486</td>
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House damages beyond 100 m and payments of Rs. 250000 and Rs. 100000.

<table>
<thead>
<tr>
<th>Division</th>
<th>Fully damaged</th>
<th>Paid</th>
<th>Partly damaged</th>
<th>Paid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town &amp; Gravets</td>
<td>31</td>
<td>313</td>
<td>1692</td>
<td></td>
</tr>
<tr>
<td>Kinniya</td>
<td>422</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mutur</td>
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<td>41</td>
<td>31</td>
<td>12</td>
</tr>
<tr>
<td>Kuchchaveli</td>
<td>312</td>
<td>104</td>
<td>356</td>
<td>90</td>
</tr>
<tr>
<td>Eachchalampaththai</td>
<td>171</td>
<td>444</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1020</td>
<td>145</td>
<td>2836</td>
<td>102</td>
</tr>
</tbody>
</table>
### D.S. Division

<table>
<thead>
<tr>
<th>D.S. Division</th>
<th>Affected families</th>
<th>Affected Persons</th>
<th>No. of camps</th>
<th>No. persons in camps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town &amp; Gravets</td>
<td>9594</td>
<td>36888</td>
<td>08</td>
<td>1228</td>
</tr>
<tr>
<td>Mutur</td>
<td>3614</td>
<td>17559</td>
<td>08</td>
<td>2833</td>
</tr>
<tr>
<td>Kinniya</td>
<td>8367</td>
<td>38523</td>
<td>08</td>
<td>5213</td>
</tr>
<tr>
<td>Kuchchaveli</td>
<td>7424</td>
<td>27706</td>
<td>07</td>
<td>4492</td>
</tr>
<tr>
<td>Verugal</td>
<td>1379</td>
<td>5351</td>
<td>02</td>
<td>1042</td>
</tr>
<tr>
<td>Seruvila</td>
<td>169</td>
<td>649</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>300547</strong></td>
<td><strong>126676</strong></td>
<td><strong>33</strong></td>
<td><strong>14808</strong></td>
</tr>
</tbody>
</table>

### Education

- No. of schools affected = 29
- No. of schools should be relocated = 26
- No. of temples affected = 03
- Other religious places = 91 - (Hindu Kovil 43, Church 02, Mosque 46)
### Appendix B

**Agencies which attended and made submissions at the Select Committee Meetings**

<table>
<thead>
<tr>
<th>Attended by</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agencies</strong></td>
<td></td>
</tr>
<tr>
<td>Centre for Housing, Planning and Building</td>
<td>Long term disaster risk reduction, education, training &amp; awareness, preparedness and long term mitigation plans, planning and construction in prone areas etc.</td>
</tr>
<tr>
<td>Ceylon Electricity Board</td>
<td>Safeguard the power stations from earthquakes, landslides and dam breaches, flooding downstream of reservoirs</td>
</tr>
<tr>
<td>Central Engineering Consultancy Bureau (CECB)</td>
<td>Geological studies and Reservoir dams</td>
</tr>
<tr>
<td>Dialog GSM</td>
<td>Telecommunication</td>
</tr>
<tr>
<td>Foreign Ministry</td>
<td>Funding possibilities</td>
</tr>
<tr>
<td>Geological Survey and Mines Bureau</td>
<td>Monitoring earthquakes, seismic levels etc. Warning related to seismic activities</td>
</tr>
<tr>
<td>International Organisation for Migration (IOM)</td>
<td>Internally Displaced Persons (IDPs), Independent Humanitarian Consultant</td>
</tr>
<tr>
<td>Irrigation Department</td>
<td>River flooding, flooding downstream of reservoirs, flood simulations, research</td>
</tr>
<tr>
<td>Japanese International Cooperation Agency (JICA)</td>
<td>Financial assistance for identified</td>
</tr>
<tr>
<td>Centre for Policy Alternative (CPA)</td>
<td>Use of local knowledge and local structure in implementation of Disaster Management</td>
</tr>
<tr>
<td>Land Use Policy Planning Division (LUPPD) of Ministry of Agriculture, Livestock, Lands and Irrigation</td>
<td>Land use policy &amp; planning</td>
</tr>
<tr>
<td>Lanka Hydraulic Institute</td>
<td>Scientific data in coastal areas</td>
</tr>
<tr>
<td>Meteorological Department</td>
<td>Weather forecasts, bad weather warnings, meteorological data, rain fall</td>
</tr>
<tr>
<td>National Aquatic Resources and Research Development Authority (NARA)</td>
<td>Ocean waves, Tsunami related observations and studies</td>
</tr>
<tr>
<td>National Building Research Organization (NBRO) - Landslide Studies and Services Division</td>
<td>Landslide hazard zonation mapping and studies, investigations, awareness creation</td>
</tr>
<tr>
<td>National Disaster Management Centre</td>
<td>Disaster Risk Management</td>
</tr>
<tr>
<td>Police Department</td>
<td>Road accidents, Industrial and Chemical Accidents, Fires, assistance in response, safety, security</td>
</tr>
<tr>
<td>Sri Lanka Air Force</td>
<td>Response, civil defense and security</td>
</tr>
<tr>
<td>Sri Lanka Army</td>
<td>Response, civil defense and security</td>
</tr>
<tr>
<td>Sri Lanka Navy</td>
<td>Ocean waves, Tsunamis</td>
</tr>
<tr>
<td>Sri Lanka Telecom (SLT)</td>
<td>Telecommunication related aspects</td>
</tr>
<tr>
<td>Telecommunication Regulatory Commission</td>
<td>Telecommunication related aspects</td>
</tr>
<tr>
<td>United Nations Development Programme (UNDP)</td>
<td>All aspects of Disaster Risk Management</td>
</tr>
<tr>
<td>University of Peradeniya - Department of Geology</td>
<td>Geology related studies</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>Director General of Census and Statistics</td>
<td>Necessity of a uniformity regarding the collection of data</td>
</tr>
<tr>
<td>Dean, Faculty of Information Technology, University of Moratuwa</td>
<td>Importance of central point for collection of accurate data</td>
</tr>
<tr>
<td>Commissioner General of Essential Services</td>
<td>Necessity of a quicker communication system</td>
</tr>
<tr>
<td>District Secretary, Galle</td>
<td>Grama Seva offices should be properly established</td>
</tr>
</tbody>
</table>

**Media**

<table>
<thead>
<tr>
<th>Ministry of Information and Media</th>
<th>Role the media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director General of Government Information</td>
<td>- do -</td>
</tr>
<tr>
<td>Sri Lanka Rupavahini Corporation</td>
<td>- do -</td>
</tr>
<tr>
<td>Sri Lanka Broadcasting Corporation</td>
<td>- do -</td>
</tr>
<tr>
<td>Associated Newspapers of Ceylon</td>
<td>- do -</td>
</tr>
<tr>
<td>Swarnavahini</td>
<td>- do -</td>
</tr>
<tr>
<td>Sirasa Television</td>
<td>- do -</td>
</tr>
<tr>
<td>Sirasa FM</td>
<td>- do -</td>
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<tr>
<td>Sunday Times</td>
<td>- do -</td>
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<tr>
<td>ITN</td>
<td>- do -</td>
</tr>
<tr>
<td>The Island</td>
<td>- do -</td>
</tr>
<tr>
<td>AFP</td>
<td>- do -</td>
</tr>
</tbody>
</table>

**Foreign Missions**

<table>
<thead>
<tr>
<th>H.E. Mr. Salvatore Zotta, Ambassador of Italy</th>
<th>Proposal for Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.E. Dr. Greg French, the Australian High Commissioner for Sri Lanka</td>
<td>Proposal for Assistance</td>
</tr>
<tr>
<td>Mr. Matthew Hyndes, Deputy High Commissioner for Sri Lanka</td>
<td>Proposal for Assistance</td>
</tr>
<tr>
<td>Mr Alex Knox, an AusAID programme development officer</td>
<td>Proposal for Assistance</td>
</tr>
</tbody>
</table>

**External Individuals**

| Mr. Clarence Welikala, a Security Consultant | Security and safety |
| Dr. N P Wijeyananda, Former DG, Geological Survey and Mines Bureau | Monitoring earthquakes, seismic levels etc., Warning related to seismic activities |
| Mr. Sunil Somasiri, Former President of the Surveyors Association | Land aspects |
| Dr. Lochana Guneratne, Architect and Urban Planner | Planning and development expertise |
| Dr. Wilbert Kehelpannala, Researcher | Earthquake studies |
| Mr D W R Weerakoon, Former DG, Irrigation Department | Flood related expertise |
| Dr. Athula Sumathipala, Psychiatric attached to the University of London | Expertise in health and psychological trauma |
| Dr. N P Wijeyananda, former Director General of the Geological Survey and Mines Bureau | Earthquakes, seismic studies etc. |
| Dr. Krishan Deheragoda, Head, Dept. of Geography, University of Sri Jayewardenepura | Resettlement, relocation housing, rebuilding of Tsunami affected areas and research on |
Appendix C

List of personnel with whom the Committee had deliberations

<table>
<thead>
<tr>
<th>Representing Agencies / Ministries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Mr. L R K Perera, Head of the Department of Geology, University of Peradeniya</td>
</tr>
<tr>
<td>2. Mr. Sarathchandra Weerawarnakula, Director, Geological Survey &amp; Mines Bureau</td>
</tr>
<tr>
<td>3. Mr. G H P Dhamararatne, Director General, Meteorology Department</td>
</tr>
<tr>
<td>4. Prof. Kapila Dahanayake, Senior Professor of Geology, University of Peradeniya</td>
</tr>
<tr>
<td>5. Dr. Kapila Perera, Chairman of NARA</td>
</tr>
<tr>
<td>6. Mr. N D Hettiarachchi, Director, National Disaster Management Centre</td>
</tr>
<tr>
<td>7. Dr. Athula Sumathipala, Director Forum for Research and Development in Sri Lanka</td>
</tr>
<tr>
<td>8. Mr. Jayanandana, Deputy Director, Land Use Policy Planning Division (LUPPD), Ministry of Agriculture, Livestock, Lands and Irrigation</td>
</tr>
<tr>
<td>9. Mr. Nishantha Kamaladasa, Director, Centre for Housing, Planning and Building and Director, Sri Lanka Multi Hazard Disaster Mitigating Project</td>
</tr>
<tr>
<td>10. Mr. R M S Bandara, Deputy Director, Landslide Studies and Services Division, National Building Research Organization (NBRO)</td>
</tr>
<tr>
<td>11. Mr. Malith Mendis, Chief Executive Director, Lanka Hydraulic Institute</td>
</tr>
<tr>
<td>12. Mr. Anil Obeysekera, Chairman of Sri Lanka Telecom (SLT)</td>
</tr>
<tr>
<td>13. Mr. Chandrasena Maliyadda, Chairman, Telecommunication Regulatory Commission of Sri Lanka</td>
</tr>
<tr>
<td>14. Dr. Hans Wijayasuriya, CEO of Dialog</td>
</tr>
<tr>
<td>15. Mr. Ranjith Fonseka, General Manager, Ceylon Electricity Board (CEB)</td>
</tr>
<tr>
<td>16. Mr. Kirthi Jayawardena, Additional General Manager, Generation Sector, CEB</td>
</tr>
<tr>
<td>17. Mr. Ranjith Gunewardena, Additional General Manager for Transmission, CEB</td>
</tr>
<tr>
<td>18. Mr. G M Wijeykone, Additional General Manager, CEB</td>
</tr>
<tr>
<td>19. Dr. N P Wijeyananda, former Director of the then Department of the Geological Survey</td>
</tr>
<tr>
<td>20. Mr. W B Ganegala, Secretary, Ministry of Information and Media</td>
</tr>
<tr>
<td>21. Mr. S D Piyadasa, Director General of Government Information</td>
</tr>
<tr>
<td>22. Mr. Udeni Amarasinghe, Senior Lecturer, University of Peradeniya</td>
</tr>
<tr>
<td>23. Mr. Esala Weerakoon, Representative, Foreign Ministry</td>
</tr>
<tr>
<td>24. Mr. T M Abewickrama, Secretary, Ministry of Mahaweli &amp; River Basin Development and Rajarata Development</td>
</tr>
<tr>
<td>25. Mr. Thilak Ranaviraja, Commissioner General of Essential Services</td>
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<td>47.</td>
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**Representing Media**

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<tr>
<th>No.</th>
<th>Name and Position</th>
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<tbody>
<tr>
<td>48.</td>
<td>Mr. Kingsley Rathnayake, Director, Sirasa FM</td>
</tr>
<tr>
<td>49.</td>
<td>Mr. Anthony David, Editorial Board, Sunday Times</td>
</tr>
<tr>
<td>50.</td>
<td>Mr. Bandula Jayasekera, Editorial Board, The Island</td>
</tr>
<tr>
<td>51.</td>
<td>Mr. Amal Jayasinghe, Bureau Chief for AFP</td>
</tr>
<tr>
<td>52.</td>
<td>Mr. M.M. Zuhair, Chairman, Rupavahini Corporation</td>
</tr>
<tr>
<td>53.</td>
<td>Mr. Rosmand Senaratne, Swarnavahini</td>
</tr>
<tr>
<td>54.</td>
<td>Mr. Newton Gunaratne, Chairman, ITN</td>
</tr>
<tr>
<td>55.</td>
<td>Mr. Janadasa Peries, Chairman, Associated Newspapers of Ceylon Ltd. (Lake</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>56.</td>
<td>Mr. Sarath Kongahage, Director, Sirasa</td>
</tr>
<tr>
<td>57.</td>
<td>Mr. Amal Jayasinghe, Bureau Chief for AFP</td>
</tr>
<tr>
<td>58.</td>
<td>Mr. Bandula Jayasekara, The Island newspaper</td>
</tr>
</tbody>
</table>

**Individuals**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>59.</td>
<td>Dr. Wilbert Kehelpannala, Senior Research Fellow, Institute of Fundamental Studies</td>
</tr>
<tr>
<td>60.</td>
<td>Dr. Priyantha Serasinghe, Senior Fellow, Japanese International Cooperation Agency (JICA)</td>
</tr>
<tr>
<td>61.</td>
<td>Dr. Fredrick Krimgold, Virginia Institute of Technology</td>
</tr>
<tr>
<td>62.</td>
<td>Mr. G T Dharmasena, a Former Director General of the Irrigation</td>
</tr>
<tr>
<td>63.</td>
<td>Mr. Clarence Welikala, a Security Consultant</td>
</tr>
<tr>
<td>64.</td>
<td>Dr. Ajith Madurapperuma, Dean Faculty of Information Technology, University of Moratuwa</td>
</tr>
<tr>
<td>65.</td>
<td>Mr. M Atton, Deputy Secretary General, Ceylon Chamber of Commerce</td>
</tr>
<tr>
<td>66.</td>
<td>Mr. M P T Cooray, Secretary, Joint Apparel Association</td>
</tr>
<tr>
<td>67.</td>
<td>Prof. K Gunasekera, Vice Chancellor, University of Peradeniya</td>
</tr>
<tr>
<td>68.</td>
<td>Mr. D T Kingsley Bernard, President, National Chamber of Exporters</td>
</tr>
<tr>
<td>69.</td>
<td>Dr. Krishan Deheregoda, Head of the Department of Geography, University of Sri Jayewardenapura</td>
</tr>
<tr>
<td>70.</td>
<td>Mr. Nihal Rupasinghe, AGM, Central Engineering Consultancy Bureau</td>
</tr>
<tr>
<td>71.</td>
<td>Prof. Nimal Seneviratna, Faculty of Engineering, University of Peradeniya</td>
</tr>
<tr>
<td>72.</td>
<td>Mr. K Paliniyandi, Member of the Old moor Street Business Association</td>
</tr>
<tr>
<td>73.</td>
<td>Mr. Priyantha Serasinghe, Group Director, Maharajah Organization</td>
</tr>
<tr>
<td>74.</td>
<td>Dr. Priyantha Serasinghe, Research Officer, JAICA</td>
</tr>
<tr>
<td>75.</td>
<td>Mr. Ransith A Rajapakse, General Manager, Associated Motorways</td>
</tr>
<tr>
<td>76.</td>
<td>Mr. P C Saravanamuttu, Executive Director, Centre for Policy Alternatives</td>
</tr>
<tr>
<td>77.</td>
<td>Mr. Stanely Jayawardena, National Chamber of Commerce</td>
</tr>
<tr>
<td>78.</td>
<td>Mr. Sunil Somasiri, former President of Surveyor’s Association</td>
</tr>
<tr>
<td>79.</td>
<td>Mr. K C Suwarneraj, Chairman, Vavunia Chamber of Commerce</td>
</tr>
<tr>
<td>80.</td>
<td>Mr. Viraj Dias, CE, CECB</td>
</tr>
</tbody>
</table>

**Police and Armed Forces**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>81.</td>
<td>Vice Admiral Daya Sandagiri, Commander, Sri Lanka Navy</td>
</tr>
<tr>
<td>82.</td>
<td>Lieutenant General Shantha Kottagoda, Commander, Sri Lanka Army</td>
</tr>
<tr>
<td>83.</td>
<td>Air Marshall Donald Perera, Commander, Sri Lanka Air Force</td>
</tr>
<tr>
<td></td>
<td>Name and Title</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>84</td>
<td>Mr. Chandra Fernando, Inspector General of Police</td>
</tr>
<tr>
<td>85</td>
<td>Mr. Jayantha Wickramaratne, DIG Crimes</td>
</tr>
<tr>
<td>86</td>
<td>Major General Susil Chandrapala, Sri Lanka Army</td>
</tr>
<tr>
<td>87</td>
<td>Major General T T R de Silva of the Sri Lanka Army</td>
</tr>
<tr>
<td></td>
<td><strong>International Assistance Agencies and UN</strong></td>
</tr>
<tr>
<td>88</td>
<td>H.E. Mr. Salvatore Zotta, Ambassador of Italy</td>
</tr>
<tr>
<td>89</td>
<td>Professor Mrs. Stesania Giannine</td>
</tr>
<tr>
<td>90</td>
<td>Professor Sabrizio Feruchchi</td>
</tr>
<tr>
<td>91</td>
<td>H.E. Dr. Greg French, the Australian High Commissioner for Sri Lanka</td>
</tr>
<tr>
<td>92</td>
<td>Mr. Matthew Hyndes, Deputy High Commissioner for Sri Lanka</td>
</tr>
<tr>
<td>93</td>
<td>Mr. Alex Knox, Programme Development Officer, AusAID</td>
</tr>
<tr>
<td>94</td>
<td>Mr. Kamal Kishore, Regional Disaster Reduction Advisor, United Nations</td>
</tr>
<tr>
<td></td>
<td>Development Programme (UNDP)</td>
</tr>
<tr>
<td>95</td>
<td>Mr. Ramraj Narasimhan, Programme Officer, Disaster Management, UNDP</td>
</tr>
<tr>
<td>96</td>
<td>Mr. Jeff McMurdo, Development Officer, IOM</td>
</tr>
<tr>
<td>97</td>
<td>Mr. Robert Thomson, Consultant for the International Organization for Migration (IOM)</td>
</tr>
<tr>
<td>98</td>
<td>Dr. Allen Clark, Executive Director, Pacific Disaster Centre</td>
</tr>
<tr>
<td>99</td>
<td>Mr. Ananda Mallawathanthri, USAID</td>
</tr>
<tr>
<td>100</td>
<td>Mr. Jean Pierre Massue of the European Academy of Science and Arts</td>
</tr>
<tr>
<td>101</td>
<td>Mrs. Manohari Dharmadasa, Economic Section US Embassy</td>
</tr>
<tr>
<td>102</td>
<td>Mrs. Mary Shehan, Chief of Mission, International Organization for Migration</td>
</tr>
<tr>
<td>103</td>
<td>H. E. Masumo Oarchini, Deputy Ambassador of Italy</td>
</tr>
<tr>
<td>104</td>
<td>Dr. A R Subbaiah, Expert, Asian Disaster Preparedness Centre</td>
</tr>
</tbody>
</table>
Appendix D

Summary of Submissions of Representatives

2nd Meeting of the Select Committee - February 17, 2005

The first meeting of the Parliament Select Committee on Natural Disasters featured presentations by academic experts on topics related to natural disasters in Sri Lanka.

Mr. L R K Perera, Head of the Geology Department, Peradeniya University spoke about the Geology of Earthquakes; Mr. Sarathchandra Weerawarnakula, Director of the Geological Survey & Mines Bureau spoke about the Past, Present and Future in terms of the tsunami; Mr. G H P Dharmaratne, Director General of the Meteorology Department spoke about Extreme Weather Events; and Prof. Kapila Dahanayake, Senior Professor of Geology, University of Peradeniya gave an overview of the tsunami disaster and discussed landslides.

They all emphasized the need for nationwide awareness programmes to educate the public on natural disasters and an effective information dissemination system should a disaster occur.

3rd Meeting of the Select Committee - February 22, 2005

The second meeting of the Parliament Select Committee on Natural Disasters afforded committee members the opportunity to clarify queries with the experts who had delivered presentations during the first meeting.

The main concerns brought up were whether there was prior knowledge that Sri Lanka was within an earthquake zone and thus prone to tsunamis, and whether more people’s lives could have been saved since there was a time lag between the tsunami hitting the northeast coast and southern coast.

The Geological Survey & Mines Bureau and the Meteorology Department recommend that Sri Lanka set up a strong national multi-hazard warning system, join an international tsunami warning system, develop a good communication and information dissemination network, and carry out frequent awareness programmes for disaster preparedness, not only about tsunamis as they are rare phenomena, but for storm surges and cyclones as well.

4th Meeting of the Select Committee - February 24, 2005

The third meeting of the Parliament Select Committee on Natural Disasters was attended by representatives of the Armed Forces and Police.

The officials present were Vice Admiral Daya Sandagiri, Commander of the Sri Lanka Navy; Lieutenant General Shantha Kottagoda, Commander of the Sri Lanka Army; Air Marshall Donald Perera, Commander of the Sri Lanka Air Force; Chandra Fernando, Inspector General of Police; Jayantha Wickramaratne, DIG Crimes; Major General Susil Chandrapola of the Sri Lanka Army; and Major General T T R de Silva of the Sri Lanka Army.

It was concluded that there was a definite lack of knowledge about the tsunami phenomenon and lack of preparedness on the part of the public and authorities.
Thus the Armed Forces and Police believe that educating the public on environmental phenomena, responsibly utilizing the media, coordination amongst different authorities, and developing community-based awareness systems are the best methods to tackle future natural disasters.

5th Meeting of the Select Committee - March 1, 2005

Representatives of National Aquatic Resources and Research Development Authority (NARA), the National Disaster Management Centre, International Organisation for Migration (IOM) and the UNDP (United Nations Development Programme) as well as a psychiatrist attended the fourth meeting of the Parliament Select Committee on Natural Disasters.

Discussion revolved around the importance of having a central authority that links all institutions and contingency plans together, harm caused by the tsunami from a psychological point of view, the need to develop a forensic and genetic facility in Sri Lanka and mental health, and also developing expertise in the field of disaster preparedness in Sri Lanka.

6th Meeting of the Select Committee - March 3, 2005

Representatives of University of Peradeniya and Irrigation Department (former and present officials) discussed regarding tsunami warning system linked with the media to disseminate news, the increasing earthquakes and earth tremors can have an accumulated effect on Sri Lanka’s dams, inundation mapping on the occurrences of flooding and dam break, studies preparedness of local authorities and educating the public, stressed need to have emergency preparedness plans as floods and landslides cause loss of life and destruction to livelihood in Sri Lanka every year.

7th Meeting of the Select Committee - March 7, 2005

LUPPD, CHPB, NBRO discussed issues of land use and disaster management, mitigating landslides, the need to have a coordinated disaster management mechanism in place, the vital role the media played in the aftermath of the tsunami through the dissemination of news and the role it can play in the future, that the three key means of mitigating a disaster are detection, judgment and implementation etc.

8th Meeting of the Select Committee - March 9, 2005

Representatives from Faculty of Engineering, University of Peradeniya and CECB participated in the discussion focusing on various aspects: although emergency management was important, priority should be given to risk management. The use of science and technology as the basis of disaster reduction, having a volunteer programme and having meteorology data available through websites; proactive approach is needed; and how science and technology contribute to improved safety.

A Security Consultant said that the country needed a Civil Defense Academy and it was recommended that a multi-disciplinary Volunteer Core group with the participation of armed forces, scientists, health officials, civil society, NGOs and private sector be set up. The Volunteer Core Group should be around 15-20 individuals and the whole group would be around 2000. They should be registered and trained.
Lanka Hydraulic Institute had been working closely with Sri Lanka Ports Authority and Coast Conservation Department. They have scientific data including near shore data and human resources. They have launched projects on Colombo and Hambantota harbours as well as river Walawe.

9th Meeting of the Select Committee - 10, March 2005

Sri Lanka Telecom, Ceylon Electricity Board and IOM made presentations. The threat of earthquakes, safeguarding the power stations, landslides and dam breaches exists. With regard to the safety of the dams there is a threat. Regarding transmission, the CEB works closely with the Ports Authority and the Irrigation Dept.

Recommendations

• CEB communication network presently serving for internal use only, has to be broadened to cover other sectors as well.
• With regard to monitoring the dams, the local police stations should have a system of alerting the CEB and other relevant authorities.
• Presently, CEB has a unit stationed in Kollonnawa, comprising an engineer and two technical officers to deal with emergency situations, but coping with a huge disaster would not be possible.
• The mobile telephone network could be used to warn about natural disasters. The emergency messages could be transmitted quickly.
• Wireless network could be used to monitor and transmit earthquakes, tremors etc. Such a system is in practice in countries such as Tunisia and Turkey. Presently, they conduct research on that aspect.
• A pre-disaster plan which is vital.
• There should be dedicated lines in disaster situations.
• There should be one authority to communicate.
• Emergency V-Sat technology could be used without depending on ground systems. (At present, V-Sat facilities have been given to the Armed Forces, Police and some banks.)

10th Meeting of the Select Committee - 17 March 2005

An Italian delegation led by the Italian Ambassador and others: proposals for an exchange programme to share cultural and scientific knowledge between the two countries; and need for a digital model construction, focusing on geomorphological studies on the coastal belt of Sri Lanka.

Proposals

➢ Post-graduate programmes should be started in Italy and Sri Lanka on natural disaster-related subjects.
➢ Higher education programmes too should be for senior Sri Lankan Govt. officials.
➢ Italy could extend research and development facilities. (Cooperation at the university level.)
➢ The educational material on disaster management could be made available to Sri Lanka

Afterwards the delegation led by the Australian High Commissioner for Sri Lanka made presentations.
11th Meeting of the Select Committee - 22 March 2005

Afterwards the delegation led by the Australian High Commissioner for Sri Lanka continued his presentations and it a observed that at the initial stage there was a lack of coordination.

Former Director, Geological Survey Dept. observed the Pallekele Seismological Centre was established after the1993 tremors. The Centre is a part the geological seismological network.

Sri Lanka is a signatory to the Comprehensive Test Ban Treaty (CTBT). Besides, there is an agreement between the GSMB and the UCSD. Under these agreements they had received funds. But the GSMB has failed to exploit the facilities in full. For instance, Rs. 2 million had not been utilized. The Centre at Pallekele is better than the Indian one. Therefore we should have made better use of that facility. Sri Lanka should promote the idea of global tsunami network. The country should become a partner of such a system.

The role of the GSMB - Although the GSMB should have followed the data, it did not happen. None of us had experience of tsunami. We would have been better armed if we knew more about that earthquake in northern Sumatra. When Pallekele recorded extra ordinary signals, they should have inquired for more details.

Recommendations
- The relevant institutions, such as the Met. Dept, Irrigation Dept. and the GSMB should be allowed to continue with their good work.
- The monitoring centres at Pallekele and the University of Peradeniya are different but both could function under one dedicated authority.
- Mr. L.R.K. Perera of the University of Peradeniya said that their system is not suitable for global monitoring. The geographical location (Peradeniya, Mihintale, Matara and Oluwil) is not sufficient to monitor the global situation as Sri Lanka is a tiny island.

12th Meeting of the Select Committee - 24 March 2005

UNDP Team made presentations and suggested following as Early Warning System for Sri Lanka and other actions
- The technical and scientific communities, such as the Met. Dept., NARA and the NBRO must forecast with the users such as farmers, fishermen, water managers and disaster managers in mind.
- There should be facilitators and champions such as NGOs, Agricultural Extension Officers and media. The weather forecast office teams should maintain relationship with local and state governments.
- Community awareness campaigns and educational programmes should be conducted.
- Expert advice to emergency operations centres should provided.
- Radio, Internet, weather information network etc. should be used. Private sector participation is important.
- Science and technology: observation, data assimilation, computing, dissemination and forecasting methods
• With regard to dissemination Internet, pagers, personal digital assistants, cell phones and satellite radios are important.
• In Bangladesh, fold levels are marked on concrete pillars. In addition, red, white, blue, green and yellow flags are displayed to show the flood status.
• Needs to identify priority areas in consultation with the operational as well as technical institutions. Tornado system, modeling of cyclones, protocols for warning dissemination, seasonal forecasting, ocean-atmosphere models and satellite data assimilation are vital. The implementation issues have to be tackled. It takes time to build trust and understanding.
• Partnership with technical institutions regionally and globally is important. United States Geological Service, US universities, UN agencies, international financial institutions and bilateral development partners.
• Interaction with Hurricane Centre in the US, Florida State weather forecasters and disaster managers, Oklahoma City forecasters, media representatives etc.


Issues in the aftermath of the tsunami:
• The Internally Displaced Persons’ problems such as resettlement, livelihood, care for children, dependent family members.
• The Centre for National Operation had little experience
• The disaster management institutions had few resources, no legal mandate
• The govt. had no national disaster plan
• Highly bureaucratized system
• The ability and skills of the officials not satisfactory
• Political polarization

Effects
• No policies on which the CNO could base decisions
• Decisions were taken and then changed
• The Gas, DSs failed to take timely action
• When decisions were taken, the people were neither consulted nor informed
• Decisions were changed following intervention by politicians
• There needs to be co-ordination at 3 levels, viz., Strategic, Planning and Implementation. The registration of international NGOs should be made tighter.

13th Meeting of the Select Committee - 29 March 2005

Representatives of the media were invited by the Select Committee to participate in an open discussion on what role the media can play when a natural disaster occurs.
Suggestions

- Some media personnel pointed that one frequency should be used by all TV channels/radios and should give one message in order to avoid confusion and panic. They also said that since the time is limited, there should be an effective mechanism to get the issues clarified rapidly.
- It was also pointed out that commercial interests were important. Besides, legal issues too are involved. On some occasions the media institutions could be sued.
- The media personnel who had been in Japan said that in that country radio is widely used. The Japanese people are encouraged to carry portable radios. Through the radio, mobile phones, megaphones and sirens, warning could be given. Those methods are commonly used in Japan.
- Mass media can play a role in educating the people on natural disasters with the participation of NGOs and voluntary groups.
- The country needs better evacuation plans. There should be an authoritative body to give “all clear” message to the public when the threat is over.

14th Meeting of the Select Committee – 30 March 2005

Team led by Italian Ambassador to Sri Lanka briefed the members on the agreements reached between the Italian delegation and relevant local authorities. He presented three substantive project proposals, which were agreed upon with the consultation of Prof. Tissa Vitharana, Minister of Science and Technology, and professors from the universities of Colombo and Moratuwa. These project proposals will be financed from Sri Lanka’s remitted debt to Italy.

The three projects proposed are:

- High technology impact assessment aimed at providing Sri Lankan experts with the technology needed for emergency management and natural disaster mitigation - particularly from meteorological, hydrological and oceanographic hazards. This technology is imperative when it comes to advance territorial planning - helping to identify areas vulnerable to natural disasters.
- Creation of a coordinating network, which is composed of chancellors of the involved universities in both Italy and Sri Lanka. This will help to integrate a university course in disaster mitigation from both a practical and theoretical perspective.
- The promotion of cooperation among both the higher education institutions and emergency management agencies of Sri Lanka in order to foster development and exchange of disaster knowledge among scientists, practitioners, decision-makers, legislators and citizens.

Recommendations by Dr. Wilbert Kehelpannala, a researcher who made a presentation on earthquakes.

- A coastal buffer zone is essential.
- With regard to new construction, ocean topography should be used to evaluate the coastal belt.
- Public awareness campaign should be launched.

Mr. Sunil Somasiri, former president of the Surveyors association and others from GSMB made their observations.
15th Meeting of the Select Committee - 31st March 2005

The Select Committee, along with media personnel went on a field visit to the Geology Centre in the University of Peradeniya, the Pallekele Seismological Centre and Kuliatta, an identified landslide prone region in Kandy.

16th Meeting of the Select Committee - 5 April 2005

Professionals from University of Peradeniya and Senior Fellow for Japanese International Cooperation Agency (JICA), and a delegation representing the Virginia Institute of Technology which was led by Dr Fredrick Krimgold met with the Select Committee.

Discussion revolved round how the Geology Centre in the University of Peradeniya was formed with assistance from JICA for academic and research purposes in 2003; it consists of a network connecting Peradeniya, Ruhuna, Mihintale and Oluwil; Geology Centre in Peradeniya is the central agency, which receives data sent by three other seismic stations located throughout the country; it could be upgraded to have an effective warning system; the Centre can work closely with the Japanese universities such as Zukuba, Tokyo and Kyoto; due to software breakdown presently the Centre is defunct.

A delegation representing Virginia Tech made their presentation regarding cooperation with local universities for strengthening their capacity to handle disaster management, Research is an important aspect of the overall system. The delegation was on an initial exploratory mission, which was here to assess the needs of local universities with regard to incorporating disaster studies. The proposal being made by the mission is the establishment of a centre for disaster studies integrating natural science, engineering and sociology.

Recommendation: A multi-disciplinary disaster management centre should be established. (The US universities and a large number of agencies could extend their support.)

17th Meeting of the Select Committee - 25 April 2005

The Select Committee summoned national and international NGOs to share their views on the tsunami and to participate in an open discussion about the role the NGO sector in events of natural disaster.

An overview of the three study tours the members of the Select Committee took to Australia, Japan, South Korea, Turkey and Germany were presented. Mahinda Samarasinghe spoke on the three-pronged approach in Australia’s national disaster management policy and how Sri Lanka could use similar approaches - expertise in Disaster Victims Identification (DVI) lacking in Sri Lanka and proposal made by Australia for an advanced course in this subject in Canberra. Other criteria are, training and mobilization of youth to volunteer and the federal system the Australian government bases its natural disaster policy.
NGOs spoke of difficulties and shortcomings with respect to the work they are doing - psychological trauma of children, delivering relief to tsunami-affected areas especially in the north and east, lack of coordination between NGOs in the aftermath of the tsunami, problems they faced regarding the clearance of goods from the Sri Lankan port, Services offered by organisations like St. Johns not being given due recognition by the government.

There is a need for a mechanism to regulate the flow of aid to the country and a national policy on disaster management indicating the role the NGO sector should play in that framework. Some recommendations were,
- NGOs should voluntarily disclose the amount of funds they receive so that accountability and transparency is not undermined
- Mechanism required for facilitation as opposed to just a coordination mechanism
- Incorporation of first aid programmes into schools
- Community-based volunteer programmes were needed in Sri Lanka.

On the issue raised on the buffer zone and different treatment meted out to different districts, Professor Tissa Vitharana, Minister of Science & Technology, responded by explaining the scientific evidence backing the need for a buffer zone. In 1981, the Coast Conservation Act set aside 300 metres as a buffer in order to protect the coast from exploitation. Besides the tsunami, global warming has a huge effect on island nations like Sri Lanka and every country needs a buffer zone. Indian Ocean has two earthquake belts running across Sumatra and the Maccaran, which have seismic activity. Professionals in the field have expressed that Asian people must understand that there is an increase in seismic activity in the region. The only way to mitigate the risk is by encouraging coast conservation programmes that involve the growth of mangroves and coral reefs.

Responding to the issue of different treatment to different districts with regard to the buffer zone, he said that the implementation of the buffer zone was not motivated by discrimination but that the government is responsible for protecting the lives of people as well as property.

18th Meeting of the Select Committee - 26th April 2005

Representatives from all religious groups (Buddhist priest, Catholic priest and Moulavi) along with the Government Agents from affected districts shared their experiences of the tsunami with the Select Committee. Tilak Ranaviraja, Commissioner General for Essential Services and Chairman of TAFOR, Kapila Dahanayake, Senior Professor of Geology, University of Peradeniya, Sarath Weerawamakula, Director of Geological Survey and Mines Bureau, Jean Pierre Massue and Akira Akazawa, representatives from the International Organization of Migration (IOM), and Philip Frayne from the American Embassy were also present.

Recommendations:
- Need for a coordinated body of governance
- All grama niladharis need to have a census of the people living in their divisions
- Role of pradeshiya sabhas should be expanded to better cope with natural disasters
- Districts should also be informed of the probable disasters and given the appropriate resources to mitigate same
- Need for the lives of the people in that region to return to normalcy (Tirichovil)
- Provision of tools to rebuild lives and livelihoods were also important
- Need for psychological counselling for those
- Special provisions to be made for school children sitting their Ordinary and Advanced levels this year
- Need for the maintenance of cultural centres affected by tsunami
- Need for helping people to reclaim their livelihood

On making special provisions in education, Dinesh Gunawardena, Minister of Urban Development and Water Supply, stated that the Advanced Level examinations have been postponed until mid-June, and that all children living in affected areas were issued, in collaboration with UNICEF, with the necessary textbooks and stationery, and those students can opt to take their national exams next year.

Tilak Ranaviraja, Commissioner General for Essential Services and Chairman of TAFOR, briefed the Select Committee on the status of the relief effort thus far. All those living in temporary shelter would be moved into transitional settlements by the end of May 2005. Each family will be provided with 200 square feet of space and electricity. 18,500 transitional shelters have been completed and 17,500 people have already moved.

19th Meeting of the Select Committee - May 3, 2005

At the 18th meeting, the Chairperson Mahinda Samarasinghe tabled the first draft of the report prepared with technical assistance from UNDP. He also announced that the draft report on the recommendations made during the Australian study tour undertaken by a parliamentary delegation was released.

Jeff Murdoch, and Akira Akazawa from the International Organization of Migration (IOM), Ramraj Narasimhan from UNDP, Dr A R Subbiah and Lolita Bildhan from the Bangkok based Asian Disaster Prevention Centre, Jean Pierre Massue, Member of the European Mediterranean Inter Governmental Group and of the European Academy of Science and Arts, and Nora Belachchi, expert on natural disasters made their presentations to the Select Committee.

Dr A R Subbiah made an assessment of the Early Warning System for Sri Lanka for the UNDP. He stressed the need to have a flood warning system. Re. droughts, authorities need the ability to forecast in advance. International forecasters can predict changes in weather patterns through the use of Global Precipitation Forecasts three months ahead. He also stressed the importance of delivering locally relevant climate information so that authorities can preempt this and plan the agriculture industry accordingly.

On the local levels of disaster preparedness and emergency response in Sri Lanka, Jean Pierre Massue stated that an ISCR survey conducted in Kobe showed that the world is vulnerable to natural disasters and people need to look into the careful conservation of the coast and stressed the need for Sri Lanka to invest in mapping data using GIS. Five key areas that need to be looked into when having an Early Warning System are Risk Prevention, Elements involved in an Early Warning System, Crisis Management, Debriefing and Rehabilitation. Suggestions - there has to be a legal basis when making policy decisions; capacity building should be based on an inter-ministerial and decentralized approach; and with regard to education, children are the most vulnerable to natural disasters and are also the most receptive to risk prevention messages.
20th Meeting of the Select Committee- 4 May, 2005

Dr Ajith Udagama, Dean Faculty of Information Technology of the University of Moratuwa, Mr. A G W Nanayakkara, Director General of Department of Census and Statistics, Dr Paikiasothy Saravanamuttu, Mrs. Cyrene Siriwardhana and Ashanga Welikala representing the Centre for Policy Alternatives, and Dr K Deheragoda, representative from the Geography Department, University of Sri Jayewardenepura, made their recommendations to the Select Committee.

Jeff Murdoch and Akira Akazawa from the International Organization of Migration (IOM), Jean Pierre Massue, Member of the European Mediterranean Inter Governmental Group and of the European Academy of Science and Arts and the representatives from the UNDP were also present.

Mr. A G W Nanayakkara released the data the Department of Census and Statistics collected in the aftermath of the Tsunami to the Select Committee. In all districts, 39,903 houses were completely damaged, 10,080 houses were partially damaged and cannot be used while 38,561 houses were partially damaged but can be used. He stated that officials should depend on police records to confirm the number of people who lost their lives in the tsunami in Sri Lanka. When asked by the Select Committee why there were discrepancies in the statistic of the public on the death toll Mr. Nanayakkara said that different organizations were collecting data and thus the statistics were overlapping or falling short because the system was not a coordinated one.

He stressed the importance of losing the same data collection instruments, common concepts, definitions and methodology everywhere, so that there will be uniformity in the collected data. If there is no uniformity in the data collected at grassroots level such data will be of very little use for planning and monitoring purposes.

Dr. Ajith Udugama stated that a system involving the Grama Sevaka Division, District Officers and provincial Councils was important for the collection of accurate data. He also stated that there should be a central point where all stakeholders can have access to the relevant data in order to conduct a proper needs assessment. He emphasized that in order for that system to work, the data repository needs to be computerized and work across multiple ministries.

Dr. Paikiasothy Saravanamuttu stated that the culture of governance in Sri Lanka was to centralized everything. He stressed that it was important to use local knowledge and local structures in implementation and coordination of disaster management for effective data gathering. Speaking on the key problems he face, he stated that coordination and communication between government officials because of the culture of governance in the country was lacking, the political imperative in the country is on the distribution of relief, too many ministries were spread too thing and there was lack of involvement of both the local and provincial authorities in the interest of central governance.

Recommendations:
- Need for a decentralized system of data collection at grass root level.
- Central point where all stakeholders can have access to the relevant data.
Data repository needs to be computerized and work across multiple ministries
Important to use local knowledge and local structures in implementation and coordination of disaster management for effective data gathering
Need one central body of research

Key problems:
The culture of governance in the country was lacking
Political imperative in the country is on the distribution of relief
Too many ministries were spread too thin
Lack of involvement of both the local and provincial authorities in the interest of central governance

Dr. K. Deheragoda stated that one central body for allocation of research grants on DM is needed so that funds can be allocated to relevant research proposals on priority basis. This would be very useful approach not only for rational allocation of funds but also to avoid duplication of research and tracking the both funds and the outputs, while enabling to maintain a database of research findings that are of vital importance for policy making and building a knowledge base on the subject. He further emphasized that Sri Lanka is not adequately contributing to build knowledge on this subject due to lack of research funds, particularly with the universities. What we have is only information and some data. Until and unless we convert such data and information into knowledge through research analysis, we continue to take ad-hoc planning and management decisions, thus increasing the vulnerability of the people in the disaster prone areas. He also pointed out that during the past two decades, GOSL allocations for R&D has been drastically cut down in all the research institutions and even the policy makers have ignored the importance of academic and other research initiatives. Today Sri Lanka is ranking among the countries that are making lowest investments in R&D i.e. 0.018% of the GDP where as India is spending nearly 2% of its GDP on R&D.

21st Meeting of the Select Committee - 17 May 2005

Mr. R A D B Samaranayake, Director of the Coast Conservation Department (CCD) and representatives of both the Urban Development Authority (UDA) and the National Physical Planning Department (NPPD) made their presentations to the Select Committee.

Mr Samaranayake stated the importance of coastal conservation and managing the environment and legislation authorizing it to implement policies concerning protection of the coastal belt of Sri Lanka - Coast Conservation Act No 57 of 1981, Coast Conservation Amendment Act No 64 of 1988 and Coastal Zonal Plan 2004 - yet to be enacted.

CCD follows an Environmental Impact Assessment Plan, Coastal Zonal Plan 2004, which is yet to be enacted, was prepared before the tsunami. He presented the three-pronged plan that has been given to the cabinet. The three sections are, Seaward reference line and reservation area are strictly forbidden areas with regards to development activities and the restrictive area is the soft zone where development will be allowed in respect to the tourism and fishing with CCD approval.

He also presented a new plan where coastal belt of Sri Lanka is divided into 99 zones, each of which will be analyzed with the EIA Plan to find vulnerable areas. All these recommendations are given to a specially appointed committee. Regarding the buffer zone he stated that the existing management plan should be kept in place with the addition of rest areas and fishing and tourism industry related structures. However, no new housing settlements would be allowed. He stated that the CCD is following the
guidelines set out by TAFREN. The reason for having a Buffer Zone is that Sri Lanka had a high erosion rate as opposed to other countries.

UDA representative explained the process of planning development activities. He stated that conservation of the land is an imperative for the country to prevent natural disasters like floods and landslides. Re. possible threat of earthquakes he stated that when high-rise buildings come up in Colombo, the UDA advises investors with a pre-qualification system. NHDA too has housing guidelines for investors to follow during development stages. A recommendation was for Policy planners to encourage development in the interior of the country, to decrease the population density along the coastal belt.

NPPD stressed the need for new National Physical Structure Planning for Sri Lanka. Planning in the past was based on three attributes - Availability of resources, Economic disparity and Geo-climatic regions; need for the expansion of tourism, IT, industries and services; the object of a sound economic plan is for people to live in and around industrial regions. The coastal belt and the hill country are vulnerable to natural disasters. Objective of a new National Physical Structure Plan is to provide incentives for people to move away from vulnerable regions, for which government needs to focus on concentrated development in the interior of the country; and to balance urban development and population density.

The three-pronged approach for future development activity in the country would be - Reduce the population at risk on the coastal belt and in the central hills, Balance economic and environmental activity and Provide opportunities in rural areas.

23rd Meeting of the Select Committee - 20 May 2005

Priyantha Serasinghe, Group Director of The Maharaja Organisation, Kingsley Bernard, President of the National Chamber of Exporters (NCE), M P T Cooray, Secretary General of the Joint Apparel Association, Ranjith Rajapakse, General Manager of Associated Motorways, K C Suwamaraj, Chairman of the Vavuniya Chamber of Commerce, Stanley Jayasekera, Head of Global Trade for the National Chamber of Commerce, K Palaymianly, Member of the Old Moors Association, and M Atton, Deputy Secretary General of the Ceylon Chambers Forum, attended the Select Committee hearings.

Discussion pivoted around the need for the private sector to play a larger role in the coordination of reconstruction efforts and of protecting employees in the event of a natural disaster. Chairman, Select Committee presented systems in place in California and Honolulu, which looks into the welfare of businesses and of employees in the event of a natural disaster. He suggested this should be implemented here too.

The agencies present explained their contributions in the aftermath of the tsunami. Maharaja Organisation utilises its media division to create awareness. National Chamber of Commerce had an arm of the district chamber of Small and Medium Enterprises (SME) organized in 15 districts, which network helps to dispatch aid to affected areas and to give assistance to affected businesses. There was a need to make employees aware of how to identify a natural disaster and know what to do when it occurs.
Chairman, Select Committee briefed heads of the business community on the government’s plan of action for the mitigation of natural disasters; the council; and the technical committee, which will coordinate relief efforts with a National Disaster Centre.

**24th Select Committee Meeting - 7 June 2005**

Representatives from the Colombo Municipal Council as well as Provincial Council members from each district were present. Chairperson, Select Committee explained the role the Select Committee in both formulating and recommending certain policies through the Natural Disaster bill. He stated that policy makers cannot centralize decisions that need to be made by relevant authorities on the field. Each district faces unique risks that need to be looked into by the people who can provide expertise in those fields. For example, all Provincial Councils need to have a disaster management plan, storage of dry rations, medicines and also a fire engine truck and ambulance.

Discussions highlighted that Sabaragamuwa province is vulnerable to floods and landslides, had a high population and needed a pre-preparedness plan. They diverted resources to help Hambantota and Galle during the tsunami and were now facing a short fall. Last December tsunami was an eye opener to other problems - the lack of resources and the unpreparedness on all levels of governance when dealing with natural disasters.

Colombo had an emergency preparedness plan even before the tsunami but needed investments and resources. Lack of resources the main challenge. The main natural disasters in Nuwara Eliya UC area were forest fires and earth slips but they had only one Backhoe. The people of Hambantota district are still facing difficulties in the aftermath of the tsunami. The government had difficulty finding land and then releasing it to the affected people. The need for Provincial Councils to have emergency plans was stressed. Galle MC has four fire engines and 12 people to operate the equipment.

They need new equipment, better resources and new laws giving them authority. Matara MC stressed that resources to be spent in emergencies should be allocated separately.

Vajira Abeywardena briefed on the lack of progress made on the debris embedded in the sea. Coast Conservation Department had failed to look into the matter. He requested to create public awareness on tsunami. Prof Kapila Dahanayake, said that JICA is providing the necessary resources needed to repair the seismology equipment in the Peradeniya University.

**25th Select Committee Meeting - 8 June 2005**

The Deputy Ambassador of Italy, Prof Ferruchchi from the University of Calabria, Dr. K Deheragoda, Head Department of Geography, University of Sri Jayewardenepura and representatives from the Irrigation Department, Mahaweli and River Basin Development Authority and the Ceylon Electricity Board (CEB) were present at the 23rd Select Committee meeting.

The Deputy Ambassador of Italy introduced Prof Ferruchchi for a follow up of the project proposal he presented to the Select Committee in March 2005. The Deputy Ambassador of Italy explained the status of the project proposals the Italian delegation made to the Select Committee and the Government of Sri Lanka and said that it is called digital mapping of the coast or Hyper Dam. He introduced the preliminary stage of the project.
to the Select Committee informing them that after the MoU was signed with the Government of Sri Lanka, the project could begin. The focus of the project is the mapping of the coastal areas. We will start a preliminary survey from space already being done through space borne radar or spatial technique. There will be no need to use topography on the ground. This is the fastest, easiest and cheapest method to use. The second survey will be done through the digital surface model - 1 square km resolution in width and 10 square km in height. This will be a space borne survey. It is done with special equipment like laser scans. It will include everything between Galle and Jaffna anti-clockwise. The project could be done in three parts. Discussions were already held with Meteorology Department regarding timing of activities.