



Sri Lanka National Disaster Management Plan 2013 - 2017



Disaster Management Centre
Ministry of Disaster Management

2nd May 2014

Sri Lanka
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Message from Hon. Minister of Disaster Management

Ministry of Disaster Management has by now undertaken the onerous responsibility of effectively facing the challenging problems caused by natural and man-made disasters which affect the whole Sri Lanka.

Been able to present the Sri Lanka National Disaster Management Plan which contains the aims that are expected to be achieved during the coming five years with the vision of "Towards a safer Sri Lanka" is another achievement of the Ministry.

The "National Disaster Management Plan", which is put forward in a situation where most of the plans including legal framework relating to disaster management in Sri Lanka throughout the period of past years, disaster risk reduction plans, and the action framework within which the disaster management process will be carried out from the national level to the divisional level have been completed, will be another challenging target of the performance to be achieved in future.

I would like to express my sincere thanks for the support extended by the Ministry of Disaster Management and the other entities attached to the ministry as well as the national and international supporting agencies in order to enable the achievement of these aims and objectives.

Mahinda Amaraweera

Minister of Disaster Management



Message from Hon. Deputy Minister of Disaster Management

This book that has been named as “National Disaster Management Plan of Sri Lanka 2013 – 2017” consists of a system of guidelines for Post Tsunami activities such as Mitigation, Emergency Operations, providing relief, restoration and reconstruction which are the prime subject areas related to disaster management.

Government organizations and non-governmental organizations and people of various walks of life have been consulted when preparing this book and the assistance of the United Nations Development Programme has also been provided for it.

It is important that attention has been paid regarding the organizations which have already been established, the organizations which should be coordinated, the Committees which should be established anew and the administrative laws which should be strengthened in a sudden disaster and in the task of disaster management.

The assistance of government and non-governmental organizations, officers of all levels and the civil community has to be obtained to properly implement the proposed activities related to the field of disaster management in the manner indicated in this five year plan.

I firmly believe that the aspiration of His Excellency the President Mahinda Rajapaksa and also the objective of “Mahinda Chinthana” Policy framework for a prosperous and secure Sri Lanka could be fulfilled, once we mitigate disasters acting in the aforesaid manner.

Thank you,

Dulip Wijesekara

Deputy Minister of Disaster Management



Message, Secretary, Ministry of Disaster Management

It gives me great pleasure to provide a message to this utmost important document in implementing Disaster Risk Management (DRM) in Sri Lanka. The formulation of this National Plan represents a very significant achievement of the Ministry of Disaster Management since this clearly identifies the priorities and the initiatives that need to be undertaken by various stakeholders comprising public and private sectors, and the civil society to lead Sri Lanka in taking pro-active DRM measures.

The Process of formulation of this document has been consultative, with contributions from various stakeholders and I express my sincere appreciation to all those who have contributed in the preparation of the plan.

I also wish to acknowledge the lead role played by the Disaster Management Centre, in coordinating this effort of formulating the National Plan. The plan, I am sure will be extremely useful in developing other related mitigation and preparedness efforts at different administrative levels, and also in coordinating the plans of other ministries and agencies.

I am confident that this plan will help Sri Lanka to be a country safe from natural as well as man-made disasters.

S. M. Mohomed

Secretary

Ministry of Disaster Management



Message, Director General, Disaster Management Centre

Sri Lanka Disaster Management Act No.13 of 2005 provides for the development of National Disaster Management Plan (NDMP) as the overall guiding document consisting of all phases of disaster management cycle, namely, mitigation, preparedness, response, coordination of relief, rehabilitation and reconstruction.

NDMP incorporates all aspects such as, institutional mandates and institutional development; hazard, vulnerability and risk assessment; multi-hazard early warning systems; disaster preparedness and response planning; disaster mitigation and integration into development planning; community-based disaster management; public awareness, relief, immediate recovery, rehabilitation and reconstruction; education and training. Plans and policies of the related sectors covering the subjects as indicated in the Act have been taken into account in preparation of this plan.

All state sector agencies, provincial councils and local authorities will have to develop the Institutional Disaster Management Plan (IDMP) based on the NDMP. The users of this plan would be all stakeholders; officials of sub-national administration – at Provincial, Local Authority, District, Divisional and Grama Niladari levels; relevant officers and personnel from Governmental and Non-Governmental Organizations, community leaders etc, have been consulted and their comments were incorporated. I sincerely hope that this document will be useful in developing the response and preparedness capacity of the country.

I take this opportunity to thank everyone involved in developing this document, and also appreciate the support extended by the United Nations Development Programme throughout this Process.

Major General Gamini Hettiarachchi (Retd.)

Director General

Disaster Management Centre

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Acronyms and Abbreviations

AEA	Atomic Energy Authority
ARTI	Agrarian Research and Training Institute
BOISL	Board of Investment Sri Lanka
CBDRM	Community Based Disaster Risk Management
CBOs	Community Based Organisations
CCA	Climate Change Adaptation
CC&CRMD	Coast Conservation & Coastal Resource Management Department (formerly Coast Conservation Department)
CEA	Central Environmental Authority
CEB	Ceylon Electricity Board
CECB	Central Engineering Consultancy Bureau
CHPB	Centre for Housing Planning and Building
CMC	Colombo Municipal Council
DDMCU	District Disaster Management Coordinating Unit
DDPERP	District Disaster Preparedness & Emergency Response Plan
DesInventar	Sri Lanka Disaster Information System
DIA	Disaster Impact Assessment
DM	Disaster Management
DMC	Disaster Management Centre
DMCU	Disaster Management Coordinating Unit
DoM	Department of Meteorology
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DVI	Disaster Victim Identification
EIA	Environmental Impact Assessment
EOC	Emergency Operating Centre
EPL	Environmental Protection License
EW	Early Warning
GIZ	German Development Cooperation
GN	Grama Niladhari
GSMB	Geological Survey and Mines Bureau
Ha	Hectare
HFA	Hyogo Framework of Action
ICS	Incident Command System
ICTAD	Institute for Construction Training and Development
IDNDR	International Decade for Natural Disaster Reduction
IDPs	Internally Displaced Persons
IESL	Institution of Engineers Sri Lanka
INGOs	International Non Governmental Organizations
IOM	International Organisation for Migration
ISDR	International Strategy for Disaster Reduction
ITI	Industrial Technology Institute
LA	Local Authority
LECO	Lanka Electric Company

LUPPD	Land Use Policy Planning Division
MASL	Mahaweli Authority of Sri Lanka
MC	Municipal Council
MDM	Ministry of Disaster Management
M/DM&HR	Ministry of Disaster Management and Human Rights
M/PC&LG	Ministry of Provincial Councils and Local Governance
MIn.	Million
MEPA	Marine Environment Protection Authority
MOH	Medical Officer of Health
MP	Member of Parliament
N/A	Not available
NACWC	National Authority for Implementation of Chemical Weapons Convention
NAITA	National Industrial Training Authority
NARA	National Aquatic Resources, Research & Development Agency
NBRO	National Building Research Organization
NCDM	National Council for Disaster Management
NCT	National Certificate in Technology
NDMC	National Disaster Management Centre
NDMCC	National Disaster Management Coordination Committee
NDMP	National Disaster Management Plan
NDRSC	National Disaster Relief Services Centre
NDT	National Diploma in Technology
NEOP	National Emergency Operation Plan
NGOs	Non Governmental Organisations
NHDA	National Housing Development Authority
NHS	National Health Services
NIE	National Institute of Education
NIHS	National Institute of Health Services
NPPD	National Physical Planning Department
NSF	National Science Foundation
NWS&DB	National Water Supply and Drainage Board
NYSC	National Youth Services Council
OOC	Ocean Observation Centre
PC	Provincial Council
PDMC	Provincial Disaster Management Committee
PDMCU	Provincial Disaster Management Coordinating Unit
PRDA	Provincial Road Development Authority
PS	Pradeshiya Sabha
R&D	Research & Development
RDA	Road Development Authority
SAR	Search and Rescue
S&R	Search and Rescue
SD&CC	State Development and Construction Corporation
SEC	State Engineering Corporation of Sri Lanka
SIDA	Swedish International Development Cooperation Agency
SLA	Sri Lanka Army
SLAF	Sri Lanka Air Force

SLDRN	Sri Lanka Disaster Resources Network
SLIA	Sri Lanka Institute of Architects
SLIDA	Sri Lanka Institute for Development Administration
SLILG	Sri Lanka Institute for Local Governance
SLLRDC	Sri Lanka Land Reclamation and Development Corporation
SLN	Sri Lanka Navy
SLPA	Sri Lanka Ports Authority
SLRC	Sri Lanka Red Cross
SLRCS	Sri Lanka Red Cross Society
SLSI	Sri Lanka Standards Institution
SLT	Sri Lanka Telecom
SLUMDMP	Sri Lanka Urban Multi-Hazard Disaster Mitigation Project
SOC	Site Operating Centre
SOPs	Standing Operating Procedures
TAC	Technical Advisory Committees
TOR	Terms of Reference
ToT	Training of Trainers
UC	Urban Council
UDA	Urban Development authority
UN	United Nations
UN BCPR	United Nations Bureau for Crisis Prevention and Recovery
UNDP	United Nations Development Programme
UN OCHA	United Nations Office for Coordination Humanitarian Assistance
UNV	United Nations Volunteer
VTA	Vocational Training Authority
WHO	World Health Organization

Executive Summary

In May 2005 the government of Sri Lanka enacted the Sri Lanka Disaster Management Act² No. 13. This National DM Plan (NDMP), which is developed as a major requirement of the Act for the period of five years from 2013 to 2017 conforms to the Act and the draft Sri Lanka National Disaster Management Policy³. It describes management arrangements, relationships, mechanisms, strategies and corresponding timeframes for action to establish the DRM framework and implement related programmes in the country with multiple-stakeholder participation covering all phases of DM cycle. NDMP is the overall guiding document consisting of the major areas – mitigation, preparedness, early warning, emergency operations and post disaster activities, such as relief, recovery, rehabilitation and reconstruction. Training, public awareness and education are also covered within these areas as relevant. As provided for by the Act the National Emergency Operations Plan (NEOP) will be developed at national level in conformity with this plan. Support information and documents are given in **Annexes 1 to 9**. Time frames of activities are given as **Annex 10** at the end of the plan.

The Overall Country-Wide DRM Framework and National Institutional Framework for Effective DRM in Sri Lanka are illustrated in **Fig 2-1** and **Fig 2-2**. Decentralisation of disaster management; existing policies of different sectors; current mandates of government departments and agencies; and sub national level administrations may be reviewed as necessary. Also legal powers and capacities of different levels of government and hazard-specific institutions must be strengthened. Ministries responsible for different aspects of DM need to be reviewed too. National DM Advisory Committee; National DM Coordination Committee (NDMCC) to implement the activities of HFA as the Sri Lanka National Platform; Emergency Response Committee; and Construction Guidelines Committee; have been established. As provided for by the Act, Technical Advisory Committees for other relevant aspects of DRM may be established as and when required. There will be DM Committees at different levels of administrations chaired by the respective administrative heads, and coordinated by the DMC / District DM Coordinating Units. On occurrence of a disaster, the participation of relevant political authority in such committees is vital for speedy implementation of committee decisions. CBDRM will be strengthened too. The Government, M/DM and DMC will coordinate as necessary with UN agencies, other international agencies, SLRCS and NGOs.

The chapter on hazard, vulnerability and risk assessment presents the major agencies responsible for hazard information and mapping; the proposed hazard mapping process at national and sub national levels; different agencies using hazard maps; the proposed process for vulnerability and risk assessment with respect to different hazards; and the progress of the Risk Profile for Sri Lanka. Sri Lanka Disaster Information System (DesInventar), Sri Lanka Disaster Resource Network (SLDRN) and other data bases and data collection will be continued; and DM related Research and Analysis will be undertaken.

Immediately after the tsunami, a Technical Committee for Tsunami Early Warning was appointed by the Ministry chaired by the Secretary. The performance of the various technical agencies mandated with early warning with respect to different hazards will be reviewed and measures taken to remedy the identified shortcomings. For hazards such as earth quakes, tsunamis, adverse weather conditions and cyclones the relevant agencies will work in constant coordination with the respective regional and international warning centres. Standard Disaster Early Warning messages and bulletins are being formulated and agreed upon by all stakeholder agencies. For cell broadcasting, SMS messages and EW Towers short specific messages have been formulated, agreed upon and made ready for use. The present system of communication from national level to sub national

levels or other specific identified locations is mainly through the Police and military communication systems, radio communication, multi-hazard early warning towers, media and the normal telephone systems. Personnel and agencies such as SLRCS, NGOs, LA officials, GNs, Local Police, CBOs and Volunteers will be involved in the Last Mile dissemination activities.

The strategy of DMC will be for LAs and district/ division/ GN level administrations to develop disaster mitigation action plans and implement mitigation activities in a planned manner by implementing various disaster mitigation strategies for risk reduction. Integrating mitigation in new development will look at making integration of DRR mandatory through development control and approval procedure; guidelines for planning and construction in disaster prone areas; adoption of policies and legal enforcement; making DIA for new development mandatory etc. The technological hazards will include radiological / nuclear related hazards; industrial, chemical, explosives, oil spills in sea and land etc. Other hazards include animal attacks; traffic accidents, health hazards and possible biological hazards, contamination of water sources with pesticides, insecticides, fertiliser, chemicals etc. In implementation, DMC will coordinate and collaborate with the relevant agencies, which have been identified. DMC would make attempts to put into practice a proactive scheme of risk transferring and financing in DRR considering that the reactive approaches to risk financing are becoming increasingly unsustainable. The need has been stressed for policy makers, experts and practitioners of both DRR and CCA to collaborate with each other to ensure a comprehensive risk management approach at local and national levels.

The National Emergency Operations Plan (NEOP) is being prepared at present. The National level EOC in DMC will be linked to the Provinces, Districts, DS Divisions and local authorities with fail-safe communication modes to inform warnings and other vital information. The EOC is well equipped and adequately staffed, and will operate 24x7 to coordinate all incident information and resources for management, along with a Call Centre to handle emergency calls. DMC will ensure maintaining the EOC at Readiness state all the time; in every district SAR Teams have been earmarked from the Military; Rapid Response Teams for chemical emergencies have been formed; training have been conducted for radiological emergencies. EOCs in all districts are being established and ready to be activated in case of an emergency. Disaster / Emergency Response at national and all sub national levels will be through disaster management committees, sub-committees, EOCs, District and site offices of government departments, volunteer groups etc. Military and Police will take a lead role in emergency response activities at all these levels in any part of the country. There will be a role for all these parties provided in the DDPERP. On receiving early warning or on occurrence of a disaster, actions to be taken by the responsible stakeholder agencies at sub-national levels have been identified. In the future ICS will be incorporated into emergency operations at different levels adjusted to the local context. LAs will be strengthened for undertaking emergency response with relevant equipment such as earth moving equipment, boats, fire machines, ambulances etc. and other resources with clustering of selected LAs to overcome the legal barrier for sharing resources and approvals for providing services outside the mandated limits. Other aspects that will be considered in response are DVI for positively identifying deceased victims of a major disaster in conformity with the legal requirements; involvement SLRCS, NGOs and private sector in emergency operations; and the media.

DM Plans are developed as a part of total disaster management plans, as a requirement at all levels for responding to disasters. For coordination and command and control, a coordination structure has been proposed. MDM and DMC will be the overall coordinating authority. DDMCUs and the proposed PDMCUs will be the focal points for coordinating at sub national levels. ICS will be reflected in the preparedness plans too. All Ministries and Departments / agencies in different sectors will also be required to develop a DM Plan. DMC will facilitate in developing these plans by providing guidance notes with general coverage, necessary circulars to national/provincial

ministries and awareness workshops. DMC will also coordinate and monitor plan development activities with all national and provincial, private and public establishments in all sectors. Representatives from national, provincial and district level offices of service providing agencies will be serving in the disaster management committees at the respective levels. These agencies, in addition to the DM Plans of their own organisations at the respective levels, will have a role in the DM Plans of the administrations at the given levels. Protection for public utilities and infrastructure from impact of natural/ human induced disasters should be given high priority by the responsible agencies and included in their plans (contingency plans). For hazards listed in the Act, SOPs for various government departments / agencies will be made mandatory for adherence in case of a disaster. These will form part and parcel of the respective departmental plans.

In the National Policy for DM high priority has been accorded to several aspects during and after a disaster. These include (i) response, relief and immediate recovery of essential services, and (ii) medium and longer term reconstruction and rehabilitation to a higher standard than before the occurrence of the disaster. National Disaster Relief Services Centre (NDRSC) has been established within the Ministry of DM and assigned with the relief functions. Ministry of Economic Development is responsible for rehabilitation and reconstruction of infrastructure after a disaster. DMC will also coordinate as required with ministries and agencies handling different functions related to these phases. In relief and temporary shelter management several features will be ensured, such as, social justice, equitable distribution of relief, neutrality and impartiality in the provision of assistance and respect for the dignity, values and culture of affected persons. Due consideration will be given to immediate recovery of essential services, recovery of livelihoods of the affected communities, and activities with respect to IDPs as a result of internal conflicts / terrorist activities. Mechanisms will be in place to ensure reconstruction to a higher standard than before the disaster.

Target groups of training and public awareness include different strata of administrators and technical personnel, field officers, NGOs, business community, CBOs, selected community leaders and volunteers. In developing plans for training and awareness DMC will take into consideration the target groups and needs based on the report of the Training Needs Analysis conducted by the DMC. Awareness programmes will include specific awareness for different government officials at sub-national level; general public awareness; and awareness for communities for livelihood development and poverty reduction, Proper land use practices. In school education, DMC will collaborate with Ministry of Education, NIE, GIZ, NSF, UNOCHA, SLRC, NGOs. These will include awareness, training for teachers and students etc.; 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; incorporating natural disaster aspect in school curriculum; training of trainers (ToT) G.C.E (Advanced Level) projects and assignments; risk awareness education and school safety / emergency plans. Tertiary education will include integration of disaster management in university curricula and in other tertiary educational curricula collaborating with universities; Department of Technical Education and Training (DTET), VTA, NAITA and also the skill level training courses conducted by the network of technical colleges in the country.

Time frames for establishing systems and implementing Disaster Risk Management (DRM) activities are in **Annexure 10** of the Plan.

* * *

Chapter 01



Introduction

Chapter 1

1.0 Introduction

1.1 Legal Framework for Disaster Management and formulating the National Disaster Management Plan (NDMP)

In the aftermath of the Tsunami a Parliament Select Committee was appointed by the government of Sri Lanka, consisting of 21 members from all political parties represented in Parliament, to investigate and recommend steps to ensure that an early warning system will be put in place and other steps to minimize the damage caused by similar natural disasters. After deliberations, the committee made some specific recommendations, which were presented in the committee report¹.

Subsequently, the government introduced the legal framework for Disaster Management in May 2005 – Sri Lanka Disaster Management (DM) Act², so that the country will be prepared for most types of disastrous events in the future. The Act provides for the establishment of the National Council for Disaster Management (NCDM), which is a high-level inter-ministerial body chaired by H.E. the President. It also provides for establishing the Disaster Management Centre (DMC) under the Council.

Subsequently in November 2005 a separate Ministry for Disaster Management (with DMC within its purview) was established under the Hon. Prime Minister, which in January 2006 was renamed as the Ministry for Disaster Management and Human Rights (M/DM&HR). At present the ministry functions as the Ministry of Disaster Management (MDM) with additional agencies, i.e., Department of Meteorology (DoM), National Building Research Organisation (NBRO) and National Disaster Relief Services Centre (NDRSC), within its purview.

The Draft Sri Lanka National Disaster Management Policy³ is available at present. In 2006, the Roadmap for Disaster Risk Management – Towards a Safer Sri Lanka⁴ was developed for the 10 year period from 2006-2016, identifying specific projects in coordination with multiple stakeholders through a holistic strategy.

1.2 Basis for the Formulation of the National Disaster Management Plan (NDMP)

When formulating this National Disaster Management Plan (NDMP), the Disaster Situation in Sri Lanka (see **Annex 1-I**), Influence of Global Initiatives on Disaster Management Activities in Sri Lanka and the Disaster Management Initiatives in the past in Sri Lanka (see **Annex 1-II**) have been taken into consideration.

NDMP is the overall guiding document covering intended activities of the major phases – mitigation, preparedness, emergency operations and post disaster activities, such as relief, recovery and reconstruction. Training, public awareness and education are also covered in the above phases.

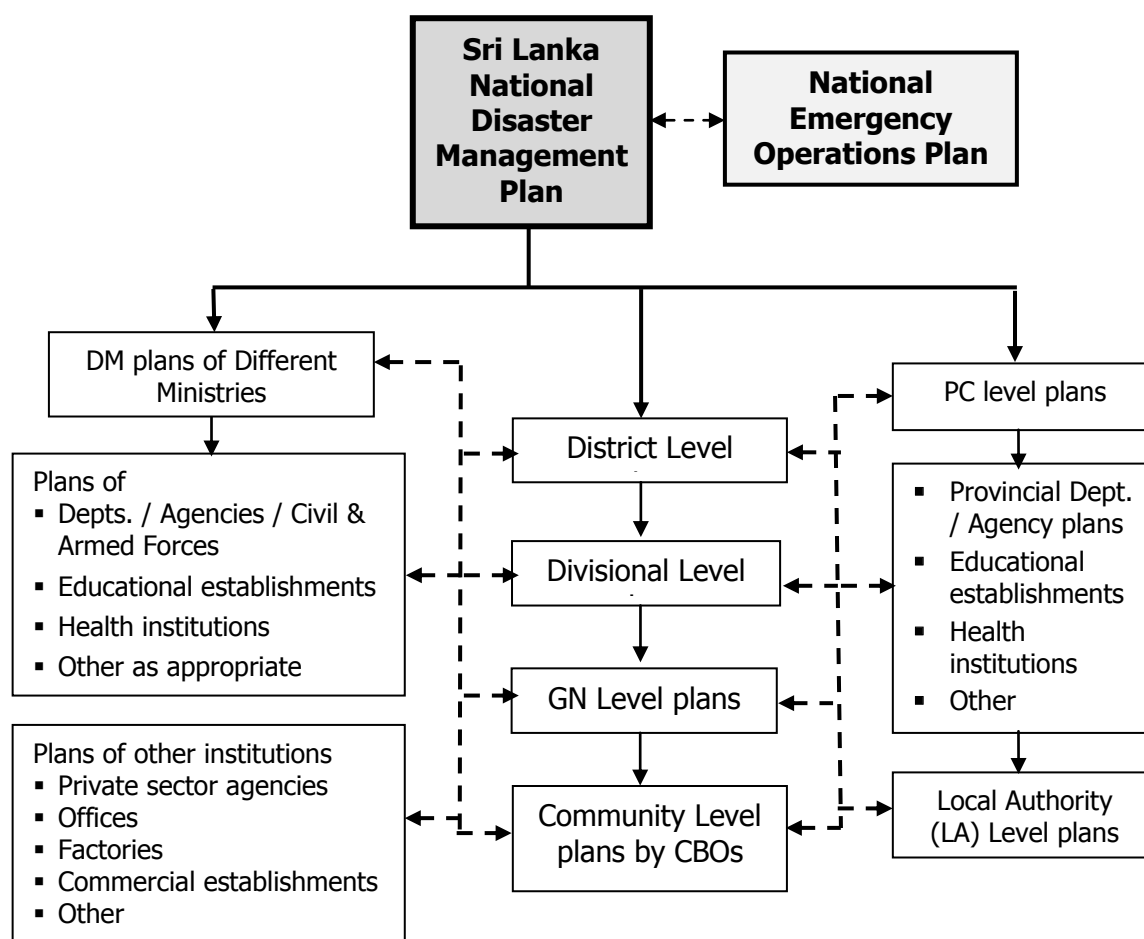
The users of this plan will be all stakeholders; officials of sub-national administrations (provincial and district); relevant officers and personnel from Governmental and Non-Governmental organizations; community leaders, private sector, civil society, professional organisations and people's representatives.

This plan will be implemented in conjunction with other plans on related national policies. Plans and policies of the related sectors covering the subjects as indicated in the Act have been taken into consideration in preparing this plan to the maximum extent possible and where there are any lapses such plans and policies will be taken into consideration as and when identified during implementation. All line Ministries, Departments and agencies, when preparing their plans will take this Plan into consideration. Administrations at Provincial, Local Authority (LA), District, Divisional and Grama Niladhari (GN) levels also will have their plans accordingly. All implementing authorities, NGOs and grass root level organisations will have their operational plans in conformity with this plan. **Fig 1-I** below illustrates the conformity of disaster management plans at all levels and different sectors.

All these plans at all levels and different sectors are to be developed in conformity with the NDMP and NEOP and will consist of the following component parts as applicable:

- Risk Assessment
- Disaster Prevention and Mitigation Plan
- Disaster Preparedness Plan for Emergency Response (DPPER)
- Contingency Plans
- Disaster Rehabilitation and Reconstruction Plan.

Fig. 1-1: Conformity of Disaster Management Plans at all Levels and in all Sectors



1.3 Aim, Goal and Objectives of the National Disaster Management Plan (NDMP)

Aim

Reduced disaster impact on communities, infrastructure, lifeline facilities, shelter, agricultural property, economic and development activities in Sri Lanka.

Goal

Translating the National DM Policy into action in order to achieve the overall aim.

Objective

Establishment of mechanisms/systems for Disaster Risk Management (DRM) in Sri Lanka as a multi-sectoral, inter-ministerial, and inter-agency activity, by identifying and assessing the capacities of existing agencies for improving their capacities and mandates as necessary to implement the identified tasks, using methodologies and concepts already developed and field tested.

The Strategic Objective Tree with the Results and Results Indicators are detailed in **Annex 1-III**. The baseline information on man-made and technological disasters as indicated in the **Table II** therein is not available at present with the stakeholder agencies. A system should be established in

coordination with the relevant stakeholders (Labour dept., CMC and other MCs, Technical agencies, Service providing agencies etc.) to keep records of such disasters in their data bases. These should include information such as, human life loss, destruction of property, resources unfit for human use, services made unfit for use, geographical areas affected etc. relevant to a given disastrous incident. This will enable the DMC to regularly gather and maintain such information in the DMC databases such as the Sri Lanka Disaster Information System (DesInventar) and the Sri Lanka Disaster Resource Network (SLDRN), which are explained in Chapter 3. In any future upgrading of the plan, such information need to be included by completing the format given in the **Table II** of **Annex 1-III** (modified as appropriate).

1.4 Plan Coverage and Structure

This National Disaster Management Plan covers management arrangements, relationships, mechanisms, strategies and corresponding timeframes for action to establish the Disaster Risk Management (DRM) framework and implementing related programmes in the country with a multi-disciplinary approach, i.e., multi-sectoral, inter-ministerial, and inter-agency multiple-stakeholder participation within a period of 5 years covering the entire disaster management cycle. It looks at Disaster Risk Management (DRM) at all levels holistically dealing with the vital areas listed below:

- I. Pre-event Measures
 - Hazard Assessment, Vulnerability and Risk Analysis/Evaluation, Research, Databases
 - Mitigation
 - Preparedness, Early warning
- II. Emergency Response Measures (Measures during and immediately after the impact)
- III. Post disaster measures (medium and long term after the disaster): Relief and recovery; Loss and damage assessment; Rehabilitation; Reconstruction; Psychological and trauma counselling; Long-term assistance to rebuild the community is critical for survival.

Different aspects of DRM are discussed under different chapters in the body, while support information and documents relevant to different aspects are given in **Annexes 1 - 9**. Time frames of activities proposed under different chapters are given as **Annex 10**.

1.5 Future Upgrading of the Plan

A time frame of five years from 2013 to 2017 has been considered in this plan. Upgrading the Plan will be coordinated by the DMC with the participation of all stakeholders. It will be the responsibility of the DMC to present proposals for upgrading the Plan as and when the situation in the country demands so, i.e., after a review in 5 years; after a major disaster or if any other situation arises demanding a change in the plan.

1.6 National Emergency Operations Plan (NEOP)

National Emergency Operations Plan (NEOP) will be developed as required by the Act.

Chapter 02



Disaster Risk Management Framework

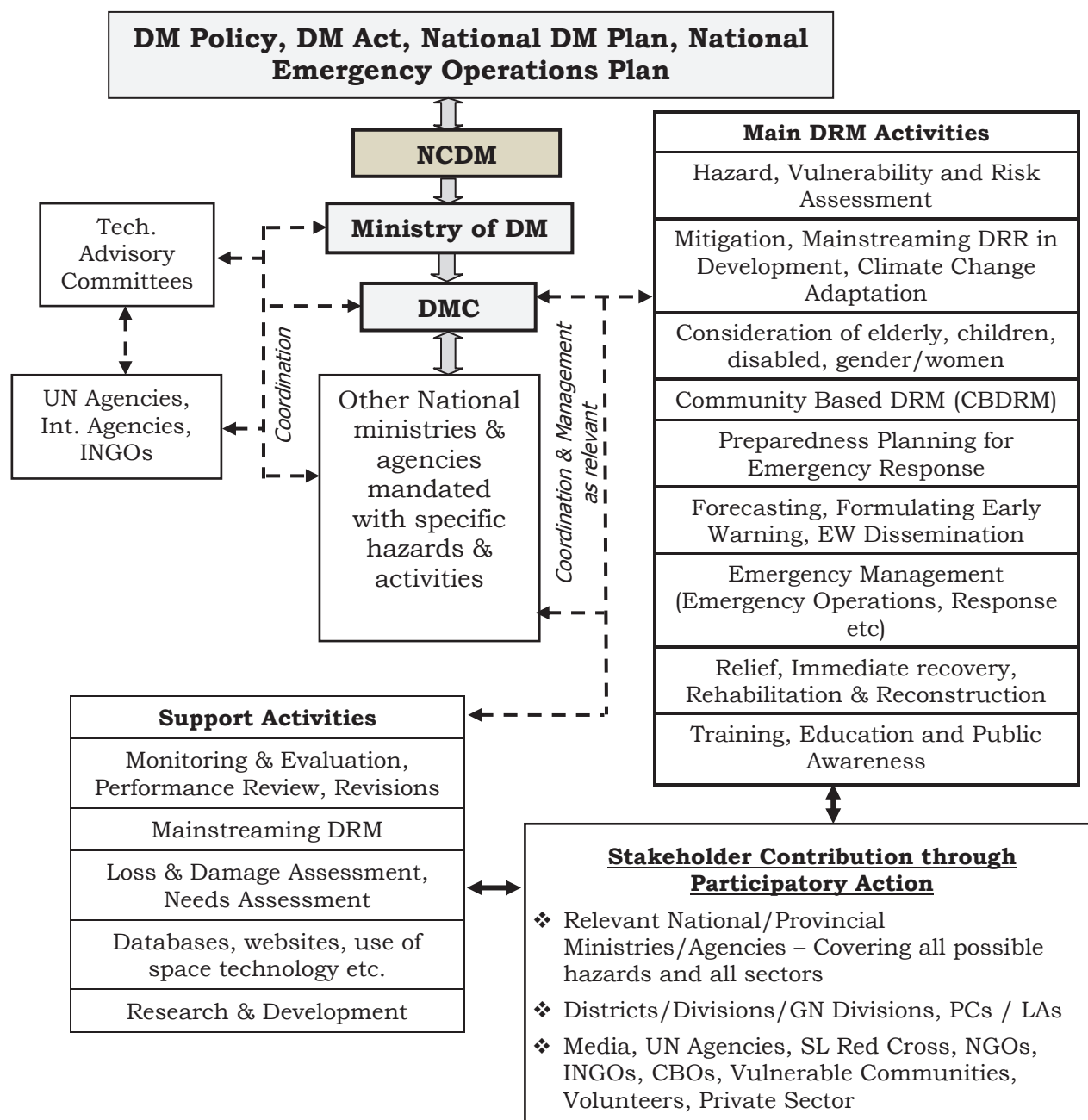
Chapter 2

2.0 Disaster Risk Management Framework

2.1 Overall Country-Wide Disaster Risk Management Framework

The proposed overall Country-Wide Disaster Risk Management Framework will fulfil the need for a multi-disciplinary, multi-sectoral, inter-ministerial and inter-agency approach, with the full involvement of all key sectors, as spelt out in the Act and the National Policy³. Such a framework is illustrated in **Fig. 2-1**. This framework takes into consideration that "Primary responsibility for dealing with disasters will rest with the national government, but decentralised to Provincial Council, Local Authority, District, Divisional, GN, Village and Community levels. DMC under the guidance of the NCDM and the M/DM will coordinate and implement the DM programme through a countrywide DRM mechanism, with the main DRM activities being implemented by the respective mandated national agencies."

Fig. 2-1: Overall Country Wide Disaster Risk Management Framework



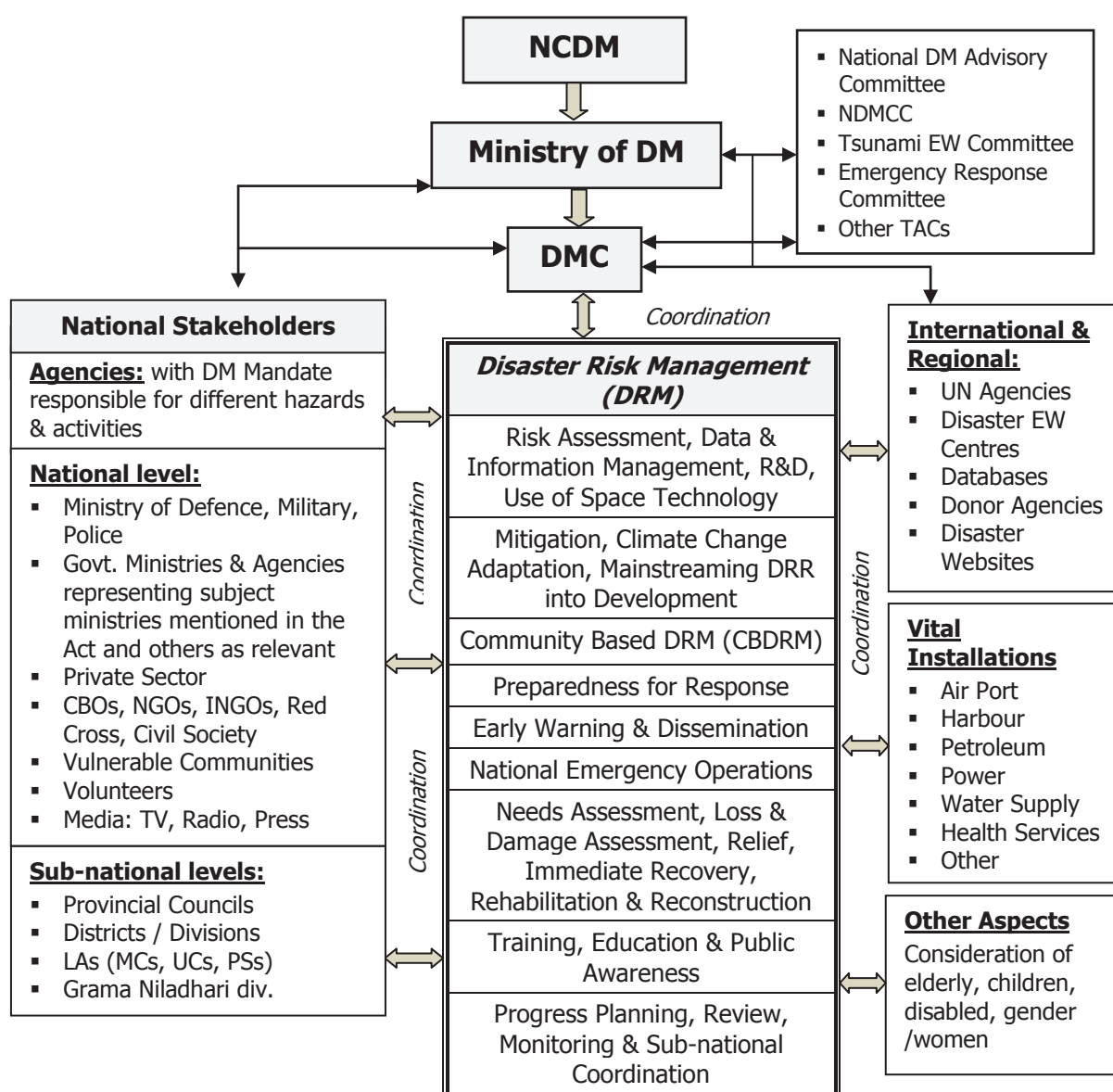
Disaster risk management is the systematic process of using administrative decisions, organisation, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards.

The framework for disaster risk management requires legal and institutional arrangements to address the need for each action displayed in the framework as well as to identify the roles and responsibilities of the actors and the resources required to put the framework into practice. The national disaster risk management system conforms to the guiding principles stipulated in the National DM Policy³. The broad framework has also been described in the Parliament Select Committee Report¹ as well as the Roadmap⁴.

2.2 Institutional Framework for Disaster Risk Management

The National Institutional Framework for effective DRM in Sri Lanka is illustrated in **Fig 2-2**, which is already effective to a great extent, but which has to be improved and more formalized. Stakeholder agencies are identified in such a manner that they include institutions responsible for specific hazards/disasters and activities, and agencies covering all development and service sectors.

Fig. 2-2: National Institutional Framework for Effective DRM



2.3 Legal Powers of Different Levels of Government and Hazard-Specific Institutional Mandates

In addressing legal powers of different levels of government and hazard-specific institutional mandates the following criteria will be looked into. DM Act will be amended as per the National Policy for DM.

Decentralisation of Disaster Management – This is vital to ensure participation of all levels of administration and other stakeholders in Disaster Management.

Enforcement of Existing Policies of Different Sectors - Incorporating DRM in National Planning Policies will make it mandatory for agencies in formulating guiding principles for planning and approving projects for preventing undesirable consequences, and adopting these in development. When considering the present rapid development this is extremely vital in order that the development will not create new hazardous conditions and environmental degradation, and also that prevailing disasters will not adversely affect the new development.

DMC will work with stakeholders representing relevant sectors with respective line ministries in the following activities.

- Review of existing ordinances, acts and regulations
- Identify gaps and causes for inadequate enforcement
- Clarify and resolve areas of overlap or contradiction
- Develop capacities or resources needed as identified for effective enforcement.

Ministries Responsible for Different Aspects of DM - Currently there are several national ministries handling different functions related to Disaster Management other than the Ministry of DM. Clear responsibility for any given function of DM has to be specified. It will be helpful if Ministry of DM as the main DM ministry could take the lead role in coordinating such various DM functions with ministries, and the DMC to coordinate with the various agencies functioning under these different ministries.

Government Departments and Agencies – There are some line agencies performing various functions under their mandates. Some agencies are already working in coordination with the DMC. The agricultural sector is often affected by hazards, especially drought, but agriculture is not included in the list of subjects in Clause 3 (1) (d) of the DM Act. As such, there is a need to review and strengthen identified line agencies. Some aspects in reviewing mandates of Line Agencies are in **Annex 2-I (A)**.

Provincial Councils (PCs) and Local Authorities (LAs) - Currently PCs, various Provincial Departments / Agencies and LAs perform various functions related to DRM. However they do not have mandates for carrying out some of the activities they handle during and after a disaster. As a result there are gaps and many activities relating to DRM that do not receive adequate attention.

There is a need to review and strengthen the mandates of the PCs and LAs and to bring them to the mainstream of DRM. DM plans of these different agencies should conform to the National DM Plan and the National Emergency Operation Plan of the DMC. Various DM activities must encompass the Provincial and Local Government set-up, with support extended by the DMC and other national level institutions. This aspect should receive highest priority. Some aspects of reviewing mandates of Provincial Councils and Local Government Agencies is in **Annex 2-I (B)**.

It is to be noted that according to the Provincial Councils (PC) Act of 1987, some aspects of Rehabilitation and Reconstruction have been decentralised to PCs. This feature also may be utilised for better decentralised management of these post disaster aspects.

District, Divisional and Grama Niladhari Administrations - These agencies have been considered to be the main line of authority for disaster relief and other related aspects in post disaster situations. In some of the districts / divisions / GN areas Disaster Management Committees have been established, Disaster Preparedness Plans for Emergency Response (DPPER) developed and connected training and awareness workshops conducted.

DMC will have a strategy to strengthen these administrations by way of training, awareness for establishing DM committees at different levels and developing plans in varying degrees. Provisions

in the Act for authority for District Secretaries, Divisional Secretaries etc. to initiate action immediately after a disaster, regulations have to be formulated and gazetted as legally required.

Community Based Disaster Risk Management (CBDRM)

DMC will promote Community Based Disaster Risk Management to,

- Promote communities to form disaster management committees for DRM in all vulnerable locations in the country in a phased manner and a system of registration of such committees with divisional secretariats
- Develop a plan for undertaking CBDRM activities covering all phases of the DRM cycle, namely, pre-disaster; during early warning and emergency; evacuation; and post disaster relief, rehabilitation and reconstruction
- In all above activities give consideration for elderly people, children, disabled people, gender/ women, especially in evacuation. Encourage civil society organisations, CBOs, NGOs and INGOs to consider this aspect in their activities
- Develop a database of community volunteer groups to be maintained at divisional / LA levels
- Establish a sustainable system to maintain volunteers' skills through regular training and motivation
- Encourage the communities to develop Community Based Disaster Management Plans for vulnerable villages, facilitated by the District DMCUs with the support of Divisional Secretaries in conformity with the NDMP. In these plans also emphasise activities related to elderly people, children, disabled people, gender/ women, especially in evacuation. DMC will support by providing guidelines and encouraging SLRCS and NGOs to undertake implementation of identified activities. NGO coordination will be formalised to prevent duplication of some activities in the same area and to ensure equitable distribution of their services.

2.4 Disaster Management Committees Functioning at National Level

National DM Advisory Committee is chaired by the Minister of DM. National DM Coordination Committee (NDMCC) functioning at the national level is chaired by the Secretary, MDM, details of which are given in section 2.4.1. There are other committees already functioning, such as the Tsunami EW Committee chaired by the Secretary; Emergency Response Committee functioning in the EOC, chaired by the DG, DMC; and the Technical Advisory Committee on Construction Guidelines, chaired by Director (Mitigation, Research & Development), DMC. Coordination and functioning of these committees are illustrated in **Fig. 2-3**. Agencies already functioning as members or proposed as members of these committees are shown in **Annexure 2-II** and Terms of Reference for the Committees are given in **Annexure 2-III**. Technical Advisory Committees (TACs) on other subject areas as needed can be appointed as explained in the section 2.4.2 below.

2.4.1 National DM Coordination Committee (NDMCC)

The government being a signatory has agreed to implement the Hyogo Framework of Action (HFA) initiated by the UN International Strategy for Disaster Reduction (ISDR). In consequence, as per the requirement of ISDR HFA, a National DM Coordination Committee (NDMCC) has been established as the Sri Lanka National Platform for DM, with representative from Government Agencies, Donors, UN agencies, INGO, NGOs, Media, Professional and Academic Institutions, Private Companies and CBOs. This committee is chaired by the Secretary, Ministry of DM. Each of these agencies have appointed two representatives, one senior staff officer, who will act as the permanent focal point, and an operational focal point to participate in the regular monthly meetings and coordinate with the permanent focal point to implement the decisions taken at the NDMCC meetings.

There will be two types of meetings of the committee.

1. Regular monthly meetings
2. Six-monthly progress review meetings.

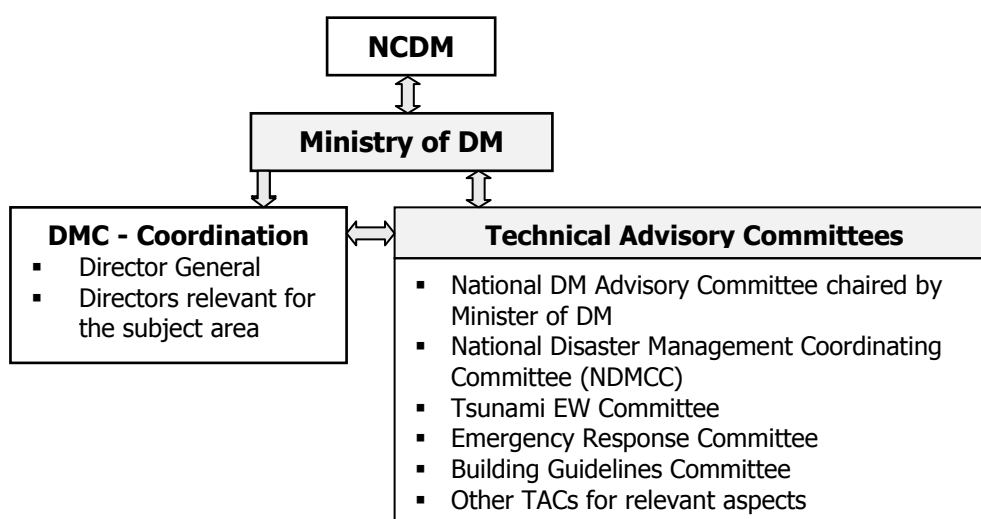
Agencies that are members of NDMCC are shown in **Annex 2-II**, and its goal and objectives are given in **Annex 2-III**.

2.4.2 Technical Advisory Committees (TAC)

As provided for by the Act, in the discharge of their functions, the Council and the Disaster Management Centre shall be assisted by such number of Technical Advisory Committees as shall be deemed necessary by the Council, consisting of professionals and experts having expertise in relation to the respective functions and responsibilities of the Council. The members and chairmen of the Technical Advisory Committees as needed shall be appointed by the Council. These will include specialists and members representing different stakeholder agencies handling different natural and human induced hazards covered in the Act, and DM practitioners, professionals, academics, NGOs etc. These committees will provide advice in specific activities as required at the respective levels.

As the need arises for a technical advisory committee in a given aspect, a proposal indicating the name of the committee naming the members and chairman, shall be submitted to the Council for formal appointment. Some such committees that may be necessary to be established as the need arises, and agencies proposed as members of such committees are shown in **Annex 2-II** and proposed Terms of Reference for the Committees are given in **Annex 2-III**. These committees will be chaired by either the Director General or the relevant Director of the DMC.

Fig. 2-3: Coordination and Functioning of Various Advisory Committees



2.5 Disaster Management (DM) Committees functioning at different sub-national levels

There will be Steering Committees and DM Committees at different levels established chaired by the respective administrative heads, and coordinated by the DMC / District DM Coordinating Units as illustrated in **Fig. 2-4**. The compositions, and Convening and Coordinating of DM Committees at different levels are given in **Annex 2-IV**. During a disaster event however, politicians at the respective levels will chair these meetings for speedy decision making, such as senior Ministers / Chief Ministers / Governors at provincial level, and Ministers / MPs at district level as appropriate.

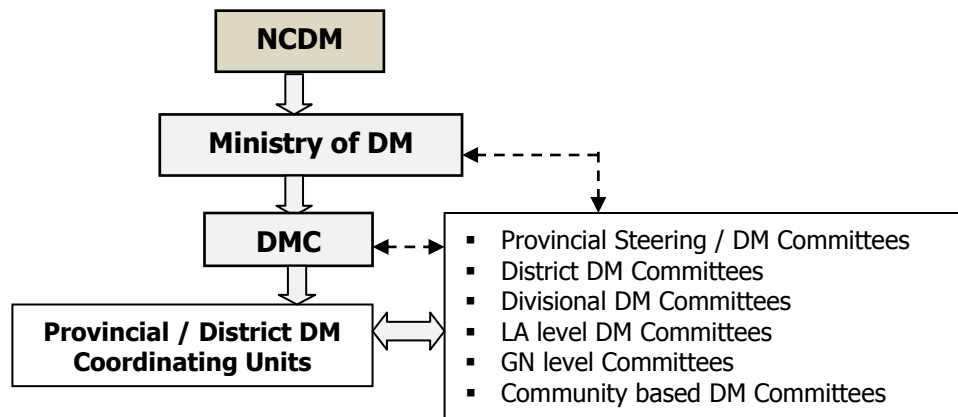
Convening and Coordinating Meetings of DM Committees:

It is essential for Disaster Management Committees at each level to meet regularly during normal times as a routine for general preparedness. Before monsoons and inter-monsoonal rains committees must meet to ensure preparedness for response in all aspects related to anticipate rain related hazards. On receiving early warning or on occurrence of a rapid onset disaster, DM committees must meet and activate the emergency operations. During a disaster event it would be appropriate for politicians at respective levels to chair these meetings for speedy decision making.

Convener and coordinator of Disaster Management Committees must be appointed by the administrative head at the given level delegating to him/her the relevant responsibilities. Meetings of the committee will be held regularly. The coordinator will also be responsible for all

documentation, correspondence, coordination with sub-committees, updating all information in the plan etc. This subject will be a part of the responsibilities of this officer.

Fig. 2-4: Coordination of DM Committees at different levels by the DMC and District DM Coordinating Units



2.6 Coordination with UN System and other International agencies

The Government, MDM and DMC will coordinate as necessary with following agencies:

- i. Coordination with UN Agencies - UNDP DRM Programme (on different programmes as will be initiated at any given time); UN OCHA; WHO; International Organisation for Migration (IOM)
- ii. International Donor Agencies – as applicable at a given time
- iii. International Non-Governmental Organisations (INGOs).

2.7 Regulations for Additional Powers for District Secretaries and Divisional Secretaries in Emergency Situations Immediately after a Disaster

Ministry of DM and DMC may propose to the Ministry of Public Administration and Home Affairs to formulate and gazette regulations after obtaining necessary approvals, for Additional Powers for District Secretaries, Divisional Secretaries etc. to initiate action in emergency situations immediately after a disaster.

2.8 Proposed Provincial Level Coordinating Units in the DMC

At present at the sub-national level District Disaster Management Coordinating Units have been established within the DMC and are functioning. In addition it is proposed to create Provincial Level DM Coordinating Units in the DMC as detailed in **Annex 2-V**.

2.9 Review and Implementation of the Road Map for DRR

As a high priority activity it is proposed that the DMC review the Road Map proposals and revise as necessary and coordinate the implementation with relevant stakeholder agencies.

2.10 Regulations for Disaster Management

If and when deemed necessary regulations may be brought in and approval obtained.

2.11 Corporate Plan of DMC

DMC has already completed the Corporate Plan for the period of 2009-2014 and subsequently revised for the period of 2013-2017. This should be periodically revised.

Chapter 03



Hazard, Vulnerability and Risk Assessment

Chapter 3

3.0 Hazard, Vulnerability and Risk Assessment

Most frequent natural hazards affecting Sri Lanka are hydro-meteorological related hazards.

Majority of the disasters reported are floods, caused by heavy rainfall, as well as human activities such as filling of low land which served as water retention areas before, which increase the frequency of flooding, as well as their impacts. Reservoir related floods due to overflow / spilling, breaching of dams, emergency rapid release of water owing to heavy rains etc. have to be given extra consideration in hazard, vulnerability and risk assessment.

Haphazard development activities in steep hill slopes contribute greatly to the occurrence of slope failures.

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

Frequent:	Floods, Landslides / slope failures, Lightning, Tornadoes
Intermediate:	Drought, Cyclones, Storm Surges, Coastal Inundation, Epidemics
Rare:	Earthquakes, Tsunami.

Even though not posing immediate life threats or property damage, the following hazards should receive more attention as they create medium and long term, sometimes very adverse effects on the national economy.

- Drought
- Erosion and Sedimentation
- Salinity Intrusion
- Contamination of drinking water sources
- Bush / Forest Fire.

The probability of recurrence of these Natural Disasters is bound to increase in the future since uncertainties of weather due to climate change. And these would be further aggravated by unplanned land-use leading to environmental degradation, deforestation and desertification. While earth quakes are not very frequent in the country, few earth tremours have been experienced in the recent past, within the country and in the sea south east of the country. This is a hazard which cannot be predicted in advance and therefore risk reduction activities will be recommended.

Being a developing island nation subject to tropical climatic conditions, Sri Lanka is highly vulnerable to impacts of climate change. Extreme weather events such as, high intensity rainfall followed by flash floods and landslides, extended dry spells resulting in scarcity of water for drinking and agriculture etc. are now becoming common occurrences. Little can be done to mitigate the climate change itself, but Sri Lanka need to improve the adaptation capacity of people to climate change impacts urgently.

The following man made and technological hazards too should be considered in hazard, vulnerability and risk assessment as risks from these hazards cannot be underestimated as already stressed in

Annex 1-I:

- Industrial
- Fire
- Chemical
- Transport accidents
- Nuclear
- Biological
- Radiological
- Solid waste
- Other technological hazards as would be identified.

These trends make it absolutely necessary to take positive action to strengthen the counter disaster capability as covered in this national disaster management plan. To this end it is necessary to look at proposed arrangements for Hazard, Vulnerability and Risk Assessment.

3.1 Hazard Zonation Mapping

Hazard zonation mapping is essential for preparing vulnerability and risk assessment maps for any given area. The major technical agencies in Sri Lanka that are responsible for hazard information and mapping are indicated in **Annex 3-I**. Specific reservoirs falling within the purview of different agencies are shown in **Annex 3-II**. These agencies are responsible to continue development and updating of hazard maps periodically as appropriate.

Base Maps for use in Hazard Mapping

DMC with all stakeholders will develop an effective system for data sharing among stakeholders as there is a grave need for such a system. As the Survey Department is the main national focal agency responsible for survey maps, it would be one of the central locations for having base maps available. The DMC will work in partnership with the Survey Department all the time coordinating, facilitating and ensuring the availability of base map. Arrangements for building institutional capacity of both these institutions as necessary will be taken up.

The Mapping Process

Hazard mapping at national and provincial level will be initially undertaken by the respective responsible agencies as shown in **Annex 3-I**. Initially mapping will commence for most devastating and common hazards to be followed by others subsequently. Necessary support will be given to those agencies which do not have the capacity presently. Appropriate scales for mapping would be as follows.

Type of maps	Scales (as appropriate)
Mapping at district level	1:50 000
Mapping at local level	1:10 000 or 1:5 000

Some mapping activities are planned to be carried out under different projects as identified under the Roadmap.

Some Issues to be addressed in Implementing Hazard Mapping

- 1) Non-availability of base contour maps in required scales. While Survey Department has such maps for selected areas, in other areas the maps are either not of the required scale. DMC in collaboration with the Survey Department and other major stakeholder agencies must identify ways as to prepare the base maps as required.
- 2) For hazard mapping at scale of 1: 5 000 for use at local levels, there will be a necessity for detailed investigations and therefore with respect to different hazards it will be necessary to strengthen the capacities of respective agencies for such mapping.
- 3) High cost of base maps and high resolution satellite imageries (2.5 m or better resolution) is an issue. A possible solution may be for DMC to coordinate and make available such imageries to the stakeholder agencies as necessary.
- 4) DMC should continue coordination of mapping of landslides, river floods, possible inundation areas downstream of reservoirs, tsunami and other coastal hazards and other hazards as relevant with the respective technical agencies and wherever there is no technical agency responsible, it will be the role of the DMC to undertake such mapping directly within its purview.
- 5) DMC should arrange to assess the affected areas or damages immediately after a disaster, as access along the ground may be difficult, it is essential to pre-establish a procedure to acquire satellite images (preferably Radar Images) or aerial photographs of the land at the time of occurrence of the event.

Multiple Hazards

In areas prone to multiple hazards it will be the responsibility of the DMC to prepare integrated hazard maps. As the possibility exists this may be coordinated with other agencies, and if not the DMC must build in-house capacity to carryout mapping activities including GIS capability within the institution.

Community Level Hazard Mapping

In this process the traditional knowledge of the communities could be made available in the preparation of the maps. DMC District Disaster Management Coordinating Units (DDCMUs) have already commenced preparing community level hazard maps using PRA tools for preparing community level risk maps as per the guidelines issued by the DMC. Several rounds of training have been conducted for the DMC district coordinators and other staff on participatory community mapping process. The maps show evacuation routes, safe areas for evacuation and temporary shelter etc. Initially this activity has been done in the tsunami affected areas, which now has moved on to other areas. This activity will be continued by DMC based on a priority basis depending on the levels of vulnerability in different districts and divisions. CBO, INGO and NGO support may be obtained as necessary in these activities.

An identified extension to this activity is the proposed digitisation of these maps and integrating same in the Grama Niladhari level area map so that a very realistic GN level hazard map showing areas prone to various hazards will be finally available, which can be included in the GN level DM Plans. An initial training has been provided to the District Coordinators on this but for these to be sustained continuous training must be provided to the present Coordinators as well as new Coordinators who will join the DMC in future. DMC can set targets (see Time frame) for participatory community mapping in a prioritized manner as follows:

- Tsunami prone districts - if not already in progress
- Areas severely prone to floods, landslides, cyclones and other hazards
- As above – less prone and low prone.

Users of Hazard Maps

The hazard maps would be used by different agencies for Vulnerability and Risk Assessment depending on the needs. Some such agencies are shown in **Annex 3-III**.

3.2 Vulnerability and Risk Assessment

3.2.1 Need for Risk Assessment

Risk assessment is necessary as vulnerability and risk information / maps are required in implementing the main DRM activities by various agencies, namely,

- i) Disaster Preparedness and Early Warning
- ii) Mitigation planning and risk reduction activities
- iii) Integration in large scale development projects (also categorised as mitigation)
- iv) Land use zoning and building/development approvals by local authorities (also part of mitigation process).

Some agencies that would need hazard maps for carrying out Vulnerability and Risk Assessments are given in **Annex 3-III**. Some of these agencies such as investors would have to get risk assessments done through other agencies or consultants having the technical knowhow.

3.2.2 Levels at which Risk Assessment must be carried out

Risk assessment must be carried out at different levels in the following manner:

- National level risk maps: Once the Hazard Maps are developed by the responsible technical agencies, DMC will carry out Vulnerability Assessments and develop Risk Maps
- Regional level risk maps to be prepared by DMC as per the requirement of planning agencies such as NPPD / UDA as needed for use in developing the regional structure plans etc.
- Urban sector risk assessment for all cities and urban areas in a prioritised manner based on proneness to different hazards (by UDA, MCs, UCs, PSs) in conformity with guidelines provided by the DMC

- **Community Level Risk Assessment:** Along with the community level hazard mapping as explained before, risk assessment also will be carried out capturing the vulnerabilities and risks of the given communities. This would be most effective as it is the vulnerable communities who have the indigenous knowledge about the vulnerabilities and the risks faced by them, which could be identified in the process. With the continuous community level participatory activities, coping mechanisms and preparedness plans for response also could be developed based on these.

3.2.3 Risk Profile for Sri Lanka

Activities on developing a Risk Profile for Sri Lanka (Earlier referred to as Vulnerability Atlas) will be continued. The broad objective of this is to have information on spatial distribution of various types of natural hazards, vulnerable areas and risks thereof, presented as a compendium for use as a decision making tool for preparedness and mitigation programmes. Broadly the main activities include, Hazard Zonation mapping; Compilation of maps and information related to elements exposed: settlements, population density, land use patterns of LA areas etc.; Consolidate with zonation maps on most frequent hazards and historical records on impacts; Identification and rating of districts and divisions on multi-hazard risk scale; Compilation of Risk Profile for Sri Lanka and update every 10 years; and Preparation of a detailed historical referral data base on disasters.

Risk Profile will be completed by DMC with stakeholders as planned in a phased out manner. Initially the activity will focus on 5 hazards - Floods, Drought, Landslides, Coastal Hazards and Cyclones - in selected geographical areas to be subsequently followed by other hazards and other areas.

3.3 Data Bases and Systems for Data Collection

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. This aspect was highlighted in the Report of the Parliament Select Committee¹ as well. The need was emphasised for systematic disaster inventories that capture time-series, local-level impacts of disaster events that can be very useful in determining trends in emerging disaster risks and in making policy, program design and resource allocation decisions to manage those risks. In consequence, an Inventory of Past Disaster Impacts – DesInventar for analysis of past disasters in Sri Lanka; and Sri Lanka Disaster Resource Network (SLDRN) have been initiated by DMC with the UNDP and UN/BCPR. Sri Lanka Historical Disaster Information System (DesInventar)⁸ has been completed and continuously being updated. Interested stakeholder agencies can access the web based database at www.desinventar.lk. There is also a link to the database on the DMC website: www.dmc.gov.lk.

DMC will continue and coordinate as appropriate activities of the SLDRN, DevInfo Data Base, SAHANA Data Base, Data Base of Lands indicating proneness to various hazards, i-Base (district level web based data base), National Level Emergency Information Database, SADKN (SAARC Disaster Knowledge Network), Web Portal on Investment on DRR and other Data Collection Activities with other relevant agencies. DMC will also continue updating them as necessary.

3.4 Research and Analysis

Research

To capture latest developments in the country with respect to specific subject areas such as, disaster preparedness at different levels and more particularly the communities exposed to a given hazard or in a given geographical locality, risk awareness of selected community groups to prevailing hazards, capacities of various stakeholders etc. research and specific studies can be undertaken or promoted by DMC. In the present day context with change of rainfall patterns, drought conditions and high wind frequencies, it is important to carry out studies on Climate Change Scenarios. Research will help strengthening the data base on disaster information. Disaster risk assessment studies in prone areas can be taken up as broader or larger projects. With the integration of DRM in university education, Ph.D., Masters and Bachelor Degree students are now encouraged to select Disaster Risk Management related themes for dissertations. This

has been evident from the inquiries made by university students for DRM related materials and information.

Important and urgent research studies will be undertaken by the relevant government agencies. These agencies may obtain assistance from 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. A database of references of research study reports and research papers can be kept as a page in the web site. Some R&D agencies that can undertake research are given in the **Table 3-1** below.

Table 3-1: Government Agencies Recommended for Undertaking Research

1	Relevant Departments of all Local Universities
2	Central Engineering Consultancy Bureau (CECB)
3	Sri Lanka Land Reclamation and Development Corporation (SLLRDC)
4	National Aquatic Resources Research and Development Agency (NARA)
5	National Building Research Organization (NBRO)
6	Agriculture Research & Training Institute (ARTI)
7	Department of Agriculture
8	Geological Survey and Mines Bureau (GSMB)
9	Coast Conservation & Coastal Resource Management Department (CC&CRMD)
10	Marine Environment Protection Authority (MEPA)
11	Department of Meteorology
12	Central Environmental Authority
13	Atomic Energy Authority
14	Other as identified

As a means of enhancing the DRM information base in Sri Lanka in general and more specifically enhancing the knowledge base of the future generation, the following are recommended to be taken up by the Mitigation, Research & Development Division of the DMC:

- Encourage Degree, Masters and Ph.D. students to select Disaster Risk Management related themes for dissertations and carry out research 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.

It is proposed to appoint a technical committee on Research to meet from time to time as necessary with the following TOR:

- Assess research needs – will encompass different hazards and activities in all phases of the DM cycle
- Review proposals and requests by R&D agencies, universities, donors for conducting research studies and advise the DMC as to the suitable action to be taken
- Provide guidance to researchers on conducting selected studies
- Review and grade research papers or reports and making decisions on the required standard for publishing
- Other as necessary.

Analysis

There will be a mechanism in the DMC with required research associates for continuous analysis of information from the databases and other data being collected for determining trends and patterns, especially considering the climate change, in aspects such as – *Magnitude; intensity and frequency of hazards; Disaster events; Mitigation needs; Gaps in preparedness; Disaster impacts; Temporary shelter and provision of relief; Quarantine aspects after specific types of disasters; and other as appropriate.*

Analyses also can be focused on aspects such as,

- Prevalence of specific human induced hazards or peculiar natural hazards in a given geographical area
- Geographical areas of coverage of disaster management activities carried out in the country
- Long term impacts of mitigation activities carried out
- Extent and impacts of CBDM activities executed in different phases of DRM cycle
- Whether volunteer activities has trickled down to all communities as desired
- Pattern of distribution of NGO/INGO activities geographically and type of DM activities
- Other as appropriate.

Major Disaster Scenarios with Damage Estimation

As a part of research and analysis DMC proposes to continue to work on defining major disaster scenarios with estimated damage and specification of appropriate responses. Specific scenarios can be decided upon based on severity of hazards and vulnerabilities, in collaboration with the various agencies. These could include damage downstream of reservoirs due to reservoir related disaster scenario; damage due to a large high rise building collapse as result of earth quake, fire; etc.

There is a need to conduct disaster damage, loss and needs assessment after every major disaster. DMC will facilitate if request is made by the relevant authority.

Chapter 04



Hazard Forecasting, Early Warning and Dissemination

Chapter 4

4.0 Hazard Forecasting, Early Warning and Dissemination

4.1 Technical Committee for Tsunami Early Warning

As per the Act, with respect to multiple hazards, the various mandated technical agencies will be responsible for forecasting and issuing early warning messages on the respective hazards to the DMC. In the absence of a technical agency for the tsunami hazard at the time, a Technical Committee for Tsunami Early Warning comprising relevant professional agencies and experts (see **Table 4-1** below) has been appointed by the Ministry in charge of Disaster Management chaired by the Ministry Secretary, and Standard Operating Procedures (SOPs) will be developed by this committee for Tsunami Early Warning. This committee will be responsible for Tsunami evacuation orders. The broad TOR of this committee is in **Annex 2-III**.

Table 4-1: Members of the Technical Advisory Committee on Tsunami Early Warning

Representing	Designation
i. Ministry of Disaster Management	Secretary
ii. Disaster Management Centre	Director General
iii. Meteorological Department	Director General
iv. Geological Survey and Mines Bureau	Director
v. National Aquatic Resources Research and Development Agency	Director General
vi. Dept. of Civil Eng., University of Moratuwa	Representative
vii. Sri Lanka Navy	Specialist Hydrographer

4.2 Mechanism for Coordination and Working with Relevant Early Warning Agencies – International, Regional and Local

DMC will be the main focal point responsible for coordinating early warning, along with the relevant technical agencies and Technical Committees, its dissemination and for ensuring last mile dissemination of same. The Emergency Operations Centre of the DMC will be in constant coordination with all technical agencies responsible for natural, technological and man-made hazards and in instances of any imminent disaster it will take action to inform the responsible officers for onward communication to the sub-national levels and communities.

DMC has established an effective early warning system for disasters – natural, technological and man-made - through the Emergency operation Centre of the DMC. Priority will be given for those disasters, such as riverine floods, landslides, flash floods, tropical cyclones, storm/sea surges etc. At the same time for rarer but very destructive hazards such as tsunami, systems are in place. Methods of obtaining information about impending disaster events and issuing early warnings would vary from one hazard to another due to different characteristics of different hazards. With respect to local hazards such as floods and landslides, local systems already available will be strengthened. For other hazards such as earthquakes, tsunamis, adverse weather conditions and cyclones the relevant agencies will work in constant coordination with the respective regional and international warning centres. For nuclear hazards Atomic Energy Authority (AEA) will work in coordination with the relevant countries, and regional and international warning centres.

The broad responsibilities of the DMC with respect to Early Warning would be:

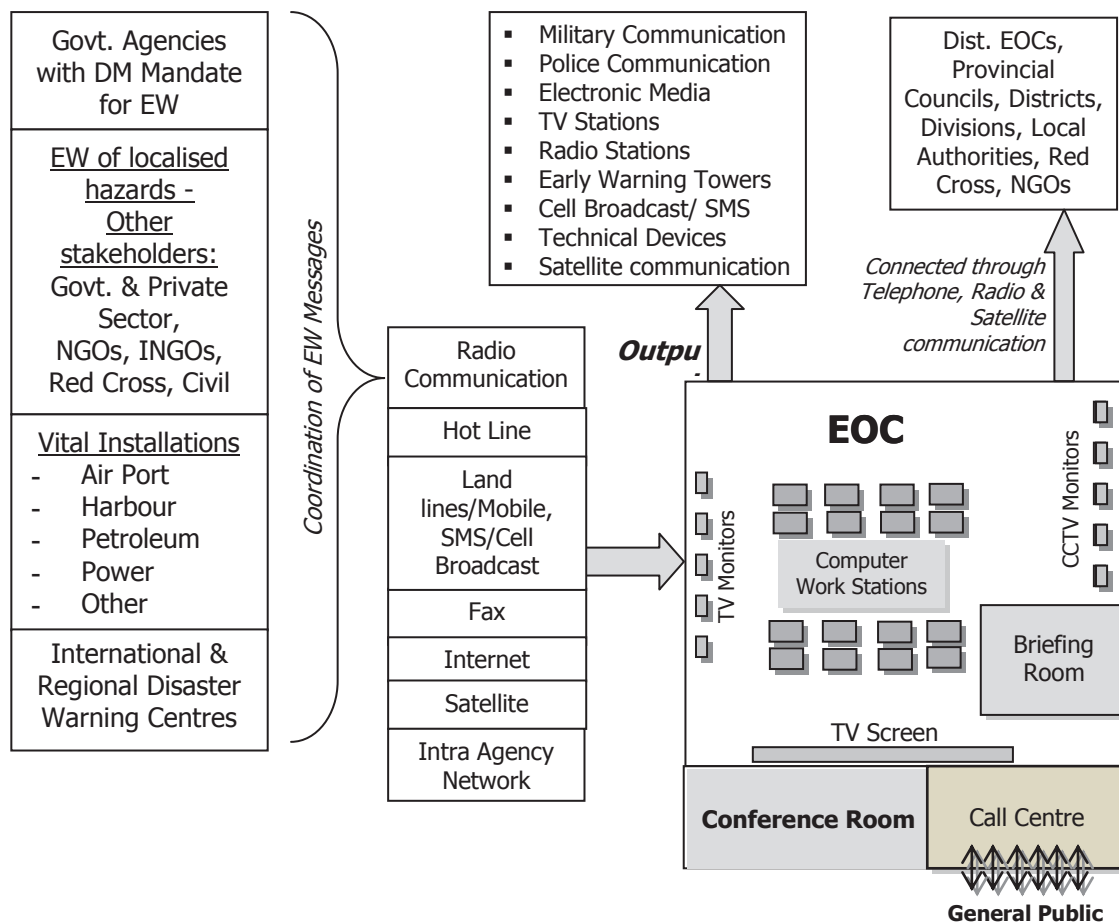
- Strengthening the dissemination capacity of DMC in early warning to vulnerable communities
- Working out strategy and policy in the given area of activity
- Initiating awareness on activities related to early warning among the various agencies and public
- Guiding DDMCUs in coordinating and implementing warning dissemination related activities in the Province, district, LA, division, Grama Niladhari and community levels.

The specific role of the EOC of the DMC with respect to early warning dissemination would be to,

- Establish coordination with the local technical agencies responsible for forecasting different hazards, who will be in constant communication with regional and international early warning agencies to receive early warning of the respective hazards
- Establish coordination with all local early warning agencies responsible for other local hazards
- Establish a reliable communication system (telephones, radio communication etc. from technical agencies to the Head Office and to Provincial / District Control Rooms directly or through Head Office). Ensure redundancy by having alternative communication systems in place in case of breakdowns in the main system
- Have the system established with media, Military and Police Communication Centre, and ensure dissemination of information through same
- Create awareness among communities and all concerned including Police and military forces on the communication system in use for early warning dissemination and what immediate actions to be taken, especially on rapid onset disasters. Get the assistance of the respective early warning agencies mentioned above.

Coordinating activities of the EOC of the DMC with respect to receiving early warning and dissemination is illustratively shown in **Fig. 4-1**.

Fig. 4-1: Coordinating Activities of Emergency Operations Centre of DMC with respect to Receiving Early Warning and Dissemination



4.3 Technical Institutions Responsible for Forecasting and Issuing Warning Alerts for Different Hazards; and their Roles and Responsibilities

At present in Sri Lanka, there are several agencies to handle issues related to different hazards / disasters mentioned above. For most of the disasters, there is a government institution legally mandated to monitor the disasters which fall within their expertise. For example, Department of Meteorology is responsible for weather related disasters such as tropical cyclones and tsunami, while Irrigation Department is responsible for river floods. The technical institutions that will be responsible for forecasting and issuing warning alerts for different hazards are shown in the **Annex 4-I**. Relevant Roadmap project proposals on capacity building and systems improvement with respect to such technical institutions and hazards are included in **Annex 10 - Time Frames for Planned Activities**.

4.4 Standard Disaster Early Warning Messages and Bulletins

A committee is already working on this with the DMC. The procedure adopted by the DMC in this regards is as follows:

- a) Standard disaster early warning messages and bulletins are being developed by the Mandated Technical Agency on the impending threat indicating the nature of the disaster and the warning level.
- b) These should reflect the magnitude of the event, the geographical areas likely to be affected, the level of alert and the clear message as to how the community members are expected to act on receiving the message. While these could be verbal messages, they should be free of technical jargon for the community to understand same easily. Communities will be made aware of the exact meaning of the messages and how to act on receiving such messages.
- c) With these clearly identified the tools for last mile dissemination could be decided upon. For cell broadcasting, SMS messages and EW Towers short specific messages have been formulated, agreed upon and made ready for use.

4.5 Early Warning Systems and Capacities of Agencies for Forecasting and Early Warning

Effective early warning systems will be established for all the weather related hazards that have been more frequent in the recent past such as flash floods, tropical cyclones, tornadoes, lightning etc., as well as for rare phenomena such as tsunami. The fact that early warning systems of different disasters take different forms will be taken into consideration. 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.

In different technical agencies responsible for different hazards, systems have been established for receiving early warning from the international or regional agencies as necessary. However there are shortcomings prevailing in these institutions. Action will be taken to implement the relevant Roadmap proposals under Early Warning by way of overcoming these shortcomings.

4.6 Communication Systems for Early Warning Dissemination

The present system of communication from national level to district / divisional / local authority / Grama Niladhari levels or other specific identified locations is mainly through the Police and military communication systems, radio communication, multi-hazard early warning towers, media and the normal telephone systems. Alternative countrywide communication systems will be established and with these improvements, DMC will ensure that there will be a mechanism to inform the vulnerable communities immediately. These include the Nation-wide Emergency Communication System, which will be used to provide information on:

- Impending cyclones, floods, landslides, epidemics, sea surges, tsunami and storms etc.
- Impending floods due to dam breach, rapid opening of sluice gates; dam & reservoir related floods
- Inundated areas, and closure of roads and bridges that have become impassable
- Evacuation routes and safe areas
- Bomb blasts, explosions, chemical accidents etc.
- Traffic congestion
- Important news flashes.

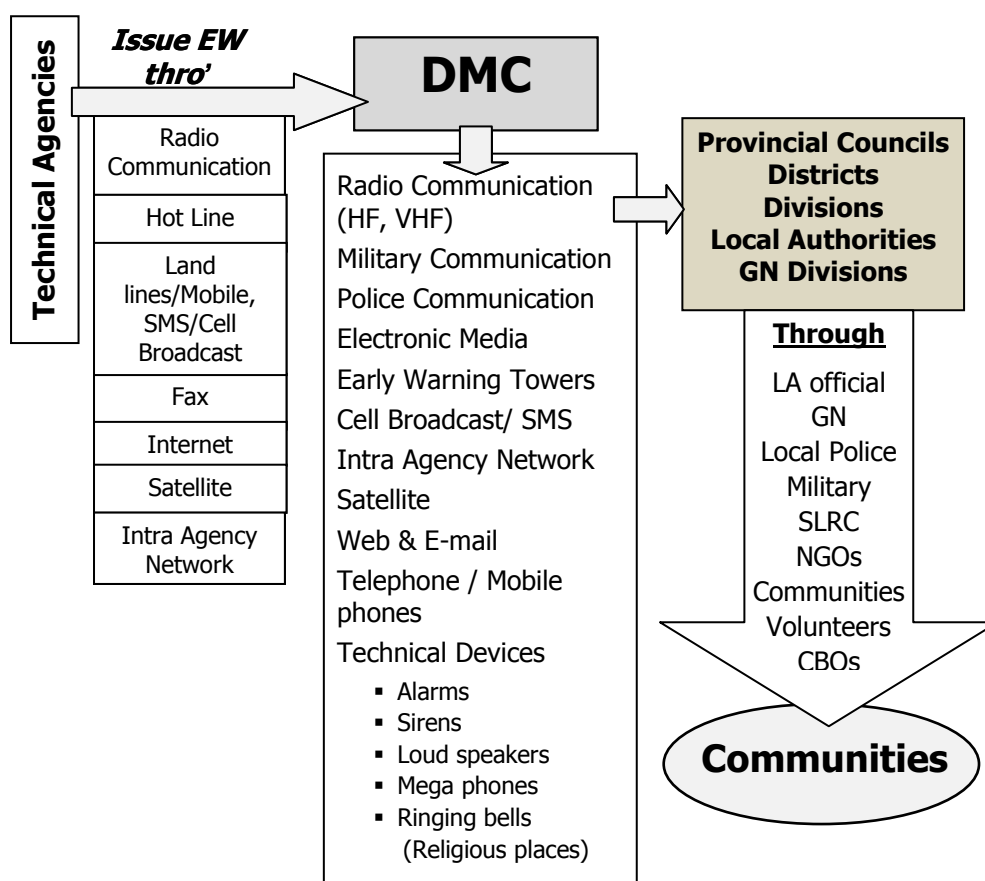
4.7 Last Mile Dissemination to the Communities

From the above locations (district / divisional / local authority / Grama Niladhari levels or other identified specific locations) onwards, the dissemination to the communities will be through following various methods:

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

Personnel and agencies such as LA officials, GNs, Local Police, Military, CBOs, SLRC, NGOs and Volunteers will be involved in the dissemination activities. The effectiveness of the methods will be different in different locations depending on the location specific characteristics. The Grama Niladhari level Early Warning Committee and CBOs must develop the method that will be adopted and obtain the concurrence of the Divisional / District Secretary. **Fig 4-2** illustrates the Planned System of Dissemination of EW messages to the Communities.

Fig. 4-2: Planned System of Dissemination of EW Messages to the Communities





Disaster Mitigation for Risk Reduction, Mainstreaming into Development and Climate Change Adaptation

Chapter 5

5.0 Disaster Mitigation for Risk Reduction, Mainstreaming into Development and Climate Change Adaptation

The strategy of DMC for Disaster Mitigation for Risk Reduction and Mainstreaming in Development

With regards to Disaster Mitigation for Risk Reduction and Mainstreaming in Development, the strategy of DMC will be to implement the following activities in a planned manner:

1. Disaster Mitigation Action Plans
2. Disaster Mitigation Strategies for Risk Reduction – to be implemented in different ways
3. Mainstreaming Disaster Risk Reduction into Development Policy, Planning and Implementation
4. Reducing Vulnerabilities due to Technological Hazards
5. Reducing Vulnerabilities due to Other Hazards
6. Consideration of Existing Public Services in Areas of New Development
7. Risk transferring and financing
8. Climate Change Adaptation.

5.1 Disaster Mitigation Action Plans

Implementation of mitigation for disaster risk reduction is the responsibility of Provincial Councils, Local Authorities and all public and private sector Institutions. Each Local Authority (LA) and district/division/GN level administration is required to develop a disaster mitigation action plan. The role of districts/divisions/GN level administrations will be more in the lines of coordinating mitigation activities with the line agencies at the respective levels. On the other hand, LAs by law are the responsible authority for regulatory activities such as, development controls in the respective areas by suitable land use planning to prevent haphazard development and environmental degradation. As such, with the integration of disaster mitigation in the development controls, the Local Authorities will be responsible for risk reduction and mitigation activities, adopting guidelines for planning and construction in disaster prone areas as explained in the following sections.

Disaster Mitigation Action Plans are to be developed as a part of the Overall Disaster Management Plans as already elaborated in Chapter 1 and **Fig. 1-1**. Guidance Notes¹⁰ have been developed by DMC on Developing Disaster Mitigation Action Plans i) by District and Divisional Administrations; and ii) by Local Authorities.

Disaster Management Committees at any given level will be the multi-stakeholder mechanism to develop and undertake review, monitoring implementation of such plans and evaluation. The committees will review such plans and proposals therein and decide on priority projects considering the maximum benefits to the communities in relation to the cost proposed, and availability of finances. Local or donor funding may be used for such projects. In many cases these agencies as well as surrounding local authorities and NGO's will be involved in the implementation under the guidance of the committees. Accordingly, action will be initiated on awareness raising, artisan training and transfer of appropriate technology with respect to mitigation at community level. Agencies such as NBRO and other technical institutions and universities, which are already involved in training, will be made use of as resource persons.

Disaster Management Committee at respective levels will discuss and decide on a mechanism for developing implementation schedules, monitoring and evaluation method. Considering the urgency of implementing selected mitigation measure for reducing immediate adverse impacts from impending disasters, projects will be identified even before the mitigation plans are prepared or finalized and also depending on funding availability.

5.2 Disaster Mitigation Strategies for Risk Reduction

The main strategy of disaster mitigation is based on mainstreaming DRR and climate change adaptation measures in to development at national, provincial and local levels. For this purpose necessary policies will be adopted and legally enforced in the respective sectors. This will be made effective through regulations formed under provisions of the DM ACT by the DMC.

Based on the strategies described in this section, various line departments / agencies undertaking new development will implement them as appropriate.

For the various projects that are considered by a given line department / agency, a rationale will have to be selected and criteria developed for prioritizing the projects. These will be based on the historical information and risk levels. For example, risks with high consequences, but low frequency, will be addressed initially with options of lower cost and higher impacts. Medium risks merit additional options related to new development. High risks require implementation of additional options related to reducing the losses within areas of existing development. The basic intention in developing criteria is to take into account all the issues such as, social, technical, administrative, political, legal, economical and environmental nature. As and when necessary these agencies will coordinate with the Technology and Mitigation Division of the DMC. Some of the mitigation measures, DMC will implement in collaboration with NGOs and CBOs, particularly, activities related to livelihoods development and poverty reduction.

Disaster mitigation strategies for risk reduction will be implemented in different ways, namely,

1. Implementing specific mitigation projects
2. Retrofitting / strengthening of existing structures
3. Mainstreaming DRR into development
4. Mainstreaming DRR during Reconstruction after a Disaster
5. Disaster Risk Reduction (DRR) by Controlling the Use of Natural Resources
6. Livelihoods Development and Poverty Reduction as a Mitigation Measure.

5.2.1 Implementing Specific Mitigation Projects

Based on risk assessments in a given geographical area / river basin, highest priority mitigation projects must be selected for implementation. Projects will be selected by respective sectoral and provincial agencies based on any of the risk control options, viz., avoidance of hazard impact, prevention of hazard occurrence, risk reduction and/or loss reduction/mitigation.

Minor small scale mitigation projects will be identified by district, division, LA and GN administrations for implementation with their own funding or with external support. DMC will assist in such initiatives for the feasibility and funding support.

5.2.2 Retrofitting / Strengthening of Existing Structures

Each agency responsible for a given infrastructure facility will be required to investigate and assess whether the facility is vulnerable, i.e., may not be able to withstand forces of disasters that could affect the area (natural, technological or man-made) then the facility needs to be strengthened or relocated to a safe location. These activities also would be reflected in the sectoral policies and plans. It is the responsibility of all agencies to prepare plans for implementing such activities and request funding. Various line departments/agencies after selecting priorities may seek the support of the DMC for obtaining funds through the treasury. Depending on the priority and importance Donor Funding may be sought.

5.2.3 Mainstreaming DRR in Development Policy, Planning and Implementation

Planning and regulatory activities are the general activities being implemented by planning and regulatory bodies at different levels for avoiding haphazard development and ensuring systematic and sustainable development in the country. In disaster mitigation, the strategy is to integrate disaster risk reduction aspect in these existing systems.

Integration of disaster risk reduction in development is one of the most effective ways of reducing risks. There are several aspects to be strengthened under the proposed DRM system under integration of DRR in development. New development projects will be looked at as opportunities for mitigation implementation. Arrangements will be made to consider exposure to hazards and the risks of disastrous consequences in all development planning.

Some areas that will be looked at here are listed below:

- I. Legal provision for making mainstreaming DRR mandatory
- II. Some support activities by planning and regulatory bodies where mitigation must be mainstreamed - Physical planning and regional structure planning; Land use planning; Development planning; Development control by UDA and Local Authorities
- III. Mainstreaming DRR into Land Use Planning
- IV. Development control and approval procedure
- V. Guidelines for construction and planning in disaster prone areas
- VI. Adoption of policies and legal enforcement
- VII. Disaster Impact Assessment (DIA) for new development.

I. Legal provision for making Mainstreaming DRR mandatory - In all foreign funded as well as Treasury funded development projects consideration of mainstreaming DRR will be made mandatory. During the stage of approval by the Department of National Planning these will be made a requirement. Mainstreaming of DRR will be considered at an early stage of project formulation and design.

II. Some support activities by planning and regulatory bodies where mitigation must be mainstreamed: Planning and regulatory activities are implemented by planning and regulatory bodies at different levels for avoiding haphazard development and ensuring systematic and sustainable development in the country. In disaster mitigation, one of the main strategies is to mainstream disaster risk reduction aspect in these existing systems. At the national level National Physical Planning Department (NPPD) is the highest level physical planning authority and the Urban Development Authority (UDA) is the urban planning and regulatory body.

National Physical Planning Department (NPPD) is the national level body for promoting and regulating integrated planning of economic, social, physical and environmental aspects of land and territorial waters in Sri Lanka. NPPD has formulated the National Physical Planning Policy and the National Physical Plan, in which disaster mitigation aspect has been incorporated as appropriate.

With regard to natural hazards, the main focus of the policy is a future for Sri Lanka that is sustainable ensuring the protection of important environmental assets; protection of the fragile areas from inappropriate development; minimising threat of natural disasters on human settlements and supporting infrastructure; and protection of the rural areas from haphazard urban expansion.

Some significant objectives are to protect the environment through limiting development in fragile areas, the protected area network and areas of local and regional environmental significance; and Ensuring that the people of Sri Lanka live in areas that are safe from natural disasters and the effects of global warming including rising sea level.

Accordingly, the National Physical Plan and the Regional Structure Plans have been developed in conformity with the vision and objectives, not encouraging and limiting development in fragile areas of the country.

Urban Development Authority (UDA) is the national level urban planning authority as well as regulatory body in Sri Lanka, which is responsible for the formulation of development plans and building regulations for areas declared as urban areas. UDA is a multi-disciplinary organization engaged in urban planning and sustainable urban development in Sri Lanka.

The overall national goal of UDA is to achieve a rational, integrated, comprehensive and orderly development in Sri Lanka by improving the planning, development management, and delivery capacities of the urban centres.

The main activities of the UDA are,

- Carrying out integrated planning and physical development of declared urban areas
- Formulating and submitting development plans, including capital investment plans
- Undertaking the execution of development projects and schemes
- Formulating and implementing urban land use policy
- Developing environmental standards and preparing schemes for the environmental improvement of urban areas
- Providing technical planning services.

DRR mainstreaming activities by the UDA in the land use policy and development planning that commenced around 1997 is more or less complete now. However an enormous amount of activities yet remain to be done at sub national level by way of mainstreaming of DRR into development control procedure of urban LAs including, mainstreaming of DRR mandatory and legal enforcement.

III. Mainstreaming DRR into Land Use Planning

UDA and LAs are the main agencies responsible for preparing land use plans. Ministry of Lands has developed and obtained approval for a National Land Use Policy for Sri Lanka. For effective integration in development, disaster mitigation must be integrated in these plans and policies.

At the sub national level, DRR aspect needs to be mainstreamed in the development planning process of LAs so that it can be incorporated in the development control procedure (This includes land blocking out and building application and approval procedure).

Accordingly, DMC will collaborate with all relevant agencies in these activities related to land use, which is a very crucial factor in disaster mitigation and mainstreaming of same in development.

- i. Land use zoning based on hazard maps (developing new land use zoning plans or revising existing ones considering the hazard aspect)
- ii. Preparing Development Plans based on land use zoning (considering the hazard aspect as in i. above)
- iii. Bring in Land Use Planning Legislation that governs risk mitigation
- iv. Land use in coastal areas
- v. Further collaborations among agencies related to land use.

IV. Development control and approval procedure

Presently UDA and local authorities are the development controlling agencies except for special areas where there are other agencies responsible, such as BOISL, MASL, CC&CRMD (formerly CCD), SLLRDC etc. There are still some LAs which are not declared as urban areas by UDA and these LAs are governed by the Town and Country Planning Ordinance and specific development approvals are not required in these areas. These LAs fall within the purview of the NPPD.

In the present system of development control and approval procedure, other main agencies with disaster management mandate for different hazards are involved by the LA depending on the hazards prevailing in the area of the proposed development – at the Technical Committee meetings as well as in the certification process. Some such agencies are CC&CRMD, SLLRDC, GSMB, NARA, Irrigation Department and MASL etc.. If any of these agencies are not already involved, they should be involved in the process in the future.

For disaster resilient development, as the major part of development is within the purview of LAs, it is necessary to review the prevailing system of development control procedure as follows taking the hazard aspect into consideration:

- For the LA area developing Hazard Maps; developing new Land Use Zoning Plans or revising existing ones based on the hazard maps; preparing Development Plans based on revised land use zoning
- Improvement and revision of application procedure for approval of housing and building construction; introduction of regulations for approval of land sub division plans; and for issuing a certificate of compliance as appropriate
- Adopting guidelines for planning and construction in areas prone to disasters
- Provide training for Urban / Town Planners assigned to LAs on land use zoning and preparing development plans based on hazard maps
- Provision of training for LA technical personnel on these new systems, including attitudinal changes
- Public awareness regarding DRR, revised land blocking out and development approval procedure – paper advertisements, Radio & TV discussions.

In this activity DMC will work in coordination with the UDA, Ministry of Provincial Councils and Local Governance (M/PC&LG), Sri Lanka Institute for Local Governance (SLILG) and Provincial Commissioners of Local Government in Provinces, and NPPD.

V. Guidelines for construction and planning in disaster prone areas

Guidelines for Construction in Disaster Prone Areas: DMC will continue activities to build up on Guidelines that have already been developed under SLUMDMP⁷ (CHPB, NBRO and UDA) for construction in areas prone to landslides; high winds and cyclones; and lightning and thunderstorms, further covering coastal flooding and tsunami; and earthquakes. Guidelines will be finalized and an Action Plan developed for enforcement and implementation by integrating in development regulations and adoption in local authorities. Guidelines for other hazards will be taken up subsequently. Accordingly, following actions will be continued by the DMC with the Advisory Committee for Development and Enforcement of Guidelines for Construction in Disaster Prone Areas:

- Action plan for preparing and enforcing guidelines for construction / buildings in areas prone to more frequent hazards
- Action plan for preparing and enforcing guidelines for construction / buildings in areas prone to other natural and man-made hazards
- Enforcement of the Fire Code in all urban areas where multi-storey buildings are coming up.
- Special workshops for professionals and contractors on disaster mitigation & guidelines for construction in prone areas
- General awareness for professionals and contractors on disaster mitigation & guidelines for construction in prone areas – paper advertisements, Radio & TV discussions
- Special Skills training for craftsmen on disaster mitigation techniques in construction in prone areas.

Mitigation of fire risks and Fire Code: In the context of rapid development and coming up of large multi-storey buildings, fire risk in buildings will be considered seriously and following action will be initiated:

- Enforcement of the Sri Lanka Fire Code¹¹ not only in Colombo and other major Municipal Council areas of authority, but in all urban areas where multi-storey buildings are coming up adjacent to each other without adequate fire gaps
- Awareness programmes for development professionals and local authority technical officials about these requirements in development approvals / controls
- Strict adherence of Fire Code and availability of fire extinguishers in factories and storage areas with inflammable materials and enforcement by Labour Department as applicable.

Guidelines for Planning in Hazard Prone Areas: UDA has now finalised the Draft Guidelines for Planning in hazard prone areas commenced under SLUMDMP⁷ (with CHPB, UDA and NBRO as partner agencies). Once approved, action will have to be taken for enforcing these under UDA regulations.

VI. Adoption of policies and legal enforcement - The development strategy in future will be such that appropriate policies are adopted and legally enforced in the respective sectors as follows:

- 1) Hazard specific mitigation measures in development in key economic and service sectors, viz.,
 - Agriculture, Manufacturing, Mining, Tourism, Construction, Housing, Fisheries etc.
 - Health, Education, Water Supply, Power, Telecommunication, Road and Railway infrastructure, Transportation etc.
- 2) In expanding urban sectors, policy decisions and legal enforcement of the following by the respective LAs with the support of DMC, SLILG, UDA, Provincial Councils and other specific agencies. RCC guidelines¹² will be used in these.
 - Vulnerability reduction of buildings and infrastructure in disaster prone areas by adopting guidelines for construction in natural disaster prone areas
 - Vulnerability reduction of multi-storeyed buildings from fire hazard in compliance with the SL Fire Code¹¹
 - Curtailing the increasing trend of unauthorised / illegal settlements involving other relevant agencies responsible for reservation areas, such as Irrigation Department, Sri Lanka Land Reclamation and Development Corporation (SLLRDC), Department of Railways, Coast Conservation & Coastal Resource Management Department (CC&CRMD), other
 - To reduce the flooding incidents by allowing retention during high intense rains, curtailing the increasing trend of filling low lying retention land in urban areas (especially with solid waste)
- 3) In providing necessary infrastructure facilities, planning to have them in safe locations and/or with hazard resilient designs.

VII. Disaster Impact Assessment (DIA) for new development

Although in new development activities must be carried out ensuring that no new hazards are created, or that prevailing hazards are not increased, a separate Disaster Impact Assessment (DIA) is not justified as already there are procedures by the Central Environmental Authority (CEA) which can be used to encompass disaster impact aspect as well.

The most important of such environmental tools available for incorporating environmental considerations at different stages during the development of projects and programmes are given below:

1. Integrated Strategic Environmental Assessment (ISEA) - at the level of Policy, strategy and Plan. This is a system of incorporating environmental considerations into policy, plans and programs.
2. Initial Environmental Examination (IEE) - At the project development or prefeasibility stage as the first level of the environmental impact assessment process.
3. Environmental Impact Assessment (EIA) - At the Program/project level for achieving two objectives (i. Environmental consequences are recognized & taken into account in project design; ii. Development interventions are environmentally sound & sustainable)
4. Site Selection Guidelines – at the design stage
5. Environmental Protection License (EPL) – At the project operational level as a tool or an instrument applied in order to safeguard the environment at the operational stage of programs/projects.

As disaster risk reduction (DRR) is closely associated with environmental aspects, it is suggested to link DRR aspect in the assessment of the environmental sensitivity of projects by this group.

In the present EIA process as required by the CEA, depending on the type of project an investor has proposed, the CEA invites representatives from the related institutions for the initial meeting. Finally the investor must obtain certificates from the relevant institutions. For example, the following agencies responsible for different hazards are invited to the meetings accordingly:

- National Building Research Organisation (NBRO) - for projects in hilly areas prone to landslides
- Irrigation Department - for projects in river flood prone areas
- Coast Conservation & Coastal Resource Management Department (CC&CRMD) - for projects in coastal areas prone to coastal hazards.

It is proposed to include Sri Lanka Land Reclamation and Development Corporation (SLLRDC) for project proposed in urban low lying areas and any other main agencies with disaster management mandate for the hazards in the area of the proposed development. It is also proposed to involve a representative from the Disaster Management Centre (DMC) in this process, at the initial meeting as well as the approval procedure.

5.2.4 Mainstreaming DRR During Reconstruction after a Disaster

Post-disaster reconstruction usually proceeds without any measures to reduce similar impact if the hazard takes place again. Activities that should receive highest priority after a disaster include medium and longer term reconstruction and rehabilitation, and these must be to a higher standard than before the occurrence of the disaster. It is appreciated that it is not possible to develop guidelines, establish systems, or impose regulations after the occurrence of a disaster. With this in view DMC will carry out necessary activities to have systems in place with the following:

- Relevant guidelines
- Regulations for enforcement or mandatory adherence
- Approving authorities made aware of the whole process including the need for integration, technical guidelines and the process and
- Technical personnel trained.

5.2.5 Disaster Risk Reduction (DRR) by Controlling the Use of Natural Resources

A mechanism will be planned to impose additional stringent regulations against misuse of natural resources by individuals / agencies leading to triggering of different hazards / disasters in different areas, which is another aspect in mitigation. In this respect DMC will work with several agencies which are responsible for issuing licenses / permits for extraction of natural resources for various development purposes. These agencies include, CEA, GSMB, CC&CRMD, NARA, Gem and Jewellery Authority and other such agencies as identified. In addition to the above agencies, at local level divisional secretariats / local authorities or representatives of the above mentioned agencies would be involved in the licensing and implementation process. Apart from the regulations, short comings prevail in the implementation, such as overuse or over extraction deviating from the conditions in the license and conditions with respect to leaving of the site after the license period.

A mechanism will also be planned for strict monitoring of the present regulations, including penalties for non-adherence or corruption and keeping a large sum of money as retention or withholding money when issuing the licenses. Other activities will be empowering communities and citizens to ensure fulfilment of conditions laid down will be undertaken, wide public awareness campaigns on measures for controlling misuse of natural resources through paper advertisements, Radio & TV discussions/ video clips etc., training and awareness for the general public, their right for information and happenings around them. There will be community based / led programmes in this regard. DMC will work with the CEA and other relevant agencies and if necessary a sub-committee will be establishment for planning all above actions with time frames fixed.

5.2.6 Livelihoods Development and Poverty Reduction as a Mitigation Measure

As a mitigation measure stabilising and diversifying livelihood and poverty reduction initiatives will be commenced at community levels through involving large scale local community members, particularly the women in most vulnerable areas of the country. These initiatives will not only cover the disaster management activities, but also as a tool for linking disasters with livelihoods, environment and poverty reduction activities that will also increase the community resilience to future disasters. These activities will include micro financing, capacity building, strengthening communities and awareness raising activities.

These initiatives will be in collaboration with DDMCUs, CBOs and NGOs active in different areas of the country. In addition National Youth Services Council (NYSC) and Samurdhi officials will be involved in this activity at community level. Experience of RADA in livelihood activities after 2004 tsunami and recommendations of the reports of the Tsunami Evaluation Coalition¹³ by Swedish International Development Cooperation Agency (SIDA), will be taken into consideration in these activities.

5.3 Mainstreaming Disaster Risk Reduction (DRR) into the National Development Policy, Planning and Implementation

Mainstreaming disaster risk reduction (MDRR) into the national development policy, planning and implementation is incorporating DRR into national development policies and making it a practice by the Government in locations vulnerable to disasters. This means that in all development activities integration of mitigation will be done by all relevant agencies as a practice¹².

MDRR in different sectors means, incorporating DRR into the development policies of the given sectors, and integrating mitigation in all development activities in the sector as a practice by the Government in locations vulnerable to disasters. The degree of vulnerability will determine the extent to which attention is needed. It means radically expanding and enhancing the attention to disaster risk reduction so that it becomes normal practice and fully institutionalized within the country. This is critical when there is a large section of the population vulnerable to disasters with majority of them from the low income groups.

PIP on Mainstreaming Disaster Risk Reduction (MDRR) in the Housing Sector, Sri Lanka

DMC in partnership with the Asian Disaster Preparedness Centre (ADPC) implemented the program on Priority Implementation Partnership (PIP) on Mainstreaming Disaster Risk Reduction (MDRR) into the Housing Sector. Phase I of the program⁹ was implemented during the period from August 2008 - February 2009 and Phase II of the project that commenced in August 2009 was completed in June 2010. This was carried out as a demonstration activity in order that the experience could be used for mainstreaming DRR in other sectors as well.

5.3.1 The Process for Mainstreaming of DRM into the National Development Process

Mainstreaming of DRM in the National Development Process and some Possible Areas are given in **Annex 5-I**. DMC will take action on the following proposals through approval by Cabinet within a specified time frame. This needs prior discussions with treasury, funding agencies, Department of National Planning, CEA etc.

- Consideration of DRR integration to be made mandatory in all foreign / treasury funded development projects
- At approval stage, Department of National Planning to ensure that the DRR component is included in the proposal and budget
- DRR integration will be considered at an early stage of project formulation and design
- Disaster Impact Assessment (DIA) to be incorporated in the EIA process for all new development in hazard prone areas
- Development Control by SLLRDC as required by its mandate.

Some problems at national level that must be corrected are,

- Non-adherence to prevailing Acts and Legislations: Although there are so many Acts and Legislations governing land development at national level, there are lapses in implementation. As a result unplanned land use and development is difficult to avoid.
- BOI Projects: Sometimes local authorities and district officials have indicated that projects undertaken under some specific agencies, such as, the Board of Investment of Sri Lanka (BOISL) do not have to conform to any approvals at local levels, due to the authority exercised by that agency.

In implementing these activities, while the DMC will initiate discussions with the relevant agencies, these will be taken up for discussion as deemed necessary at the committees, viz., National DM Coordinating Committee (NDMCC) / relevant technical committees.

5.3.2 Programmes / Plans of Action Required by UN Agencies on Mainstreaming in Development

There are several activities related to mainstreaming disaster risk reduction in development required by programmes of some UN Agencies. In conformity to these requirements DMC has already commenced implementing various activities. DMC will pay further attention to implementing activities related to these programmes / plans of Action, which are listed below:

- Mainstreaming Disaster Risk Reduction into the National Poverty Reduction Strategy
- 5 Priorities for Action under *Hyogo Framework of Action (HFA)*¹⁴ - See **Annex 5-II**
- Mainstreaming Disaster Risk Reduction into *In-Country Assessments and the Multi-year Program Framework* of International Development Agencies
- Mainstreaming Disaster Risk Reduction into the *National Adaptation Plan of Action (NAPA)* under the UN Framework on *Convention for Climate Change*
- Mainstreaming Disaster Risk Reduction into the UN *Common Country Assessment (CCA)* and *UN Development Assistance Framework (UNDAF) Process*.

5.4 Reducing Vulnerabilities due to Technological Hazards

Radiological / nuclear related hazards; industrial, chemical and traffic accidents; oil spills in sea and land; other technological hazards will be taken into consideration. Accidents can occur in any industry in spite of the preventive measures taken by the management. Especially those industries dealing with chemicals which are toxic, inflammable or have a high explosive potential are particularly vulnerable. In such instances the human as well as economical losses may be very severe. Action will be taken in the following manner:

Storage, transportation and use of toxic/lethal chemicals, explosives and other hazardous materials

- Impose regulation on the need to declare and the right of the general public to know of the availability of such materials at any given location and consideration of locations in land-use planning/zoning.
- With respect to transportation of such materials, conditions to be laid down, even regarding making use of the drivers and helpers for heavy vehicles, bowlers, high / low loaders etc. such as the number of working hours at a stretch, resting time in between etc. and should be specially trained and given a special license. Transport of such materials should be communicated to the Police along the route; vehicles properly labelled; special route license to be issued by the Police for vehicles transporting hazardous and toxic material, which will designate the route and the time of transport of material.
- Pipelines carrying such material should be equipped with devices to check any leakage or metal fatigue
- Awareness raising, artisan training and transfer of appropriate technology with respect to mitigation at community level
- A common format for chemical data sheets to be developed made available to both fire brigade and police.

Industrial Accidents and Traffic Accidents

Review regulations governing industrial accidents under the Ministry of Industries and Labour Department and take further precautionary action to minimise such accidents; and to minimize accidents with large containers carrying various types of goods; All industrial concentrations to establish institutional mechanisms for management of industrial accidents; Industries involved in production and transportation of inflammable, hazardous and toxic materials to have a mandatory responsibility for preparing on and off site plans with simulation exercises undertaken in the adjoining communities; Poison treatment centres with facilities for detoxification to be established in hospitals near industrial estates; Small-scale industries releasing toxic waste in to surface water bodies to set up common effluent treatment facilities.

Radiological Accidents

Preparedness Plan by Atomic Energy Authority that would help to, reduce the risk or mitigate the consequences of the accidents; prevent serious deterministic health effects (e.g. death) due to accident in radiation facilities and reduce the likely stochastic health effects (e.g. cancer) as much as reasonably achievable.

Oil spills in sea

MEPA already has a preparedness plan. MEPA and SL Navy will have a surveillance system to identify any ships in the sea before entering the shores of the country. NARA undertakes research on oil spill dissipation, ecological damage, recovery rates etc.

Ministries and agencies responsible for various types of technological hazards and accidents are illustrated in **Table 5-1**.

Table 5-1 Ministries / agencies responsible for various types of technological hazards / accidents

Type of Accident	Responsible Ministries / Agencies
Radiological and nuclear accidents or disaster	Atomic Energy Authority
Chemical hazards / threats Industrial Hazards	Ministry of Industries, Labour Department, National Authority for Implementing Chemical Weapons Convention
Fire threats due to petroleum products / storage, pipe lines, oil spills on land during transportation	Ministry of Petroleum and Petroleum Resources Development, Ceylon Petroleum Corporation
Road / Traffic Accidents	Ministry of Railways and Transport, National Transport Commission, Railways Department, Dept. of Motor Traffic
Oil spills in sea	Marine Environment Protection Authority, SL Navy

5.5 Reducing Vulnerabilities due to Other Hazards

DMC will initiate action with various responsible agencies for mitigating hazards such as wild elephant attacks, health hazards and presence of fluorides in drinking water and contamination of water sources as shown in **Table 5-2**.

Table 5-2: Agencies that DMC will Collaborate in Mitigation of Other Hazards

Hazard to be mitigated	Agencies DMC will work with
Wild elephant & crocodile attacks	Department of Forests, Department of Wildlife Conservation, Wildlife Trust, Central Environment Authority (CEA), Respective Local Authorities / Divisional Secretariats in prone areas
Health hazards - epidemics, communicable diseases, bird flu, AIDS, SARS, poisoning etc., and possible biological hazards, other health hazards	Health Ministry, Epidemiology Unit, and Department of Health Services, Medical Research Institute and others as relevant
Contamination of water sources with pesticides, insecticides, fertiliser, chemicals etc. Adverse effects include diseases such as fluorosis, renal failure etc.	National Water Supply and Drainage Board, Water Resources Board, Ministry of Health, Health Services Department

5.6 Consideration of Existing Public Services in Areas of New Development

With the rapid development taking place at present there are instances when required essential services are insufficient, such as water supply, sewerage (applicable in Colombo and other areas with central sewerage systems), solid waste collection and disposal and especially, surface water drainage in city areas. Details with respect to different services are described in **Annex 5-III**. These should be dealt with adequately after discussion with the relevant agencies such as the UDA, Sri Lanka Institute of Local Governance, Provincial Commissioners of Local Governance and other sectoral agencies as applicable.

The outcome will be service providing agencies planning infrastructure in advance considering the development planned in given areas, as per the regional development plans of the UDA and NPPD for a specific future given period. The Planning Committee of the UDA / Ministry of Urban Development to be made aware of this aspect for making the service providing agencies (members of the Planning Committee) aware of these in turn.

5.7 Risk Transferring and Financing

The financing of disasters in Sri Lanka has mostly relied on a reactive approach, consisting of the diversion of funds from government budgets and extensive financing from international donors. Such approaches are inefficient, often poorly targeted, and insufficient. Moreover, they provide no incentives for proactive risk reduction measures such as improved urban planning, higher construction standards, following disaster resistant construction guidelines etc.

Reactive approaches to risk financing are becoming increasingly unsustainable due to a number of factors such as, increasing vulnerability, continued environmental degradation, population growth and growing disaster losses. The increase in hazard exposure and vulnerability points to a continuing trend of increasing losses due to natural disasters, but the capacity of donors to fund disaster relief and reconstruction is limited, resulting in funding gaps.

Insurance market in the country is under developed, and coverage for natural disasters is extremely limited. Where hazard coverage exists, it is usually limited to major industrial and commercial properties, and some wealthier households. The demand for risk transfer instruments in emerging markets is often constrained by market gaps, lack of regulatory frameworks, lacking data on disaster risk, lack of a culture of risk financing, and the reluctance of large reinsurance market players to invest in the development of small risk markets.

Micro insurance can provide low-income households, farmers, and businesses with rapid access to post-disaster liquidity, thus protecting their livelihoods and providing for reconstruction. As insured households and farms are more creditworthy, insurance can also promote investments in productive assets and higher-risk/higher-yield crops. In addition, insurance has the potential to encourage investment in disaster prevention if insurers offer lower premiums to reward risk-reducing behaviour.

Since recently there has been a growing interest from private sector insurance firms in micro insurance. Primary insurers at the country level play a key role in most micro insurance schemes,

by channelling the risk to commercial markets and allowing the intermediary agency to focus on client relations and support.

Last few years, Disaster Management Centre has promoted discussions to introduce few initiatives to introduce a more proactive approach to risk financing with the support from private and public insurance companies. To implement these initiatives it is required, immediate liquidity after a disaster for more effective government response, and some relief of the monetary burden placed on governments due to disaster impacts. They constitute critical steps in promoting more proactive risk management strategy that includes preparing for disaster impacts and planning for the response. These formal mechanisms, however, do not address the issue of reaching the poor, who are consistently the most affected by disasters.

In bringing this concept into operation there are challenges and opportunities as well. DMC would continue this activity in achieving a favourable approach for risk transferring and financing in DRR.

5.8 Climate Change Adaptation (CCA)

Climate Change

There are concerns at present about global warming with the increase in temperature that leads to changes in the ocean and wind currents globally resulting in changes in traditional patterns of winds and precipitation referred to as climate change. Climate change may be due to natural processes or human activity (anthropogenic impacts). Global warming is predicted to bring about severe changes in frequency of rainfall patterns, drought conditions and high wind frequencies. According to IPCC, increases in temperature could lead to changes in the ocean and wind currents globally resulting in changes in traditional patterns of winds and precipitation. This is predicted to bring about increasing frequency and intensity of hydro meteorological hazards such as floods, droughts, cyclones, tornados and heat waves. Dryness resulting from drought could aggravate the threat of wildfires. Even at present some changes are already taking place.

Extreme weather includes unusual, severe or unseasonal weather. These are events at the extremes of the historical distribution that have been seen in the past. Extreme weather occurs only 5% or less of the time. According to climate scientists and meteorological researchers, extreme weather events are rare. Increase in extreme weather events has been attributed to man-made climate change.

In recent times unusual heat waves, cold waves, unprecedented rainfall leading to severe floods and landslides, tornado strikes, forceful cyclones, severe droughts and wildfire impact diverse geographical regions could be seen. Some of these events have been attributed to the two phenomena called El Nino and La Nina. There is no conclusive acceptance of the links of these phenomena to climate change.

Some potential impacts of climate change are, reduction in water regulation in mountain habitats; decreased availability of water and quality of water in many arid and semi-arid regions; adverse effects on many ecological systems; decreases in reliability of hydro power; decreased agricultural productivity; adverse impacts on fisheries; threats to food security; sea level rise and inundation of low lying coastal areas; salinity intrusion to coastal land making them agriculturally unproductive; and increased incidents of vector borne diseases such as malaria and dengue.

As such these can adversely impact many sectors including agriculture, fisheries, tourism, infrastructure and coastal development.

With these occurrences, climate change has become an extremely important aspect to pay attention to. Possible actions include actions to combat climate change, enhanced actions on adaptation and actions on mitigation of climate change.

Possible actions to combat climate change

Possible actions to combat climate change had been arrived at COP-13 in Bali in 2010, which is called the Bali Action Plan. Its highlights are as follows:

- Enhanced action on adaptation, taking in to account the needs of developing countries that are particularly vulnerable to the adverse effects of climate change.
- Cooperative action to reduce greenhouse gas (GHG) emissions.
- Actions on mitigation of climate change.

Global Recommendations for adaptation

The Bali Action Plan (COP 13) called for enhanced action on adaptation, and recommended the following for consideration:

- International cooperation to support implementation of actions, including vulnerability assessments, prioritization of action, financial assessments, capacity building and response strategies, integration of adaptation actions into sectorial and national planning, specific projects enable climate-resilient development and reduce vulnerability of all parties.
- Risk management and reduction strategies, including risk sharing and transfer mechanisms such as insurance.
- Disaster reduction strategies and means to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change; and
- Economic diversification to build resilience.

Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR)

As can be seen from above, Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) are closely related and have similar aims and mutual benefits. As such there is a need for policy makers, experts and practitioners of both DRR and CCA to work hand in hand, communicating and collaborating with each other effectively to ensure a comprehensive risk management approach at local and national levels. One major action would be to integrate climate change (CC) in development planning along with DRR initiatives.

Benefits of such close collaboration would include,

- Reduction of climate related losses through more widespread implementation of DRR measures linked with adaptation
- More efficient use of financial, human and natural resources
- Increased effectiveness and sustainability of both CC adaptation and DRR approaches.

In this context, all ministries and agencies working on CCA and DRR would participate in all activities as reflected in **Fig. 2-1** - Overall Country Wide Disaster Risk Management Framework, and **Fig. 2-2** - National Institutional Framework for Effective DRM.

CCA Actions Implemented in Sri Lanka

Climate Change Secretariat in Sri Lanka has been established under the Ministry of Environment and Renewable Energy with the vision and mission as follows:

Vision: An environment conscious nation and a prosperous Sri Lanka with a high level of resilience to global climate change.

Mission: To lead the country to take comprehensive action to contribute towards local, regional and global efforts in combating Climate change and to integrate unavoidable climate change scenarios into National Sustainable Development Plans.

National Climate Change Adaptation Strategy (NCCAS) for Sri Lanka – 2011 to 2016

This strategy states,

“Living and coping with uncertain impacts of climate change is no longer a choice; it is an imperative. Sri Lanka is a negligible contributor to global warming. However, as a nation, we are highly vulnerable to the impacts of climate change, which include, Increases in the frequency and intensity of disasters such as droughts, floods and landslides; Variability and unpredictability of rainfall patterns; Increase in temperature; and Sea level rise, among others.”

Chapter 06



Emergency Operations

Chapter 6

6.0 Emergency Operations

6.1 National Emergency Operation Plan (NEOP)

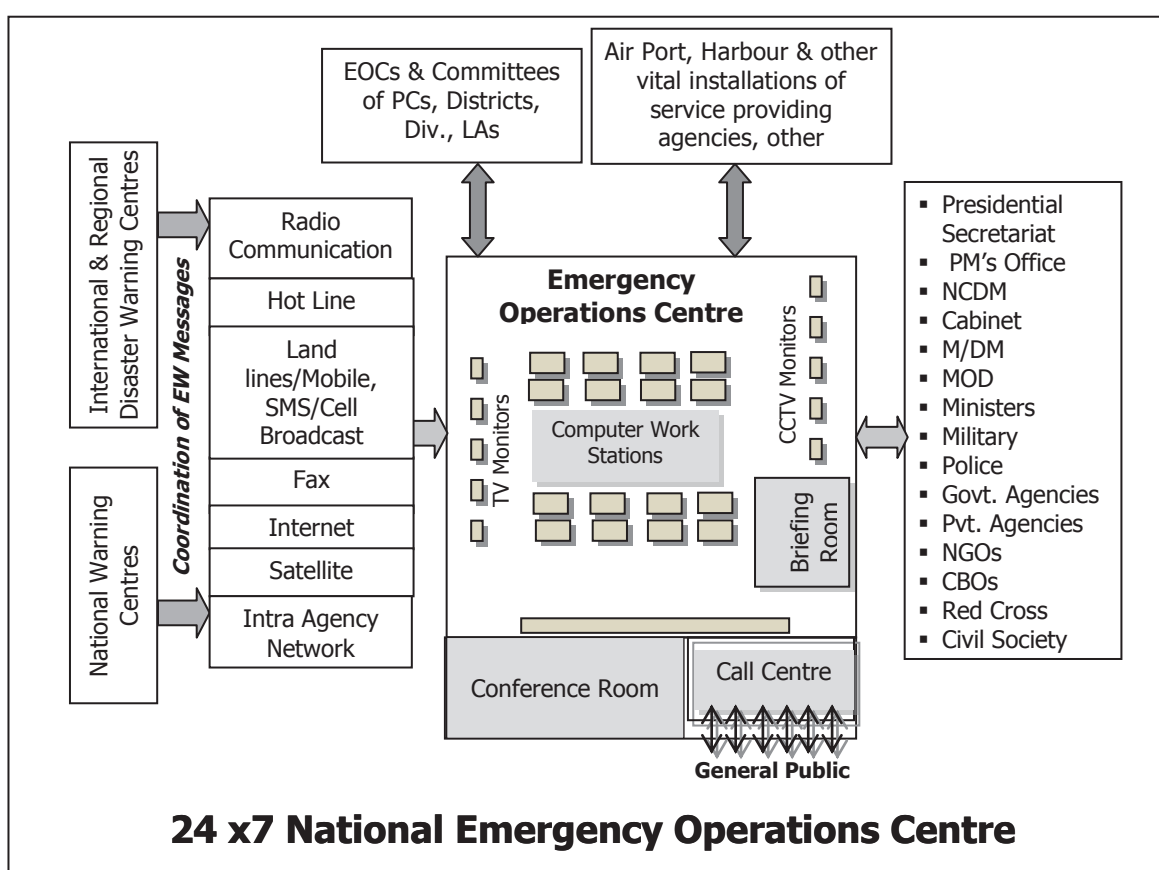
DMC will prepare the National Emergency Operation Plan (NEOP) as required by the Act. It will conform to the Act, the National Policy and the National DM Plan.

6.2 Emergency Operations Centre (EOC) in DMC

An EOC at the national level is an important pre-requisite to ensure an effective and coordinated response in any emergency. The EOC is well equipped, adequately staffed and will operate 24x7 to coordinate all incident information and resources for management. It will receive, analyze, and display information about the incident to enable decision-making. The EOC will also find, prioritize, deploy, and track critical resources. It will enhance decision making, communication, collaboration, and coordination. It is staffed with personnel from different skills required for the operations. The structure of the National EOC is schematically illustrated in **Fig. 6-1** below.

The EOC will have all necessary equipment with conference facilities and display systems. It will comprise one fully-fledged 24x7 Operations Centre with a call centre.

Fig. 6-1: National Emergency Operations Centre



6.2.1 Maintaining the EOC at Readiness State All the Time

The EOC will be linked to the technical agencies for receiving necessary early warning messages in time without delay for immediate action and to the call centre which handles and records all telephone calls and monitors the situation continuously. Locally all natural and man-made disasters will be reported to this EOC. In case of a warning or occurrence of a disaster, irrespective of the time of the day communications will be established immediately with relevant officials/staff of the EOC, and depending on the critical nature and the magnitude of the event they will be present and

operations commenced. As and when required the EOC will be manned by representatives of relevant stakeholders coordinated by the DMC.

This EOC will be linked to the Provinces, Districts, DS Divisions and local authorities with reliable communication systems to inform warnings and other vital information. In addition it will be linked to other major stakeholder agencies and media. It has an emergency number (117), which any citizen can call round the clock for disaster related assistance including medical assistance. This number would be a free for the caller from any local telephone. The Centre will be able to not just provide appropriate advice through the personnel available, but also link up additional resources, as necessary.

Technical agencies, DMC, Police and media are connected through the existing communication network and the EOC would be able to download any information directly even without the relevant officers. The EOC will maintain all the necessary information required for responding to a disaster. It will range from the contact information of important stakeholders of emergency response to all resources including equipment, teams of skilled personnel and critical supplies. The Sri Lanka Disaster Resources Network (SLDRN) has all these information that is planned to be updated annually.

It has become necessary to maintain a stores and essential equipment, to fulfil the need for providing emergency response equipment in case of a disaster in a location unexpectedly. Maintaining such a stores with equipment that have been donated by various donor agencies and also maintaining minimum level of emergency stock items will be a part of responsibility of DMC.

In case of an emergency of a serious nature, where foreign assistance is required, DMC will initiate actions through the Ministry to obtain assistance of foreign Search & Rescue teams.

6.2.2 1st Responders Teams for Man-Made Disasters

A Rapid Response Team at national level has been trained and will be equipped for effective response in case of an emergency, such as an oil spill, hazardous material accident, chemical and industrial accidents, radiological emergency etc. These will be in collaboration with the respective mandated agencies, SLRCS and NGOs. Refer **Table 5-1** for Ministries / agencies mandated for various types of technological hazards/accidents. Response team personnel will be from Sri Lanka Police, Fire Brigade, Armed Forces, Health, Atomic Energy Authority, SLRCS and NGOs. For disposal of lethal, toxic and adverse chemicals etc. after a technological disaster the mandated technical agencies will work with CEA, Police, Military and other agencies as appropriate.

Formulating a methodology to ensure safe transportation of hazardous chemicals is in progress.

6.2.3 Search & Rescue teams at National and District levels

Military Search & Rescue teams at National and District levels have been established and trained to ensure prompt response operations to save lives in case of an emergency. DMC has coordinated with the Military and established an evacuation plan for Tsunami vulnerable coastal districts, where the detachment commander takes initiative to activate the evacuation plan even at mid night when all others are fast asleep.

6.3 Emergency Operations Centres at other Levels

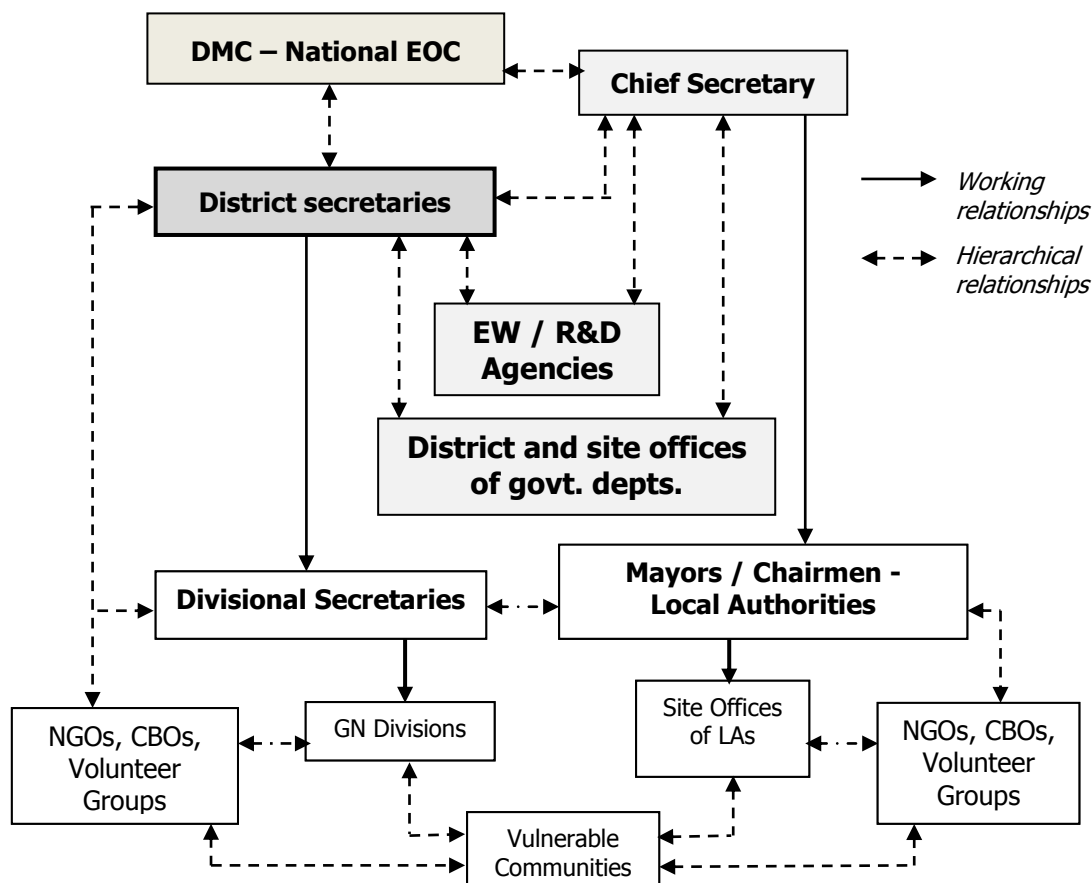
Emergency operation Centres (EOCs) in all districts are established and ready to be activated in case of an emergency. EOCs at other levels (Provinces, Divisions, LAs) will also be established as appropriate.

These EOCs will maintain all the necessary information required for responding to a disaster. It will range from the contact information of important stakeholders of emergency response to all resources including equipment, teams of skilled personnel and critical supplies. The already established SLDRN database is designed to be used at these levels too. The EOCs will be generally functioning, or activated on issue of early warning or on occurrence of a disaster and the modality of their functioning is in **Annex 6-I**.

6.4 Coordination of Disaster / Emergency Response at Different Levels

Disaster / Emergency Response at National, Provincial, District, Divisional, Local, Grama Niladhari and Community Levels will be activated through disaster management committees, sub-committees, EOCs, district offices of government departments, volunteer groups etc., which will be described in the respective DM Plans. The emergency operations coordination structure and flow of information at the provincial level are shown in the **Fig. 6-2**. Military and Police will take a lead role in emergency response activities at all these levels in any part of the country.

Fig. 6-2 – Provincial and District Emergency Operations Coordination Structure and Flow of Information



6.5 Incorporation of Incident Command System (ICS) into Emergency Operations at Different Levels

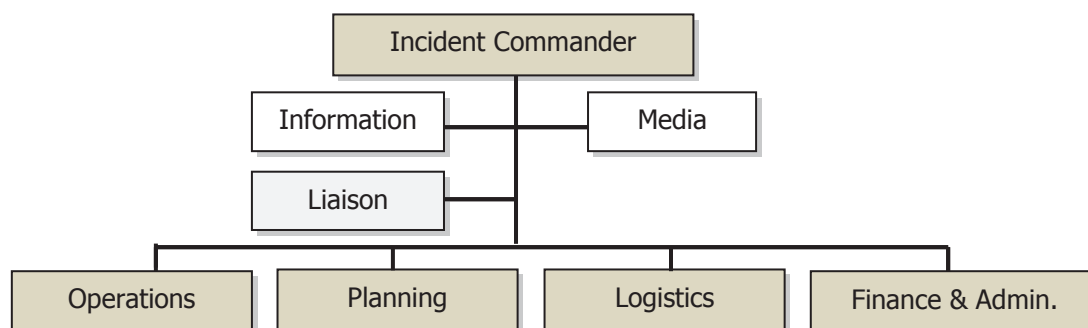
Incident Command System has been incorporated or will be incorporated into emergency operations at different levels adjusted to the local context. Personnel have already received training in ICS in different districts and their services will be obtained in responding to emergency situations. ICS is a standardised emergency management system designed that allows quick response to emergency situations. It is a system for organising the functions of a team, so that every aspect of response to an incident is addressed. It enables a team to communicate, cooperate and implement a response activity. ICS enables the following five major functional areas for managing an incident:

- ♦ **Command** – Establishes incident objectives and has overall responsibility for managing the incident
- ♦ **Operations** – Develops and oversees tactical operational activities needed to accomplish incident objectives
- ♦ **Finance / Administration** – Oversees all financial and administration aspects of the incident including cost racking, procurement, payments, compensation etc. in support of the objectives
- ♦ **Planning** - Coordinates planning, resource ordering and release, record keeping, mapping, technical expertise and documentation necessary to accomplish the objectives

- ♦ **Logistics** – Oversees the development and use of infrastructures (facilities, transportation, supplies, communication, food etc.) necessary to meet the objectives.

It is designed in such a manner that each functional area is led by a team leader and the entire ICS is led by an Incident Commander as shown in **Fig. 6.3**.

Fig. 6-3 - Major Functional Areas in the Incident Command System (ICS)



At different levels of administrations the Incident Commander will be the head of the respective administrations. The presently functioning provincial / district disaster management committees and emergency operations units under the chairmanship of the Chief Secretaries / District Secretaries, the support of emergency response personnel trained on ICS will be obtained.

6.6 Strengthening of Emergency Response Systems

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 DM Plans. 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 and district levels are shown in **Annex 6-II** and **6-III**. These structures also show how the trained ICS teams / personnel fit in to the response structure.

Mode of response to disasters will depend on the severity of the event. If it is a local event then the local EOC will coordinate and respond. If the magnitude is larger and cannot be responded by the local EOC, then support from provincial or national level is requested as the case may be. If the national level intervention is required to control the situation then the national EOC will take over and coordinate outside resources as necessary.

On receiving early warning or on occurrence of a disaster, responsibilities of different stakeholders have been summarised as a matrix in **Annex 6-IV**. Such a matrix improved specifically to suit the relevant administrative setup and enlarged can be displayed in the EOC for easy reference during a disaster. Detailed actions and responsibilities of various stakeholder agencies after issue of early warning or on occurrence of a disaster are shown in the **Annex 6-V**.

Strengthening response capacity for different types of emergencies should include effective coordination among stakeholders including SL Red Cross and NGOs with an emergency service network and a knowledge management system.

6.7 Involvement of Armed Forces in Emergency Response

DMC has coordinated with the Ministry of Defence and established National and District S&R teams; and equipped and trained them. Arrangements are being made to plan out and select platoons of the Armed forces in different locations of the country so that in case of a disaster the military platoon in the closest vicinity will be contacted for assistance in response. Under preparedness planning for emergency response these would have already been selected and necessary awareness given to selected teams about the likely hazards in the respective geographical areas and specific preparedness measures etc. As already mentioned under section 6.2 Emergency Operations Centre (EOC), DMC has coordinated with the Military and established an evacuation plan for Tsunami

vulnerable coastal districts where the detachment commander takes the initiative to activate the evacuation plan even at mid night when all others are fast asleep. With such an arrangement, availability of trained manpower, communication equipment, transport etc. will be guaranteed. Above all discipline will be ensured.

Such camps are there in all districts and linking up with them will be very easy. In a disaster with the training and contact pre-arrangements having done the required teams can be called without any delay at all and directly by the provincial / district administrations or the DDMCU. The Police, Sri Lanka Army, Sri Lanka Air Force and Sri Lanka Navy will have to be strengthened for undertaking such activities.

6.8 Emergency Response by Local Authorities

To minimize response time to local emergencies like fire and accidents, the local authorities have to have response capabilities for which they need to be strengthened with relevant equipment such as earth moving equipment, boats, fire machines, ambulances etc. and other resources. They should also have the capacity / skilled operators to respond immediately within a very short time. Some local authorities already have excellent fire fighting equipment and capability. Fire response capability of fire stations has been developed. However, there is a legal barrier for sharing resources and approvals for providing services outside the mandated limits, which needs to be clarified and sorted out. For this purpose clustering of selected Local Authorities is proposed.

A Special Response Unit (SRU) established under the Fire and Rescue Brigade of the Colombo Municipal Council, is equipped with specialized rescue material and training, to deliver a specialised multidisciplinary response to major disasters.

6.9 Response to Other Specific Types of Emergencies

In case of other disasters due to activities such as bomb explosions that can be expected, it will be the Armed Forces and Police that will take immediate emergency response actions. With the response mechanisms and systems in place this will be made easier.

6.10 Disaster Victim Identification (DVI)

The Disaster Victim Identification procedure is very appropriate in case of foreigners who are victims of a disaster. With regard to the local victims however, the appropriateness, practicability and usefulness of this procedure may be doubtful 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. The secondary criteria are medical information, personal property and photographs.

A committee may be appointed to look into this and if feasible to assist in setting up the system with the required training and capacity building of associated organisations, after identifying a donor who is willing to support this initiative.

6.11 Stakeholder Involvement in Emergency Operations – SLRC, NGOs, Private Sector

SLRC, 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 levels. At any given level of emergency operations activities (district, division, LA or village level), details of NGOs will be maintained and registered. A suitable format for maintaining and registering NGOs can be developed to maintain the following information:

- i. Name of NGOs, Private Sector Agencies & CBOs
- ii. Geographical Area of Operation
- iii. Possible Sectors of activity by NGOs: Evacuation, First Aid, SAR, Assistance in temporary shelter management, Relief, Health & Sanitation, Training and education, Flood Rehabilitation Sector, Community Development, Humanitarian support, Recovery of agricultural activities, Poverty alleviation, Environment, Village development, Gender balance and development
- iv. No. of Staff
- v. Contact Name & Address.

For effective private sector involvement in response activities, appropriate actions will be taken up by the DMC through the District Units.

6.12 Role of Media

Media has a vital role to play in terms of disaster preparedness for emergency response and early warning. 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 (EOC) at a certain level would release relevant information to the media within the shortest possible period of time.

Chapter 07



Disaster Management Planning

Chapter 7

7.0 Disaster Management Planning

At all levels, Disaster Management Plans have to be developed for responding to disasters. Development of such plans is required by the Sri Lanka Disaster Management Act, and the National Disaster Management Policy.

In the present day context it is important to consider Climate Change predictions, i.e., sudden and rapid changes of rainfall patterns, drought conditions and high wind frequencies in the Disaster Management Plans in order to ensure timely early warning, evacuation and/or other response activities.

Considering the multiplicity of players in disaster response, the organisational model of DM Plans will be structured in such a manner that it emphasises coordination rather than command and control. However, command and control will be applicable within the government hierarchy of each agency. Assignment of functions and responsibilities and effective inter-agency coordination will be the key feature. For coordination, and command & control, a coordination structure is needed. While DMC will be the overall coordinating authority, Provincial DM Coordinating Units (PDMCUs) / District DM Coordinating Units (DDMCUs) will be the focal point for coordinating at Provincial, District, Division, Local Authority and Grama Niladhari levels for coordinating response and recovery efforts and managing and disseminating critical information.

The plans at different levels will reflect the inputs of Incident Command System (ICS) that will be incorporated into emergency operations. The services of the trained teams / personnel will be obtained in emergency situations.

Conformity of Disaster Management Plans at different levels to the National Disaster Management Act, the National DM Policy, National Disaster Management Plan and National Emergency Operations Plan (NEOP) and with each other is illustrated in **Fig. 7-1**.

7.1 Preparation of Disaster Management Plans at Sub-national Levels of Administration

As per the Act it is mandatory for the following administrative levels to develop DM Plans for responding on receiving or declaration of warning or on occurrence of a disaster:

- Provincial councils, Districts, Divisions, Local Authorities, Grama Niladhari Divisions and Community level plans (through community participation facilitated by District DMCUs).

The Disaster Management (DM) Committees at different sub-national levels will monitor and coordinate the implementation of these plans.

7.1.1 Broad Scope and the Process of Preparation of Plans at Different Levels

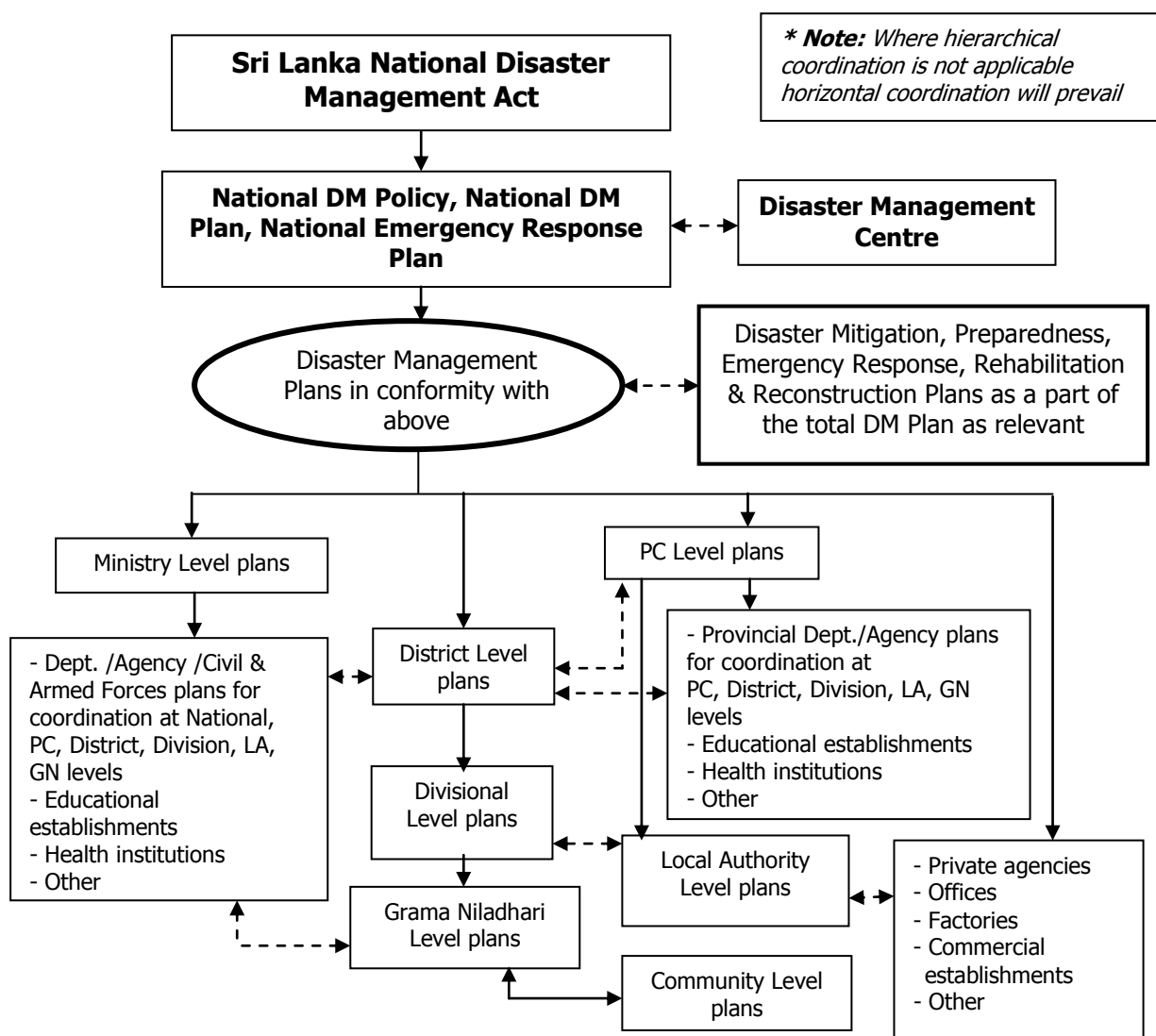
Plans will be developed conforming to the Generic Formats¹⁵ and the Guidance Note¹⁶ developed by the DMC for Plans at respective levels. These have been made available in Sinhala, Tamil and English for use in different areas of the country as appropriate. All levels of plans generally will be either in Sinhala or/and Tamil.

Provincial DM Coordinating Units (PDMCUs) / District DM Coordinating Units (DDMCUs) will be responsible for coordination of plan preparation at sub-national levels along with the Provincial Chief Secretary or the District Secretary as relevant. The process of preparation of plans at different levels is given in **Annex 7-I**. These plans will have provision for all sub national level administrations to coordinate with each other, namely, Provincial Councils, LAs, Districts, Divisions and GN divisions.

Time Frames for Developing Plans: With due consideration to funding availability DMC is implementing a programme with the time frames for developing plans at different administrative levels. In stages DMC will cover all administrative levels the entire country. In developing the plans due consideration must be given to aspects such as, Proneness of the areas to different natural and man-made hazards; Population density of the areas; and Areas with high-rise buildings and other buildings and residential buildings without adequate fire gaps.

Updating / Revision of the Plans: Plans must be updated half yearly; reviewed after a major disaster and / or revised after a predetermined time period (say after five years).

Fig. 7-1 – Conformity of DM Plans at different levels to the DM Act, Policy and National Level Plans with Provision for Coordination with each other



7.1.2 Involvement of NGOs / INGOs in Preparation of DM Plans at Sub-national Levels

SLRC and other NGOs can be involved for developing local authority, divisional and Grama Niladhari level plans in different districts, divisions and GN areas where they are actively involved in DM related activities. NGO / INGO participation would be very fruitful in developing plans at community levels. In such collaborations the following have to be ensured:

- That plans are prepared in conformity with the formats and guidance notes developed by the DMC (Except for the community level plans)
- That time lines conform to the DMC overall plan
- That officials of the respective levels of administration, representatives of all stakeholder agencies are involved in the process of developing the plans as described above
- That concurrence of the disaster management committee is obtained at various stages of development of the plan
- That final plan is presented at a meeting / workshop where the concurrence of the respective disaster management committee is obtained for the plan, final printing format including cover, inner cover, Messages, Foreword, Preface etc.
- That all other requirements as stated in the formats and guidance notes are met
- General concurrence is obtained from DMC.

7.1.3 Involvement of Selected SAR Teams of the Armed Forces for Disaster Response Activities

The three armed forces have appointed / earmarked disaster SAR teams to come to the assistance of the District Secretary during the times of disasters. These SAR teams have been trained and equipped to carry out SAR activities at district, division and village levels in coordination with District DM Coordinating Units (DDMCUs), and the district secretariat and local authorities.

Over and above such SAR activities, after a disaster event these teams will be involved in assisting the district administration in distributing meals, relief items, caring for the sick, first aid, transporting the sick people to hospitals, clearing wells, houses etc.

7.2 Preparation of Disaster Management Plans in Different National and Provincial Ministries /Departments /Institutes /Agencies

All responsible Ministries and departments / agencies listed below will be required to develop a DM Plan as a part of the total DM Plan within the framework of the National Plan and the National Policy.

- i. Technical agencies responsible for different technological hazards as given in **Annex 7-II**;
- ii. All national and provincial educational establishments including schools, universities, technical colleges, training establishments etc. (private & public);
- iii. All national and provincial health institutions including hospitals, clinics, training schools, health facilities, etc. (private & public);
- iv. Private / government agencies including hotels / inns, offices, factories, commercial establishments etc. These would include production factories involving explosives, hazardous materials, chemicals, such storage places etc.
- v. In addition there would be the vital government agencies responsible for public services and infrastructure facilities (list of some such agencies is given in **Annex 7-III**).

DMC will facilitate in developing these plans by providing guidance notes, general coverage, necessary circulars to national/provincial ministries and awareness workshops. DMC will coordinate and monitor adherence and progress.

In addition, representatives from National, Provincial and District level offices of service providing agencies will be serving in the disaster management committees at the respective levels. These agencies, in addition to their DM Plans for their respective agencies, will have a role in the DM Plan at the given administrative level and will have **Standard Operating Procedures (SOPs)** detailing out activities to assist National, Provincial and District level administrations in an emergency situation after a disaster.

Types of Plans

These DM plans / parts of plans will be of different types, viz.,

- ❖ For protection of the building itself from fire and other possible hazards (especially high-rise and other susceptible buildings) and early warning
- ❖ For protection of usual assets / equipments / documents / information / data of the organization
- ❖ For protecting installations of specific nature (involving explosives, hazardous materials, chemicals, such storage places etc.) and early warning
- ❖ In case of technical agencies responsible for different technological hazards, for protection of people, property, installation of other service providing agencies as applicable, and for early warning (List given in **Annex 7-II**)
- ❖ In case of vital agencies responsible for public utilities and infrastructure facilities, for protection of such services and for early warning in case of any emergencies such as a dam breach or any other such emergencies (List given in **Annex 7-III**)
- ❖ Emergency plans for evacuation in case of early warning and responding on occurrence of disasters.

Coverage and the Plan Preparation Process

Coverage of such Disaster Management Plans applicable to all establishments is given in **Annex 7-IV**. The Proposed Process of Preparation of plans of Different Ministries / Departments / Institutes / Agencies is given in **Annex 7-V**.

Time Frame

DMC will specify the time frames for developing plans in different ministries, departments / agencies and private sector in the entire country, giving due consideration to the aspects such as, Proneness of the areas to different natural and man-made hazards; Population density of the areas; Areas with high-rise buildings, other buildings and residential buildings without adequate fire gaps; and Risk profile / specific nature of the installation (explosives, hazardous materials, chemicals, such storage places etc.).

7.3 Private Sector Preparedness

Private sector agencies while having plans as explained above will be encouraged to organize themselves in to associations funded by themselves for responding to disasters and for rapid recovery after a disaster. The **Goal** of such a body basically would be, "to provide a forum for sharing resources and information exchange to enhance emergency preparedness and contingency planning within the business community". Such organisations in the form of Traders' Associations, National Construction Association of Sri Lanka 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 and/or to form new associations with this particular goal. A similar organization is functioning in the City of Los Angeles in USA¹. DMC will facilitate in organizing and capacity building for these groups. At the same time DMC will coordinate with them to obtain resources available with them for post disaster response, having them captured in the Sri Lanka Disaster Resource Network (SLDRN).

7.4 Standard Operating Procedure (SOP) to be made mandatory

Broad Standard Operating Procedures (SOPs) drafted for specific DM tasks and various government departments / agencies will be finalised for adoption, with approval of the National Council for DM and the Cabinet / Parliament as appropriate. All agencies will develop agency specific SOPs that will include check lists / standing orders for action to be taken by the agencies in preparedness, on receiving early warning, emergency response, recovery, rehabilitation and reconstruction. These will form part and parcel of the respective departmental plans. These will also include check lists / standing orders for,

- Overall monitoring of precautionary measures of the sub-units of the agency by head office, e.g., water supply scheme, power plant etc.
- Check lists for sub-units for checking of detailed components – e.g., a water supply scheme or a power plant.



Relief, Immediate Recovery, Rehabilitation and Reconstruction

Chapter 8

8.0 Relief, Immediate Recovery, Rehabilitation and Reconstruction

In the National Policy for DM high priority has been accorded to several aspects during and after a disaster. These include (i) response, relief and immediate recovery of essential services, and (ii) medium and longer term reconstruction and rehabilitation to a higher standard than before the occurrence of the disaster. National Disaster Relief Services Centre (NDRSC) has been established within the Ministry of DM and assigned with the relief functions. This shows that immediate recovery of essential services, reconstruction and rehabilitation should be given adequate attention in the national and sub-national level planning. DMC will coordinate with all ministries and agencies handling different functions related to immediate recovery, rehabilitation and reconstruction, to ensure effective management of activities in these phases. In these activities due consideration will be given to the recommendations of the Report on the Sri Lanka Case Study of the Evaluation of the Linkage of Relief, Rehabilitation and Development (LRRD) regarding interventions in connection with the tsunami disaster in December 2004 of the Tsunami Evaluation Coalition¹³. At the same time attention will be given to immovable cultural property after a disaster by way of conservation / restoration of same.

Presently National Disaster Relief Services Centre (NDRSC) has been established within the MDM and assigned with the main functions, viz.,

- ❖ Providing emergency funds for dry rations, meals and for drinking water
- ❖ Distributing and coordinating relief items to disaster affected communities (stock, collect and distribute relief items in coordination with the district, division and GN divisions).

Ministry of Economic Development is responsible for providing funds for immediate / emergency rehabilitation of infrastructure after a disaster. Long term rehabilitation and reconstruction will be the responsibility of the respective sector agencies.

8.1 Relief and Temporary Shelter Management

Emergency Relief and Temporary Shelter Management related activities will be implemented at the PC and LA levels; and district, divisional and GN levels of administration as specified in the Preparedness and Response Plans. Major stakeholders in the coordination mechanism will be Government and private sector agencies; Health sector agencies; NGOs; Business communities; Community Based Organizations (CBOs) etc.

In carrying out these activities strict adherence will be ensured to social justice, equitable distribution of relief, neutrality and impartiality in the provision of assistance and respect for the dignity, values and culture of affected persons. Department of Cooperatives / CWE will be main agencies to be involved for supply of dry ration etc.

Health sector agencies will be involved in rapid assessment of requirement of food and sanitary facilities etc. In addition they will assess details such as number of persons dead, injured and displaced.

All agencies responsible for roads will take action for clearing the roads, for easy access to assist in the relief activities. National, Provincial and District level units of service providing agencies will assist by providing required services to any groups of marooned communities, those in temporary shelter and those in areas where services have been affected, as specified in the Operating Procedures.

DMC will coordinate as relevant with different levels of administration for organising additional resource requirements for the affected areas from unaffected areas and also will coordinate with different organisations responsible for relief activities.

Coordination and management of such relief activities will be by the NDRSC. In addition, the support of

NGOs, CBOs, well wishers, donors (local or international), affected communities, etc. can be obtained as the case may be at different levels of administration coordinated by the NDRSC, district and divisional secretaries etc..

Arrangements for Equitable Distribution of Relief

A mechanism need to be established with the relevant stakeholders to ensure the following in the aftermath of a disaster and in IDP camps as a result of natural and man-made disasters:

- i. Equitable distribution of relief
- ii. Reduce incidence of ad-hoc and disparate relief distribution
- iii. Ensure equitable assistance to individuals after disasters
- iv. Ensure avoidance of corruption in relief distribution
- v. Ensure avoidance of oversupply of relief to some areas and undersupply to other remote areas by introducing a monitoring and control mechanism.

For ensuring the above, following actions will be taken by the NDRSC and M/DM:

1. Assess the organisations 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 distribution¹⁵, for which a formula may be 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 People (IDPs) also have to be focused on, as emphasized in the Parliament Select Committee Report¹.

Speedy Resettlement of IDPs

Attention should be given for Speedy Resettlement of IDPs. A minimum time will be stipulated for the duration of functioning of the IDP camps and relief projects after a given disaster. To achieve this, safe housing (temporary or/and permanent) will have to be provided to the IDPs, if necessary relocating them from original locations within earliest possible time giving due consideration to livelihoods and social aspects.

8.2 Stakeholder Agencies Responsible for Immediate Recovery, Rehabilitation and Reconstruction

Currently there are several ministries and agencies handling different functions related to the post disaster phase. Some such functions are Resettlement, Essential Services for functioning of IDP camps, Reconstruction, Rehabilitation. Ministry of DM, NDRSC and DMC will coordinate with all these ministries and agencies regarding these activities.

8.2.1 Immediate Recovery of Essential Services

National, Provincial/LA and District/Division level units of service providing agencies will take immediate action to revive the affected public utilities to provide essential services in affected areas. LAs will immediately attend to all services within their purview. Where services are affected severely, action will be taken to take temporary measures for providing such services immediately.

There will be the major agencies responsible for various infrastructure and essential services, which will be associated with these activities and these activities will be coordinated by the DMC at national level and PC, District and Divisional administrations as detailed out in the respective DPRPs.

After disasters due to other specific incidents such as bomb explosions, strikes, violence and civil riots immediate emergency response actions will be taken by the relevant authorities, e.g., Police and Armed Forces. Post event activities must be attended to by these authorities and/or agencies responsible for relief, management of IDP camps, recovery and rehabilitation.

8.2.2 Recovery of Livelihoods of the Affected Communities

In respect of recovery of the disrupted livelihoods of the affected communities, maximum possible assistance will be provided to them, by the responsible government agencies and NGOs, adhering to social justice, neutrality, impartiality, values and culture of affected persons.

The respective ministries / agencies, SLRC and NGOS will be involved with these activities coordinated by DMC as relevant. In the recovery of the disrupted livelihoods, the government will work in association with NGOs and community.

8.2.3 Rehabilitation and Reconstruction

Depending on the scale of the disaster, the responsible agencies will prepare immediate, medium and long term plans for rehabilitation and reconstruction after carrying out assessments of the damages, as well as encouraging preparation of Business Continuity Plans by business entrepreneurs. Reconstruction and rehabilitation of services and public utilities will be carried out to a higher standard than before the occurrence of the disaster, which means that hazards prevailing in the area will have to be considered in reconstruction. The relevant agencies indicated in **Annexure 8-I** will provide advisory services in rapid assessments of risks in the surrounding environment and investigations in the areas selected for relocation and reconstruction depending on the hazards prevalent in the area.

As described in Chapter 5 on Disaster Mitigation for Risk Reduction, Mainstreaming into Development and Climate Change Adaptation, with guidelines for planning and construction in disaster prone areas adopted and building approval procedures of LAs revised and in place, reconstruction to a higher standard can be achieved with proper monitoring by authorities. DMC will coordinate as relevant with different levels of administration and service providing agencies regarding funding requirements.

With respect to rehabilitation, reconstruction / relocation after the disaster DMC will particularly coordinate with the various ministries and agencies handling different related functions, including Ministry of Economic Development, which is the main ministry for reconstruction after a disaster. As appropriate National Housing Development Authority, Department of buildings and various government contracting agencies will be involved in these activities. Funding assistance by Donors/ NGOs/ INGOs will be coordinated at national level by DMC and by the respective administrations at other levels.

Particular emphasis will be given to proper reconstruction after a disaster avoiding haphazard development. DMC and the agencies responsible for reconstruction and development will coordinate regarding adherence to guidelines for land use planning and construction in areas prone to different disasters.

8.2.4 Major Stakeholder Agencies

A matrix of major stakeholder agencies responsible for (or could be entrusted with) different activities in post disaster recovery, rehabilitation & reconstruction are listed in **Annex 8-1**. It is the responsibility of all agencies to ensure that facilities, infrastructure and housing are built to a higher standard than the standard of these before the occurrence of the disaster as indicated in the National DM Policy. It is emphasised that agencies responsible for reconstruction will take into consideration the hazards prevalent in the area in the reconstruction process by making use of hazard maps and other hazard information provided by the respective technical agencies, be it reconstruction in the same location or new construction in new locations.

Some additional government agencies that can be called for assistance as necessary, in addition to any established private technical agencies for assessment on structural strength and reconstruction for (or could be entrusted with) different activities in post disaster recovery, rapid assessment/investigations, rehabilitation and reconstruction activities are listed below:

- Buildings Department
- State Engineering Corporation of Sri Lanka (SEC)
- State Development and Construction Corporation (SD&CC)
- Central Engineering Consultancy Bureau (CECB)
- Academic Institutions.

Chapter 09



Training, Public Awareness and Education

Chapter 9

9.0 Training, Public Awareness and Education

The national public education and awareness generation programme will have several components, viz., Training, Public awareness, School Education and Tertiary Education. These categories include different strata of administrators and technical personnel, field officers, NGOs, business community, CBOs, selected community leaders and volunteers.

9.1 Training

Training on DM includes programmes for different stakeholder agencies involved in DM in different ways in different phases of DM cycle. Based on the Training Needs Analysis conducted earlier by the DMC, the categories of trainees and types of training to be conducted are listed in the **Annex 9-I**. Training and awareness plans will be developed to cover all areas and target groups as detailed. Priorities will be set and depending on the funds available programmes will be developed and commenced. This will involve developing training plans for each District, drawing synergy with existing/ongoing efforts of other organizations.

All stakeholder institutions will indicate their needs and DMC will coordinate the provision of such training. Training needs of the members of the vigilance groups and other grass root level personnel will be assessed by designated academic institutions. The DMC will be the focal point for overall co-ordination. Implementation of training will be assigned to appropriate agencies identified by the DMC, depending on their capacities.

Training will comprise the following types:

Training DMC Staff: To be organized by DMC to be conducted on a regular basis, in two ways, DMC staff at national level – special induction training for newly recruited staff; and regular training for functioning staff.

National Level Training in Disaster Risk Management: To be organized by DMC to be conducted on a regular basis, with funding from the treasury, course fees or with donor funding if available, capturing all categories of personnel including technical and other professionals.

Training for Government Officials, Police and Armed Forces: Appropriate modules or programs in specialist areas associated with the particular sector that the respective officials are working in, would help their career pathways. These may include strengthening of the respective organisations by identifying and strengthening the required capacities and skills to face a crisis as custom designed training programmes. Special modules are being prepared for training of the categories, viz., administrative officials and response personnel.

Special Training Programmes at Sub-national Levels: Related to Disaster Risk Assessment, Preparedness, Early Warning, Response, Relief, Recovery and Reconstruction activities will be conducted as described in **Annex 9-II**.

Special Skill Training related to mitigation:

Construction Skilled Workmen

Theory and on-the-job training for masons on structural mitigation measures such as retaining walls in landslide prone areas; Special training programs and guidelines that detail hazard specific mitigation practices.

Tertiary Students

Modules and subjects directly related to disaster risk management that contains both theory and practice associated with their disciplines.

Building Maintenance Staff

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.

9.2 Awareness Programmes

The on-going awareness programmes for different government officials at sub-national levels will be continued with regular improvements. In addition, awareness programmes for the general public and communities in specific areas that are already being conducted will be improved.

Specific Awareness for Different Government Officials at Sub-national Level: Awareness programmes related to following will be conducted in all districts based on a schedule based on proneness of the districts.

- Awareness on hazards and vulnerability
- Awareness about the safe and quick evacuation routes
- Initial response on occurrence of disaster
- EOC functions, and duties and responsibilities assigned to various personnel
- Site Operation Centre (SOC) functions, and duties and responsibilities assigned to various personnel.

General Public Awareness: Public awareness programmes will be organized with the involvement of DMC District Units, various Government Stakeholder Agencies, NGOs and Media. These can take the form of public awareness campaigns using media, posters, competitions, street dramas, workshops and others. DMC is already using a Mobile Public Awareness Unit in these programmes. Public Awareness programmes are generally for the following target groups:

- Community in all fields of activities including farmers, fishermen, traders, skilled workmen in building trades etc. and house wives
- School teachers and children - Art competitions; participation in disaster reduction campaigns and events; and meeting with people involved in disaster mitigation
- Officials of various organizations
- Professionals of different sectors
- Political heads of Provincial Councils (PCs) and Local Authorities (LAs)
- Journalists
- Volunteer Workers.

A wide array of channels of communication will be adopted for Public Awareness depending on the target groups and situations. DMC has already commenced developing different modules for such programmes.

- Face-to-face: meeting, seminar, workshop, conference, march, exhibition, demonstration, training, exchange visit, planning
- Mass media: television, melodramas, radio, newspaper, cinema
- Distributed print material: 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 etc.

Areas that will be covered in public awareness, which would be hazard specific wherever relevant, are listed in **Annex 9-III**.

Awareness for Communities for Livelihood Development and Poverty Reduction: Awareness for the communities on stabilising and diversifying livelihoods so that people can manage disaster risk better are essential. These would also include providing them with means of receiving information on risk in the locality, early warning etc. Along with livelihood diversification and stabilising, they have to be made aware of other aspects such as skill diversification, market expansion and product diversification to meet the market demands and so on.

Awareness and interactions will be taken up in small group meetings to create understanding of the need to address livelihood issues in post disaster recovery. Poverty reduction will be one objective of these interactions. DMC will utilise the existing mechanisms at the village/community levels involving CBOs and NGOs/ INGOs active in different areas of the country.

9.3 School Education

DMC will continue presently on-going activities as given below, and initiate some specific programmes comprising a variety of forms in educating the school children, while highest priority will be given to integration in the school curriculum. In these programmes DMC will collaborate with Ministry of Education, NIE, GIZ, NSF, UNOCHA, SLRC, NGOs.

- Integration of DRR and related aspects in the school curriculum (Roadmap proposal PA-3.1)
- Awareness programmes
- Training for teachers and students etc. (to include basic first aid and swimming as well)
- Development and sharing awareness material (videos, printed material etc.)
- School 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
- Integrating Natural Disaster Aspect in School Curriculum and teacher training – to include Risk Awareness Education
- Risk Awareness Education and School Safety / Emergency Plans - school safety or emergency plans for making schools safe from major accidents, and also in case of a rapid on-set natural disaster how to act and how they can trace the whereabouts of their parents, etc.

Action will be coordinated by DMC to implement the following proposals of the Roadmap regarding integration of disaster aspect in the school curriculum and school safety and awareness along with the Ministry of education:

- Roadmap proposal PA-3.1: Integration of Natural Disaster Aspect in School Curriculum
- Roadmap proposal PA-3.2: Awareness through Schools and School Children – School Awareness involving NGOs

9.4 Tertiary Education

Integration of DRR in the university curricula and other tertiary educational curricula that have already been completed to different degrees will be reviewed and continued with improvements.

Integration of Disaster Management in University Curricula

DM has already been integrated in the Masters and Degree courses in Town Planning, Architecture and Building Economics of the Faculty of Architecture in the University of Moratuwa, and in the Geography Department in the University of Ruhuna. 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. Natural Disaster Mitigation modules are being taught in these courses at present.

University of Peradeniya has already commenced a Masters Course in Disaster Management for mid-level administrators. DMC will continue this activity starting a fresh dialogue with all universities and 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 compulsory and 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, Languages, Health and Physical Education etc.

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.

Incorporating Disaster Management in other Tertiary Educational Curricula

In Technical Colleges and other skill training schools and establishments DM will be integrated in collaboration with the various colleges as appropriate to the course contents. Teacher training has already begun for this activity. The emphasis in these is twofold, viz.,

- i. General DM awareness
- ii. Specific content to match the subject area of the courses.

Special attention will be given to courses such as National Diploma Courses (NDT) and National Certificate in Technology (NCT) in the multiple disciplines such as civil, mechanical, electrical etc. as appropriate. Other possible courses are masonry and electrician courses conducted by the Vocational Training Authority (VTA), National Apprenticeship and Industrial Training Authority (NAITA) and also the skill level training courses conducted by the network of technical colleges in the country.

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- 16 Guidance Note for preparing Disaster Preparedness and Response Plans – presently known as Disaster Preparedness Plans for Emergency Response (DPPERs) at different levels using formats – DMC / UNDP, March 2007 - This document needs to be reviewed and revised to suit the present context



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