



**Sri Lanka Comprehensive  
Disaster Management Programme  
(SLCDMP)**

**2014 - 2018**





## **Message of the Hon. Minister of Disaster Management**

The government has successfully resettled almost all victims of natural and human induced disasters such as tsunami, floods, landslides and 30 years of internal conflicts which ended in 2009. A trend of increase in natural disasters has been reported in many countries, including Sri Lanka, during the recent past. Quite a few leading scientists have warned that climate change would immensely contribute to this alarming situation. The adverse impact of such natural and man-made disasters on the day-to-day life, properties and livelihoods of our people and also on the entire development process cannot be overemphasized. Therefore, in order to successfully respond to such unfavorable events and minimize the impacts on human life it is indispensable that we enhance the capacities of the people as well as of the country as a whole.

I am happy to note that the government was able to establish an effective mechanism to disseminate timely warning messages to those living in vulnerable locations. Large number of awareness programmes conducted during the past few years has helped to improve the resilient capacity of the general public, especially school children. Keeping in line with the policy of the government to give highest priority to save the lives of people and provide disaster relief, my ministry has streamlined the process and minimized delays in distributing cooked meals and dry food items.

It must be stated here that, while maintaining the social welfare measures to minimize the suffering of the disaster victims, my ministry has recognized and initiated action on addressing disaster management holistically. In this regard, we have taken several positive initiatives to prevent and mitigate disaster impacts in several vulnerable districts in the country. A large numbers of lives were lost due to rising trends in high winds and lightning during the past few years. There are also economic losses caused by severe droughts. This situation has warranted the need to issue seasonal weather forecasts. We have observed that sudden opening of spill gates in several large reservoirs due to unexpected heavy precipitation has caused severe floods downstream. Therefore, mitigation of disasters, securing the lives of people and maintaining an uninterrupted economic development process are serious challenges before us today. To overcome these challenges, as envisaged in Mahinda Chinthana, it is imperative to acquire the full participation of all public sector agencies, cooperation of private sector, non-government organizations, donor communities, UN agencies and communities to implement a comprehensive programme to reduce risk and protect human life and property.

Considering the achievements made so far, gaps identified in implementing disaster management programmes and recommendations made by international agencies, the National Council for Disaster Management chaired by HE the President had directed my ministry to develop a Comprehensive Disaster Management Programme to address these issues comprehensively. I am pleased to note that my ministry, with the technical assistance of UNDP, has developed a long term plan –the Sri Lanka Comprehensive Disaster Management Programme covering the period 2014 to 2018. Regional experience sharing in addressing disaster management issues holistically and consultations with large number of ministries and stakeholder agencies have been very valuable in developing the Programme. In this endeavour, I wish to extend my gratitude to the Hon. Deputy Minister, the Secretary of my Ministry and Secretaries of all Ministries, Chief Secretaries, District Secretaries, Director Generals of Institutions under my Ministry and Heads of Institutions for the valuable input provided and the United Nations Development Programme for their assistance in developing the programme.

**Mahinda Amaraweera**  
Minister of Disaster Management



## **Message of the Hon. Deputy Minister of Disaster Management**

Sri Lanka has a long history of disaster risk reduction (DRR) that goes back to the ancient era where there was an ecosystem based approach to disaster management. However, the devastating Indian Ocean Tsunami in 2004, and other disasters such as floods, droughts and landslides experienced during the last several years made us understand that Sri Lanka is no longer a disaster-free country and that it requires a coordinated approach of government, private sector institutions and communities to minimize the impacts of potential disasters. Being an island nation we have to pay special attention to the impacts of climate change which further aggravate intensity and frequency of disasters.

I am very pleased to note that Sri Lanka is the first country in the Asian region to establish the legal framework by enacting the Disaster Management Act No 13 of 2005 in Parliament which established an institutional framework to address Disaster Management holistically. With the guidance of the Ministry of Disaster Management all institutions under the ministry have implemented a large number of programmes including the project “Road map for safer Sri Lanka” to enhance the capacity to reduce the impact of disasters. As a result Sri Lanka has been reporting significant achievements in reducing human casualties in water related disasters even though economic losses and damage to infrastructure and property are very high.

The Ministry strongly believes that the Sri Lanka Comprehensive Disaster Management Programme initiated under the guidance of the Hon. Minister of Disaster Management will pave the way to minimize these disaster losses with assistance and coordination of all public and private sector organizations, NGOs, Donors, UN agencies and communities.

I thank the Hon. Minister for providing policy guidance to develop the programme and the Secretary of the Ministry for leading and coordinating the programme. I wish all success in implementing the programme.

**Duleep Wijesekera**

Deputy Minister of Disaster Management



## **Message of the Secretary Ministry of Disaster Management**

Disaster Management is a cross cutting issue requiring the involvement of all ministries, state and private sector agencies, non-government organisations, academia, electronic and print media and citizen of the country to prevent or minimize the impacts of disasters. The Sri Lanka Comprehensive Disaster Management Programme (SLCDMP) -2014-2018 will serve as the primary framework for Disaster Management in Sri Lanka and provide the enabling environment for multi-sector and multi-agency interventions at the national, district, divisions and GN levels.

The extensive and inclusive consultation approach which went in to the development of the SLCDMP has resulted in producing the next five year programme to overcome future challenges in disaster management in the country. The programme will bring together key development agencies in order to mainstream DRR into the development process. All government, non-government, UN, donor, and private sector agencies involved in Disaster Risk Management will need to align their programs with the SLCDMP to ensure coherence of disaster management interventions and demonstrate their contribution in achieving national objectives.

The launching of the SLCDMP also comes at a time Sri Lanka is commemorating the 10th year anniversary of the 2004 Tsunami, where after the country has done a significant amount of work in the area of Disaster Management. Implementation of the SLCDMP will bring the country a further step closer to achieving the main goal of ensuring the safety of Sri Lankan citizens. I am confident that with the political will from the highest levels and the support of all partners at national and international level including the development partners our vision will be translated in to reality for the benefit of people in Sri Lanka.

In this process the guidance provided by the Hon. Minister and Deputy Minister of Disaster Management has been invaluable and acknowledged with gratitude. I take this opportunity to express my sincere appreciation to all Secretaries, Head of Institutions in public and private sector, members of National Disaster Management Coordinating Committee for their valuable contribution in formulating the programme. My staff, specially Additional Secretary Ms. Wasantha Samaraweera and former Director General of the Disaster Management Centre, Major General Gamini Hettiarachchi worked hard to finalise the SLCDMP. I also wish to acknowledge the support received from the United Nations Development Programme, especially the former Assistant Country Director Dr. Ananda Mallawatantri, Former UNDP Consultant Mr. U.L Chandradasa and former UNDP Programme Development Officer Ms. Kushani de Silva in compiling this document.

**S M Mohamed**  
Secretary



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## Acronyms and Abbreviations

AEA	Atomic Energy Authority
AICWCA	Authority for Implementing Chemical Weapons Convention Act
ADPC	Asian Disaster Preparedness
ARPAs	Agrarian Research and Production Assistants
CBDRM	Community Based Disaster Risk Management
CBEW	Community Based Early Warning System
CBOs	Community Based Organisations
CCA	Climate Change Adaptation
DCC&CRM	Department of Coast Conservation & Coastal Resource Management (formerly Coast Conservation Department)
CEA	Central Environmental Authority
CEB	Ceylon Electricity Board
CHPB	Centre for Housing Planning and Building
CMC	Colombo Municipal Council
CPR	Cardiopulmonary Resuscitation
DA(DoA)	Department of Agriculture
DAD	Department of Agrarian Development
DDMCU	District Disaster Management Coordinating Unit
DMCU	Disaster Management Coordinating Unit
DesInventar	Sri Lanka Disaster Information System
DS	District Secretary
DI	Department of Industries
DIA	Disaster Impact Assessment
DM	Disaster Management
DMC	Disaster Management Centre
DoM	Department of Meteorology
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DTET	Department of Technical Education and Training
EOC	Emergency Operations Centre
EW	Early Warning
GN	GramaNiladhari
GHG	Greenhouse Gases
GIZ	German Development Cooperation
HARTI	Agrarian Research and Training Institute
HFA	Hyogo Framework of Action
ICS	Incident Command System
ICTA	Information Communication Technology Agency
ACTAD	Institute of Construction Training and Development
ID	Irrigation Department
IDMP	Institutional Disaster Management Plan
IDNDR	International Decade for Natural Disaster Reduction

INGOs	International Non-Governmental Organizations
IOM	International Organisation for Migration
IPCC	Intergovernmental Panel on Climate Change
JICA	Japan International Cooperation Agency
LA	Local Authority
LG	Local Government
LKR	Sri Lankan Rupees
LS	Land Slides
MASL	Mahaweli Authority of Sri Lanka
MDM	Ministry of Disaster Management
MED	Ministry of Economic Development
MPA	Ministry of Public Administration
M/LG&PC	Ministry of Local Government and Provincial Councils
MRI	Medical Research Institute
NBRO	National Building Research Organization
NCDM	National Council for Disaster Management
NCE	National Colleges of Education
NDMCC	National Disaster Management Coordination Committee
NDMP	National Disaster Management Plan
NDRSC	National Disaster Relief Services Centre
NEOP	National Emergency Operation Plan
NGOs	Non- Governmental Organisations
NIE	National Institute of Education
NPD	National Planning Department
NPPD	National Physical Planning Department
NSDI	National Spatial Data Infrastructure
NTS	Nurses Training School
NWP	Numerical Weather Prediction
NWSDB	National Water Supply and Drainage Board
PC	Provincial Council
PTS	Police Training School
SAR	Search and Rescue
S&R	Search and Rescue
SDI	Spatial Data Infrastructure
SLCDMP	Sri Lanka Comprehensive Disaster Management Programme, 2014 – 2018
SLILG	Sri Lanka Institute for Local Governance
SLLRDC	Sri Lanka Land Reclamation and Development Corporation
SLRCS	Sri Lanka Red Cross Society
SLUMDMP	Sri Lanka Urban Multi-hazard Disaster Mitigation Project
SMI Sector	Small and Medium Industries Sector
SOPs	Standing Operating Procedures
TACs	Technical Advisory Committees
TOR	Terms of Reference
TRC	Telecommunication Regulatory Commission
UDA	Urban Development Authority
ULA	Urban Local Authority
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UN OCHA	United Nations Office for Coordination Humanitarian Assistance
VTA	Vocational Training Authority
WB	World Bank
WFP	World Food Programme
WRB	Water Resources Board

## Executive Summary

During the colonial era the then prevailing tank and village culture of Sri Lanka which embraced an ecosystem based approach was disturbed and resilience of communities gradually eroded. Since independence however, the government has established systems to provide welfare assistance to affected people.

With the declaration of the IDNDR in 1990 by the United Nations, a new trend in DM started in mid 90s in Sri Lanka. This included formalised provision of relief and shelter through the Ministry of Social Services, and the district and divisional administrations. Furthermore, other initiatives have taken place such as, implementing projects attempting to incorporate DRR into urban planning, developing guidelines for urban planning, land use zoning and construction in hazard prone areas, DM training and integration of DRR into school and university curricula, and developing plans for preparedness and response to disasters at district and divisional levels.

With the tsunami of 2004, the Government and Society had to take up the challenge of assisting those affected. Since then, various initiatives have been launched such as, the enactment of the Disaster Management Act I of May 2005, after which the National Council for Disaster Management (NCDM), Ministry of Disaster Management and the Disaster Management Centre (DMC) were established for the purpose of implementing provisions of the Act. This was followed by the establishment of the institutional framework to address Disaster Management in the country holistically. Other initiatives followed such as, Towards a Safer Sri Lanka, A Road Map for DRM – Volume 2: Project Proposals<sup>2</sup>, and drafting of The National Disaster Management Policy<sup>5</sup> and The National Disaster Management Plan<sup>6</sup>. The National Disaster Management Coordinating Committee representing Government Agencies, I/NGOs, Universities, Private Sector, UN Agencies and the Donor Community functions as the national platform for coordinating activities of all stakeholder agencies.

Apart from the somewhat rare disasters such as tsunamis, the more common disasters affecting Sri Lanka are floods, drought, landslides, lightning strikes, high winds/cyclones, animal attacks etc. In addition to these, climate change induced events and improper land use in the recent past are also influencing disaster patterns at present.

Based on the country experience, global developments in DRR and, recommendations of UNDAC Assessment 2011<sup>14</sup>, in May 2012 the NCDM has approved the development of the “Sri Lanka Comprehensive Disaster Management Programme (SLCDMP), 2014 – 2018”. Its goal is ensuring the safety of Sri Lanka by reducing the direct and associated potential risk of the country and minimising impacts on people, properties and the economy. Its overarching objective is creating and facilitating an enabling environment for multi hazard, participatory and partnership oriented DM programmes which use risk knowledge as the base, in line with global conventions and frameworks.

Accordingly, Chapters 3 and 4 present in detail the proposed programme outcomes, and the related outputs and activities. Chapter 5 will examine the financing plan, the project investment and the socio-economic cost benefit analysis. Chapter 6 will describe the arrangements for implementation of the programme, SLCDMP Implementation Unit and Proposed Programme Structure along with Annex 6-1 listing the implementing Ministries and Agencies. The Monitoring and evaluation process and the system proposed are explained in Chapter 7 with the necessary matrices, charts and formats attached as annexes.

# Introduction

Sri Lanka has historical evidence of managing disaster risk. This proven history of Disaster Risk Reduction (DRR) goes back to the villagetank (reservoir) system which was based on an ecosystem management approach and supported the country’s agrarian civilization for many centuries. These systems were disrupted during the colonial period and the equilibrium of natural systems and human life along with the resilience capacity of communities gradually eroded. With modern challenges such as population increase, resource constraints, conflicts and development related modifications to land use and landscape conditions, the potential for disaster has increased; more so with the impact of such human induced disaster elements.

Disaster risk reduction is even more important today as Sri Lanka embarks on a rapid development trajectory<sup>1</sup> where natural and human induced disasters can erode development gains unless DRR measures are factored into development planning. In addition, the potential impact of climate change should also be an essential part of modern DRR strategies.

With the increased attention towards Disaster Management after the devastating Indian Ocean tsunami of December 2004, the government appointed a “Parliamentary Select Committee on Natural Disasters” to identify ways to improve Disaster Management in the country. Based on its recommendations<sup>2</sup> the Disaster Management Act<sup>3</sup> of May 2005 was formulated providing the initial legal and institutional framework for holistic disaster management. Accordingly, the National Council for Disaster Management (NCDM) Chaired by H.E. the President, the Ministry of Disaster Management and the Disaster Management Centre (DMC) has the responsibility of implementing provisions of the Act.

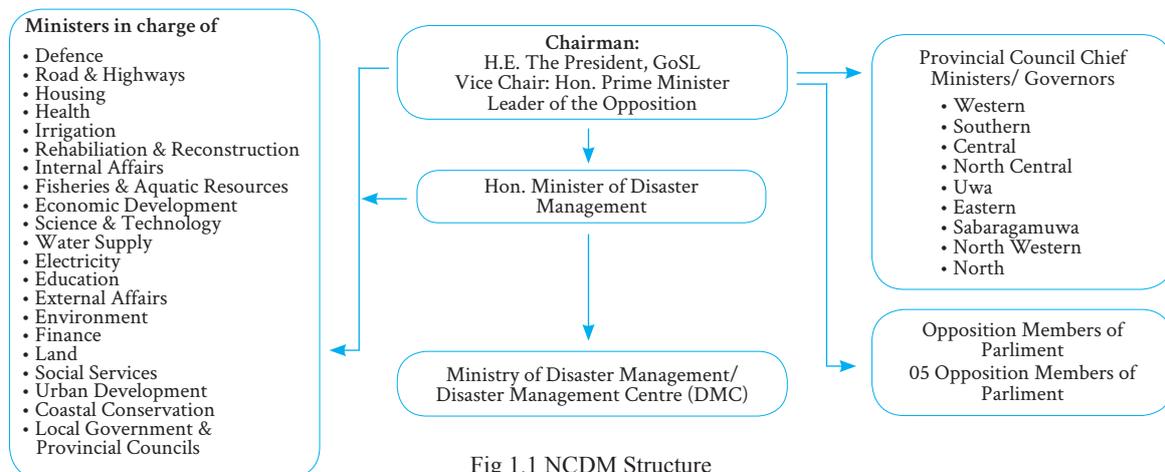


Fig 1.1 NCDM Structure

1 Unstoppable Sri Lanka, GoSL Investment Plan for 2014-2016, Ministry of Finance and Planning  
 2 Report of Sri Lankan Parliament Select Committee on Natural Disasters, August 2005  
 3 Sri Lanka Disaster Management Act No.13 enacted in the Parliament of Sri Lanka in May 2005

To implement the provisions of the Disaster Management Act, a multi-stakeholder group designed the “Road Map for Disaster Risk Management - Towards a Safer Sri Lanka” together with the leadership of the Ministry of Disaster Management and with UNDP technical and financial assistance, in 2005. The “Road Map” is also in line with the UN sponsored global initiative for disaster reduction<sup>4</sup>. “Hyogo Framework for Action (HFA) 2005-2015.

Volume 2 of the “Road Map for Disaster Risk Management - Towards a Safer Sri Lanka”: Project Proposals”<sup>5</sup> launched in 2006 included 103 project concepts under seven thematic components, including institutional development; multi-hazard early warning systems; disaster preparedness planning and response; and public awareness, training and education.

The “Road Map” approach was further strengthened with the National Disaster Management Policy<sup>6</sup> and the National Disaster Management Plan<sup>7</sup> (NDMP) adopted by the NCDM and approved by the Cabinet of Ministers for implementation in 2013.

The multi-stakeholder national platform or the National Disaster Management Coordinating Committee (NDMCC) established in November 2007 plays a key role in implementing DRR strategies in the country. The NDMCC which is coordinated by DMC meets monthly under the leadership of the Ministry and includes a representation from relevant government agencies, I/NGOs, Universities, Private Sector, UN Agencies and the Donor Community.

Implementation of interventions outlined in the “Road Map Towards a Safer Sri Lanka” during the past nine years (2005-2013) has resulted in significant improvements in the disaster management capacity of the country in terms of preparedness, response, awareness and creation of the legal and institutional structures, together with the fostering of an enabling environment for risk reduction.

As a result of a multitude of such interventions by stakeholder agencies, Sri Lanka is reporting significant achievements in reducing human casualties in weather-related disasters (Table 1.1).

**Table 1.1 -Loss of life due to frequently occurring hazards**

Year	Flood	Landslide	Cyclone / High Winds	Lightning
2000	3	0	7	5
2001	0	3	0	16
2002	1	12	4	9
2003	151	218	4	9
2004	5	8	3	8
2005	17	4	6	10
2006	37	38	5	12
2007	16	34	10	28
2008	44	19	13	22
2009	7	11	11	17
2010	24	4	2	19
2011	69	6	25	11
2012	45	4	2	68

Source: DesInventar database<sup>8</sup> of DMC

However, there has been an increasing trend of casualty with regard to lightning strikes and high winds, calling for more attention and investments, especially on awareness raising.

4 Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, International Strategy for Disaster Reduction - World Conference on Disaster Reduction, 18-22 January 2005, Kobe, Hyogo, Japan. www.unisdr.org  
 5 Towards a Safer Sri Lanka, A Road Map for DRM - Volume 2: Project Proposals, Ministry of Disaster Management and Human Rights, April 2006  
 6 Draft National Disaster Management Policy - Ministry of Disaster Management, November 2013  
 7 National Disaster Management Plan - Ministry of Disaster Management, October 2013  
 8 DesInventar- Sri Lanka Disaster Information System (www.desinventar.lk), Disaster Management Centre (DMC), Ministry of Disaster Management and Human Rights in partnership with UNDP Sri Lanka and Regional Centre, Bangkok - June 2007

## 1.1 Key Disasters Affecting Sri Lanka

### Floods

Recurring floods have had an impact on 16 to 23 out of 25 districts since 2003 (**Table 1.2**). Since 2003, however, significant reduction in numbers related to loss of life has been evidenced. This reduction is due to improved early warning systems and response capacity at district levels which also involved the support of armed forces.

However, a marginal increase is noted in the figures on loss of life during the past five years partly due to the high intensity precipitation leading to flash floods. In these cases timely early warnings on water management in reservoirs and dams have been a challenge. An increase is noted in 2011 when, as many as three flood events in January, February and September were recorded. Though the average number of lives lost in 2011 compared to the number of people affected is relatively low, the flood of January 2011 alone recorded a loss of five lives against 100,000 affected, which is higher than previous years. In 2012 the same figure had increased to 8 people against 100,000 affected (**Table 1.2**). Detailed analysis of daily situation reports revealed that some losses of life are due to negligence of individuals but this further highlights the need for awareness and increasing response capacity.

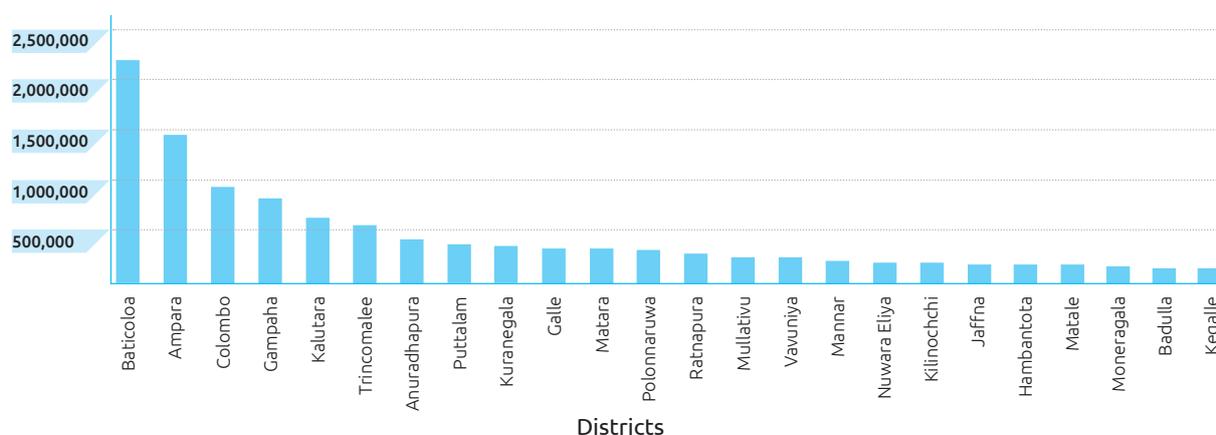
**Table 1.2 - Number of lives lost against total affected due to floods**

Year	Number of districts affected	Number of people affected	Total number of lives lost	Casualties against every 100,000 affected
2003	17	733,479	151	21
2004	19	340,068	05	01
2005	20	415,471	17	4
2006	20	605,903	37	6
2007	20	499,887	16	3
2008	21	1,262,506	44	3
2009	16	453,429	07	2
2010	18	453,429	24	2
2011*	23	2,524,402	69	3
2012**	20	536,318	45	8

Source: DesInventar database of DMC

\*Three flood events January, February and September

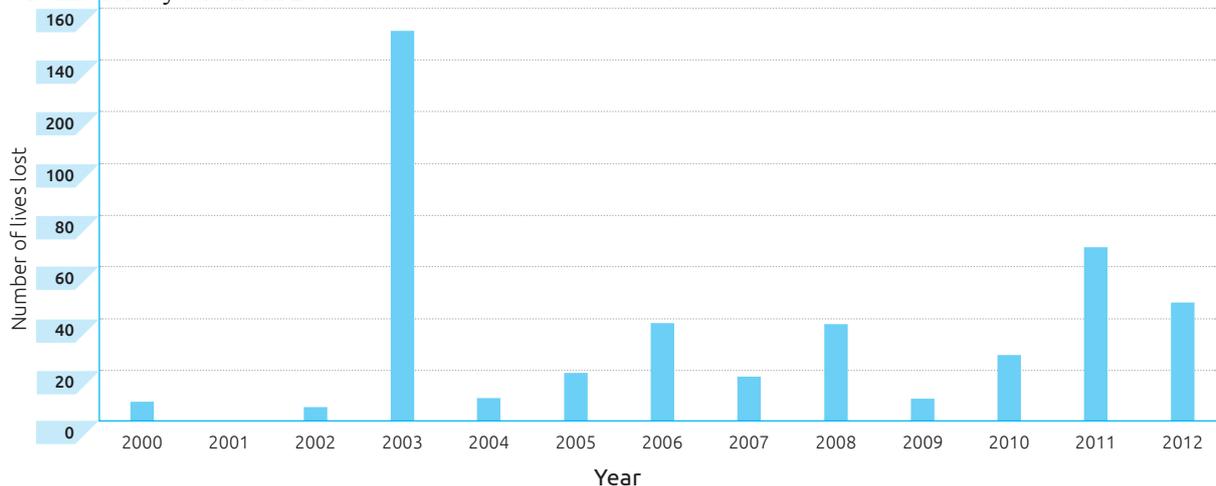
\*\* Data from Emergency Operation Centre DMC



**Fig 1.2 - Cumulative Number of people affected by floods: 2002 -2012**

Source: DesInventar database of DMC ([www.desinventar.lk](http://www.desinventar.lk))

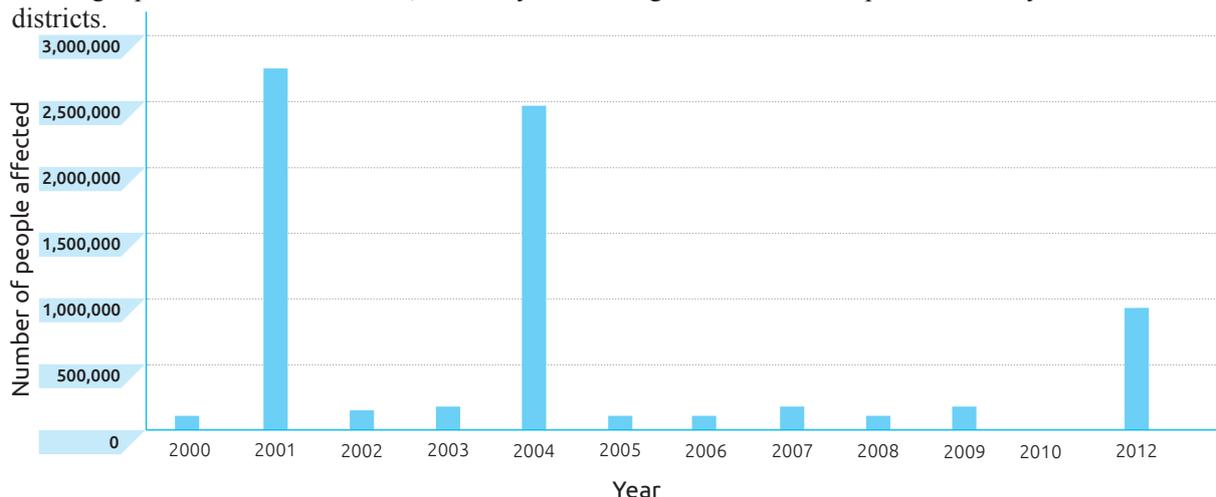
Intense precipitation exceeding 300 mm within 24 hours both in 2011 and 2012 generated flash floods also highlighting potential climate change contributions. This observation is different to that of 2003 and 2008 when cyclones forming in the Bay of Bengal influenced the weather. Flash flood impacts are further aggravated by urbanization, settlements in flood prone areas and infrastructure development which neglect potential disaster risks, especially in Batticaloa, Ampara, Colombo, Gampaha, Kalutara and Trincomalee districts. Government has provided more than Rs. 1,400 million (over 10 million USD) as food aid to flood victims for 5 years from 2007.



**Fig. 1.3–Number of lives lost due to Floods**  
 Source: DesInventar database of DMC ([www.desinventar.lk](http://www.desinventar.lk))

### Drought

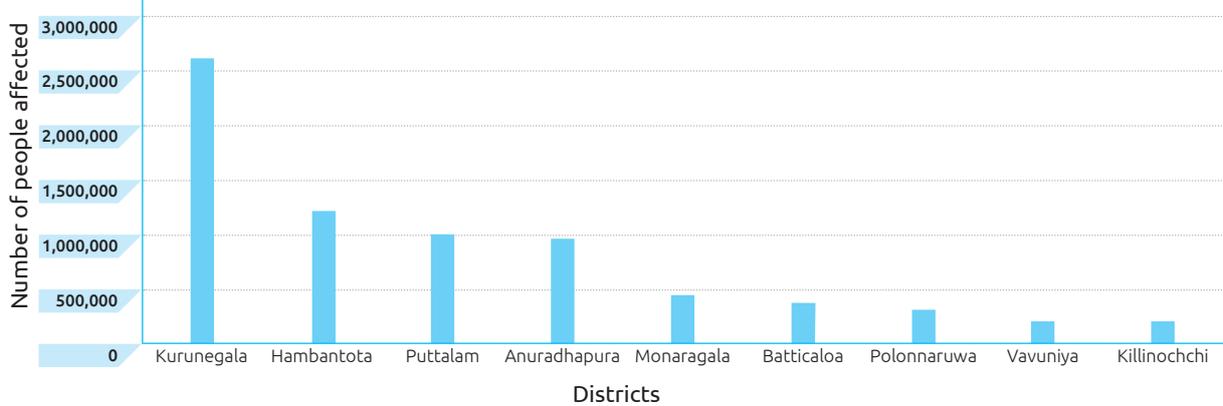
Severe drought periods have been reported in 2001, 2004 and 2012 (Fig. 1.4). Drought is a slow onset disaster affecting communities over an extended period of time. The number of people affected due to drought however has been reduced significantly (Fig. 1.4) partly due to the major irrigation development programmes in drought prone districts. However, a scarcity of drinking water has been reported annually in most of these districts.



**Fig 1.4 -Impact of Drought**  
 Source: DesInventar database of DMC ([www.desinventar.lk](http://www.desinventar.lk))

Failure to cultivate crops in two consecutive seasons due to scarcity of water is the criteria for the government to provide drought relief. Analysis of data after the year 2000 indicates that the impact of drought has been

severe in Kurunegala, Hambantota, Puttalam, Anuradhapura and Moneragaladistricts (Fig.1.5).According to the Department of Meteorology there is no substantial variation of the amount of annual precipitation in Sri Lanka, but there is a variation in the rainfall pattern and intensity.

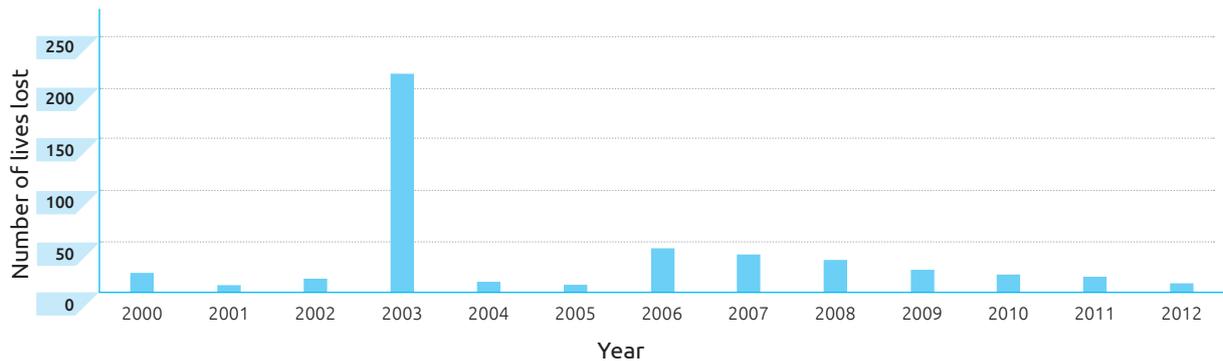


**Fig. 1.5 - Cumulative number of people affected by drought: 2000-2012**  
 Source: DesInventar database of DMC ([www.desinventar.lk](http://www.desinventar.lk))

### Landslides

Landslides are seen to have a greater adverse economic impact in urban centers in the hill country with higher density of human settlements and infrastructure facilities. Although heavy rainfall is considered the trigger factor of landslides, what significantly enhances the landslide potential is the geological and topographical characteristics of the landscape, poor land utilisation practices such as unplanned development and settlements together with harmfully extensive agriculture.

The significant decrease in the numbers of human lives lost through landslides since 2003 (Fig.1.6) can be attributed to the multiple interventions, led by the National Building Research Organization (NBRO), an agency under the Ministry of Disaster Management. Interventions included increased awareness, mapping and modeling, identification of landslide hotspots, early warning systems and introduction of building guidelines and approval processes to Local Authorities. Nevertheless, other factors such as damage to property, economic losses as well as provision of relief to victims of landslides are yet to reduce significantly (Table 1.3).



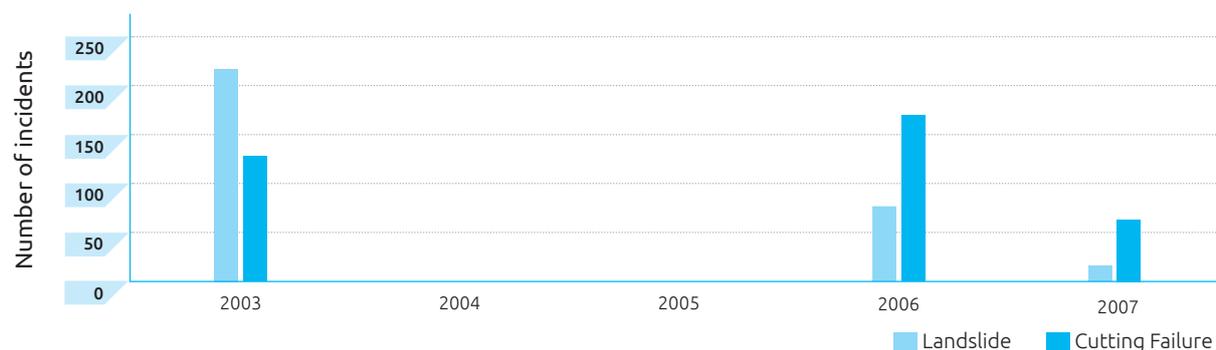
**Fig. 1.6 – Number of lives lost due to landslides/ slope failures:2000-2012**  
 Source: DesInventar database of DMC ([www.desinventar.lk](http://www.desinventar.lk))

**Table 1.3 -Landslide:2000–2010**

Year	No of People affected	No. of lives lost	Houses damaged and destroyed	Damage to paddy and other crop lands (Ha)	Relief Distribution (Rs)
2000	23	0	4	2	60,000
2001	10	3	2	0	0
2002	2,299	12	76	55	2,657,593
2003	22,328	218	3,713	80	152,000,000
2004	3,867	8	548	3	951,523
2005	1,613	4	107	4	966,788
2006	26,889	38	2,283	46	10,047,180
2007	27,497	34	2,317	5,713	3,167,719
2008	3,180	19	283	11	3,283,260
2009	1,376	11	117	4	712,430
2010	833	4	18	0	0

Source: DesInventar database of DMC ([www.desinventar.lk](http://www.desinventar.lk))

NBRO also has reported an increasing trend in cutting failures that also get reported under landslides (Fig. 1.7). Housing and road construction have significantly contributed to this trend. In order to mitigate the increasing trend in cutting failure, NBRO has introduced regulatory measures in the development approval procedure of local authorities, which discourages construction of houses in unstable land, and vertical excavation on steep slopes.

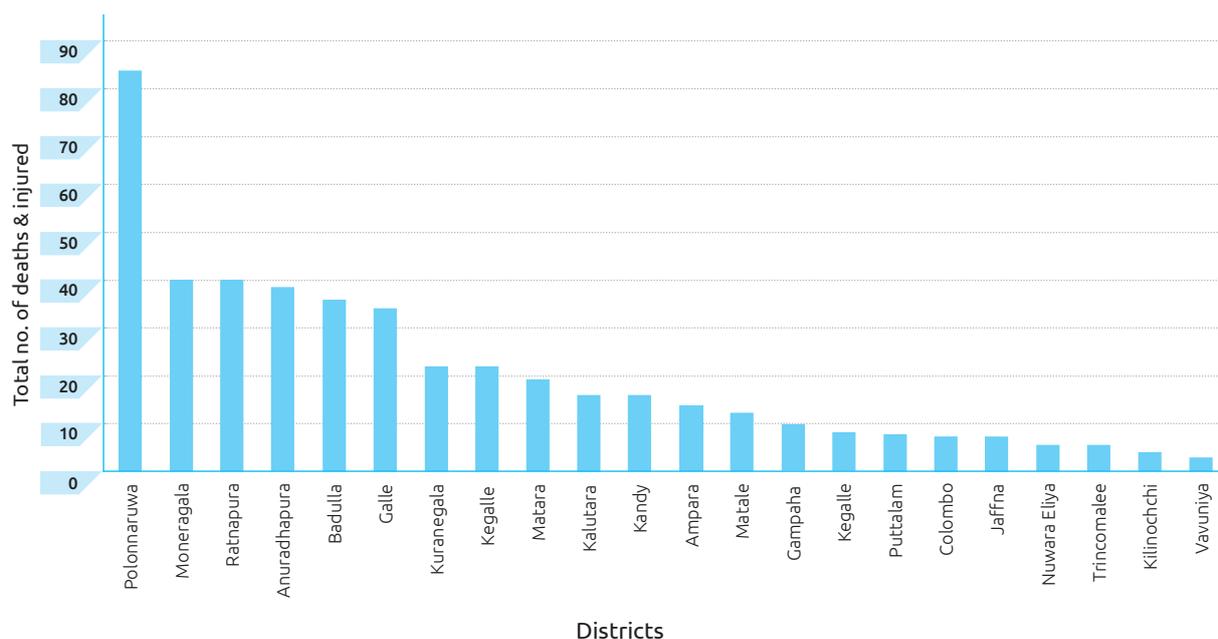


**Fig. 1.7 - Landslide and Cutting Failure incidents from 2003 – 2007**

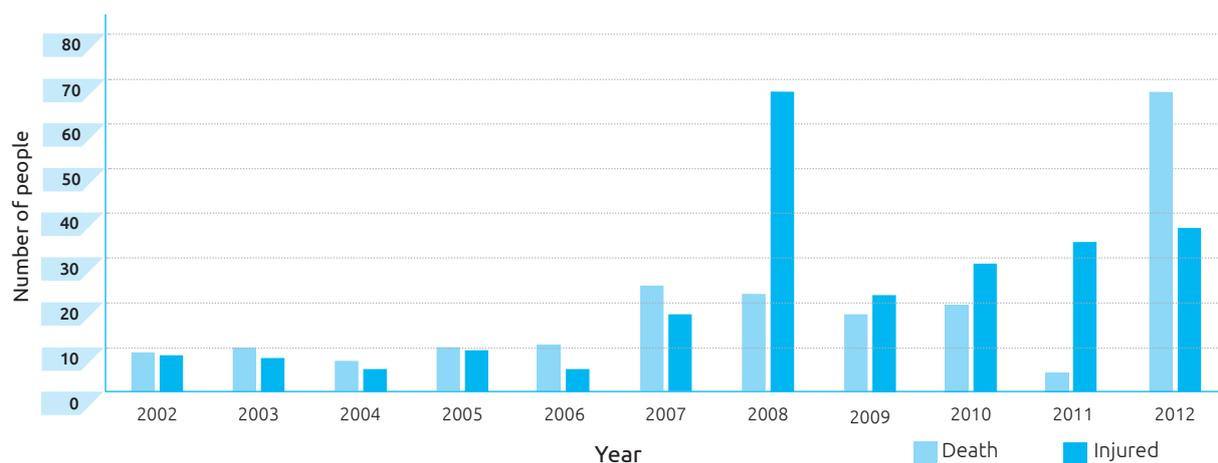
Source: National Building Research Organisation (NBRO)

### Lightning Strikes

Lightning strikes are a natural hazard which is difficult to predict with the available technology. A single thunderstorm could produce over 100 lightning flashes. In Sri Lanka all districts are prone to lightning strikes. Reported data for the last 12 years indicates that loss of life and injury are more prevalent in some districts (Fig. 1.8). There could however be many more unreported incidents. Relatively high incidents have been reported in the districts of Polonnaruwa, Moneragala, Ratnapura, Anuradhapura, Badulla and Galle (Fig. 1.8). It is clear that in general awareness on the dangers and prevention of lightning strikes has to be improved in districts with high incidents.



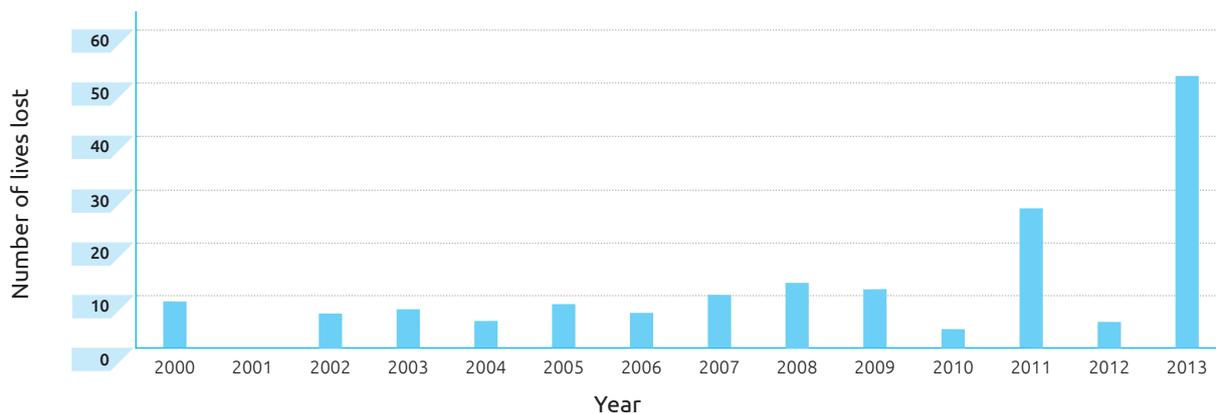
**Fig 1.8 - Geographical spread of deaths and injured due to lightning: 2002-2012**  
 Source: DesInventar database of DMC



**Fig 1.9 – Number of deaths and injuries due to lightning: 2002-2012**  
 Source: DesInventar database of DMC

### High winds/cyclones

There is an increasing trend in loss of human life due to high winds (**Fig 1.10**). The majority of incidents has been reported in 2011 and 2013 and involved fishermen. The Department of Meteorology has enhanced its capacity to track the development of cyclones in the Bay of Bengal and issue early warning. However, according to the DoMitis difficult to predict the formation of high winds due to the frequent changes of tropical weather patterns particularly in an island country like Sri Lanka. Due to high losses of life and property the Government has assigned priority status for early warnings to fishermen.



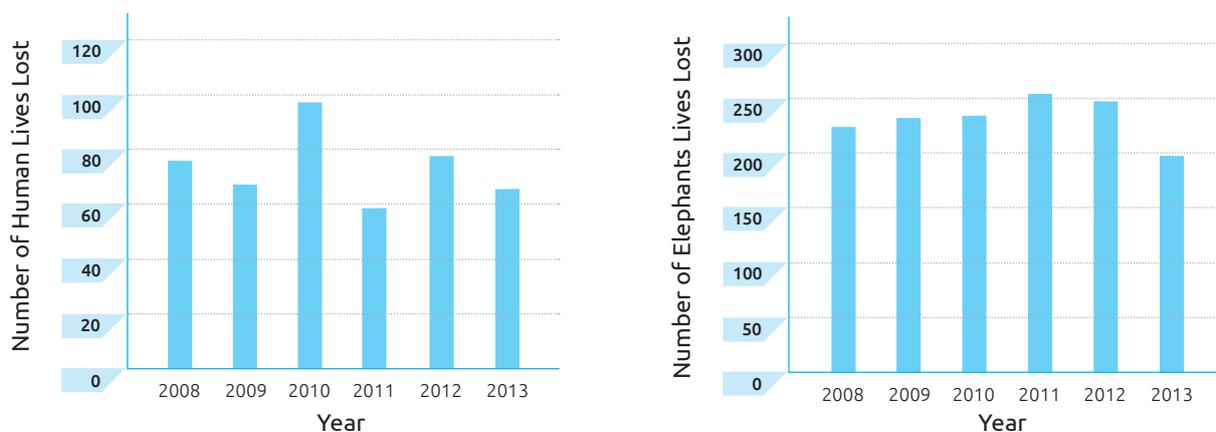
**Fig. 1.10 - No. of lives lost due to high winds and cyclones: 2000 – 2013 July**  
 Source: DesInventar database of DMC ([www.desinventar.lk](http://www.desinventar.lk))

### Tsunami

More than 35,000 lives were lost to the historic Indian Ocean tsunami on the 26<sup>th</sup> of December 2004 partly due to the lack of awareness. Since then DMC together with other agencies has implemented several programmes to improve the awareness of people in tsunami prone districts and established tsunami early warning mechanisms. An interview survey<sup>10</sup> was conducted by DMC with the assistance of Japan International Cooperation Agency (JICA) in 2010 to assess the readiness of communities to respond to disaster warnings issued by Pacific Tsunami Warning Centre. This was part of a worldwide exercise on 13<sup>th</sup> June 2010. The survey revealed that 70% of the population surveyed had evacuated from danger prone areas to safe locations. DMC has also reported that about 90% of the population in tsunami prone districts evacuated to safe locations in response to the tsunami warning issued on 11th April 2012. Results of these assessments indicate that future loss of life due to a tsunami could be substantially reduced.

### Human Elephant Conflict

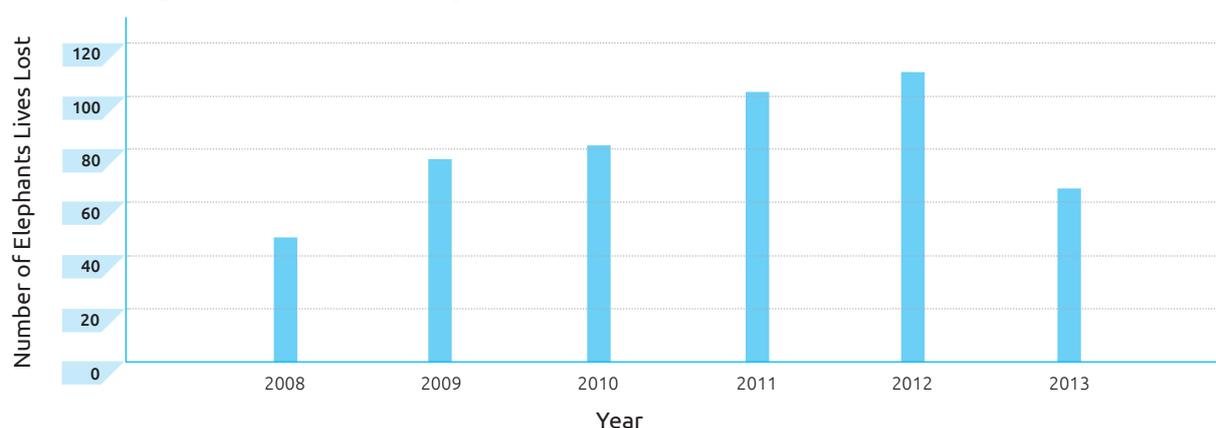
Wild elephant habitats cover 33% of the land within 17 districts. Human elephant conflict is reported in Polonnaruwa, Anuradhapura, North Western, Southern, Eastern, Vavuniya, Killinochchi, Central, Trincomalee and Uva wildlife regions. According to the Department of Wildlife Conservation<sup>11</sup>, 341 people have lost their lives due to elephant attacks between 2008 and 2012. Loss of life in 2012 alone had been 79 with the highest numbers reported from the North-Western, Northern and Eastern Provinces. On the other hand the number of elephant deaths also has been increasing from 180 prior to 2009 to 250 thereafter. This may be due to increasing incidents as well as non-reporting prior to 2009. Nevertheless, a survey conducted by the Department of Wildlife Conservation indicates an increase in the elephant population.



**Fig. 1.11 - No. of human & elephant lives lost due to human elephant conflict 2008 – 2013**  
 Source: Department of Wildlife Conservation

10 Interview survey by DMC & JICA  
 11 Department of Wildlife Conservation

The primary cause of the Human Elephant Conflict (HEC) is the unplanned settlements and poverty pressuring humans to occupy elephant corridors and lands adjacent to dense forests. Elephants prefer the shrub areas near forests. Therefore the encroachment of forest lands by humans has a direct implication on HEC because such encroachment by farming/settlements results in fragmentation of connectivity of natural forests leading to the loss of elephant habitat. Poor waste management which allows elephants to taste salt food is also considered an exacerbating factor which invites elephants to destroy houses in the process of looking for more salt and food. This highlights the need and the opportunity for integrated approaches to mitigate the HEC that involve proper land use planning, resettlement schemes and incentives or legislative interventions that discourage humans from occupying forest lands.



**Fig. 1.12 -Value of property damaged 2008 –2013**

*Source: Department of Wildlife Conservation*

## Epidemics

An epidemic is declared when the number of reported cases of a disease exceeds the expected level for that particular community. Epidemics may reach disaster proportions. With the increase in international travel and the changes in the environment, there is an increased risk in the spread of diseases both locally and internationally. The Ministry of Health continues to be the focal point in the prevention and management of epidemics in the country and is continuously monitoring the number of reported cases of around 30 communicable diseases. These identified communicable diseases which can lead to epidemics have been declared as ‘notifiable diseases’ and all such suspected cases are reported by the healthcare service providers around the country to the respective district and the central epidemiology unit for necessary action.

### Emerging incidents needing attention

In addition to the natural and human induced disasters discussed above, there are emerging incidents that cause significant human casualties and health impacts. Disasters induced by human behavior include the following: Inadequate awareness, weakness in monitoring systems, unplanned urban growth, unauthorized settlements, inappropriate agricultural practices, deforestation, uncontrolled industrial pollution, indiscriminate use of agrochemicals and fertilizer, poor service delivery, transport related incidents such as road and chemical accidents and air, ground and surface water pollution, uncontrolled extraction of ground water.

Ministries and Institutions mandated to minimize impact of the above emerging incidents on human populations and environment each have their own short term and long term programmes. These programmes need to be implemented before the impact of these events spiral into disasters. The Ministry of Disaster Management has the mandate to monitor the levels of incidents, coordinate risk reduction programmes and maintains readiness to respond, to ensure the safety of citizens of Sri Lanka.

### Potential Climate Change Influence on Disaster Management

The economic sectors highly vulnerable to climate change have been identified as Agriculture, Fisheries, Tourism and Coastal Infrastructure.<sup>12</sup> According to some of the forecasts led by staff of the Dept. of Agriculture

<sup>12</sup> Second National Communication to UNFCCC, Ministry of Environment (2012)

in Sri Lanka<sup>13</sup> the rainfall amounts and spatial distribution is expected to change due to climate change (Figure 1.13), although there is a high level of doubt about the exact amount of deviations from the average rainfall patterns.

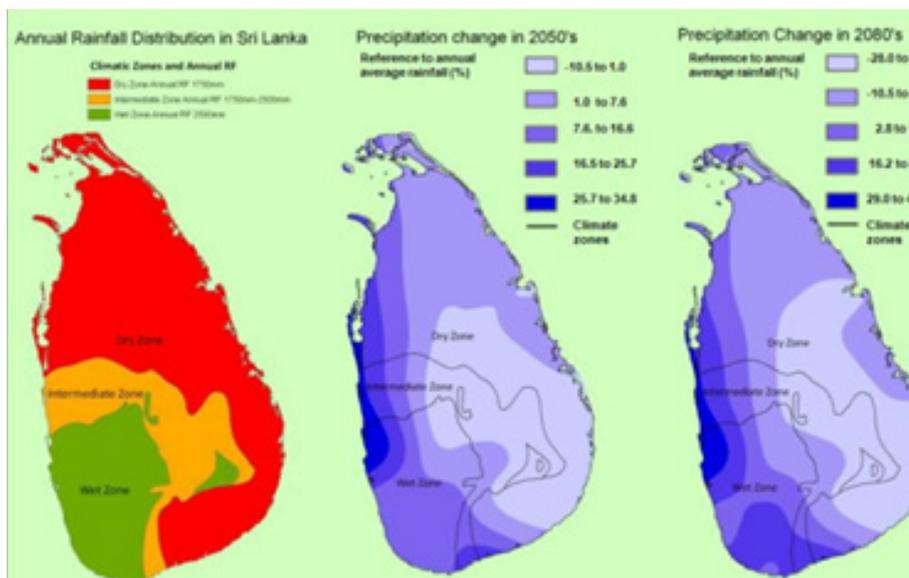


Figure 1.13 Predicted deviations in Rainfall due to Climate Change

Similarly the average mean annual temperature is also predicted to go up (Figure 1.14) and again the exact change indicated may have inherent errors coming from the methods and uncertainty of the data used in the models.

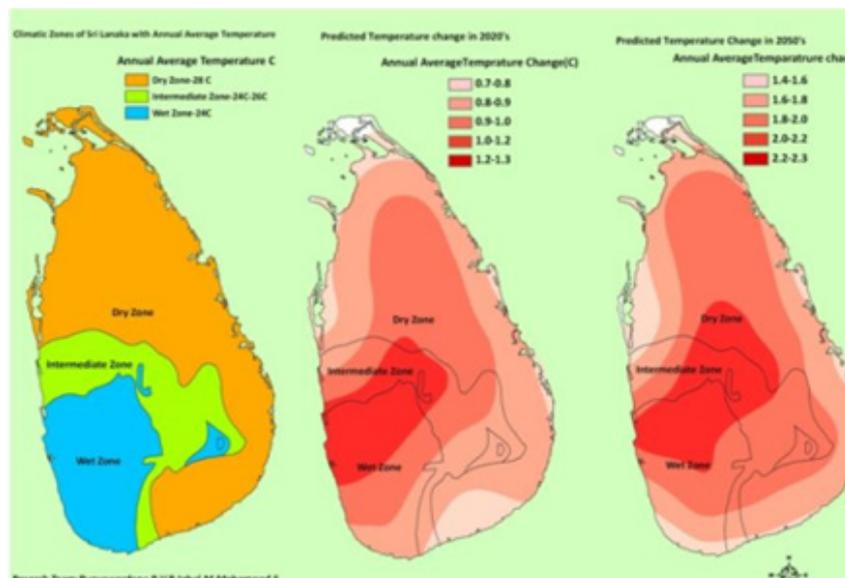


Figure 1.14: Predicted deviation in temperature due to Climate Change  
 Source: Punyawardena, B.V.R., B. Iqbal and S. Mohamood. 2012

These predictions are important in mainstreaming DRR and CCA. One of the approaches Sri Lanka is trying to adopt is to introduce no-regret options such as water use efficiency, better crop rotations, disaster resilient buildings and agriculture management practices etc., so that investments in no-regret options will not go to

13 Punyawardena, B.V.R., B. Iqbal and S. Mohamood.2012. Predicted Climate Change over Sri Lanka by PRECIS RCM in combination with ECHAM4 GCM for B2 Scenario

waste. In that light DMC has successfully supported research to grow paddy in salt affected soils and in flood affected areas. In addition the “Farmer Guidebook” for cropping under drought and flood conditions is being considered as a valuable tool along with resilient building codes. Efforts are underway to mainstream DRR and CCA in Sri Lanka’s main rural development thrust, namely, the Divineguma (Life Enhancement) where over 14,000 new graduates are being hired by the Ministry of Economic Development to take charge of the village development in about 14,000 communities in different parts of the country.

## 1.2 Damages and Losses

Disaster damages and losses take away the hard earned development gains. On the other hand, relief, compensation and rehabilitation/reconstruction needs after disaster events utilize the meagre resources that otherwise could be used for development, and provide for education, health and other long term social investments.

While the progress made in reducing the number of casualties is notable the disaster related damages and losses are still significant and in fact increasing. An Integrated Post Flood Assessment<sup>14</sup> carried out after the flood in the Western and Southern Provinces in May 2010 by DMC with the World Bank and UNDP assistance, indicated that the total flood damages and losses amounted to over Rs. 5,000 million (Table 1.4). A similar study carried out by the National Planning Department recorded losses and damages due to 2011 floods, primarily in the Eastern part of Sri Lanka, and reported damages and losses exceeding Rs. 77,000 million (Table 1.5).

**Table 1.4 - Losses and Damages in Western and Southern Provinces due to 2010 Floods**

Sector	Losses and Damages (LKR million.)		
	Damages to properties	Revenue losses	Total
Social (Health & Education)	306.7	236	524.7
Production (Agriculture & livestock)	114.1	1,82.3	1,940.5
Infrastructure (housing, roads, irrigation)	2,146.3	427.8	2,574.1
Others (Public Administration)	1.6		1.6
<b>Total</b>	<b>2,568.7</b>	<b>2,409.2</b>	<b>5,058.9</b>

*Source: Integrated Post Flood Assessment Report - May 2012*

**Table 1.5- Losses and Damages in Batticaloa, Polonnaruwa, Anuradhapura, Ampara District due to 2011 Floods**

Sector	Cost of Damages and losses (LKR million)
Housing	7,575
Agriculture	15,070
Irrigation	3,000
Roads	48,916
Livestock	1,914
<b>Total</b>	<b>77,475</b>

*Source: National Planning Dept.*

14 Integrated Post Flood Assessment – May 2010, DMC, Ministry of DM Sri Lanka, August 2012

However the total damages and losses in all sectors are not considered in the above assessment. With the reported information the road sector accounts for 2/3 of the total disaster damages and losses during 2011 floods. Furthermore, the inter linkages/dependency among sectors may lead to greater economic losses than anticipated. This highlights the need to consider integration of DRR measures in multi-sector plans during development initiatives.

Considering the importance of these findings the NCDM has directed that a damage and loss assessment be conducted for disaster events affecting more than 50,000 people. This directive of the NCDM requires standby arrangements of trained staff from sector agencies at national and sub national levels to carry out damage, loss and needs assessments. An accreditation system for registration of trained people also needs to be introduced.

This improved damages and loss assessment capacity will help not only to identify the level of damages but also to plan immediate recovery needs and medium to long-term risk reduction related investments in disaster prone areas including risk transfer mechanisms.

### 1.3 Cost of Disaster Relief

The government bears the responsibility of taking care of disaster victims, providing food and other necessary relief plus supporting early recovery. **Table 1.6** shows past government expenditure for food aid and other incidental expenses incurred due to disasters during the period 2007-2011.

**Table 1.6 - Relief expenditure: 2007-2011**

Year	Cyclone	Drought	Flood	Landslides	Others	Total (Rs.)
2007	17,662,054	19,921,772	159,111,089	22,586,775	24,263,218	219,281,690
2008	11,675,820	15,286,758	210,339,335	20,502,716	59,138,606	316,943,235
2009	4,387,936	27,655,774	202,680,398	4,928,667	56,516,573	296,169,348
2010	8,678,239	16,308,306	244,091,220	3,252,698	8,782,287	281,112,750
2011	20,997,295	12,263,596	589,835,798	34,397,743	15,889,434	673,383,866
<b>Total</b>	<b>63,401,344</b>	<b>91,436,206</b>	<b>1,406,057,840</b>	<b>85,668,599</b>	<b>140,326,900</b>	<b>1,786,890,889</b>

Source: National Disaster Relief Services Centre

Analysis of disaster affected communities revealed that the same disaster victims are repeatedly provided with compensation creating dependency on the government relief on one hand while also failing to address the causes of disasters on the other hand. This emphasizes the need for improved risk governance systems to prevent occupation of hazard prone areas. Populations living in flood and landslide prone areas can be relocated to safe areas and their return can be actively discouraged, while they can also be legally supported by awareness and incentives. A study may be undertaken to assess the reasons for the repetitive nature of relief distribution and housing assistance in order to enhance their effectiveness and ultimately to create resilient communities.

### 1.4 Cross cutting areas

#### Need and Opportunity to Strengthening First Responders

An identified gap in disaster management in Sri Lanka is the lack of preparedness of first responders to disasters on First-Aid, CPR and the needs of elderly and disabled. Sri Lanka Red Cross Society has extensive experience in these areas through programming over the years and also has district offices in all 25 districts. An improved coordination system and a number of public-private partnerships to fund the first-responder capacity improvement can make a significant difference. School curricular and cultural festivals are some of the entry points under discussion in The Sri Lanka Comprehensive Disaster Management Programme (SLCDMP). This area also has a direct link with the operationalizing of National Emergency Operations Procedures (NEOP).

### **Enhanced role for Private Sector in Disaster Management**

An Integrated Post Flood Assessment conducted on the May 2010 flood revealed that the medium-term economic losses to industries and commerce are around ten times higher than that of physical damage. The majority of small-scale entrepreneurs were affected more seriously due to absence of in-house capabilities and resources to prepare DM plans, business continuity plans and recovery plans. Improved co-ordination and facilitation between banks, industries and businesses (especially the SMI sector) could be beneficial. This area may also require introduction of a number of policy interventions at the level of Central Bank and Treasury. The SLCDMP proposes to engage with Ceylon Chambers of Commerce in Colombo, Regional Chamber Offices, Central Bank and other banks with a view to promote preparedness and risk reduction measures in businesses.

### **Awareness and Education**

The Ministry of Education has already taken steps to include DRR concepts into school curricula by providing standard school books for secondary school children on frequently occurring disasters and first aid. National Guidelines on School Disaster Safety have been made available to schools. With reference to the standard books and school safety guideline available however, it has been observed that the teachers' guides and school syllabuses need to be further improved. In addition the tertiary level curricula development in Universities, Technical Colleges and schools can be supported to strengthen the training base. During the formulation of SLCDMP the MDM proposes to establish a dedicated training facility on disaster risk management as prescribed in the *MahindaChinthana Vision for the Future*.

### **Information Sharing, Research and Planning Support**

In comparison to many other countries in the region, Sri Lanka is known to possess good coverage in data on environment, disaster management, demography, socio-economic factors, hydrology, soils, water, and climate change etc. However, there exists a lack of proper infrastructure and a mechanism to access the information that is being collected by different agencies.

In 2010 UNDP carried out a survey to identify the agencies that have spatial data and GIS systems and initiated a dialogue between Ministries to develop a National Spatial Data Infrastructure (NSDI) starting with "*Environment Sustainability and Disaster Resilience*" data as a prototype and then to expand to a National SDI. The development of Environment and Disaster Data platform work can be an integral part of SLCDMP.

Enhanced information sharing is critical for quality research in DRR and CCA too and also for guiding the resource allocations through the National Budget. As such the SLCDMP proposes to establish a research forum on DRR and CCA that could include staff of the National Planning Department and research groups of universities and other entities working on Human Development, Poverty and cross cutting areas such as gender and climate change. The research groups can be linked with other similar groups in other countries through the SLCDMP.

In addition a pool of research needs could be developed using a web interface. The UN developed Solution Exchange is also a good platform to learn about research done in other parts of the world and also to share work done in Sri Lanka.

### **An Enabling Environment for Gender and Disability Mainstreaming**

It is visualised that the Sri Lanka Comprehensive Disaster Management Programme (SLCDMP) can provide the base for agencies to come together onto a single platform that in turn can be used to mainstream long-felt gender needs and needs of persons with disabilities. It may also then be possible on this platform to collect the required level of data and monitor the effectiveness of the implementation, and to take corrective action. Although the need and the commitment/readiness for gender and disability mainstreaming is visible, long-term sustainability requires a strategy, action plan and necessary documentation for capacity building such as manuals, guidebooks, films and other print media. It is essential to institutionalize the processes and have a set of trainers certified and known to all agencies as potential resource providers. As such it is proposed to

use the first two years of the SLCDMP to develop both relevant materials and a step-wise approach through a consultative and an inclusive initiative.

## 1.5 Development of the Sri Lanka Comprehensive Disaster Management Programme

Nine years after the 2005 launch of the “Road Map” initiative, disaster management programmes, institutional and legal frameworks and response capacity of the country demonstrate significant improvement. Based on the country’s experience, global developments in DRR and, recommendations of the UNDAC Assessment 2011<sup>15</sup>, the National Council for Disaster Management (NCDM) approved the development of a DM programme for Sri Lanka under the title “*Sri Lanka Comprehensive Disaster Management Programme (SLCDMP) 2014 – 2018.*” This was done at consultations conducted on 11 May 2012 chaired by H.E the President, Mahinda Rajapaksa.

The development of SLCDMP involved a series of stakeholder consultations. A collective understanding of the present Sri Lankan context of disaster management and a proposed future approach was arrived at by the stakeholder groups during their deliberations.

It is summarized as follows:

*“Though there is a declining trend in loss of lives due to disasters, economic losses and damage to infrastructure are still significant and increasing. Considering the increasing number of disasters, including natural, human and climate change induced events, it is prudent to invest in preventive and mitigatory measures to ensure Sri Lanka’s fast tracked development is resilient and scarce resources are not used repeatedly in response and post disaster processes.*

*During the 2005 to 2013 period much needed enabling environment for planning and implementation of risk reduction measures had been established through number of interventions, including the development of nine hazard profiles, 30 years disaster event database, disaster management policy and amended 2005 DM Act. Necessary materials for awareness/education and local authority guidelines on mitigation have been also made available. A world class coordination system of stakeholder entities had been evolved in the form of the National Disaster Management Coordinating Committee (NDMCC).*

*Therefore, Sri Lanka is well positioned to embark on a new Disaster Management programme developed through a well co-ordinated, multi-hazard, multi-sector, multi-stakeholder partnership approach. In doing so, the envisaged Sri Lanka Comprehensive Disaster Management Programme (SLCDMP) for 2014 to 2018 will focus on mainstreaming Disaster Risk Reduction and Climate Change Adaptation in the development processes.*

The SLDCMP will build on the lessons learned from the implementation of the “Road Map” over the last nine years, and from observed disaster impacts on lives and properties and the global trends in Disaster Management. Given below are some of the key principles used in the SLCDMP development process.

### Alignment with National Priorities

SLCDMP takes its guidance from the “*Mahinda Chintana - Vision for the Future*”, the Development Policy Framework<sup>16</sup> and the Public Investment Strategy 2014-2016<sup>17</sup> “*Unstoppable Sri Lanka*” which is the current implementing strategy of the *Mahinda Chinthana Vision for the Future*. The SLCDMP development process also gained much credence through the *Disaster Management Policy*<sup>18</sup> of Sri Lanka; *National Climate Change Adaptation Strategy for Sri Lanka 2011-2016*<sup>19</sup>; and the *Draft Sri Lanka National Action Plan for Disability*<sup>20</sup>.

15 Disaster Response Preparedness Assessment to Sri Lanka United Nations Disaster Assessment and Coordination UNDAC, November 2011

16 Mahinda Chintana – Vision for the Future, Development Policy Framework, Government of Sri Lanka, NPD, 2010 – p.179

17 Public Investment Strategy 2014-2016 “Unstoppable Sri Lanka”, Ministry of Finance and Planning 2013

18 Disaster Management Policy of Sri Lanka, Ministry of Disaster Management - 2013

19 National Climate Change Adaptation Strategy for Sri Lanka 2011-2016, Ministry of Environment – December 2010

20 Draft Sri Lanka National Action Plan for Disability, Ministry of Social Services – June 2013

### ***Risk based decision making***

Sri Lanka has significant scientific and technical capacities on different aspects of disaster risk management (DRM) including a number of outstanding institutions. This expertise along with the information needs to be brought together in a coordinated manner. The proposed “risk profile” of the country based on *Hazard Profiles of Sri Lanka (2012)*<sup>21</sup> and information related to vulnerability from *National Census of 2012* is expected to provide the foundation for risk based decision making.

### ***Focus on local and intermediate levels***

After the Indian Ocean tsunami, there has been a significant strengthening of policy, legal and institutional arrangements at the national level. It is important that these efforts are introduced and practiced at local and intermediate levels to realize tangible linkages between policy and practice. SLCDMP plans to ensure support for local action on national level policies by improving institutional mechanisms and capacities to undertake disaster risk reduction activities. In the area of disaster response, despite the country having a disaster response capacity on par with the rest of the world at the national level, the capacities of local governments and communities to respond to disasters can be further improved. In this context improving provincial and district planning, sector level coordination at local levels, capacity building of local authorities and the operationalizing of the National Emergency Operations Procedures (NEOP) are some of the SLCDMP key strategic areas envisaged.

### ***Engage key development sectors and maximize co-benefits of investments in DRR***

In the recent past Sri Lanka has made much progress in poverty alleviation and meeting Millennium Development Goals (MDGs). Investments in DRR in the country’s economic development context must be seen as an investment towards ensuring the resilience of the achieved development and not as an additional expenditure. It is important that SLCDMP explicitly works towards realizing the development co-benefits of disaster reduction as opposed to being focused entirely on reduction of losses. This will also be in line with the global development discourse on ‘resilience’, where the focus is on transformative development as opposed to maintaining minimum capacities to cope with shocks.

### ***DRR benefits linked to the Key Performance Indicators (KPIs) of the stakeholder Ministries.***

The Government of Sri Lanka is placing greater emphasis on result orientation of its development programmes. All ministries are required to establish Key Performance Indicators (KPIs) and track progress against them. This requirement for KPIs for Ministries presents a unique opportunity to mainstream DRR in the work of key stakeholder Ministries and ensure that DRR is recognized to be an integral part of the broad based development agenda in the country. Such integration across sectors will also form the basis of an Integrated Monitoring and Evaluation (M&E) system for the SLCDMP that could capture the DRR related progress by different sectors; identify lessons learned; and inform course correction in respective development sectors. This will also help ensure that resources from the national budget (aligned with various ministries) are better targeted towards managing disaster risk.

### ***Linking disaster risk reduction (DRR) and climate change adaptation (CCA)***

Climate Change (CC) impacts are likely to cause increased spatial and temporal variability in weather patterns, both temperature and rainfall leading to increased incidence of floods, droughts and epidemics in the country. This would require integrating potential Climate Change (CC) impacts into Disaster Management planning and implementation including the Climate Change Adaptation (CCA) practices and related local disaster preparedness capacities. Early warning systems, communications, and evacuation centers would be important components of disaster preparedness, whereas an improved rainfall monitoring system, efficient natural drainage systems, and enhanced water storage through revival of tanks would promote adaptation at the level of communities are some of the areas SLCDMP may advocate.

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21 Hazard Profiles of Sri Lanka - DMC & UNDP, December 2012

### ***Aligning with the global frameworks on disaster risk management***

Sri Lanka had been successful in adopting the elements in the *Hyogo Framework of Action (HFA)* during the development of the “*Road Map for Disaster Risk Management-Towards Safer Sri Lanka (2005)*”; and the National Platform or the National Disaster Management Coordinating Committee (NDMCC). It has consistently been reporting the country’s progress related to the HFA priorities for action and core indicators since 2007. Sri Lanka’s participation in the Global Platform events has been engaging and beneficial. In depth consultation process involving all segments of the society for developing a Post-2015 Framework for Disaster Risk Reduction (HFA2) has been initiated. Proposed key areas in the HFA2 framework have been considered in the development of the SLCDMP for 2014-2018 period.

### ***Target Beneficiaries/Stakeholders***

The percentage of the female population in Sri Lanka<sup>22</sup> out of the total of 20,263,723) is 51.48%. Children under 15 years of age are 25.8%. The elderly population above 60 years of age is 12%. The disabled population in 2001 had been 274,711. A study conducted by Disability Organizations Joint Forum in 2011 with the assistance of Ministry of Social Services in seven districts has estimated that disabled population to be 255,000 which is 2.5% as against the total population. However, according to the Department of Census and Statistics the disabled population in 2012 is about 8.6% of the total population. These groups will directly benefit from the programme in addition to the economic and development benefits.

In 2011, the number of people affected by floods in 23 districts was 2,524,402 which is about 7.37% of the total population and in 2012, drought had affected 951,449 people in 10 districts amounting to 4.7% of the total population. During the 2010 floods in five districts in the southern and western provinces 693,035 were affected. These people will directly benefit from the proposed mitigation and rehabilitation activities of the SLCDMP.

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22 2011 Census - Department of Census and Statics

# Sri Lanka Comprehensive Disaster Management Programme (SLCDMP)

## 2.1 Goal and Objectives

### Goal of SLCDMP

The goal of the new SLCDMP is to ensure the “safety of Sri Lanka” by reducing potential disaster risks and impacts on people, property and the economy.

### Objectives

The overarching objective is to create and facilitate the enabling environment for a multi-hazard, multi-sector, multi-agency partnership oriented disaster management programme, using risk knowledge as the base, in line with global conventions and frameworks.

Specific objectives are to,

1. Build capacity at institutional and individual levels;
2. Integrate disaster risk information based approaches in the development agenda;
3. Prevent/mitigate the impacts of frequently occurring disasters on life and properties;
4. Improve coordination of stakeholder groups (public, private, NGOs and others);
5. Enhance response capacity at all levels;
6. Adopt an integrated monitoring and evaluation and a reporting system; and
7. Efficient knowledge management in disaster risk reduction.

## 2.2 A specific problem to be addressed

Sri Lanka is exposed to a range of hydro-meteorological and geophysical natural hazards. The frequency of these natural hazards combined with increasing exposure and vulnerability due to poor land use practices and the climate change, poses challenges to the future disaster management in the country, thereby, threatening the sustainability and resilience of development.

*“The Sri Lanka Comprehensive Disaster Management Programme (SLCDMP) proposes to mainstream Disaster Risk Reduction (DRR) knowledge and preparedness and response capacities into the development agenda using a multi-hazard and multi-sector approach, at different levels to reduce potential disaster related damages and losses.”*

The SLCDMP will work on a number of key technical areas linking the development efforts to potential disasters. For example, the new roads can obstruct water flow pathways leading to local floods upstream; water supply schemes for irrigation using ground water can increase saline intrusion into the ground water aquifers etc. Improved awareness, engagement of different stakeholder entities, appropriate local or international technical assistance, studies to facilitate policy formulation will be helpful to incorporate DRR into development.

The SLCDMP has been formulated using a programmatic approach where a number of ministries, departments, non-government organizations (NGOs) and private sector will be responsible for the implementation of activities.

It is envisaged that the formal coordination led by the Ministry of Disaster Management, a set of capacity development initiatives and technical inputs to strengthen the agencies in implementing activities, and a rigorous monitoring and evaluation system along with knowledge sharing would provide the structure to the SLCDMP.

## **2.3 Programme Strategy and proposed interventions**

### **Programme Strategy**

*MahindaChinthanaVision for the Future* proposed a number of strategies to promote human development, environment sustainability, and disaster resilience. It also highlighted the need for combining the efforts of different sectors for reducing disaster risks. For example, interventions in environment conservation such as enhancing forest cover, watershed and water resource management, coast conservation and soil conservation etc. are directly linked to disaster risk reduction. On the other hand, the environment assessments in infrastructure development such as road building or irrigation can recommend measures also taking into consideration the disaster risk aspects of the development investments. Therefore, in order to ensure the disaster resilience of the development programming in Sri Lanka, the Government's programmatic planning approach suggests mainstreaming disaster management into development efforts including education and research.

In line with the same approach, the Sri Lanka Comprehensive Disaster Management Programme (SLCDMP) focuses on eight strategic components to ensure the safety of lives, properties and the environment. In addition, the approach taken is also in line with The Hyogo Framework of Action (HFA) 2005-2015 and its approaches towards post 2015.

The eight strategies of SLCDMP are:

- A. *Policy environment and legal/institutional framework*
- B. *Multi-hazard early warning and effective dissemination*
- C. *Hazard, vulnerability and risk assessment*
- D. *Disaster mitigation and DRR mainstreaming into development*
- E. *Reconstruction and rehabilitation*
- F. *Targeted and effective capacity building at all levels through training and awareness*
- G. *Preparedness & response*
- H. *Results based monitoring and evaluation*

There are a number of cross cutting areas in these eight strategic themes. For example, the Community Based Disaster Risk Management (CBDRM) involves almost all the strategic areas.

## **A. Policy environment and legal/institutional framework**

### **a. Policy environment**

There are a number of baseline documents to inform about the policy environment, the historical and spatial distribution of disaster events ([www.desinventar.lk](http://www.desinventar.lk)), nine hazard profiles of Sri Lanka, and climate change related communications, to name a few. This information, combined with the data from national census process will help to delineate the spatial patterns of risks. Policies and the enabling environment are pre requisites for “risk based” decision making in development and in the investment processes. In addition, there are a number of new areas such as traffic accidents, chemical management related hazards, pollution leading to health impacts of disaster proportions, and the requirement to implement integrated approaches for land use and water resources management that needs to be brought into the disaster risk reduction related policy environment.

### **b. Legal environment**

Management of natural, technological & man-made risks requires systematic implementation of the provisions of the Disaster Management Act and the Disaster Management Policy of the country along with other relevant or complementary legislation. For example, beyond the Disaster Management Act (2005 and the upcoming revision), and the Disaster Management Policy (2013), the National Policy on Local Government includes risk reduction, National Housing Policy incorporates disaster risk reduction, among other legislation. Large number of environment related acts and legislation can be used to meet the different aspects of disaster management. In that context, SLCDMP can support multiple agencies to develop policies, bi-laws and guidelines to operationalize the provisions of the acts while developing new legal provisions to meet the identified gaps. Especially, there are a number of disaster risk reduction related bi-laws in the local government area, among other sectors. For example, the Local Government Policy of 2009 provides for and expects Local Authorities (LAs) to incorporate hazard parameters in local authority planning processes, but, further refinements are required for local government entities to ensure adequate resources are diverted for disaster mitigation and preparedness.

### **c. Strengthening institutional mandates and collaborations**

Due to the cross cutting nature of the Disaster Management, the SLCDMP needs to work with a multitude of agencies. In doing so, SLCDMP’s contributions may help diffuse unclear institutional mandates while providing support to strengthen and further develop the synergy between different institutional frameworks.

For example, the present flood management related responsibilities are distributed among several agencies and the “Flood Ordinance” mainly covers river floods. This requires amendments to the Flood Ordinance to address coastal, urban and tank induced floods and gazette new legislation on the use of river banks, steep hill slopes, water catchment areas, etc., relevant to flood control and management. SLCDMP has the opportunity to provide support to strengthen these institutional mandates and inter-agency partnerships.

SLCDMP may also provide the institutional base and required operational systems for many non-government, inter-government (including UN agencies), bilateral and multilateral agencies. One such platform is the National Disaster Management Coordinating Committee (NDMCC) structure that will allow multiple agencies to come together around national priorities coordinated by the Ministry of Disaster Management in line with the mandate provided by the National Council for Disaster Management headed by H.E. the President.

## **B. Multi-hazard early warning and effective dissemination**

With the post tsunami momentum, the early warning generation capacity in the country was much enhanced. It was a test proven beyond success when Sri Lanka evacuated the entire coastal area within 45 minutes in response to a tsunami warning on September 12, 2007. However, even in the tsunami early warnings, there are gaps in last mile dissemination in all parts of the country. In addition, more attention is needed to improve the capacities in agencies such as the Department of Meteorology (DoM), Irrigation Department, National Building Research Organization and Agriculture Department etc., in the areas of early warnings related to high winds, rainfall, tropical cyclones, tank/dam water releases, landslides, agricultural drought, etc. Early warning dissemination will be an integral part of the National Emergency Operating Plan (NEOP) in the SLCDMP.

Drought has been identified as a slow onset hazard. Impacts of drought could be minimized to some extent through early warnings and timely decisions on crop selection, extent of farming and balancing drinking, irrigation and power generation options.

The Department of Irrigation plans to install new rain gauges and prepare maps on cross sections in Kelani Ganga, Kalu Ganga, Gin Ganga, Nilwala Ganga, Malwathu Oya, Deduru Oya, Yan Oya and Mundali Aru to strengthen riverine flood early warnings. In addition, real time monitoring of water levels in large reservoirs and tanks along with monitoring of rainfall in catchment areas could help in the spill gate openings and related warnings.

Installing automatic rain gauges and alarm systems by NBRO and landslide related forecasting based on rainfall, geological factors and other data has made good progress. Vulnerable communities living in landslide prone areas need to be provided with back up decision support systems so that communities themselves can take decisions to evacuate in the event the centrally issued early warnings fails.

According to the UNDAC (2011), there is a lacuna in “policy interventions to define clear cooperation between agencies and an information sharing mechanism between organizations to improve the quality and effectiveness of early warnings. For example, rainfall and weather data is being collected by a number of agencies including the Dept. of Meteorology, Ceylon Electricity Board, NBRO and real time sharing of information is still a challenge requiring policy interventions on data sharing and related cost benefits.

## **C. Hazard, vulnerability and risk assessment**

With the advanced knowledge on the spatial distribution of key hazards and the availability of all island census data of 2012, the country can develop risk profiles and start using a “risk based” approach in investments on risk reduction and investments. High risk areas should receive high priority. While supporting the “Risk Profile” development process, the SLCDMP can promote the enabling environment for professionals in various development sectors to be aware of and use the available risk information including appropriate training. Urban and high risk areas may need hazard, vulnerability and risk maps for frequently occurring hazards. Availability of risk information may help expand the insurance industry and policy development related to land use, construction guidelines and dwellings in high risk areas.

A number of programmes to promote the use of hydro-metrological models to forecast floods and inundation areas are underway. Potential also exists to enhance the use of watershed models in integrated water resource management and pollution control. There are a number of coastal models being tested for sea level rise, storm surges and tsunamis. These modeling efforts will add value to in the risk assessment processes. In that context, it is necessary to provide opportunities via SLCDMP for capacity building and including the applications of simulation models in national and sub national level land use and investment planning towards risk reduction. Also, the SLCDMP may play a key role in knowledge management and transferring best practices from other countries and vice-a-versa in the area of hazard profile development, risk assessment and related mitigations.

## **D. Disaster mitigation and mainstreaming DRR into development**

Floods and landslides cause severe damages to infrastructure and affect a large number of people in several districts annually. Impacts of floods could be reduced to certain extent by improving operations of spill gates avoiding sudden release of storm water from reservoirs. Capacity of institutions which manage reservoirs need to be enhanced to assess the water levels in reservoirs with the predicted rainfall and the controlled operation of spill gates. River catchments where severe floods occur have been identified and studies need to be initiated covering the entire river catchment to identify improvements needed to mitigate severe floods as well as drought. NBRO has identified high risk locations in landslide prone districts along main roads, schools and public places which need to be mitigated to prevent further damages and losses. Protecting surface and ground water resources from contamination will also be addressed in the programme to ensure the availability of drinking water to all people. It has been observed that the government has been assisting annually to repair/rehabilitate houses affected by floods at the same location. Assessment has to be made to identify houses affected by floods annually and formulate relocation programme and introduce a risk transfer scheme for those not qualified to receive government assistance.

### **a) *Integrated water resources management***

As seen in the introductory chapters, most disaster related damages and losses are due to water related events, namely, flood, droughts and landslides where integrated water resource management can play a key role. SLCDMP capitalizes on the strategic importance in ancient tank and cascade systems, management/control options offered by dams and irrigation schemes to reduce flood and drought impacts and enhanced flood prevention within urban development. For example, in 2011 and 2012, in North-Central and Northern Provinces, about 800 small tank bunds were breached creating cascading effects causing severe damages to property and threatening the safety of large dams. Recent pilot work also highlighted the importance of artificial structures such as “Pathaha” – a dug pit to capture rainwater, and other surface modifications could not only prevent drought and flood potential, but also help much in livelihoods by minimizing crop failures. The new Government guideline “Unstoppable Sri Lanka” aims at reducing the water draining into the sea through enhanced investment in water resources management.

Further, eco-system approaches such as conservation of sensitive hill areas, increased cover, enhanced infiltration and recharge of ground water and selection of appropriate crops may also help. In addition, disaster risk reduction concerns can be mainstreamed in new irrigation and other water related infrastructure development.

It is also necessary to monitor the changes in surface and ground water quantity and quality. For example, extensive pumping of ground water for agriculture may encourage seawater intrusion in coastal areas. Uncontrolled agricultural and industrial waste discharges may harm surface and ground water in certain watersheds. It would be necessary to review existing regulations and mechanisms relating to (a) discharge of industrial waste water into water sources/underground and, (b) import and use of agrochemicals and poisonous substances in agriculture and industries, and other sectors.

### **b) *Land use and natural resource management***

Extensive land or forest degradation can impact drinking, irrigation and hydro power generation, among others. Reduction of forest cover results in the increase of runoff and drying up of small tributaries soon after the cessation of rainfall. Increased forest cover will facilitate the percolation of water in to the ground and reducing the possibility of flash floods. Clearance of land in upper watershed areas in the Central hills and in the Uva Province for vegetable cultivation has increased the soil erosion resulting in high rate of siltation of newly constructed major reservoirs. Discouraging this harmful agricultural practices and implementation of a national programme for increasing the forest cover is an urgent requirement to ensure the sustainability of development gains and to reduce disaster impacts, including climate change.

In order to provide a science base for addressing land use issues, it is necessary to carry out a number of multi-disciplinary studies, consultations and advocacy sessions targeting policy makers, especially those related to land use in the Central hills. These should highlight the socio-economic aspects of landslides as well as the linkages between land use and water availability in river basins (highland area being the water catchment area of the country) for agriculture, power generation and extending water services to new areas.

c) ***Diverting attention from relief to risk reduction***

Sri Lanka has an excellent track record in providing relief and ensuring health, water sanitation and recovery support for disaster impacted populations in both natural and man-made disaster situations. While relief is a must for sudden disasters such as cyclones, tsunami, major accidents etc., investing in relief is not a sustainable approach for floods, droughts and landslides. Government subsidies for house damages and crop losses during the last few years have been increasing and sometimes government assistance is given to rebuild houses at the same vulnerable location. Value of partially and fully damaged houses in 2011 and 2012 floods has been estimated as Rs. 7,575 million and Rs 5,739 million, respectively. Also only those having a monthly income less than Rs 3,000 qualify for the government subsidy. Vulnerable populations need to be identified, and, alternative lands, livelihood options and compensation provided to them to ensure long-term resilience of the nation.

A Study conducted by DMC in 2010 covering 30 rivers and a total catchment area of 10448km<sup>2</sup> in the Eastern Province, has identified 18 sub-projects in irrigation schemes and urban areas in Ampara and Batticaloa districts that need to be implemented on a short term and medium term basis to relieve the impact of floods. As per the available statistics, forest cover had reduced to less than 29% of the total land area by 2012.

d) ***Risk transfer mechanisms***

The insurance industry in Sri Lanka is evolving. In providing disaster related insurance, agencies tend to keep the premiums high as they have limited information to assess the risks. It is proposed to review the present insurance/risk transfer mechanisms and develop systems appropriate and affordable. Support will be provided to insurance companies to access risk related data and relevant policies developed/ improved to provide for effective enabling environment.

Disaster Risk Financing and Insurance starts with Fiscal Disaster Risk Assessment – looking at the fiscal impacts of disasters on the government budget and continue analysis up to sub national level. No such analysis/ assessment have been done in Sri Lanka, to date. Therefore, it is very important to expand the areas of studying risk financing options. Hazard and risk information and related modeling may add value as most of the information is available and after the Fiscal Disaster Risk Assessment, the need for risk transfer/ insurance could be quantified and articulated for targeted investments.

World Bank recently signed up with government to provide a standby facility to support government to respond to disasters. However, there are significant opportunities to work with Insurers Board of Sri Lanka and Association of Insurers in Sri Lanka to introduce affordable insurance schemes to cover crop losses and house damages. Possibility of providing insurance cover for houses of low income groups who have constructed houses legally can be studied. Promotion of risk transfer mechanisms through SLCDMP as planned requires extensive awareness targeting different levels including the policy makers and vulnerable people in hazard prone areas.

e) ***Minimizing disaster risks in urban areas***

Much progress has been made in this area, mostly in the Western Province. Expanding the efforts under the Metro Colombo Urban Development Project, SLLRDC will be supported to undertake development of flood models for selected local authority areas. Land use approval processes in

local authorities, availability of data for such decision making and better coordination between agencies will help to address flash floods. Preparation of risk profiles for 18 selected urban areas is proposed during SLCDMP and the efforts will enable Urban Development Authority (UDA) and respective Urban Local Authorities (ULAs) to prepare/amend Urban Development Plans and identify development interventions to reduce the impact of floods and landslides. It is proposed to prepare landslide susceptibility maps at the scale of 1:5,000 by NBRO for Kandy, NuwaraEliya, Badulla, Bandarawela, Ratnapura and Kegalle towns, along with detailed flood inundation maps for 12 urban centers. Survey Department would facilitate the process by developing base maps at the scale of 1: 5,000 for 18 urban centers identified as high risk.

## **E. Reconstruction and rehabilitation**

During early recovery, reconstruction, and rehabilitation, past global and local experience suggest to “build back better.” However, the process of building better needs new information on technologies and best practices on reconstruction and environment conservation or service delivery. During the post-tsunami developments, the DMC worked on the information necessary through hazard profiles, DesInventar database and strategic environment assessments, among others. Access to LIDAR images and satellite information improved and above all, the culture of information sharing was introduced. Combined with information the DMC also facilitated the development of building guidelines for floods, high winds, etc., and started mainstreaming through curricular and tsunami related reconstruction processes.

## **F. Targeted and effective capacity building at all levels through training and awareness**

### ***Enhanced simulation, modeling and scenario analysis capacity***

The projects included in the SLCDMP such as “Finalizing and Operationalizing the National Emergency Plan” and “Integrated Strategic Environment Assessments” or “Disaster Impact Assessments” involve as much as 25 different agencies with different mandates. At the same time, the agencies may not be in a position to readily access all the relevant information for joint planning and programming. This lacuna allowed developing capacity and interaction of universities and research agencies to provide the required technical assistance.

The complex scenarios of studying ecosystem services, land use options, and impacts of climate change etc., require the country to have the capacity to carry out environment, social and economic modeling that facilitate what-if-scenarios. The SLCDMP proposes to strengthen the capacity of Government Agencies, Universities and Research Institutions and provide platforms that promote team work. Support in this area requires extensive coordination of scientific institutions in the region that would add value to the current approaches in DRR in the country as well as help in national planning.

### ***Training on Disaster Risk Management (DRM)***

As experienced in the last decade, the frequency and intensity of hydro meteorological disasters are increasing. To meet the ever changing needs, adoption of new technologies and challenges of climate change, it is important to ensure continuous high quality capacity building across different layers. Target levels may include policy level, technical, implementing, administrative, national, provincial, district, local authority and community levels etc.

The Ministry of Education has already taken action to include DRR concepts into the school curricula. Standard school books for secondary school children on frequently occurring disasters and first aid are available. National Guidelines on School Disaster Safety has been made available to schools. However, it was observed that the teachers’ guides and school syllabuses need to be further improved referring to the available Standard Books and School Safety Guidelines.

In addition, the curriculum development in universities and schools can be supported to strengthen the knowledge base on disaster management. SLCDMP will support to incorporate disaster risk reduction components in to the curricula of human resources development institutions such as SLIDA, police and

nurses training colleges, ICTAD, vocational training institutes and technical colleges targeting specific group of professionals. It will continue to support the ongoing and new graduate programmes in universities.

### **Enhanced information access and tools**

DMC with the assistance of technical agencies including UNDP have prepared number of useful information and technical tools to facilitate scientific analysis of disaster information and mainstreaming DRR and CCA in development. For example, disaster event database of the past 30 years ([www.desinventar.lk](http://www.desinventar.lk)); national hazard profiles for coastal hazards, droughts, floods in four key river basins, landslides, lightning, sea level rise, storm surges, tropical cyclones and tsunami ([www.hazard.lk](http://www.hazard.lk)) are some of the valuable resources when taken along with Census and Statistics, Meteorological, Survey Dept. data etc., could immensely support planning and decision making towards resource allocations for DRR. There is a wealth of information being generated or available under specific projects such as the Dam Safety and Water Management project (inundation maps for dams failures); LIDAR data by DMC (Coastal Areas), UDA (Colombo), Survey Dept. (Northern Province); Central Environment Authority (Environment Impact Assessments for larger projects) and Integrated Environment Assessments jointly by CEA and DMC ([www.isea.lk](http://www.isea.lk)) to complement mainstreaming of data use. **G. Preparedness and response**

Having established the 24/7 emergency operations around the country and a call centre dedicated to disaster response, a significant progress has been made in preparedness and response. In addition, the start of the preparation of National Emergency Operations Plan (NEOP) has provided the foundation for a sound coordinated preparedness and response approach.

There are 23 key disasters and 29 key agencies identified as important to develop response capacity according to a nationally agreed set of Standard Operating Procedures (SOPs) for each agency, at the time of a disaster. This collection of SOPs is identified as the National Emergency Operations Plan (NEOP) and covers the activities around the occurrence of the hazard. During 2012 and 2013, a series of consultations and ground work had been concluded developing the NEOP<sup>23</sup>. However, the most important aspect of NEOP is in its operationalization at different levels and building of agency capacity to implement NEOP. Already, the UNDP and DHL have agreed to build the capacity at the Airports as part of the operationalizing of NEOP. The process of NEOP can be extended to complete the disaster management plans for provinces, districts and local authorities.

### **Hazards and Agencies Considered for NEOP Development**

- |                             |                          |                               |
|-----------------------------|--------------------------|-------------------------------|
| 1. Aircraft crash           | 9. Earthquakes           | 17. Lightning & Thunderstorms |
| 2. Air raids                | 10. Epidemics            | 18. Manmade disasters         |
| 3. Chemical accidents       | 11. Explosions           | 19. Maritime hazards          |
| 4. Civil or internal strife | 12. Fire                 | 20. Nuclear disasters         |
| 5. Coastal erosion          | 13. Floods               | 21. Oil spills                |
| 6. Cyclones                 | 14. Forest fire          | 22. Radiological emergencies  |
| 7. Dam breach               | 15. Industrial disasters | 23. Tsunami                   |
| 8. Droughts                 | 16. Landslides           |                               |

In this respect, special skill development training programmes to improve a range of skills such as search and rescue, first aid and first responders training will be required for effective response. Training modules available at present are limited and improvements may be required. Already, the need for training infrastructure facilities has been identified in the “Mahinda Chintana – Vision for the Future.” The proposed residential disaster management training facility for the Disaster Management Centre will help towards such trainings for agencies. It is also important to enhance the public knowledge on first-aid and CPR for a better disaster response. It is proposed to plan and implement activities to improve the capacity of the communities as first

23 National Emergency Operations Plan (NEOP)

responders.

### ***Increased attention on changing disaster trends***

A number of high wind events, increased lightening and traffic accidents impacting on loss of lives needs to be given prominence in future planning, early warning and DRR related to disaster response. New areas such as oil spills, chemical handling and accidents, nuclear threats, surface and ground water pollution, climate related epidemics etc., have been included in the SLCDMP.

### ***Strengthening national, provincial, district and divisional DM planning process***

The DM Act requires all state sector agencies at national and sub national level to have a Disaster Management Plan in responding to disasters. At present, most of the districts have developed preparedness plans, but not the contingency plans for response. Inadequate institutional capacity and the absence of proper guideline for agencies to develop such plans hinder the development of DM plans of institutions. The programme proposes to strengthen the capacity of DMC to prepare guidelines and assist all state sector agencies to develop institutional DM plans.

### ***Community Based Disaster Risk Management (CBDRM)***

Community based disaster risk management cuts across all aspects of the disaster management cycle. Also, the CBDRM provides opportunities to integrate ecosystem based approaches, climate change, gender, and disability concerns at the community level to promote disaster mitigation. Government is increasing its investments at the community level through programmes such as “DiviNeguma”, “GamaNeguma” and “PuraNeguma.” These approaches could be effectively used to enhance the capacity of communities to incorporate disaster risk management elements in the community level planning and target resources.

After the tsunami of 2004, the subject of CBDRM was revitalized through a large number of projects and programmes by different agencies that also included establishment of village level committees, participatory village development planning, rehabilitation of minor infrastructure, etc. The SLCDMP platform can be used to improve agency coordination in CBDRM and bring together the best practices of agency approaches to a consolidated and coordinated thrust thereby strengthening the government’s village level investments by introducing resilience at village/community level.

In this context, material developed by DMC such as hazard profiles ([www.hazard.lk](http://www.hazard.lk)); village/community development plans incorporating disaster concerns supported by Sri Lanka Red Cross, OXFAM, Practical Action, UNDP, UNHABITAT and others, and disaster resilient building guidelines by DMC etc., could be relevant and useful. In addition, there is a wealth of information and guidance available through agencies responsible for agriculture, climate change, forestry, wild life conservation, and water resources etc., to add value to CBDRM.

### ***Enhanced role for private sector in disaster management***

Post Flood Assessment conducted for the May 2010 Flood revealed that the medium-term economic losses to industries and commerce are around ten times higher than that of physical damage. The majority of small-scale entrepreneurs were worst affected due to the absence of in-house capabilities and resources to prepare DM plans, business continuity plans, and recovery plans. Improved co-ordination and facilitation between banks, industries and businesses, especially the Small and Medium Industries (SMI) sector, is needed. This area may involve a number of policy interventions at the level of the Central Bank and the Treasury. The project proposes to coordinate with the Ceylon Chamber of Commerce in Colombo, Regional Chamber Offices, Central Bank and other banks to play a catalytic role in promoting preparedness and risk reduction measures in businesses.

## **H. Results Based Monitoring & Evaluation**

During the recent years a significant attention had been given to incorporate Results Based Management (RBM) in the public sector processes. At the time of the development of the “Roadmap Towards Sri Lanka”, it was not possible to articulate and put in place an extensive RBM structure that included detailed monitoring and evaluation. However, in SLCDMP design, the observed weaknesses in RBM implementation have been addressed and a detailed coordination and monitoring system had been devised.

This expanded and added efforts in monitoring and evaluation is expected to help the country to strengthen the baseline data and also keep track of the multi-agency inputs towards disaster management in different sectors. The RBM structure is also supported with a knowledge management system which will articulate the work of multiple agencies as well as formulate the cumulative benefits contributing towards the national outcomes of SLCDMP. The same knowledge management facility will promote sharing of the disaster management best practices within the country and with other countries and vice-versa. The Roadmap for Disaster Risk Management implemented since 2006 has not outlined a system to monitor and evaluate the implementation regularly. Review of implementation of road map proposals revealed that individual agencies have implemented projects although there was no national level monitoring. SLCDMP proposes the establishment of monitoring and evaluation system for regular capturing and reporting of related information to facilitate decision making at NCDM level.

## **2.4 Implementation Arrangements of SLCDMP**

Several actions were identified under each strategic component to address the key issues.

The programme was formulated using a programme approach for disaster risk management. This integrated programme uses a partnership strategy where a number of Ministries, Departments, Non-Government Organizations and Private Sector will be responsible for the implementation of the activities as articulated in the next chapters of this plan under the four outcome areas presented therein. In addition, to support the programme’s formal coordination system led by the Ministry of Disaster Management, a set of capacity development initiatives to strengthen the agencies in implementing the activities and a rigorous monitoring and evaluation system for the programme is proposed to be established.

## Proposed Programme Outcomes

Capacity of personnel at national and sub-national level needs to be enhanced to assess the disaster risk using the data and risk information, and provide policy guidance with a view to reducing the risk. Institutional capacity also needs to be enhanced introducing latest technology facilitating the decision making process.

Sustainability of investments on development will depend on the ability of the development projects to withstand the climate change and disaster impacts. It may be necessary to support the amendments to existing legislations or provide for new legislations to mainstream DRR and CCA concepts in to sectoral development process.

Changing climate scenarios will trigger disasters and DRR measures taken will not be able to totally prevent or mitigate impacts of disasters. Therefore, enhancing response capacity as well as rehabilitation and reconstruction processes incorporating DRR measures need to be strengthened. Systems may have to be introduced to the optimal use of equipment and facilities available for disaster response.

Large number of agencies will be involved in the implementation of the SLCDMP. Monitoring and evaluation of the activities undertaken by multitude of government, private sector agencies and NGOs will be a complex process. External assistance may be required to develop systems and mechanisms for collecting and analyzing data to be submitted to NCDM and NDMCC for monitoring.

Several outputs will lead to the expected outcomes of the programme and are numbered against each outcome. The following four programme outcomes and outputs will lead to the achievement of the ultimate goal of the programme.

**Outcome 1:** National and sub-national level agencies are capable of assessing disaster risk and making decisions for short, medium and long term disaster management.

Item	Programme Outputs	Output Indicators
1.1	Timely issuance of seasonal climate and weather forecast is streamlined	Regular issue of seasonal forecast
1.1.A	Timely issuance of seasonal climate forecast on drought is streamlined	Advisories on effect of climate issued quarterly
1.1.B	Weather prediction capacity of DoM is enhanced	Daily weather forecast improved to 80% accuracy

Item	Programme Outputs	Output Indicators
1.1.C	Climate change scenarios for Sri Lanka 2050 and 2100 developed using the latest model outputs	Climate change scenarios
1.2	Timely issuance of flood early warning is streamlined	Flood early warning is issued on time for riverine, reservoir and urban floods
1.3	National & community level landslide early warning systems are in place	% of landslide prone GNs covered by automated and manual early warning systems
1.4	Mechanisms to disseminate early warning messages are enhanced.	% of geographical coverage achieved
1.5	Disaster Risk Profiles are available at national level to capture the elements at risk and assess damage to capital assets and economic losses	Disaster risk profiles available for all districts
1.6	Detailed risk profiles are available for high risk major urban centers prone to floods and landslides	Disaster Risk Profiles available for urban centers  Detailed risk profiles for floods and landslides are available for urban centers identified in the PuraNagumaprogramme
1.7	Organizational capacities for management and operation of reservoirs to minimize flood impacts are enhanced	Number of reservoirs/tanks where new gate operation procedure introduced
1.8	Flood ordinance amended to streamline institutional mandates for managing floods	Amended flood ordinance
1.9	Information management and analytical capacities for disaster management improved	Number of reports generated annually with analyzed disaster information
1.10	Research and Development in DRR and CCA supported	Number of research findings disseminated

**Outcome 2:** Key development sectors are able to incorporate Disaster Risk Management (DRM) in their respective development initiatives/ processes/ activities at different administrative levels.

Item	Programme Outputs	Output Indicators
2.1	Legal framework improved to mainstream DRR concepts in Local Government	Number of Las adopting DRR through improved planning
2.2	Legal provisions and community capacity for the preparation of GramaNiladhari (GN) level development plans incorporating Disaster Risk Reduction and Climate Change Adaptation measures established.	Regulations, Guidelines
2.3	Legal provisions and procedures to train cadres are available for mainstreaming DRR into the development process.	Regulations
2.4	DRR concepts are mainstreamed into primary, secondary, tertiary education institutes, universities and national & provincial level training institutes including technical colleges.	Number of training courses strengthened
2.5	Private sector disaster resilience in hazard prone areas improved	Number of plans

Item	Programme Outputs	Output Indicators
2.6	The potential impacts of flood reduced in flood prone districts of Batticaloa, Ampara, Colombo, Gampaha, Kalutara, Trincomale, Anuradhapura, Puttalam, Kurunegala, Galle, Matara, Pollonaruwa, Ratnapura&Mulathivu	Number of mitigation sub projects implemented in Ampara&Batticaloa districts Number of mitigation interventions identified for mitigation
2.7	Safety of small village level tanks and bunds improved	Number tanks with developed rehabilitation plans/programmes
2.8	Flood impact in selected urban local authorities mitigated	Number of urban development plans with improved drainage concepts incorporated Number of urban drainage projects implemented
2.9	Ensure village development programmes are resilient to multiple disasters	Number villages implementing DRR integrated plans.
2.10	Slopes stabilized in identified high risk landslide and rock fall sites	Number of slopes stabilized
2.11	Drought risk reduction strategies developed	Operationalized drought management plan
2.12	Coastal risk reduction strategies developed	Number of development plans approved with DRR
2.13	Disaster resilience incorporated in the National Physical Plan and Policy-2030	Updated national Physical Plan and the Policy considering the disaster risk and climate change impacts
2.14	Safeguarding water resources from industrial, agro chemicals and domestic point and non-point source pollution	Inter-agency work group to on water pollution Number of guidelines/regulations developed to minimize water pollution
2.15	Potential impacts of lives and properties due to human - elephant conflict reduced.	Length of electric fence established Number of lives lost
2.16	Procedure and guidelines for the implementation of provisions in the National Housing Policy for reducing impacts of hazards in housing sector are available	Guidelines
2.17	Strategic Environment Assessment integrating disaster risk reduction concerns are available at Provincial level to facilitate sustainable and resilient development.	SEA reports

**Outcome 3:** Communities, local governments and sub-national agencies have necessary capacities and mechanisms to respond to and recover from disasters.

Item	Programme Outputs	Output Indicators
3.1	Disaster Management Plans for national and sub-national levels sector organizations in high and moderate risk areas developed and in operation	Number of plans
3.2	Awareness of communities on DRR is improved	Number of programmes conducted

Item	Programme Outputs	Output Indicators
3.3	Human resource capacity for DRM is enhanced	
3.3A	Institutional capacity for developing human resource for DRM enhanced	Well-equipped training center Training manuals
3.3B	Child and women centered DRM programmes in practice.	Child and women centered guidelines, and data collection manual
3.4	Programme for sustainable housing in flood prone areas and micro insurance scheme to assist small farmers & low income groups to minimize impacts of disasters are available	Number of disaster risk insurance policies issued
3.5	At national and district levels, ability to conduct damage, loss and needs assessments to guide post disaster recovery and cost benefit analysis of DRR investment is improved	Disaster needs assessment mechanism in place
3.6	Capacity of communities and organizations is enhanced to respond to a potential cyclone hazard	Number of villages prepared for cyclone response
3.7	Capacity of institutions and personnel for post disaster relief is enhanced	Training manuals Number of officers and youth trained
3.8	Capacity for institutions and personnel for disaster response is enhanced	Number of institutions ready to respond
3.9	Community awareness on pre-hospital care and patient transportation during mass casualty incidents improved	Number of community groups trained
3.10	Regulations and guidelines to empower District and Divisional Secretaries to take action in any disaster situation available	Regulations and guidelines

**Outcome 4:** A system in place for obtaining advice and continuous monitoring, learning and adapting to facilitate the ongoing planning and implementation process.

Item	Programme Outputs	Output Indicators
4.1	Comprehensive monitoring and evaluation system in place	Accurate monthly, quarterly & annual reports submitted on time
4.2	Technical Advisory Committees namely the National Disaster Management Committee, Multi-hazard Early Warning Committee, National Disaster Management Coordinating Committee, Construction Guidelines Committee and National Emergency Operations Committee are in operation.	Number of major issues deliberated and recommended for implementing
4.3	Effective knowledge management and integration in to global conventions ensured	Number of baselines established , HFA assessment report

The programme focuses on eight strategic components to address the key issues identified through consultation process. These in turn may have one or more activities and sub activities. Achievement in the implementation of activities will be reflected in the outputs and measured through the proposed output indicators. The next chapter presents details of the main programme outputs, activities and indicators.

# Strategic Components of the Programme

## Outputs and Activities

### 4.1. List of Programme Outputs under Each Strategy

#### Strategy A. Policy Environment and Legal/Institutional Framework

- 1.8 Flood Ordinance amended to streamline institutional mandates for managing floods
- 1.9 Information management and analytical capacities for disaster management improved
- 1.10 Research and development in DRR and CCA supported
- 1.1 Legal framework improved to mainstream DRR concepts in local government
- 1.2 Legal provisions and community capacity for the preparation of Grama Niladhari (GN) level development plans incorporating disaster risk reduction and climate change adaptation measures established.
- 1.3 Legal provisions, procedures and trained cadre available to mainstream DRR into the development process
- 1.12. Coastal risk reduction strategies developed
- 1.13. Disaster resilience incorporated in the National Physical Plan and Policy-2030
- 2.16 Procedure and guidelines for the implementation of provisions in the National Housing Policy for reducing impacts of hazards in housing sector are available.
- 3.3.A Institutional capacity for developing human resource for DRM enhanced
- 3.10 Regulations and guidelines to empower district and Divisional secretaries to take action in any disaster situation available
- 1.2 Technical Advisory Committees namely the National Disaster Management Committee, Multi-hazard Early Warning Committee, National Disaster Management Coordinating Committee, Construction Guidelines Committee and National Emergency Operations Committee are in operation.

### **Strategy B. Multi-hazard Early Warning and Effectiveness of Dissemination**

- 1.1. Timely issuance of seasonal climate and weather forecast is streamlined
  - 1.1.A Timely issuance of seasonal climate forecast on drought is streamlined
  - 1.1.B Weather prediction capacity of DoM is enhanced
  - 1.1.C Climate change scenarios for Sri Lanka 2050 and 2100 developed using the latest model outputs
- 1.2. Timely issuance of flood early warning is streamlined
- 1.3. National & community level landslide early warning systems are in place
- 1.4. Mechanisms to disseminate early warning messages are enhanced.

### **Strategy C. Hazard, Vulnerability and Risk Assessment**

- 1.5. Disaster risk profiles are available at national level
- 1.6. Detailed risk profiles are available for high risk major urban centers prone to floods and landslides

### **Strategy D. Disaster Mitigation and Mainstreaming DRR into Development**

- 1.7. Organizational capacities for management and operation of reservoirs to minimize flood impacts are enhanced
- 2.6. The potential impacts of flood reduced in flood prone districts of Batticaloa, Ampara, Colombo, Gampaha, Kalutara, Trincomale, Anuradhapura, Puttalam, Kurunegala, Galle, Matara, Pollonaruwa, Ratnapura&Mulathivu
- 2.8. Flood impact in selected urban local authorities mitigated
- 2.10. Slopes stabilized in identified high risk landslide and rock fall sites
- 2.11. Drought risk reduction strategies developed
- 2.14. Safeguarding water resources from industrial, agro chemicals and domestic point and non-point source pollution
- 2.15. Potential impacts of lives and properties due to human-elephant conflict reduced.
- 2.17. Strategic environment assessment integrating disaster risk reduction concerns are available at provincial level to facilitate sustainable and resilient development.

### **Strategy E. Reconstruction and Rehabilitation**

- 2.7. Safety of small village level tanks and bunds improved

### **Strategy F. Targeted and Effective Capacity Building at All Levels through Training and Awareness**

- 2.4. DRR concepts are mainstreamed into primary, secondary, tertiary education institutes, universities, and national & provincial level training institutes including technical colleges
- 3.2. Awareness of communities on DRR is improved
- 3.3.B. Child and women centered DRM programmes are in practice.

## **Strategy G. Preparedness and Response**

- 1.5. Private sector disaster resilience in hazard prone areas improved
- 2.9. Ensure village development programmes are resilient to multiple disasters
- 3.1. Disaster Management Plans for national and sub-national levels sector organizations in high and moderate risk areas developed and are in operation
- 3.4. Programme for sustainable housing in flood prone areas and micro insurance scheme to assist small farmers & low income groups to minimize impacts of disasters are available
- 3.5. At national and district levels, ability to conduct damage, loss and needs assessments to guide post disaster recovery and cost benefit analysis of DRR investment is improved
- 3.6. Capacity of communities and organizations is enhanced to respond to a potential cyclone hazard
- 3.7. Capacity for institutions and personnel for post disaster relief is enhanced
- 3.8. Capacity of institutions and personnel for disaster response is enhanced
- 3.9. Community awareness on pre-hospital care and patient transportation during mass casualty incidents improved

## **Strategy H. Results Based Monitoring and Evaluation**

- 4.1. Comprehensive monitoring and evaluation system in place
- 4.3. Effective knowledge management and integration in to global conventions ensured

## **4.2 Details of Programme Outputs and Activities**

### **Strategy A - Policy Environment and Legal/Institutional Framework**

#### **Main Output: 1.8 Flood Ordinance amended to streamline institutional mandates for managing floods**

##### **Description**

Since the enactment of Flood Ordinance in 1912, there had been several changes with regards to management of floods. Presently, the authority for managing floods is distributed among several agencies. The present Flood Ordinance covers only the riverine floods and does not address the issues regarding the management of urban floods, reservoir induced floods and coastal floods. Therefore, there is a need to review the existing ordinance to cover all types of floods and provide the mandate for agencies for flood management.

##### **Activities**

- 1.8.1 Study the existing Flood Ordinance - (ID)
- 1.8.2 Identify gaps in the Flood Ordinance in managing riverine, urban, coastal and reservoir induced floods - (ID, MASL, CC&CRMD, SLLRDC, M/PC&LG)
- 1.8.3 Draft amendments to the Flood Ordinance in consultation with related organizations - (ID)
- 1.8.4 Submission of the Draft to the Legal Draftsman, the Cabinet of Ministers and the Parliament for approval - (ID)

**Output indicator:** Clear mandate given to agencies for managing floods

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** ID

**Supporting organizations:** ID, MASL, SLLRDC, CC&CRMD, NWSDB, CEB, MDM, DMC

**Duration:** 2 years

**Period:** 2014-2015

**Budget (LKR Million):** 0.6

## **Main Output: 1.9 Information management and analytical capacities for disaster management improved**

### **Description**

At present, DMC collects information on impacts of disasters on lives and properties. However, it has been noted that there are gaps and inaccuracies in the data. Only limited amount of data on damages & losses is available and data related to relief is incomplete. Further, there are other government institutions collecting data on economic losses and damages to infrastructure etc., but there is no mechanism to share this data among agencies. Information/data on disasters, loss of lives, damage to properties, damage to crops and relief are being collected by the NDRSC from the districts and divisions through district coordinators.

The Sahana data base is established by the NDRSC as a data clearance mechanism for data pertaining to relief, damages to houses and loss of lives due to disasters. DesInventar data base maintained by DMC contain historical disaster events, information since early 70s.

In addition, a large number of agencies collect information relevant to disaster management decision making, such as climate data by DoM, flow data by ID, land use by Survey Dept., etc. Ministry of Land and Land Development has obtained the approval of the Cabinet of Ministers to establish a National Spatial Data Infrastructure (NSDI). It is proposed to develop a pilot SDI covering disaster management and environment information as an initial step towards NSDI.

The mechanism to collect real time and historical data, ensuring accuracy of data, archiving and analyzing disaster trends and issuing regular information bulletins also needs to be improved.

### **Activities**

- 1.9.1 Improve disaster management data collection mechanisms including damage and losses information on different sectors and locations.
- 1.9.2 Pilot SDI covering disaster management and environment information as a start towards NSDI, which also include DesInventar, Sahana data bases.
- 1.9.3 Create and open access to a web-based GIS system capable of collecting, transmitting and analyzing data and other information concerning risk and vulnerability on real time basis
- 1.9.4 Improve the accuracy of DesInventar and Sahana data bases and the capacity of DMC at all levels to issue disaster trend analysis information to relevant agencies including the Department of Census and Statistics.

**Output indicator:** Number of reports generated annually with analysed disaster information

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** DMC, NDRSC

**Supporting organizations:** District Secretary, Relevant sectoral agencies, ICTA

**Duration:** 3 years

**Period:** 2014-2016

**Budget (LKR Million):** 30

## **Main Output: 1.10 Research and Development in DRR and CCA Supported**

### **Description**

Potential exists to promote universities and research institutions to conduct research and development and targeted studies to strengthen DRR and CCA. In the past DMC has supported universities to conduct studies on wind effect on buildings and development of seismic zonation maps and guidelines, as well as to develop hazard profiles in Sri Lanka. Research institutions have been supported to develop crop varieties and management practices to meet challenges of drought and floods. Only a limited number of policy related research has been done.

Significant variability of hazards and climate change impacts have been highlighted in the past studies and research. There are technology gaps in early warning systems, building designs and climate change adaptation best practices. On the other hand, there is a wealth of knowledge at the global level that can be adapted to Sri Lankan context. Also, there are various traditional systems in irrigation, agriculture and behaviour patterns that can be integrated to strengthen disaster resilience. Therefore, it is proposed to enhance the support on studies, research and development.

### **Activities**

- 1.10.1 Identification of priority research needs in DRR and CCA at sectoral and spatial levels
- 1.10.2 Supporting a platform for technical experts to develop research concepts, methods and proposals in line with identified priorities.
- 1.10.3 Establish a data and information exchange mechanism to support research.
- 1.10.4 Develop a mechanism to financially support proposed research and, a monitoring and knowledge management system to promote findings.
- 1.10.5 Adopt UN solution exchange concept to improve dialog between researchers, users of research findings and technology developers.

**Output indicator:** Number of research findings disseminated

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** DMC

**Supporting organizations:** TACs, Research Institutions, Universities

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 15

## **Main Output: 2.1 Legal framework strengthened to mainstream DRR concepts in the local government sector**

### **Description**

The local government policy adopted in 2009 has stated that the local government activities should minimize the impacts of hazards. Also, it provides that the local governments consider hazard parameters in local planning. Further, the policy ensures that the local authorities should be productive in disaster mitigation, management & preparedness within overall disaster management framework. It is necessary to formulate regulations and promote enabling environment to achieve the objectives of above policy statement.

### **Activities**

- 2.1.1 Arrange a consultative workshop with commissioners of local government in PCs, SLILG, representatives of associations of mayors and chairmen of LAs, to identify activities that the local government has to perform with regard to the policy statement given - (M/PC&LG).
- 2.1.2 Support to develop LA land use plans, guidelines and regulations/ bylaws with special attention to DRR and CCA
- 2.1.3 Action to improve capacities and understanding of policy makers and staff of LAs, through training and exposure events, in order for them to acknowledge the value of DRR in planning and management. Also, pass necessary resolutions to allocate funds for DRR in the annual budgets - (PCs & LAs)
- 2.1.4. Support PCs and LAs to introduce systems to monitor the DRR and CCA interventions, evaluate and provide guidance - (Sri Lanka Institute of Local Governance-SLILG)

**Output indicator:** Number of LAs adopting DRR through improved planning

**Geographical coverage of implementation:** Island wide

**Organization responsible for implementation:** M/PC&LG, PCs, SLILG

**Supporting organizations:** Min. of DM, DMC

**Duration:** 3years

**Period:** 2014-2016

**Budget (LKR Millions):** 30

## **Main Output: 2.2 Legal provisions and community capacity for the preparation of Grama Niladhari (GN) level development plans incorporating disaster risk reduction and climate change adaptation measures established.**

### **Description**

At present, methods and approaches for the development of GN level hazard maps and risk profiles are available and test piloted by a number of agencies. These techniques and experiences can be up scaled to cover all GN divisions. The Disaster Management Plans at GN level will include mitigation and adaption measures as well.

This process could be strengthened by introducing an institutional and legal setting, where national and sub-national level non-governmental organizations including Community Based Organisations, presently operating at GN level, are recognised as partners. Further, a better coordinating structure also could be introduced. Empowered Disaster Management Committees and CBO's at GN level are expected to catalyse the DRR and CCA incorporation into GN level planning.

### Activities

- 2.2.1 Introduce legal provisions for the establishment of DM Committees and engagement of NGO's at the GN level in the village development process - (DMC)
- 2.2.2 Formulate regulations to make mandatory the use of risk information in village development planning process - (DMC)
- 2.2.3 Prepare and provide technical and operational guidelines for risk based planning and disaster management at GN level- (DMC)

**Output indicators:** Legal provisions, regulations, guidelines

**Geographical Area of Implementation:** In all high risk GN divisions

**Organization responsible for implementation:** Ministry of DM

**Supporting Organisations:** Ministry of PA/HA, DMC, NGOs, SLRC

**Duration:** 2 years

**Period:** 2014-2015

**Budget (LKR Million):** 1

### **Main Output: 2.3 Legal provisions and procedures are available to mainstream DRR into the development process**

#### Description

Presently, the development agencies are required to carry out Environment Impact Assessments (EIAs) as part of the development project approval process and the Central Environment Authority is mandated to monitor the implementation of EIA recommendations during and after the project period. However, it has been observed that the disaster impacts are not sufficiently addressed in this process and disaster situations have been created by some of the development projects.

According to the DM policy, DRR should be mainstreamed into national development processes. This could be facilitated by ensuring the conduct of Disaster Impact Assessments study during the design and approval stage of development projects and ensuring the implementation of the mitigation options proposed in the study to minimize risks of vulnerable communities, infrastructure and environment. DMC has pilot tested the process by introducing DIA in to road development sector in collaboration with RDA and JICA. There is a need to provide a legal framework to institutionalize the DIA process and to build necessary capacities.

#### Activities

- 2.3.1 Amend the DM Act to include provisions to incorporate DRR concepts in to development processes as a mandatory measure- (MDM)
- 2.3.2 Develop regulations and guidelines to minimize impacts of disasters on development and disasters triggered by development (DIA) - (DMC)
- 1.1.3. Build the capacity of institutions and professionals to conduct DIA's for development projects and investments - (DMC)

**Output indicator:** Regulations, guidelines, institutional capacity built to conduct DIA

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** Min. of DM

**Supporting organizations:** DMC, NBRO, CEA, CCD and UDA

**Duration:** 3 years

**Period:** 2014-2016

**Budget (LKR Million):** 6

### **Main Output: 2.12 Coastal risk reduction strategies developed**

#### **Description**

Department of Coast Conservation and Coastal Resources Management(DCC&CRM) has already initiated the development of a “Coastal Zone Management Plan (CZMP)” as a requirement in the Coast Conservation Act. DMC could assist the process of developing CZMP by introducing large number of DRR tools developed recently, including, Sri Lanka Hazard Profiles, guidelines for building construction and approval in coastal zone, inundation modeling capacity using high resolution LIDAR data, etc. Potential exist to add value to the proposed Coastal Zone Management Plan by mainstreaming DRR information.

#### **Activities**

- 2.12.1 Identify and facilitate the transfer of DRR information to DCC&CRM led “Coastal Zone Management Plan” development process by strengthening the membership of the Technical Committee already appointed by the DCC&CRM by including DRR experts - (DMC)
- 2.12.2 Promote the implementation of DRR incorporated Coastal Zone Management Plan through DRR incorporated village and local authority development plans and National Emergency Operational Plan.
- 2.12.3 Build the capacity of agencies to adopt the DRR included Coastal Zone Management Plan towards mainstreaming DRR as well as in approving development applications.
- 2.12.4 Conduct a study to assess the impact of sea level rise on proposed National Physical Planning Policy-2030 in coastal areas.

**Output indicator:** Number of development plans approved with DRR incorporated;  
Study Report on the impact of sea level rise on proposed national physical planning policy in coastal areas

**Geographical Area of Implementation:** Coastal areas

**Organization responsible for implementation:** DCC&CRM

**Supporting organizations:**Universities, Climate Change Secretariat, DMC, SLIDA, SLILG

**Duration:** 3 years

**Period:** 2014-2016

**Budget (LKR Million):** 5

### **Main Output: 2.13 Disaster resilience incorporated in the National Physical Plan and Policy – 2030**

#### **Description**

NPPD has prepared the National Physical Plan and the Policy – 2030 (NPP&P), and the National Physical Planning Council has approved the same. At the time of its development, it was not possible

to incorporate disaster risk management concerns primarily due to the lack of necessary data including the spatial distribution of different hazards.

For example, DRR concerns are important in 86 DS divisions in the central fragile area identified by the NPPD where watersheds are affected by unplanned land use contributing to floods, landslides and droughts. Intergovernmental Panel on Climate Change (IPCC) has predicted rise of sea level due to the impact of climate change. The expected impacts of climate change may also influence the recommendations for development in coastal areas as outlined in the National Physical Plan & Policy 2030.

Department of Forest has expressed their concerns regarding the recommendation of the NPP&P to allocate marginal forest land in Mulathivu, Killinochchi, and Vavunia districts for development without implementing recommendations to increase forest cover in central hills. According to target setup by the government, green cover has to be increased to 35% in medium term. In light of these information and needs, potential exist to review the National Physical Plan and the Policy and strengthen/update the recommendations to improve the resilience of the National Physical Plan.

#### **Activities**

- 2.13.1 Appoint a technical group to review the National Physical Plan taking into consideration the Sri Lanka Hazard Profiles, Strategic Environment Assessment recommendations, Census - 2011 information, Intergovernmental Panel on Climate Change (IPCC) led climate change related knowledge and target set up by the government to increase green cover by 6%
- 2.13.2 Develop Terms of Reference (TOR) to conduct studies to evaluate the socio-economic-environmental aspects of the recommendations of the National Physical Plan regarding land use in central hills and the Northern Province. Obtain the approval of technical group for TOR and conduct the study.
- 2.13.3 Inter-agency consultations on the study findings and recommendation of technical group for revision of the NPP&P.
- 2.13.4 Revise the NPP&P based on the study recommendation and consultations.

**Output indicator:** Updated National Physical Plan and the Policy with hazards and climate change incorporated

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** NPPD

**Supporting organizations:** DMC, UDA, CCS, CEA, NPD

**Duration:** 2 years

**Budget (LKR Million):** 6

#### **Main output: 2.16 Procedure and guidelines for the implementation of provisions in the National Housing Policy for reducing impacts of hazards in housing sector are available**

##### **Description**

Draft National Housing Policy has identified the implementation of following measures to reduce impacts of natural hazards on housing sector;

- i. Land areas selected for housing should be utilised optimally in such a way it is resistant to impacts of climate changes and natural hazards

- ii. Development of environmentally friendly, low cost technology resilient to natural hazards and provide assistance to encourage research related to this field
- iii. Incorporate disaster risk reduction components in to guidelines and training modules in construction industry and curricula of universities as well as technical college.
- iv. In order to encourage the use of affordable, hazard resistant technology and environmentally friendly construction methods, technical officers at national level should be trained. Tax concessions and financial incentives should be introduced to encourage the use of such technology.
- v. Prevailing hazard should be considered in granting housing loans.
- vi. Hazard prone areas should not be selected for housing projects. Make it compulsory to obtain a certificate from National Building Research Organisation for construction in landslide prone areas.
- vii. Houses and other building should be constructed 100 feet away from the coast identified as hazard free zones.
- viii. Due to the scarcity of land for housing and other buildings, various types of construction takes place in hazard prone areas. Therefore, in areas prone to natural hazards, especially in Ratnapura and Kandy districts, construction methodology resistant to hazards should be introduced.

In order to implement provisions relating to DRR in the National Housing Policy, regulations and guidelines need to be developed.

#### **Activities**

- 2.16.1 Develop regulations and guidelines for the implementation of the provisions in the National Housing Policy to prevent/reduce disaster impacts
- 2.16.2 Review the training modules used to train technical officers incorporating DRR components
- 2.16.3 Train technical offers on DRR measures and technologies to construct houses in hazard prone areas.
- 2.16.4 Initiate discussion with banks and lending institutions to consider impact of natural hazards on the proposed housing development before granting loans.

**Output indicator:** Regulations and guidelines, number of technical officers trained

**Geographical Area of Implementation:** All islands

**Organization responsible for implementation:** Ministry of Housing

**Supporting organizations:** DMC, NBRO, NHDA

**Duration:** 3 years

**Period:** 2014-2016

**Budget (LKR Million):** 2.6

### **Main output: 3.3.A Institutional capacity for developing human resource for DRM enhanced**

#### **Description**

Disaster Management is a cross cutting subject and the understanding of disaster risk is fundamental to integrate DRR measures in to development programme and for effective response and recovery initiatives. Most of the training programmes conducted by DMC and other institutions are on general

awareness of specific hazards and disaster management. National institutions rarely conduct training programme on hazard, vulnerability and risk assessment.

In order to standardize all training programmes relating to the subject of disaster management, there is a need to develop training modules for different subject areas and targeting professional cadres to enhance the capacity.

Capacities available with national training institutes to train government officers on subjects related to DM are limited. Although the national school safety programmes have been initiated, facilities are inadequate to train teachers on school safety and DM. Further, there are specific training programmes to enhance the capacity of relevant personnel in first aid, CPR, S&R operations, mainstreaming DRR into development etc. Human resources development is a continuous task and to conduct these specialized training programmes, a dedicated training institute with residential facilities is needed. The MahindaChinthana vision for future has identified this need and proposed to establish a well-equipped DM training centre.

Training centre should be established in a suitable environment for conducting educational activities and easy access from main highways preferably within the Western Province.

### **Activities**

3.3.A.1 Identify a suitable land (preferably state land) with in Western Province.

3.3.A.2 Appoint a consultant to prepare conceptual plan for a training facility, architectural and structural designs, tender documents etc.

3.3.A.3 Construct the building and procure equipment required

3.3.A.4 Recruit staff required to operate the training centre

**Output indicator:** Well-equipped training centre,

**Geographical Area of Implementation:** Western Province

**Organization responsible for implementation:** DMC

**Supporting organizations:** MDM

**Duration:** 3 years

**Period:** 2014-2016

**Budget (LKR Million):** 500 for procurement of land  
700 for establishing training center including infrastructure

## **Main Output:3.10 Regulations and guidelines to empower District and Divisional Secretaries to take action in any disaster situation available**

### **Description:**

Disaster Management Act No. 13 of 2005 provides for the empowering of appropriate authorities nominated as per the Act to counter the effect of any disaster after proclamation of a state of disaster. In most situations, the proclamation of a state of disaster is not done considering the effect of declaration on the economic sector such as tourism. In most cases, armed forces are mobilised to provide assistance to District and Divisional Secretaries for search and rescue operation and distribution of food and essential relief items. District and Divisional Secretaries need to be legally empowered to take counter measures to remove obstructions to reduce disaster impacts, acquire properties to accommodate disaster

affected people as well as to procure services of appropriate agencies for search & rescue operations even if a state of disaster is not declared.

**Activities:**

- 3.10.1 Review the legal provisions, if any available, empowering district or divisional administration to respond to disaster situation without delay.
- 3.10.2 Consult district and divisional administrators regarding legal and administrative barriers they encounter and additional powers required to respond to a disaster situation without delay.
- 3.10.3 Draft regulations under the DM Act-2005 and guidelines empowering district and divisional administration to respond to disaster situations

**Output indicator:** Regulations and guidelines

**Geographical Area of Implementation:** Whole Island

**Organization responsible for implementation:** DMC

**Supporting organizations:** MDM

**Duration:** 2 years

**Period:** 2014-2015

**Budget (LKR Million):** 3

**Main Output:4.2 Technical advisory committees, namely the National Disaster Management Committee, Multi-hazard Early Warning Committee, National Disaster Management Coordinating Committee, Construction Guidelines Committee and National Emergency Operations Committee are in operation.**

**Description**

The DM Act provides for the establishment of technical advisory committees consisting of professionals and experts having expertise in relation to respective functions and responsibilities assigned to the NCDM and DMC. The committees shall assist both institutions. Accordingly, the National Disaster Management Plan (NDMP) approved by the NCDM proposed to establish three main committees and nine other committees as the need arises.

The National DM Advisory Committee chaired by Minister of DM and the Tsunami EW Committee chaired by the Secretary were functioning in the initial stages of establishment of DMC. The National Disaster Management Coordinating Committee, Building Guidelines Committee and National Emergency Operations Committee have been active up to date.

Accordingly, SLCDMP proposes to strengthen / establish the following committees initially, obtaining the NCDM approval as required by the DM Act and facilitate the functioning of following committees:

- National Disaster Management Committee chaired by the Minister,
- Multi-hazard Early Warning Committee for all hazards,
- National Disaster Management Coordinating Committee,
- Construction Guidelines Committee and
- National Emergency Operations Committee.

Subsequently, the following committees will be established. However, as it will be necessary to conduct meetings of these committees occasionally only as and when needed, these will also be established within a period of 5 years with NCDM approval.

- Risk assessment, data collection, research and analysis and mitigation committee and
- Disaster response, relief and rehabilitation committee

National Disaster Management Committee will meet under the chairmanship of the Minister of DM. Other committees will be chaired by the Secretary of the Ministry or professionals nominated by the council. National DM Committee will review the recommendations of the Technical Advisory Committees and submit to the NCDM. Members of these committees could be representatives from state sector agencies, academia, media, chamber of commerce, professional institutes, Red Cross, Civil Society Organisations etc.

### Activities

- 4.2.1 Submit names of members and chairmen of Technical Advisory Committees to the NCDM through the Ministry of Disaster Management for approval (DMC)
- 4.2.2 Develop the TORs for committees and issue letters of appointments to the chairmen & members (DMC)
- 4.3.3 Provide secretarial support and allocate budgets as relevant (DMC)

**Output indicator:** Number of committees functioning with NCDM approval

**Geographical coverage of implementation:** Not applicable

**Organization responsible for implementation:** Min. of DM, DMC

**Supporting organizations:** NDMCC members, Line ministries in the NCDM

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 2.

## Strategy B - Multi-hazard Early Warning and Effective Dissemination

**Main Output: 1.1** Timely issuance of seasonal climate & weather forecast is streamlined

**Sub Output: 1.1.A** Timely issuance of seasonal climate forecast on drought is streamlined

### Description

Drought has been identified as a slow onset hazard affecting a large number of people incurring enormous economic losses. The impact of drought could be minimized through advance predictions, thereby supporting decisions related to agriculture, water resource management, etc.

Presently climatic and hydro geological data is being collected by a number of agencies including DoM, ID, MASL, CEB, NWSDB, DA, DAD, WRB, etc. Inputs from all these technical agencies are required to manage drought. For example, DoM convenes the Monsoon Forum to discuss the possible impacts of monsoonal rains in the country. However, there is no formal arrangement for all technical agencies to meet and take a collective decision to issue seasonal forecast on drought. There are a number of local and regional efforts to improve seasonal forecasting such as forecast by the Regional Integrated

Multi-hazard Early-warning System (RIMES), Bangkok, Thailand and Colombia University. Therefore, interagency forum will be required to share data, technical expertise and generate seasonal forecast advisories.

At the sub-national level, seasonal meetings of farmer organizations and relevant state agencies are convened by the District Secretary to decide on availability of water for cultivation of paddy and other crops. Based on the information provided by the agencies, the District Secretary in consultation with all relevant parties including farmers, outline the water distribution pattern, types of crops and extent of land that could be cultivated.

Therefore, it is proposed to restructure and/or strengthen the present “Monsoon Forum” to include other relevant agencies to issue forecast and guidance on both floods and drought. In order to facilitate process of taking informed and timely decisions by the forum, technical capacity of relevant institutions need to be developed.

### **Activities**

- 1.1.A.1 Develop the capacity (physical and human resources) of DoM to prepare and issue improved climate forecasts
- 1.1.A.2 Develop a methodology to issue seasonal climate and weather forecast (weekly or bi-weekly) taking in to consideration meteorological and hydrological data, soil moisture contents, etc. including remotely sensed weather information
- 1.1.A.3 Restructure/establish an inter-agency forum, led by the Ministry of DM, to periodically assess climate outlook, its implications for key socioeconomic sectors, and issue advisories. (Members of the forum: Ministry of DM, DoM, DI, MASL, DA, NWSDB, CEB, DAD, WRB and DMC)

**Output indicator:** Advisories on effect of climate issued quarterly

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** MDM / DoM

**Supporting organizations:** Universities

**Duration:** 4 years

**Period:** 2014-2017

**Budget (LKR Million):** 16

**Main Output: 1.1 Timely issuance of seasonal climate & weather forecast is streamlined**

**Sub Output : 1.1.B Weather prediction capacity of the DoM is enhanced**

### **Description**

Between years 2000 and 2010, more than 13 million people in Sri Lanka have been affected by weather related natural disasters. Though the disasters cannot be avoided or prevented, it is vital to be proactive, by providing more accurate and timely weather forecasts and warnings to general public and more particularly, to those in hazard prone areas. Timely issue of information on weather will allow relevant parties to mitigate losses and damages and also to significantly enhance resilience, enabling easy recovery from disasters. Therefore, improving capabilities of the DoM for accurate weather forecasting at different time scales such as, very short range (up to 12 hrs), short range (12 hrs - 03 days), medium range (3-10 days), extended (10-30 days) and long range (1 month - 2 years including seasonal) and subsequent early warning services, is an absolute necessity.

Weather forecasting in Sri Lanka is performed using mostly subjective methods at present. The development and use of digital tools, techniques and model outputs to assist weather forecasting is a need of the hour to improve the accuracy of weather forecasting. Implementation of a numerical model of sufficient resolution developed for use in the tropics will result in better accuracy in weather forecasting and is an urgent necessity.

Capacity building on (medium and long range forecasting) Numerical Weather Prediction (NWP) techniques, aiming at implementing medium to long range forecasts objectively is a necessity to improve medium and long range forecasting. In addition, the downscaling of global NWP products to regional scale is also required to improve the accuracy of short range weather forecasting in Sri Lanka. Capacity building in downscaling of global climate model outputs, identification of reliable downscale procedures (statistical, dynamical), establishment of an advanced computer laboratory with facilities for high speed/memory computing and manpower training for meteorologists are some of the major requirements identified. DoM has already submitted a proposal requesting funding to develop the system.

#### **Activities**

1.1.B.1 Training in NWP for a selected group of meteorological personnel

1.1.B.2 Development of a high speed computer laboratory for NWP at the DoM

1.1.B.3 Development of a methodology at the DoM to incorporate numerical guidance in weather forecasting process

**Output indicator:** Daily weather forecast improved to 80% accuracy

**Geographical Area of Implementation:** Island-wide

**Organization responsible for implementation:** Department of Meteorology

**Supporting organisations:** Regional meteorological agencies / universities

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 20

### **Main Output:1.1 Timely issuance of seasonal climate & weather forecast is streamlined**

**Sub Output:1.1.C** Climate change scenarios for Sri Lanka for 2050 and 2100 developed using the latest model outputs

#### **Description**

Potential changes in temperature and variations in rainfall are expected to impact a number of sectors including agriculture, fisheries, tourism, infrastructure and coastal development. Among the key disasters in Sri Lanka, coastal erosion, drought, floods, landslides, tropical cyclones, lightning, storm surges are influenced by climate change.

Better predictive capacity of the spatial variability of climate change or climate change scenarios is important to manage the potential impact.

### Activities

1.1.C.1 Training in climate change scenario development for a selected group of meteorological personnel

1.1.C.2 Development of climate change scenarios for Sri Lanka for 2050 and 2100 utilizing state-of-the-art climate models

**Output indicator:** Training conducted; and climate change scenarios for Sri Lanka for 2050 and 2100 developed

**Geographical Area of Implementation:** Island-wide

**Organization responsible for implementation:** Department of Meteorology

**Supporting organizations:** Regional agencies/universities

**Duration:** 3 years

**Period:** 2014-2016

**Budget (LKR Million):** 21

## Main Output: 1.2 Timely issuance of flood early warning is streamlined

### Description

Presently, Irrigation Department maintains river gauges only in Kelani River and issue early warning messages to residents in downstream Kelani River. No early warning on floods issued for other major rivers.

Technical agencies managing reservoirs issue an advisory before opening spill gates. However, there is no formal system to issue warnings to the communities living downstream of reservoirs. In the case of cascading reservoirs/ tanks, a coordinated system of information sharing for gate operators as well as downstream communities is essential.

Dam safety and Water Management Project of the Ministry of Irrigation has initiated action to establish rain gauges and river gauges at identified locations of river catchments and in major rivers.

In order to further reduce life and property losses due to floods, issuance of early warning messages in time for major rivers and reservoir gate opening is a necessity.

Considering the extreme flood events experienced during last few years there is a need to issue early warning for urban floods. Under the Metro-Colombo Urban Development Project, the SLLRDC has undertaken to develop a flood model for local authorities covered by the project. This model can be adapted to other urban areas as well.

### Activities

1.2.1 Establishment of Early Warning system for riverine floods (Kelani Ganga, Kalu Ganga, Gin Ganga and Nilwala Ganga, Malwathuoya, Deduruoya, Yanoya, Mundaliaru) – (ID).

1.2.1.1 Develop the capacity of irrigation Dept. to prepare flood inundation models for above rivers - (ID)

1.2.1.2 Prepare inundation maps for different return periods of flood (5, 10, 25 and 50 year) - (ID)

1.2.1.3 Develop and practice a flood early warning system for identified rivers – (ID)

- 1.2.2 Establish an EW system for floods generated by opening of spill gates of reservoirs – (ID / MASL).
  - 1.2.2.1 Identify list of large and medium level reservoirs that could generate flood in the downstream in the event of opening of spill gates– (ID / MASL).
  - 1.2.2.2 Prepare inundation maps for identified reservoirs at three levels of gate opening – (ID / MASL).
  - 1.2.2.3 Issue flood early warning to communities in downstream of reservoir – (ID / MASL).
  - 1.2.2.4 Establish a mechanism to disseminate EW message to communities at high risk areas – (DMC)
- 1.2.3 Introduce an early warning system for floods generated by overflow/ breach of small (minor) tanks in village cascade – (DAD).
- 1.2.4 Establishment of an early warning system for urban floods (Colombo, Moratuwa, Wattala, Jaela, Peliyagoda, Galle, Matara, Kalutara, Ratnapura, Baticaloa, Mannar and Puttalam).
  - 1.2.4.1 Develop base maps 1:5000 scale for 17 Urban Local Authorities prone to floods and landslides (Colombo, Moratuwa, Wattala, Jaela, Peliyagoda, Galle, Matara, Kalutara, Ratnapura, Baticaloa, Mannar and Puttalam, Kandy, Nuwaraeliya, Badulla, Bandarawela, Kegalle) – (Survey Dept.).
  - 1.2.4.2 Obtain the services of Sri Lanka Land Reclamation and Development Corporation (SLLRDC) or any other technical agency to develop a flood model and flood inundation maps for 5, 10, 25 and 50 year return periods for identified urban centers – (ULA)
  - 1.2.4.3 Develop a system to issue and practice flood early warning to rate payers at high risk areas – (relevant urban local authority).

**Output indicators:** Flood early warning is issued on time for riverine, reservoir/tank induced and urban floods EW system established for riverine, reservoir / minor tank induced and for urban floods; base maps available for 17 ULAs; Fl. models & flood inundation maps developed for identified ULAs; system to issue and practice flood EW available.

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** Riverine floods: ID  
Reservoir induced floods: ID, MASL and DAD  
Urban floods: ULAs

**Supporting organizations:** Department of Meteorology, DMC, Survey Department

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 100

### **Main Output: 1.3 National and community level landslide early warning systems are in place.**

#### **Description**

NBRO has identified districts prone to landslides and developed hazard maps. Automatic rain gauges are being installed in high risk areas. NBRO has developed the capacity to predict landslides and issue warning. However, during the adverse weather conditions it is difficult to reach the communities at high risk areas to disseminate the EW message. In the event of the national system not being capable of reaching high risk areas, a pilot scheme is being successfully tested by NBRO to empower communities to read rain gauges and use landslide maps to decide on self-evacuation. Expansion of this scheme will contribute to reduce life losses.

## Activities

- 1.3.1 Install a system to issue landslide early warning automatically in locations identified as high risk
- 1.3.2 Identify gaps and introduce additional automated rain gauges and cutting edge EW technologies to improve methods and accuracy of landslide early warnings issued.
- 1.3.3 Expand the distribution of manual rain gauges with threshold levels marked to all communities living in high risk locations; and train communities on the use of manual rain gauges to take decisions for self-evacuation

**Output indicator:** % of LS prone GN divisions covered by the automatic EW systems  
% of communities in high risk areas covered by the manual EW system

**Geographical Area of Implementation:** Landslide prone districts

**Organization responsible for implementation:** NBRO

**Supporting organizations:** DMC, Local authorities, NDMCC members, village level committees

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 155

## Main Output: 1.4 Mechanisms to disseminate early warning messages are enhanced

### Description

DMC has established several communication systems to disseminate EW messages to communities at risk. EW towers, HF/VHF radio communication systems and mobile telecommunications are the main systems used by DMC at present. EW towers are located at major population centers and cover a maximum area of 2 km radius leaving large gaps between towers. Though the HF/VHF radio system could cover a wider area it requires repeater stations, base stations and a large number of radio sets to disseminate the messages.

There is a need to establish a siren system operated automatically or from a central location to disseminate landslide early warning messages to densely populated locations in landslide prone districts. Presently only a limited number of radio sets are issued to national, as well as district level officers. Schools and religious places also needed to be connected to the radio communication system to disseminate messages effectively. Before expanding the communication system to cover all vulnerable communities, a study has to be conducted to identify the gaps and needs.

DMC has also established intra-governmental network connecting 7 agencies involving early warning and dissemination. The real time information will be helpful for the response organizations to expedite the response activities including health authorities. There is a demand from general public for real time data on rain fall and river water levels, reservoir water levels, so that they could prepare themselves for possible disaster situations. A mechanism needs to be established to share this information on a real time basis.

Ministry of Fisheries and Aquatic Resources has requested the Disaster Management Center to assist in establishing a system to disseminate early warning messages on tsunami and high winds to fishermen engaged in fishing in coastal water as large number of lives were lost due to high wind experience along the coastal areas of the country.

Dialog has provided access to DMC to disseminate EW messages through their mobile networks. DMC

could pursue the other mobile operators to allow the dissemination of EW through their networks. Assistance of the Telecommunication Regulatory Commission (TRC) could be obtained for this.

#### **Activities**

- 1.4.1 Assess the existing early warning mechanism to disseminate EW messages for all hazards and identify gaps
- 1.4.2 Develop a system to cover gaps in disseminating EW messages for floods (riverine,damrelated, urban and coastal), landslides, tsunami and cyclones
- 1.4.3 Procure and install infrastructure required to fill the gap in EW dissemination system
- 1.4.4 Conduct awareness programme on EW dissemination systems available and practice mock drills using all systems
- 1.4.5 Expand the inter-government network to share real time data on flood, high winds, landslides, rock fall and cyclones
- 1.4.6 Establish a mechanism to provide information on rain fall data and river water levels, reservoir water levels on real time basis to the general public
- 1.4.7 Establish a system to receive early warning messages on tsunami and high wind and disseminate to fishermen in coastal waters (Min of Fisheries)
- 1.4.8. Pursue mobile operators to disseminate EW messages through their networks.

**Output indicator:** 90% land area prone to hazards covered to disseminate EW messages

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** DMC

**Supporting organizations:** Mobile operators

**Duration:** 3 years

**Period:** 2014-2016

**Budget (LKR Million):** 102

### **Strategy C. Hazard, Vulnerability and Risk Assessment**

**Main Output: 1.5** Disasterrisk profiles are available at national level to capture the elements at risk and assess damage to capital assets and economic losses

#### **Description**

Risk profile will provide the risk information for taking decisions for planning and investment, minimizing exposure to natural disasters. Further risk information will assist the decision makers to assess the acceptable risk and select suitable mitigation measures. It also helps to assess the probable damages and losses of a natural disaster before it strikes. Using the risk information, people in hazard prone areas could be made aware of risks faced by them to take preventive measures. This information will also be useful in moving settlements in high risk areas at present to safe locations and also in planning new settlements avoiding high risk locations.

For development of risk profiles, the services of universities and research organizations could be obtained.

### Activities

- 1.5.1 Complete the drought hazard maps taking in to account meteorological, hydrological and agricultural drought conditions - (DMC)
- 1.5.2 Develop landslide hazard maps at 1:10,000 scale for all hazard prone districts. (Galle and NuwaraEliya already completed) - (NBRO)
- 1.5.3 Develop flood inundation maps for eight selected river basins at 1:10,000 scale - (ID)
- 1.5.4 Prepare vulnerability and risk maps for landslide, drought and flood prone areas - (DMC)
- 1.5.5 Analyze risk, and provide information to policy makers and development agencies - (DMC)

**Output indicator:** Disaster risk profiles available for all the districts

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:**

Flood: ID  
Landslide: NBRO  
Drought: DoM, DA, ID, WRB, NWSDB, MASL  
Vulnerability maps: DMC  
Risk maps: DMC

**Supporting organizations:** Survey Department

**Duration:** 4 years

**Period:** 2014-2017

**Budget (LKR Million):** 708

### **Main Output: 1.6 Detailed risk profiles are available for high risk major urban centers prone to floods and landslides**

#### Description

With rapid urbanization and the scarcity of land in urban areas, low lying areas are filled and used for development, including housing construction. Obtrusions to canals and occupation of canal bunds aggravate the flood situation. Most of the urban centers in the coastal belt are prone to frequent floods. Preparing inundation maps and risk maps will assist local authorities to identify high risk areas and implement mitigation activities to reduce the impacts. In developing the Urban Development Plans, local authorities could use risk maps to prepare zoning plans and avoid development in high risk areas.

#### Activities

- 1.6.1 Outsource the development of flood risk maps for 12 urban centers based on the inundation maps prepared under activity 1.2.3.2 in Strategy B – (DMC)
- 1.6.2 Develop landslide susceptibility maps for Kandy, NuwaraEliya, Badulla, Bandarawela, Rathnapura, Kegalle Urban Centers at 1:5000 scale – (NBRO)
- 1.6.3 Outsource the development of landslide risk maps for 6 urban centers named in 1.5.2 – (DMC)
- 1.6.4 Develop criteria to prioritize urban centers prone to landslides and floods in PuraNeguma (town development) programme separately (DMC)

1.6.5 Develop risk maps for LA listed under PuraNegumaProgramme prone to landslides and floods(DMC).

1.6.6 Prepare a manual based on the experience of City Resilient Programme to develop hazard maps and risk maps with the participation of relevant local authorities(DMC)

**Output indicator:** Flood & landslide hazard maps and risk profiles are available for urban centers  
Detailed risk profiles for floods and landslides are available for urban centersinPuraNagumaprogramme  
Training manual

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:**

Base maps – Survey Dept.  
Landslide hazard map - NBRO  
Inundation maps for urban centers - SLLRDC  
Flood Risk Map - DMC  
Urban Risk Map - DMC

**Supporting organizations:** Local Authorities, Provincial Councils

**Duration:** 4 years

**Period:** 2014 - 2017

**Budget (LKR Million):** 152

## Strategy D. Disaster Mitigation and Mainstreaming DRR into development

### Main Output: 1.7 Organizationalcapacityfor management and operation of reservoirs to minimize flood impacts is enhanced

#### Description

Management and operation of reservoirs should be planned to balance irrigation, agriculture, flood control and ecosystem servicesrequirements.In order to achieve this capacity and coordination systems in irrigation department and other agencies need to be developed. For example, during heavy precipitation, engineers have to open spill gates immediately to discharge excess water for the safety of dams, which causes flooding downstream. In the absence of a system to monitor the inflow to reservoirs on real time basis, engineers responsible for reservoir management tends to maintain water level at maximum capacity to ensure the availability of water for agricultural purposes before opening the spill gates. It has been observed that this situation can be improved by synchronizing the incoming flow with the opening of gates.

Communities living downstream of reservoirs need to be properly briefed about the areas that could be affected in case of sudden opening of spill gates or dam breach. A mechanism to disseminate early warning messages need to be established. Community level preparedness plans has to be developed. Mock drill should be conducted before the monsoon.

#### Activities

1.7.1 Identify major and medium level reservoirs, where management and operation capacities need to be enhanced.

1.7.2 Introduce inflow recorders, rain-gauges and software/ hardware plus training required to synchronize the spill gate opening with rainfall.

- 1.7.3 Develop inundation maps downstream of dams, establish early warning system, identify safe routes, safe locations, conduct awareness programmes, mock drills and train communities to evacuate to safe locations

**Output indicator:** Number of reservoirs/tanks, where new gate operation procedure is introduced

**Geographical Area of Implementation:** Island wide as relevant

**Organization responsible for implementation:** ID, MASL, CEB

**Supporting organizations:** DMC, DDMCUs

**Duration:** 3 years

**Period:** 2014 - 2017

**Budget (LKR Million):** 100

**Main Output: 2.6 The potential impacts of flood reduced in flood prone districts of Batticaloa, Ampara, Colombo, Gampaha, Kalutara, Trincomalee, Anuradhapura, Puttalam, Kurunegala, Galle, Matara, Pollonaruwa, Ratnapura and Mulathivu**

**Description**

The cumulative flood impacts since 2000-2012 indicates that more than 500000 people have been affected due to floods in Batticaloa, Ampara, Colombo, Gampaha, Kalutara and Trincomalee districts ([www.desinventar.lk](http://www.desinventar.lk)). The number of people affected in each district i.e. Galle, Matara, Kurunegala, Rathnapura, Puttalam, Mulathivu, Anuradhapura, and Pollonaruwa vary between 200 000 – 500000.

A flood mitigation study completed by a firm of consultants engaged by DMC with UNDP assistance has covered 30 river basins, 31 major coastal water bodies (14 in Batticaloa and 17 in Ampara districts respectively), reviewed proposed storm water drainage plans in Kalmunai, Ninthavur, Addalatchineei, Akkarapattu, Potuwil (in Ampara district), Valachchnai, and Kattankudi (in Batticaloa District) and assessed the impacts of ongoing urban development projects in both Ampara and Batticaloa districts has proposed the immediate implementation of 10 sub-projects in 10 irrigation schemes and 12 urban/rural sub-projects in Ampara and Batticaloa district at a total estimated cost of Rs 4,000 million.

Further studies are needed to cover river basins of Kalu Ganga, Gin Ganga, Nilwala Ganga, Malwathu Oya, Deduru Oya, Yan Oya, Mudal Aru and Atthanagalu Oya to identify the most vulnerable areas and suitable mitigation interventions. Hydro-meteorological modeling for catchment areas will have to be undertaken for above river basins taking in to consideration available irrigation reservoirs/tanks and other water bodies.

**Activities**

- 2.6.1 Implement the recommendations of Ampara - Batticaloa flood mitigation study:

a) Irrigation sub-projects (ID), b) urban sector sub-projects - (UDA)

- 2.6.2 Undertake studies including Hydro-meteorological modeling covering river basins Kalu Ganga, Gin Ganga, Nilwala Ganga, Malwathu Oya, Deduru Oya, Yan Oya, Mudal Aru and Atthanagalu Oya and identify appropriate interventions to minimize flood impacts - (ID)

**Output indicator:** Number of flood mitigation interventions identified for implementation.

**Geographical Area of Implementation:** 14 flood affected districts

**Organization responsible for implementation:**

Irrigation sub-projects - Irrigation Department  
Urban sector sub project – UDA

**Supporting organizations:** District Secretaries, DMC, , Provincial ID

**Duration:** 4 years

**Period:** 2014-2017

**Budget** (LKR Million): 2500 for Irrigation sub projects, 1500 for urban/rural drainage projects in Ampara and Batticaloa districts; 250 for studies in 8 river basins

**Main Output: 2.8. Flood impacts in selected urban and local authorities mitigated.**

**Description**

Urbanization has increased the paved areas in urban centers limiting the percolation and reducing water retention period creating flash floods while the present storm water drainage systems in urban areas are inadequate to drain the storm water. Also, there has been a change in the intensity of the precipitation in recent times.

It is not economical to expand the existing drainage systems to cater to extreme flood events. Instead, there could be multiple mechanisms that can be put in place to improve drainage (clearing obstructions, regular maintenance, etc.), while enhancing the retention capacity within the premises (constructed wetlands, ponds, buffer storages, rain water harvesting, infiltration improvements etc.).

A policy decision has been taken by the Urban Development Authority (UDA) to encourage rainwater harvesting as a criteria for the approval of new constructions so that rain water is retained within the premises to minimize the sudden flood peaks.

These changes require a number of multi-disciplinary studies to evaluate investment options (drainage improvements, zoning and land use, and tax structures) for storm water management combined with improved awareness and education at policy making and household levels.

**Activities**

- 2.8.1 Develop an information centre of storm water drainage related information that also house studies conducted around the country during last 10 years by UDA, SLLRDC and M/PC&LG, mainly in Galle, Matara, Gampaha, Trincomalee, Mannar, Chilaw, Peliyagoda, Nugegoda, Puttlam, and Colombo Metropolitan areas (SLILG/UDA)
- 2.8.2 Review the literature, update where necessary and identify interventions to mainstream flood risks into urban development plans (UDA)
- 2.8.3 Conduct training programmes for local government officers to develop mitigation, preparedness and response plans at local levels – (DMC)
- 2.8.4 Outsource the development of investment proposals for each urban area and implement (DMC)

**Output indicator:** Number of urban plans with improved drainage concepts incorporated; number of training programmes for LG officers; number of investment proposals and projects implemented

**Geographical Area of Implementation:** Galle, Matara, Urban Centres in Gampaha district, Trincomalee, Mannar, Chilaw, Nugegoda, Puttlam, Colombo Metropolitan area

**Organization responsible for implementation:** DMC

**Supporting organizations:** Local government, SLLRDC, UDA, SLILG,

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 10,000

### **Main Output: 2.10 Slopes stabilized in identified high risk landslide and rock fall sites**

#### **Description**

NBRO has identified landslide prone sites in Matale and NuwaraEliya districts and the information is made available to public through Divisional Secretary and local authorities. Residents have been advised to avoid or take precautions in constructing houses on landslide prone sites. In addition, slope stabilization at Peradeniya, Padiyapelella has been completed, and landslide mitigation work at Garandi Ella in Kothmale DS division is in progress.

NBRO and RDA have jointly undertaken a project to stabilize the slopes along major highways in landslide prone districts with financial assistance of the Govt. of Japan. However, all sites identified by NBRO as high risk are not included in the project.

There are five urban local authorities namely Kandy, NuwaraEliya, Badulla, Bandarawela and Kegalle prone to landslides and slope failures. High risk locations in public places threatening life of school children and general public have to be mitigated to ensure the safety.

#### **Activities**

- 2.10.1 Undertake landslide risk assessment, cost benefit analysis and prioritize high risk sites required to be stabilized after considering, socio economic and ecosystem benefits.
- 2.10.2 Prepare plans and estimates to reduce landslide risks based on different options that also include engineering as well as land use measures.
- 2.10.3 Implement mitigation activities to stabilize identified slopes.
- 2.10.4 Mitigate potential slope failure locations in identified ULAs.

**Output indicator:** Number of sites identified and stabilized in landslide prone districts and urban areas

**Geographical Area of Implementation:** All landslide prone districts and selected urban centers

**Organization responsible for implementation:** NBRO

**Supporting organizations:** Urban local authorities, District Secretaries

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 6000

## **Main Output: 2.11 Drought risk reduction strategies developed**

### **Description**

Drought being a slow onset hazard, the risk reduction on droughts require multitude of approaches starting with predictions, early warnings, crop selection, water resources management and land use management in catchment areas, among other things.

There are multiple agencies dealing with water management for different uses ranging from drinking, irrigation, power generation and ecosystem services. The agencies are linked with a number of coordinating structures functioning at ministerial, district and village levels primarily on water management and occasionally on drought and flood management. Potential exists to improve the coordination efforts of agencies by introducing an integrated drought management plan developed in consultation with all stakeholder agencies supported by a coordinating structure with enhanced information management capabilities.

### **Activities**

- 2.11.1 Facilitate policy dialogues with relevant stakeholder institutes and individuals for an integrated approach for reducing drought impacts(DMC)
- 2.11.2 Appoint a technical group consisting of members from DA, HARTI, ID, DoM, Climate Change Secretariat, DAD and WRB to develop a comprehensive plan for drought mitigation in the country (MDM)
- 2.11.3 DMC to provide services of technical experts/consultants, if required, and secretarial services for the committee (DMC)
- 2.11.4 Committee to submit the recommendations in 6 months (DMC)
- 2.11.5 Capacity development of relevant institutions to implement the drought mitigation plan and the necessary information management (DA)
- 2.11.6 Develop and operationalize a coordinated monitoring system by agencies to evaluate the extent and impact of drought and effectiveness of the responses(DA)
- 2.11.7 Identify, develop and promote crop varieties and agricultural practices suitable for drought/flood conditions(DA)
- 2.11.8 Scientific land management to reduce land degradation and ensure longevity of soil moisture and soil health(DA)
- 2.11.9 Empower legal aspect of land management(DA)

**Output indicator:** Operationalized drought management plan,coordinated monitoring system by agencies to evaluate the extent and impact of drought and effectiveness of the responses, Number of prosecutions against misuse of land

**Geographical Area of Implementation:** Drought prone areas

**Organization responsible for implementation:** DA  
**Supporting organizations:** DMC HARTI, ID, DoM, Climate Change Secretariat, DAD and WRB, MASL, MoA, LUPPD

**Duration:** 2 years

**Period:** 2014-2016

**Budget (LKR Million):**320

**Main Output:2.14** Safeguarding water resources from industrial, agrochemical and domestic point and non-point source pollution

**Description**

Contamination of surface and ground water sources and related health hazards is a serious concern. Improved awareness of health and pollution linkages and an integrated structure for environmental monitoring, enforcement of regulations and standards are needed to avoid water pollution from reaching disaster proportions.

As there are a number of agencies involved in the use (drinking, irrigation, power, ecosystem services etc.) and management of quality and quantity of water, it is necessary to form a consortium of water related agencies to approach the pollution issue in a holistic manner. In addition, the number of studies supporting policy changes to address pollution is also limited. Enabling environment for water users, media or public, to access, sample and check the quality of industrial and other pollutant discharges to water bodies may improve the governance related to water.

**Activities**

- 2.14.1 Appoint a Technical Working Group (TWG) consisting of members from NWSDB, DA, HARTI, ID, CEB, DAD, WRB, CEA, MDM and other agencies responsible for quality and quantity issues of water - (MDM)
- 2.14.2 Identify gaps in the present system of environmental regulations, safeguards and barriers for proper enforcement including the concerns of industries and public - (CEA)
- 2.14.3 Develop TOR and commission a number of relevant assessments to support develop systems of monitoring, reporting and reviewing of environmental health of water resources - (CEA)
- 2.14.4 Inter-agency consultative process to develop interventions to manage the contamination potential of water resources (CEA)
- 2.14.5 Capacity building of agencies to implement the multi-agency pollution prevention system (CEA)

**Output indicators:**

- Inter-agency working group to work on water pollution
- Number of guidelines/regulations developed to minimize water pollution

**Geographical coverage of implementation:** Island wide

**Organisation responsible for implementation:** CEA

**Supporting organizations:** ID, DAD, DMC, HARTI, Ministry of Water Supply, Ministry of Environment and Renewable Energy, Ministry of Industrial Development, CEB, WRB, ITI, Ministry of Health, MDM

**Duration:** 3 years

**Period:** 2014 – 2016

**Budget(LKR Million):**10

**Main Output: 2.15 Potential impacts on lives and properties due to human-elephant conflict reduced.**

**Description**

Wild elephants are distributed in the lowland dry zone forests including the wildlife protected areas as well as in the forests reserves of the country. In view of the availability of space with required habitat conditions together with legal protection, the country has a considerable population of wild elephants. But, as a result of development activities, the lands enjoyed by wild elephants for a long period is gradually receding affecting their free movement. The decline of habitats in the rural areas where elephants were found in large numbers and the reduction of the area for their natural movement have resulted in the human-elephant conflict.

Elephants are distributed among 33% of the land covering 17 districts. As per information available with DWC, incidents have been recorded in 106 Divisional Secretariat Divisions. Natural forest cover is fragmented due to human settlements and large scale development disturbing the connectivity which has aggravated the conflict. Lack of proper land use plan for rural areas has resulted in the allocation of land areas abandoned with wild elephants for development projects, contributing to the conflict. Villages peripheral to the protected areas are susceptible to elephant attacks. Expansion of villages towards the elephant habitat due to increase in population will endanger their lives. Therefore, cooperation of villagers to form committees and adhere to safety guidelines issued by the DWC is important to safeguard their lives.

Surveys carried out by the Department of Wildlife Conservation (DWC) have revealed that there is a loss of an average of 75 human lives and 170 elephants each year as a result of this conflict.

Though the DWC spend a sum of about Rs. 400 million annually for various activities related to the conflict, loss of lives and damages to properties continue.

**Activities**

- 2.15.1 Development of land use plan for 106 DS divisions affected by conflict. (Div. Secretary)
- 2.15.2 Establishing important forest connectivity and controlling human activities within forest connectivity (Div. Secretary)
- 2.15.3 Controlling elephant movements within human habitations which includes electric fencing and other barriers (DWC)
- 2.15.4 Enrichment of elephant habitat which include renovation and establishment of tanks, removal of invasive plants and maintenance of grasslands (Div. Secretary)
- 2.15.5 Education, awareness, communication, strengthening coordination and providing relief (DWC)

**Output indicator:** Number of human lives lost, length of electrical fence constructed

**Geographical area of implementation:** 106 DS divisions where conflicts are reported

**Organization responsible for implementation:** Div. Secretary, DWC,

**Supporting organizations:** CBO

**Duration:** 4 years

**Period:** 2014-2017

**Budget (LKR Million):** 3517.2

**Main Output: 2.17 Strategic Environment Assessment integrating disaster risk reduction concerns are available at Provincial level to facilitate sustainable and resilient development.**

**Description**

In May 2006, the Cabinet of Ministers approved a recommendation made by the Ministry of Environment to conduct a Strategic Environment Assessment (SEA) for all future policies, plans and programmes. Central Environmental Authority (CEA) has conducted SEA for Trincomalee and Hambantota districts development plans. However, disaster risk reduction concerns have not been considered in both of these studies. Following the ending of the 30 year long conflict, the Central Environment Authority in close collaboration with the Disaster Management Centre initiated action to carry out Integrated Strategic Environment Assessment (ISEA) for the Northern Province to support post conflict rapid development programme. The availability of a vast amount of information through ISEA has helped key government agencies in policy planning, development decision making and fine tuning the proposed development plans in the Northern Province. ISEA for Gampaha district and Uva provinces are nearing completion. ISEA for other provinces will be undertaken on the following priority basis;

- Central Province 2014
- Sabaragamuwa Province 2014-2015
- Eastern Province 2015
- North-Central Province 2015-2016
- North - Western province 2016

The assessment will take the form of broader multi-sector analysis and the process will bring in planners, implementers and users together thereby providing an opportunity for development plans to be sound and sustainable. The data base and scientific information compiled during the process and recommendation developed will be useful to verify the feasibility, concerns and long term benefit/issues of proposed/future projects. Through SEA studies, crucial environmental issues and disaster concerns in respective areas could be identified and recommendations could be made to mitigate such problems in order that planned development programme could go ahead without an obstruction. Depending on the availability of data and information, several targeted studies may have to be conducted as a part of the assessment.

The key objectives of SEA would be;

- i. To create a process through which the proposed development plans and projects can be screened for individual/ cumulative environmental and disaster impacts
- ii. To identify existing and proposed environmental sensitive and unique environmental features
- iii. To identify hazard prone areas and undertake vulnerability and risk assessment to propose risk reduction measures
- iv. To create a data base containing environmental, archaeological and natural resources information in the province.
- v. To strengthen the institutional and regulatory framework of environmental and disaster management in order to get the attention and focus of future governance on these issues.
- vi. To analyse the development of the province through a framed work of disaster risk reduction and climate change
- vii. To identify and initiate key studies and technical assistance initiatives necessary to ensure sustainable development of the province.

The SEA study will assess the development in three time frames.

- Screening current and proposed development plans
- Provide a set of guidelines for the development of medium-term investment projects
- Develop a frame work within which long term development of the province could be conducted

## Activities

- 2.17.1 Preparatory work including formation of teams, initial brainstorming and training on ISEA
- 2.17.2 Background/ primary data (baseline data) gathering and production of initial product-opportunity map 01
- 2.17.3 Awareness sessions, initial thematic consultations and secondary data gathering
- 2.17.4 Second brainstorming session
- 2.17.5 Field visits, studies and data gathering (development group and study group outputs) and preparation of opportunity map 02
- 2.17.6 Third brainstorming session
- 2.17.7 Synthesis, analysis and outputs and development of opportunity map 03
- 2.17.8 Sharing of intermediate ISEA draft report and dissemination
- 2.17.9 Consultation for improvement to the draft ISEA report
- 2.17.10 Final ISEA report and launching

**Output indicator:** ISEA Reports and maps

**Geographical area of implementation:** Central, Sabaragamuwa, Eastern, North-Central and North-Western Provinces

**Organization responsible for implementation:** CEA

**Supporting organizations:** DMC, development agencies and relevant state sector organisations

**Duration:** 3 years

**Period:** 2014-2016

<b>Budget (LKR Million):</b> Central	15
Sabaragamuwa	10
Eastern	10
North-Central	10
North-Western	10
<b>Total for 5 provinces</b>	<b>55</b>

## Strategy E. Reconstruction and rehabilitation

### Main Output: 2.7 Safety of small village level tanks and bunds improved

#### Description

Maintenance of small tanks including the bunds has not been undertaken regularly causing breaching of bunds resulting in potential cascading bund failures during heavy precipitation, especially, when the tanks are kept at nearly maximum holding capacity aiming to support agriculture. This situation was experienced in 2011 and 2012 in the North Central and Northern Provinces, where bunds of more than 800 small tanks breached, also threatening the safety of medium level tanks.

An inventory of small dams is being prepared by the Department of Agrarian Development (DAD) and will be published after completing the inventories in the Northern and the Eastern areas. Most of the small dams located in Northern and Eastern provinces have been neglected due to internal conflict during the last 30 years. According to DAD, more than 800 small tanks were damaged in 2011 and more

than 300 village tanks were breached in the Anuradhapura district alone. In Monaragaladistrict, there are a large number of tanks and cascade systems deliberately damaged by the colonial rulers, which have not yet been rehabilitated.

In most cases, the exact condition of structures, strength of bunds and the maintenance history of the tanks may not be available. In order to collect this information with a view to ensure the safety of tanks and bunds, the Agrarian Research and Production Assistants (ARPAs, approx. 9,000) recently appointed could be utilized to collect information on dams after providing the required training. Tank rehabilitation could be undertaken on priority basis in Kurunegala, Hambantota, Puttalam, Anuradhapura, Monaragala, Batticloa, Polllonaruwa, Vavunia, and Killinochchi districts.

Improvements to small tanks and bunds could be carried out using the traditional knowledge and practices based on eco-system restoration approach, where forest establishment around the tank act as a wind barrier reducing evaporation and damage to vegetation around the catchment area while acting as a sediment filter.

The tank development could be integrated in to the village level development programmes such as Gama Naguma, DiviNaguma, etc.

### **Activities**

- 2.7.1 Complete and publish the database on small dams on GIS format / remote sensing technology.
- 2.7.2 Train Agriculture Research and Production Assistants (ARPAs) of DAD to identify tanks and assess the physical condition.
- 2.7.3 Compilation of information on dams and prepare estimates for rehabilitation and eco-system management and development including watersheds.
- 2.7.4 Prepare a priority list of tanks for rehabilitation including improvement of institutional capacity to implement and monitor the programme.
- 2.7.5 Integrate small tank rehabilitation programme with village development planning process.
- 2.7.6 Strengthen existing agro-meteorological data collection with respect to small tanks.
- 2.7.7 Support knowledge management related to 'socio-economic, environment and DRR aspects' of tank, village development and livelihoods including cost benefit analysis of investments.

**Output indicator:** Number of tank rehabilitation plans/programmes developed, number of tanks rehabilitated

**Geographical area of implementation:** Flood and drought affected districts

**Organization responsible for implementation:** DAD

**Supporting organizations:** DMC

**Duration:** 3 years

**Period:** 2014-2016

**Budget (LKR Million):** 1200

## Strategy F. Targeted advocacy, training and awareness

### **Main Output: 2.4 DRR concepts are mainstreamed into primary, secondary, tertiary education institutes, universities and national & provincial level sectoral training institutes including technical colleges.**

#### **Description**

Ministry of Education has already taken action to include DRR concepts into the school curricula. On the advice of the Ministry of Education, National Institute of Education (NIE), Disaster Management Centre and United Nations Development Programme supported the activity of developing standard books for children on frequently occurring and devastating hazards. DMC supported the Ministry of Education and GIZ to prepare national guidelines on school disaster safety. However, the teachers' guides and school syllabuses need to be further improved referring to the standard books and school safety guidelines already available.

A manual has been prepared to integrate DRR into the curricula of tertiary education institutes and principals' /teachers' training institutes. Further, the capacity of teaching staff of teacher training institutions needs to be enhanced on the use of the DRR manual.

Masters and post-graduate diplomas related to disaster management are being conducted in a number of universities. This programme needs to be strengthened and standardized to produce professionals in DRM.

There are several national training institutes mandated to develop professionals in public administration, engineering, technical and health fields. Sri Lanka Institutes of Development Administration has already incorporated disaster management in to training curricula of the officers of Sri Lanka Administration Service and heads of agencies. Disaster management Concepts will have to be incorporated in to training curricula of ICTAD, Vocational Training Authority (VTA), Department of Technical Education and Training (DTET), Police Training School (PTS) and Nurses Training School (NTS).

#### **Activities**

- 2.4.1 Review and update the curriculum (text books & teachers' guide) on school disaster safety and carryout awareness programs for zonal officers, principals & teachers on school disaster safety - (Ministry of Education / NIE)
- 2.4.2 Undertake training of trainers programmes related to DRR for teaching staff in National Colleges of Education (NCEs) & Education Leadership Development Centre - (Ministry of Education / NIE)
- 2.4.3 Introduce a rewarding system for advance level students doing projects related to DRR - (Ministry of Education / NIE)
- 2.4.4 Support to enhance the quality and standards of the Masters, post graduate diplomas, diplomas & certificate courses related to disaster management, including the promotion of collaborations with universities abroad - (DMC/Universities)
- 2.4.5 Undertake training of trainers programmes for teaching staff in technical colleges to incorporate DRR in to curricula – (VTA, DTET)
- 2.4.6 Study the training curricula of ICTAD, VTA, DTET, PTS, NTS, SLILG and identify training material where DRR concepts could be incorporated and develop required training material/modules (DMC)
- 2.4.7 Assist national training institutions ICTAD, VTA, DTET, PTS, NTS, SLILG etc. to conduct Training of Trainers programmes on DRR to enhance the capacity of teaching staff (DMC)

**Output indicator:**

- 2.4.1 Number of curricula (text books & teachers' guide) on school disaster safety reviewed and updated
- 2.4.2 Number of trainer training courses for teachers & NCEs strengthened
- 2.4.3 Rewarding system for A-level students doing projects related to DRR introduced
- 2.4.4 Number of trainer training courses for teachers of technical colleges conducted to incorporate DRR in to curricula
- 2.4.5 Number of DRR incorporated sectoral training programmes

**Geographical area of implementation:** Island wide

**Organization responsible for implementation:** Min. of Education, National Institute of Education, universities, Min. of Vocational Training, DTET, Ministry of Housing, Ministry of Health, Department of Police

**Supporting organizations:** DMC

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 10

**Main Output: 3.2 Awareness of communities on DRR is improved**

**Description**

At present, public awareness programmes are less focused on disaster risk reduction. Hazard maps developed for floods, landslides, drought, cyclones, lightning, sea level rise, coastal erosion, tsunami, storm surge and strong winds could be made available to for all organizations and communities to identify vulnerabilities and prepare themselves to respond to disasters.

In addition to the above disasters, there are emerging incidents that cause substantial human casualties and health impacts. For example, inadequate awareness, weakness in monitoring systems, unplanned urban growth, unauthorized settlements, inappropriate agricultural practices, deforestation, uncontrolled industrial pollution, indiscriminate use of agrochemicals and fertilizer, poor service delivery, transport related incidents such as road and chemical accidents, and air pollution, ground and surface water pollution, uncontrolled extraction of ground water and behavioral issues contribute towards human induced disasters. Therefore, it is important to raise public awareness to minimize the impacts of such human induced disasters as well.

Awareness materials already available in printed and audio visual forms with a number of agencies can be shared and used to conduct awareness programmes. New materials can be developed to fill the gaps.

**Activities**

- 3.2.1 Assess the available awareness materials on DRR and identify gaps.
- 3.2.2 Collect global, regional and local level printed, audio and visual materials available on hazards and disaster risk, and select suitable material and produce in local languages.
- 3.2.3 Develop awareness materials on hazards and DRR, and make them accessible to disabled as well

- 3.2.4 Conduct awareness programmes on DM for different target groups including youth, school children, disables, women, elders, etc.
- 3.2.5 Use national festivals including the National Safety Day Commemoration Programme and media to take risk messages to the general public
- 3.2.6 Develop and implement an awareness programme for the general public on lightning and high winds

**Output indicator:** Number of awareness programmes conducted on DRR

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** DMC

**Supporting organizations:** Relevant technical agencies, NDMCC members, media partners, CBOs

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 30

### **Main Output:3.3 Capacity for developing human resources for DRM enhanced**

#### **Sub Output: 3.3.B Child and Women Centered DM programmes in practice**

##### **Description**

There are differences of disaster vulnerabilities related to men, women and children. Therefore, it is important to understand such variations in vulnerabilities to improve the disaster resilient capacity of different groups within the communities. However, there are no guidelines or manuals that elaborate gender perspectives in DRR or child concerns in DRR.

Absence of guidelines to capture gender and child specific vulnerabilities has a high potential to neglect practical and strategic needs of men, women and children. Developing guidelines can better integrate such concerns into development programmes.

Most of the DM training programmes conducted by DMC and other institutions are mainly on general awareness and not specifically looking into gender perspectives that have a great share on addressing practical and strategic needs of men and women. It is also important to note that women's needs, not as needs of individuals, but as collective needs with their care giving role.

Given the explained background, it is important to cater to the above national need, by developing guidelines on integrating gender perspectives to national project proposals, manuals, advocacy programmes for policy makers and conducting awareness and training programmes for field officers in collaboration with all relevant stakeholders.

##### **Activities**

- 3.3.B.1 Develop guidelines to integrate gender perspectives in to DRM project proposals
- 3.3.B.2 Develop child and women centered DM guidelines and a manual for data collection
- 3.3.B.3 Conduct advocacy programmes on Women and Child centeredDM for policy makers
- 3.3.B.4 Conduct awareness and training programmes for field officers and committee members at district, divisional and GN levels

3.3.B.5 Collect gender and age (child) segregated data at district, divisional and GN levels in relation to disaster vulnerabilities and share with all relevant stakeholders

**Output indicator:** Child and women centered guideline and data collection manual, number of advocacy programmes and training programmes conducted at different levels, Gender and age segregated data.

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** Min. of Child Development and Women Empowerment

**Supporting organizations:** Min. of DM, DMC

**Duration:** 3 years

**Period:** 2014-2016

**Budget (LKR Million):** 6

## Strategy G. Preparedness and response

### Main Output: 2.5 Private sector disaster resilience in hazard prone areas improved

#### Description

Based on the damages and losses assessments conducted after 2010 flood in the Southern and Western Provinces, it was found that the economic losses in industrial and commercial sectors are about tenfold higher than that of the visible physical damage to private sector installations. Private sector being the engine of economic growth, the damages and losses to the sector without preparedness may impact the overall economy and the livelihoods of many workers depending on the production or services delivery. On the other hand, the majority of small and medium scale entrepreneurs were the worst affected due to the absence of in-house capabilities and resources for recommencing operation after disaster damage.

In order to avoid disruptions to operations and to minimize losses due to impacts of disasters, it is necessary to build the capacity and provide enabling environment for business contingency planning, including risk transfer systems. In case of a larger catastrophe, adequate re-insurance by local risk financing institutions is a key for industries and business to get compensation in time.

#### Activities

- 2.5.1 Identify private sector agencies in disaster prone areas needing assistance to develop disaster management plans (DMC)
- 2.5.2 Develop awareness programmes to convince the need and importance of contingency planning and conduct training programmes to private sector organisations on the development of disaster management and business continuity plans – (DMC)
- 2.5.3 Monitor, review and recognize disaster management and business continuity plan development capacity plus the risk transfer systems adopted by individual/ private sector organisations(DMC)
- 2.5.4 Investigate the potential to use new risk transfer systems used globally and regionally to strengthen the country capacity such as pool funding, emergency fund access mechanisms, re-insurance etc. (DMC)

**Output indicator:** Number of DM plans developed for the private sector business enterprises

**Geographical area of implementation:** Island wide

**Organization responsible for implementation:** Individual business enterprises

**Supporting organizations:** DMC, Chambers of Commerce, World Bank, ADB, SAARC

**Duration:** 4 years

**Period:** 2014-2017

**Budget (LKR Million):** 5

## **Main Output: 2.9 Village development programmes are resilient to multiple disasters**

### **Description**

Natural and human induced hazards will adversely affect the human development and therefore, the expected economic gains will not be achieved unless DRR measures are incorporated in different stages of development.

The government along with a number of non-government agencies has been working in poverty reduction programmes focusing on village or GN level. The opportunity exists to add value by increasing the resilience of those efforts by assessing the hazard, vulnerability, risk and coping capacity of the people. DRR incorporated village development plans will allow different sector agencies, non-state actors and communities to plan together and implement village level infrastructure and other developments in a systematic manner thereby optimizing resource use. GN level plans need to be disability inclusive and gender sensitive.

### **Activities**

- 2.9.1 Improve the capacity of officers and community leaders working at GN level to prepare hazard, vulnerability and risk maps at GN level - (DMC)
- 2.9.2 Develop GN level risk profiles and DRR programmes in consultation with community organizations - (DMC)
- 2.9.3 Develop a set of criteria to identify and prioritize GN divisions based on disaster risks- (DMC)
- 2.9.4 Involve retired professionals, disabled and volunteers in the training, planning and monitoring - (DMC)
- 2.9.5 Identify potential interventions to minimize disaster risks at GN level based on risks - (MED)
- 2.9.6 Incorporate interventions in proposals and programmes for GN level development- (MED)

**Output indicator:** Number of villages implementing DRR integrated plans; GN level risk profiles and DRR programmes; criteria developed to identify and prioritize GN divisions based on disaster risks; number of interventions identified.

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** MED

**Supporting organizations:** Ministry of Disaster Management, DMC, District Secretary, Divisional Secretary

**Duration:** 4 years

**Period:** 2014-2017

**Budget (LKR Million):** 28

### **Main Output: 3.1 Disaster management plans for national and sub-national level state sector organisations in high and moderate risk areas developed and in operation**

#### **Description**

As provided for in the Disaster Management Act No 13 of 2005, DMC has assisted the Council to prepare National Disaster Management Plan (NDMP), which the Cabinet of Ministers has approved. As per clause 10 (1) of the DM Act, every ministry, government department, and public corporations has to prepare disaster management plan with respect to such ministry, government department, and public corporations to counter any disaster or impending disaster, based on the NDMP and in accordance with such guidelines as may be specified by the Council.

In order to facilitate the process DMC will have to prepare guidelines based on NDMP to develop institutional disaster management plan. DMC will have to conduct workshop to introduce guidelines for preparation of DM plans to focal points from selected ministries and agencies.

The guidelines already issued by DMC to district and Divisional secretaries to develop preparedness plans for response earlier need to be revised based on the NDMP. Preparedness plans already completed need to be revised and submitted for NCDM approval.

#### **Activities**

- 3.1.1 Prepare/improve guidelines for development of institutional disaster management plans - (DMC)
- 3.1.2 Train focal points from ministries, and state sector agencies about the use of guidelines to prepare IDMP(DMC)
- 3.1.3 Develop/amend the disaster management plan for districts, divisional secretariat offices, vulnerable GN divisions, state sector agencies and ministries. - (Heads of Organizations)
- 3.1.4 Assist and monitor the development of IDMP (DMC)
- 3.1.5 With the approval of the NCDM, publish in the gazette a date for the development of disaster management plans - (MDM)
- 3.1.6 Submit plans for NCDM approval - (DMC)

**Output indicator:** Number of DM plans

**Geographical coverage of implementation:** Island wide

**Organizations responsible for implementation:** All state sector agencies

**Supporting organizations:** DMC

**Duration:** 2years

**Period:** 2014-2016

**Budget (LKR Million):** 20

**Main Output: 3.4 Programme for sustainable housing in flood prone areas and micro insurance scheme to assist small farmers & low income groups to minimize impacts of disasters are available.**

**Description**

The Agricultural Insurance Scheme for paddy introduced by the Agriculture Insurance Board is functioning at a limited scale. "Sanasa Insurance Ltd" has introduced a small scale insurance scheme based on the rainfall data. There is no insurance for other crops or houses damaged due to disasters. Insurance agencies claimed that, in the absence of risk information reinsurers charge a high premium, which has to be absorbed by the policy holder.

After completing the hazard profiles, the DMC is in the process of developing vulnerability and risk profiles. The information could be shared with the public and private sector agencies involved in the insurance sector to enable them to develop insurance schemes with affordable premium.

On the initiative and technical assistance of the Global Fund for Disaster Risk Reduction (GFDRR) of the World Bank, several countries in the Asian region have implemented risk transfer programmes to help communities after a disaster. These experiences will be useful in formulating a suitable scheme to provide financial assistance to disaster victims.

**Activities**

- 3.4.1 Assess damage to infrastructure and agricultural losses due to disasters during last 30 years (DMC)
- 3.4.2 Study the suitability of risk transfer schemes developed by the World Bank and implemented by countries in the Asian region to the Sri Lankan situation (DMC)
- 3.4.3 Develop a mechanism to share risk information with insurance agencies (DMC)
- 3.4.4 Encourage the private sector to develop and implement insurance schemes for paddy, cash crops and housing (DMC)
- 3.4.5 Conduct awareness programme for general public regarding the risks and feasibility of insuring against disaster risks (DMC)
- 3.4.6 Analyse the housing assistance provided during last 5 years and identify households receiving financial assistance annually to repair/rehabilitate damaged/destroyed houses due to floods(NDRSC)
- 3.4.7 Develop a programme to relocate communities continuously affected by floods (Min. Housing)
- 3.4.8 Develop guideline for providing government assistance taking in to consideration the recommendation of the above study(NDRSC)

**Output indicator:** Number of disaster risk insurance policies issued; No. of awareness programmes conducted for general public,

**Geographical area of implementation:** Island wide

**Organization responsible for implementation:** Insurance agencies

**Supporting organizations:** DMC, NDRSC, DA, Ministry of Finance

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 10

**Main Output: 3.5 At national and district levels, ability to conduct damage, loss and needs assessments to guide post disaster recovery and cost benefit analysis of DRR investment is improved.**

**Description**

At present, district authorities conduct needs assessments after a disaster to decide on relief requirement. Losses and damages are assessed on the basis of replacement cost. Indirect losses are not calculated. In order to decide on the priority areas of investments, the government needs to know the information on total value of damages and losses of major disasters. Therefore, NCDM has decided that a detailed damage and loss assessment be conducted after each major disaster affecting more than 50,000 people. Further, the Cabinet of Ministers also have decided that a technically sound and efficient mechanism to assess the loss and damages in order to obtain financial assistance from donors such as the World Bank expeditiously in the event of a disaster should be developed. The methodology pilot tested after severe floods in 2010, with the assistance of the UNDP and the World Bank could be adjusted to suit the Sri Lankan situation. Officers at national and sub-national level could be trained to practice the methodology by conducting loss and damage assessment for floods and drought in 2011 and 2012.

The project-based economic analysis is undertaken to design and select projects that contribute to the welfare of the country and its people. The cost-benefit and related economic appraisal are applied to priority projects which will give then highest return of investment.

SLCDMP consists of several projects directly related to DRR implemented by sector agencies. SLCDMP also proposes to mainstream DRR components in to economic development projects as natural hazards can have potentially serious implications for economic viability of a development project. Therefore, consideration of disaster risk as a part of economic analysis in development projects is essential to ensure sustainability of investment. Although there are well developed methods to determine the cost benefit of development projects that contribute to the welfare of the country and its people, there had been very little effort to incorporate disaster risk concerns in to the economic analyses of development projects. Even the manuals on economic cost benefit analysis provide no guidance on analysis of disaster risk.

SLCDMP proposes to undertake studies to develop a methodology to analyze the socio-economic cost benefit of projects directly related to DRR using probability based approaches to prioritize investments. Historical records on disaster damage assessments or estimates based on hypothetical disaster events ranging from very low to high probability need to be made available to develop probability curves to be used in probability based approaches.

**Activities**

- 3.5.1 Adjust the methodology introduced by the World Bank to conduct the loss and damage assessment to suit Sri Lanka - (DMC)
- 3.5.2 Develop a training manual based on the adjusted methodology
- 3.5.3 Identify the organizations and the staff to be trained at national and subnational levels to conduct disaster damage, loss and needs assessment - (NPD)
- 3.5.3 Undertake training of trainers programmes - (DMC)
- 3.5.4 Conduct training programmes to improve the capacity of national and sub national level staff to undertake assessment - (DMC)
- 3.5.5 Practice the methodology by conducting damage, loss assessment for floods and drought experienced in 2011 and 2012 and prepare reports - (DMC)
- 3.5.6 Carry out a study to develop guidelines to conduct socio economic cost benefit analysis of DRR projects and DRR incorporated development projects - (DMC)

**Output indicator:** Disaster loss, damage and needs assessment mechanism in place, training modules are available in 3 languages, number of TOT programs conducted, damage, loss and need assessment reports are available for floods and drought experienced in 2011 and 2012

**Geographical Area of Implementation:** Disaster prone districts

**Organization responsible for implementation:** NPD

**Supporting organizations:** DMC, NDMCC members

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 5

**Main Output: 3.6** Capacity of communities and organizations is enhanced to respond to a potential cyclone hazard

### **Description**

In general, Sri Lanka experiences cyclones in the early part of pre-southwest monsoon season (April-May) and during the latter part of the post-southwest monsoon season (October-December). Out of 450 cyclones formed during the period from 1891 to 2000, 4% has landed in Sri Lanka. Although the cyclone impact for Sri Lanka is less severe, whenever a tropical cyclone develops in the Bay of Bengal, it always indirectly affects the weather in Sri Lanka.

The frequency of cyclones in the Bay of Bengal is about five to six times more than that of cyclones in the Arabian Sea. As an average about four to five cyclonic storms develop in the Bay of Bengal every year. Almost all cyclones crossing Sri Lanka coast enter the land area through the eastern coastline. During the past 130 year period (1881- 2011), ten cyclonic storms and eight severe cyclones have crossed the coast of Sri Lanka. Moreover, six out of the eight severe cyclones had entered east coast while one severe cyclone had entered into the Gulf of Mannar. It is observed that even though the number of tropical cyclones in the Bay of Bengal is small in numbers, compared to other regions in the world, they are the most deadly.

It is noted that the impact of a cyclone is highest on the landmass of its landfall. However, the land masses nearest to an active cyclone could experience gale-force winds, flash floods and severe thunderstorms. Cyclone in 1978, affected 476756 people and 834 deaths were reported. In 2000, only 6 people have died, but the total affected has increased to 800225. Considering the increase in the population in the eastern province, preparedness for cyclones has to be strengthened to minimize life losses and property damages in future. DoM has the capacity to track cyclone paths and issue warnings in time to people in northern and eastern coasts to evacuate from risk areas. Buildings safe from cyclone impacts need to be identified as evacuation centers to direct people in the event of a severe cyclone warning.

### **Activities**

- 3.6.1 Identify probable cyclone paths and wind speeds for 4 scenarios - (DOM).
- 3.6.2 Develop a data base using Open Data for Reliance Initiative (Open DRI) to identify buildings within cyclone tracks, vulnerable population and critical infrastructure - (DMC).
- 3.6.3 Identify buildings that could be used as safe centers and numbers of people that could be accommodated in each center- (DMC).
- 3.6.4 Undertake awareness programme and evacuation drills to introduce evacuation routes and location of safe buildings - (DMC).

**Output indicator:** Number of villages prepared to respond to cyclone

**Geographical area of implementation:** Northern and Eastern provinces

**Organization responsible for implementation:** District Secretary

**Supporting organizations:** DMC, DoM, voluntary organisations

**Duration:** 2 years

**Period:** 2014-2015

**Budget (LKR Million):** 30

**Main Output: 3.7** Capacity of institutions and personnel for post disaster relief is enhanced.

### **Description**

Though the government encourages implementing programmes to prevent and mitigate disaster impacts, disasters cannot be totally prevented/ mitigated. Whenever a disaster occurs, media highlight the delays in food distribution and the quality of food provided. In some instances, delays are due to poor access and difficulties in reaching the affected communities. Strengthening the welfare centers with facilities for cooking could minimize delays in providing meals.

Presently, needs of post-disaster victims are given by GNs and there is no system to check the accuracy of requests made by district officers. A Standard Operation Procedure (SOP) for relief distribution could address most of these management and operational problems. Youth brigades of the National Youth Council could be involved in relief distribution.

### **Activities**

- 3.7.1 Train officers at district and divisional levels to conduct post disaster rapid needs assessment with special emphasis on people with disabilities (DMC).
- 3.7.2 Develop a training manual on how to determine the number of disaster victims based on hazard maps/ vulnerability /risk profiles (DMC)
- 3.7.3 Conduct training programme for officers at divisional level to determine the number of people that could be affected based on hazard maps and vulnerability information before a disaster strikes. (NDRSC)
- 3.7.4 Equip the welfare centers prior to disasters with required cooking utensils and equipment (NDRSC)
- 3.7.5 Develop SOPs for management of relief distribution (NDRSC)
- 3.7.6 Establish a mechanism to engage youth from National Youth Council in response & relief activities (DMC)

**Output indicator:** Training manual, number of officers and youth trained; number of welfare centers equipped with required cooking utensils; SOPs for management of relief distribution.

**Geographical area of implementation:** Island wide

**Organization responsible for implementation:**

Relief: NDRSC,

**Supporting organizations:** District Secretary, Divisional Secretary, NYC, DMC

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 200

## **Main Output: 3.8** Capacity of institutions and personnel for disaster response enhanced

### **Description**

Hazards are natural phenomena or human induced events turned in to disasters with the increased vulnerability and exposure. Impacts of climate change will further aggravate the situation. As such disasters cannot be totally prevented or mitigated. Therefore, the country should be ready to respond to potential extreme events. The Search and Rescue (S&R) teams already established by the Army at district level need to be further strengthened by providing training & equipment.

All districts are not equally vulnerable to hazards. Assessment of equipment required to respond to disasters should be based on risk levels. All local authorities (LAs) are not in the high risk category. Most of the LAs do not have sufficient income to maintain equipment and meet the operational cost even if the equipment is provided free of charge. Therefore, a study needs to be conducted to assess the possibility of establishing a clustering system with required equipment to provide the emergency service on agreed service conditions.

DMC has established a national emergency call center to assist people in emergency situations to ensure the provision of immediate response through relevant agencies. However, there is a need to improve the capacity of personnel to receive emergency requests and communicate with response organizations.

There is a need to facilitate the clearance and receipt of international assistance (personnel, material and equipment) at customs and immigration in the event of a mega disaster exceeding the coping capacity of the country. Therefore, required procedures and mechanisms should be developed and agreed to prevent interference in the internal security and local market structures.

### **Activities**

- 3.8.1 Identify the equipment and training requirements of S&R teams of Armed Forces (DMC)
- 3.8.2 Identify equipment required by other organisations to respond to disasters and assess their capacity to maintain same (DMC)
- 3.8.3 Identify gaps and procurement plan for 2014-2018 (DMC)
- 3.8.4 Procure and deliver to respective organizations including S&R teams (DMC)
- 3.8.5 Finalize and operationalize the National Emergency Operations Plan (NEOP) (DMC)
- 3.8.6 Conduct a study to assess the possibility of clustering the local authorities to respond to all disasters and the system to share the maintenance and operational cost (M/LG&PC)
- 3.8.7 Establish a system to detect and respond to emergency situations that could be created by biological, chemical, radiological and nuclear accidents (AEA, Weapons Convention Authority, CEA, and MRI)
- 3.8.8 Improve the safety and capacity of the institutions to coordinate international assistance in a case of a mega disaster (custom clearance, immigration, quarantine, Trade & tariff etc.) – (DMC)
- 3.8.9 Further improve the capacity of the national emergency call center of DMC – (DMC)
- 3.8.10 Conduct public awareness programmes through media on the use of call center – (DMC)

**Output indicator:** Number of institutions provided with equipment for response; report on clustering LAs; emergency operations plan including EW, fully operational call center

**Geographical Area of Implementation:** Island wide

**Organization responsible for implementation:** DMC

**Supporting organizations:** District Secretary, Divisional Secretary, M/LG&PC, Atomic Energy Authority (AEA), Authority for Implementing Chemical Weapons Convention Act (AICWCA), Medical Research Institute (MRI)

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 500

**Main Output: 3.9 Community awareness on pre-hospital care and patient transportation during mass casualty incidents improved**

**Description:**

With the development of the road network, transport facilities and industries, road traffic accidents, environmental and occupational accidents are increasing in numbers, resulting in mass casualty incidents. During such an incident, the first responders are people in the community where great efforts are being made to transport casualties to healthcare institutions immediately even before the ambulances and other officers arrive at the scene.

While urgent transportation of affected people to a hospital is of utmost importance, it is also critical that the casualties are given lifesaving first aid where necessary and transported in the proper manner. Sometimes, if lifesaving first aid is not provided at the scene or the casualties are not transferred in the correct position, it could lead to worsening of the injury already caused by the incident. This, unfortunately results in aggravating the condition of the patient which could result in lifelong consequences, and at times, even death. Therefore, to prevent such unfortunate incidents it is important that community groups are made aware on first aid including patient transportation.

**Activities**

- 1.1.1 Identify community groups involved in disaster response and needing training on pre hospital care including casualty transportation (DMC)
- 3.9.2 Conduct training programmes for the identified community groups on pre-hospital care
- 3.9.3 Launch a campaign to improve the awareness of general public on safe methods of casualty handling and transportation

**Output indicator:** Number of community groups trained

**Geographical area of Implementation:** Island wide

**Organization responsible for implementation:** Ministry of Health

**Supporting Organization:** Ministry of Transport, Fire and Rescue, St John's Ambulance, DMC

**Duration:** 5 years

**Period:** 2014- 2017

**Budget (LKR Million):** 50 Million

## Strategy H. Results-based monitoring and evaluation

### Main Output:4.1 Comprehensive monitoring and evaluation (M&E) system in place

#### Description:

At present, there is no system to monitor the implementation of proposals identified in the Road Map Towards a Safer Sri Lanka. A review of the Road Map at the end of 7 years of implementation revealed that the individual agencies have been implementing specific projects although there is no national level monitoring system. Therefore, SLCDMP proposes to introduce a monitoring system which will have the following approaches:

- Transforming activity-based national disaster management programme into results-based one.
- Establishing a rigorous tracking system to monitor the interventions and activities of different agencies to ensure their contribution towards DRM
- Introducing a centralized, web based platform for effective coordination.
- Facilitating national level decision making process for effective resource allocation

M & E system will consist of activity& output level indicators that could facilitate in assessing the outcomes. Monitoring of SLCDMP at national level will be done by the National Council for Disaster Management (NCDM) and at the ministry level through the National Disaster Management Coordination Committee (NDMCC).

#### Activities

- 4.1.1 Establish a dedicated information and communication technology unit at the Ministry of Disaster Management to provide technical support to operate web based M&E system.
- 4.1.2 Introducing a centralized, web based platform for effective coordination.
- 4.1.3 Build the capacity of stakeholder agencies to monitor the implementation of SLCDMP.
- 4.1.4 Assist the Planning Unit of the Ministry for Information Management and Build the capacity in analyzing the information to support the outcome.
- 4.1.6 Quarterly and annual reviews of SLCDMP progress by NCDM.
- 4.1.7 Quarterly and annual reviews of SLCDMP by the NDMCC.

**Output indicator:** Accurate monthly, quarterly and annual reports submitted on time

**Geographical coverage of implementation:** Island wide

**Organization responsible for implementation:** Min. of DM

**Supporting organizations:** All organizations implementing CDMP

**Duration:** 5years

**Period:** 2014-2018

**Budget (LKR Million):** 14

## **Main Output:4.3 Effective knowledge management and integration into global conventions ensured**

### **Description**

The final goal of SLCDMP related to Safer Sri Lanka is measured against the reduction of life losses, property damages and economic losses. Towards achieving this, multiple agencies contribute through their specific interventions in relation to SLCDMP. Losses and damages will be directly proportional to the magnitude and frequency of different hazards and vulnerabilities. Establishment of baseline information is essential for impact assessment albeit the complexity of the process.

Post-2015 HFA would require extensive M&E reporting by countries on the proposed seven thematic areas on DRR. Sri Lanka has gained a wealth of experience and knowledge on DRM since 2004 tsunami that could be shared with the countries in the region and others. It requires extensive documentation on best practices and lessons learnt, and mechanisms to share the experiences. The potential to use South-South cooperation and international knowledge networks will be explored.

### **Activities**

- 4.3.1 Supporting M&E related research (establishment of baseline and indicators for impact evaluation, periodic impact evaluation etc.)
- 4.3.2 HFA reporting
- 4.3.3 Capturing best practices and lessons learnt
- 4.3.4 Promoting Sri Lanka as a knowledge hub for disaster management
- 4.3.5 Experience sharing

**Output indicator:** Number of baselines established, HFA assessment report

**Geographical coverage of implementation:** Not applicable

**Organization responsible for implementation:** Min. of DM (SLCDMP implementing unit)

**Supporting organizations:** Research institutions, universities etc.

**Duration:** 5 years

**Period:** 2014-2018

**Budget (LKR Million):** 75.

## Financial Plan

### 5.1 Financing Plan

The estimated budget for each output was arrived at after discussing with the relevant agencies and the total investment for next five years has been estimated to be LKR 29,047.2million and this may vary after the preparation of detailed proposals.

Multilateral lending agencies, UN agencies, bilateral agencies and INGOs are expected to align their proposed work plans with the SLCDMP for 2014 to 2018. UNDP is expected to support the secretarial functions to facilitate the operationalizing of SLCDMP and resource mobilization. Already, the WB has agreed to provide USD 105 million to support flood risk planning and mitigation, and landslide mitigation in selected road sectors and schools in high risk landslide areas.

Other agencies who have indicated their willingness to support the implementation of some of the activities of SLCDMP in 2014, are UNCOR, UNOCHA, UNICEF, WFP, IOM, Handicap International, Care International, Sewa Lanka Foundation, DRR consortium (Oxfam GB, Oxfam Australia, Save the Children, Handicap International, ACTED, ICRC, SLRCS, World Vision and Dialog Axiata).

Detailed programme activities will be submitted by the above agencies.

### 5.2 Project Investment

Table 5.1: Investment Plan according to Outcomes

Item	Programme Outputs	Time Frame & Annual Allocations for Activities (Rs.) Million					Total Estimate (Rs.) Million
		2014	2015	2016	2017	2018	
Outcome 01: National and sub-national level agencies are capable of assessing disaster risk and make decisions for short, medium and long term disaster management.							
1.1	Timely issuance of seasonal climate and weather forecast is streamlined						(57)
1.1.A	Timely issuance of seasonal climate forecast on drought is streamlined	3.7	6.7	3.2	2.2	0.2	16

Item	Programme Outputs	Time Frame & Annual Allocations for Activities (Rs.) Million					Total Estimate (Rs.) Million
1.1.B	Weather prediction capacity of DoM is enhanced	3	12	2	2	1	20
1.1.C	Climate change scenarios for Sri Lanka 2050 and 2100 developed using the latest model outputs	7	9	5			21
1.2	Timely issuance of flood early warning is streamlined	35	41	22	1	1	100
1.3	National & community level landslide early warning systems are in place	10	70	75			155
1.4	Mechanisms to disseminate early warning messages are enhanced.	48	54				102
1.5	Disaster risk profiles are available at national level to capture the elements at risk and assess damage to capital assets and economic losses	13	173	221	175		708
1.6	Detailed risk profiles are available for high risk major urban centers prone to floods and landslides	4	41	52	33	22	152
1.7	Organizational capacities for management and operation of reservoirs to minimize flood impacts are enhanced	4	41	55			100
1.8	Flood ordinance amended to streamline institutional mandates for managing floods	0.3	0.1	0.2			0.6
1.9	Information management and analytical capacities for disaster management improved	5.9	13.1	9	2		30
1.10	Research and development in DRR and CCA supported	0.5	5	3.5	3	3	15
Outcome 2: Key development sectors are able to incorporate disaster risk management (DRM) in their respective development initiatives/ processes/ activities at different administrative levels.							
2.1	Legal framework improved to mainstream DRR concepts in local government	7.6	8.1	5.1	5.1	4.1	30
2.2	Legal provisions and community capacity for the preparation of GramaNiladhari (GN) level development plans incorporating disaster risk reduction and climate change adaptation measures established.	0.6	0.4				1
2.3	Legal provisions are available for mainstreaming DRR into the development process.	0.5	2	3.5			6

Item	Programme Outputs	Time Frame & Annual Allocations for Activities (Rs.) Million					Total Estimate (Rs.) Million
2.4	DRR concepts are mainstreamed into primary, secondary, tertiary education institutes, universities and national & provincial level training institutes including technical colleges.	8	16.25	15.25	6.25	3.25	49
2.5	Private sector disaster resilience in hazard prone areas improved	1	1	1	1	1	5
2.6	The potential impacts of flood reduced in flood prone districts of Batticaloa, Ampara, Colombo, Gampaha, Kalutara, Trincomale, Anuradhapura, Puttalam, Kurunegala, Galle, Matara, Pollonaruwa, Ratnapura & Mulathivu	40	715	1060	1750	685	4,250
2.7	Safety of small village level tanks and bunds improved	16	335	508	339		1,200
2.8	Flood impact in selected urban local authorities mitigated	5	405	2110	3500	3980	10,000
2.9	Ensure village development programmes are resilient to multiple disasters	12.5	10.2	5.2	0.1		28
2.10	Slopes stabilized in identified high risk landslide and rock fall sites	100	400	2,500	2,000	1,000	6,000
2.11	Drought risk reduction strategies developed	7	63	105	85	60	320
2.12	Coastal risk reduction strategies developed	2	3	1			5
2.13	Disaster resilience incorporated in the National Physical Plan and Policy-2030		0.1	2.1	3.8		6
2.14	Safeguarding water resources from industrial, agro chemicals and domestic point and non-point source pollution	3	6	1			10
2.15	Potential impacts of lives and properties due to human - elephant conflict reduced	15	1581	998	923		3517.2
2.16	Procedure and guidelines for the implementation of provisions in the National Housing Policy for reducing impacts of hazards in housing sector are available	0.3	0.8	1.5			2.6
2.17	Strategic environment assessment integrating disaster risk reduction concerns are available at provincial level to facilitate sustainable and resilient development.	15	20	20			55

Item	Programme Outputs	Time Frame & Annual Allocations for Activities (Rs.) Million					Total Estimate (Rs.) Million
Outcome 03: Communities, local governments and sub-national agencies have necessary capacities and mechanisms to respond to and recover from disasters.							
3.1	Disaster management plans for national and sub- national levels sector organizations in high and moderate risk areas developed and in operation	5.5	7	7.5			20
3.2	Awareness of communities on DRR is improved	6.5	7.5	5.5	5.5	5.5	30
3.3	Human resource capacity for DRM is enhanced						
3.3A	Institutional capacity for developing human resource for DRM enhanced	50	485	262	392	11	1200
3.3B	Child and women centered DRM programmes in practice	1.9	2.2	1.9			6
3.4	Programme for sustainable housing in floods prone areas and micro insurance scheme to assist small farmers & low income groups to minimize impacts of disasters are available	6	13	3.5	2	1	25.5
3.5	At national and district levels, ability to conduct damage, loss and needs assessments to guide post disaster recovery and cost benefit analysis of DRR investment is improved	6.5	6				12.5
3.6	Capacity of communities and organizations is enhanced to respond to a potential cyclone hazard	7.5	19.25	5.25	2	1	30
3.7	Capacity of institutions and personnel for post disaster relief is enhanced	6.5	48	61	50	32.5	200
3.8	Capacity for institutions and personnel for disaster response is enhanced	8	114	126	126		500
3.9	Community awareness on pre-hospital care and patient transportation during mass casualty incidents improved	11	12	11	8	8	50
Outcome 04: A system in place for obtaining advises and continuous monitoring, learning and adapting to facilitate the ongoing planning and implementation process							
4.1	Comprehensive Monitoring and Evaluation system in place	5	3	2	2	2	14

Item	Programme Outputs	Time Frame & Annual Allocations for Activities (Rs.) Million					Total Estimate (Rs.) Million
4.2	Technical Advisory Committees namely the National Disaster Management Committee, Multi-hazard Early Warning Committee, National Disaster Management Coordinating Committee, Construction Guidelines Committee and National Emergency Operations Committee are in operation	1	1	1	1	1	5
4.3	Effective knowledge management and integration in to global conventions ensured	15	15	15	15	15	75
	<b>Total</b>	<b>395.05</b>	<b>5,346.6</b>	<b>8,736.45</b>	<b>8,580.3</b>	<b>5,988.8</b>	<b>29,047.2</b>

## A. Institutional mandates and institutional development

Table 5.2: Investment Plan according to Strategies

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year				Beneficiary Organizations	Source of Funding
					2014	2015	2016	2017		
1.8	Flood	<b>Main Output 1.8:</b> Flood Ordinance amended to streamline intutional mandates for managing floods	ID	0.6	0.3	0.1	0.2		ID, Agencies involved with flood management & general public	Domestic
1.9	All	<b>Main Output 1.9:</b> Information management and analytical capacities on DM improved	DMC	30	5.9	13.1	9	2	General public, all agencies	UNDP
1.10	All	<b>Main output 1.10 :</b> Research and development in DRR and CCA supported	DMC	15	0.45	4.8	3.25	3.25	Universities, DMC, general public	UNDP
2.1	All	<b>Main output 2.1.</b> Legal framework improved to mainstream DRR concepts in the local government sector	M/LG & PC	30	7.6	8.1	5.1	5.1	DMC, rate payers	Domestic
2.2	All	<b>Main Output 2.2:</b> Legal provisions and community capacity for the preparation of GramaNiladhari (GN) level development plans incorporating disaster risk reduction and climate change adaptation measures established.	DMC	1	0.6	0.4			Communities GN, DS, DMC	Domestic
2.3	All	<b>Main output 2.3:</b> Legal provisions and procedures are available to mainstream DRR into the development process	MDM	6	0.5	2	3.5		Development agencies	Domestic
2.12	Coastal Hazard	<b>Main output 2.12: Coastal risk reduction strategies developed</b>	D/CC&CRM	5	2	2	1		Coastal communities, DMC	Domestic
2.13	All	<b>Main output 2.13:</b> Disaster resilience incorporated in the National Physical Plan and Policy – 2030	NPPD	6	0.1	2.1	3.8		NPPD, development & sectoral agencies	Domestic

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year					Beneficiaries	Funding Source
					2014	2015	2016	2017	2018		
2.16	All	<b>Main output 2.16:</b> Procedure and guidelines for the implementation of provisions in the National Housing Policy for reducing impacts in housing sector are available	M/Housing	2.6	0.3	0.8	1.5			Technical officers, general public	Domestic
3.3.A	All	<b>Main output 3.3.A:</b> Institutional capacity for developing human resource for DRM enhanced	DMC	1200	50	485	262	392	11	Sector agencies & general public, non-governmental agencies	Domestic/ External
3.10	All	<b>Main output 3.10:</b> Regulations and guidelines to empower district and Divisional secretaries to take action in any disaster situation available	DMC	3	1.2	1.8				District secretaries, Divisional secretaries, vulnerable communities	Domestic
4.2	All	<b>Main output 4.2:</b> Technical advisory committees are in operation		5	1	1	1	1	1	NCDM,MDM, DMC	UNDP
		<b>Total</b>		<b>1304.2</b>	<b>69.95</b>	<b>521.20</b>	<b>290.35</b>	<b>403.35</b>	<b>19.35</b>		

## Strategy B: Multi-Hazard Early Warning and Effectiveness of Dissemination

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year				Beneficiaries	Funding Source
					2014	2015	2016	2017		
1.1	Hydro-meteorological	<b>Main output 1.1:</b> Timely issuance of seasonal, climate and weather forecast streamlined								
1.1.A	Drought	<b>Sub output 1.1.A:</b> Timely issuance of seasonal climate forecast on drought is streamlined	DoM	16	3.7	6.7	3.2	2.2	0.2	Domestic community, general public
1.1.B	Flood, High wind	<b>Sub output 1.1.B:</b> Weather prediction capacity of the DoM is enhanced	DoM	20	3	12	2	2	1	Domestic general public, DMC, response agencies
1.1.C	Drought	<b>Sub output 1.1.C:</b> Climate change scenarios for Sri Lanka for 2050 and 2100 developed using the latest model outputs	DOM	21	7	9	5			Domestic DoM, DMC, general public
1.2	Flood	<b>Main output 1.2:</b> Timely issuance of flood early warning is streamlined		100	35	41	22	1	1	Domestic DoM, DMC, general public
1.3	Landslide	<b>Main output:</b> National and community level landslide early warning systems are in place.	NBRO	155	10	70	75			GFDRR general public, DMC
1.4	All	<b>Main output:</b> Mechanisms to disseminate early warning messages are enhanced	DMC	102		48	54			General public
		<b>Total</b>		414	58.7	186.7	161.2	5.2	2.2	

## Strategic Component C. Hazard, Vulnerability and Risk Assessment

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year					Beneficiaries	Funding Source
					2014	2015	2016	2017	2018		
1.5	Floods, drought, landslides, cyclone, tsunami, lightning, coastal hazards	<b>Main output 1.5:</b> Disaster risk profiles are available at national level to capture the elements at risk and assess damage to capital assets and economic losses	DMC, ID, NBRO, DoM, CC & CRM	708	13	173	221	175	126	Development & sectoral agencies, planners, general public, DMC	Domestic
1.6	Flood, landslides	<b>Main output 1.6:</b> Detailed risk profiles are available for high risk major urban centers prone to floods and landslides	DMC	152	4	41	52	33	22	General public, planners, DMC, development agencies	Domestic/ External
		<b>Total</b>		<b>860</b>	<b>17</b>	<b>214</b>	<b>273</b>	<b>208</b>	<b>148</b>		

## Strategy D: Prevention and Mitigation of Disasters and Mainstreaming DRR Interventions to Development Sectors

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year					Beneficiaries	Funding Source
					2014	2015	2016	2017	2018		
1.7	Floods	<b>Main output 1.7:</b> Organizational capacity for management and operation of reservoirs to minimize flood impacts is enhanced	ID/MASL	100	4	41	55			General public, DMC	Domestic
2.6	Flood, drought	<b>Main output 2.6:</b> The potential impacts of flood reduced in flood prone districts of Batticaloa, Ampara, Colombo, Gampaha, Kalutara, Trincomalee, Anuradhapura, Puttalam, Kurunegala, , Galle, Matara, Pollonaruwa, Ratnapura and Mulathivu	ID	4250	40	715	1060	1750	685	General public	Domestic
2.8	Flood,	<b>Main output 2.8:</b> Flood impacts in selected urban local authorities mitigated.	MCs,UCs	10,000	5	405	2110	3500	3980	Rate payers	Domestic
2.10	Landslides	<b>Main output 2.10:</b> Slopes stabilized in identified high risk landslide and rock fall sites	NBRO	6000	50	1000	2900	1150	900	Rate payers , DMC	Domestic/ External
2.11	Drought	<b>Main output 2.11:</b> Drought risk reduction strategies developed	DMC	320	7	63	105	85	60	Farmer community, DMC, DS, M/DM	Domestic
2.14	Human induced	<b>Main output 2.14:</b> Safeguarding water resources from industrial, agrochemical and domestic point and non-point source pollution	MDM, DM, CEA	10	3	6	1			General public, NWSDB	Domestic

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year					Beneficiaries	Funding Source
					2014	2015	2016	2017	2018		
2.15	Human induced	<b>Main output 2.15:</b> Potential impacts of lives and properties due to human-elephant conflict reduced.	DWL	3517	15	1581	998	923		Dept of Wild life , General public	Domestic
2.17	All	<b>Main output2.17:</b> Strategic environment assessment integrating disaster risk reduction concerns are available at provincial level to facilitate sustainable and resilient development.	CEA	55	15	20	20			Development and planning agencies, CEA partner agencies	Domestic/ UNDP
		<b>Total</b>		<b>24252</b>	<b>139</b>	<b>3831</b>	<b>7249</b>	<b>7408</b>	<b>5625</b>		

## Strategy E: Reconstruction and Rehabilitation of Damaged Infrastructure

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Min)	Budget (Rs.Min) & Year				Beneficiaries	Funding Source	
					2014	2015	2016	2017			2018
2.7	Floods	Main output 2.7: Safety of small village level tanks and bunds improved	DAD	1200	18	335	508	339		Flood prone communities, farmer communities	Domestic
		<b>Total</b>		<b>1200</b>	<b>18</b>	<b>335</b>	<b>508</b>	<b>339</b>			

## Strategy F: Targeted and Effective Capacity Building at All Levels through Training and Awareness

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year					Beneficiaries	Funding Source
					2014	2015	2016	2017	2018		
2.4	All	<b>Main output 2.4:</b> DRR concepts are mainstreamed into primary, secondary, tertiary education institutes, universities and national & provincial level sectoral training institutes including technical colleges.	Min. Education, Universities, ICTAD, VTA, DTET, PTS, NTS, SLILG	49	8	16.25	15.25	6.25	3.25	Students, teachers, technical officers	Domestic/ UNDP
3.2	All	<b>Main output 3.2:</b> Awareness of communities on DRR is improved	DMC, DoM	30	6.5	7	5.5	5.5	5.5	General public	Domestic
3.3		<b>Main output 3.3:</b> Capacity for developing human resources for DRM enhanced									
3.3.B	All	<b>Sub-output 3.3.B:</b> Child and women centered DM programmes in practice	M/CD&WE	6	1.9	2.2	1.9			Women children, vulnerable communities	UNDP
		<b>Total</b>		<b>85</b>	<b>16.4</b>	<b>25.45</b>	<b>22.65</b>	<b>11.75</b>	<b>8.75</b>		

## Strategy G: Further Develop Preparedness, Relief and Response Capacity and Coordination

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year				Beneficiaries	Funding Source	
					2014	2015	2016	2017			2018
2.5	All	<b>Main output 2.5:</b> Private sector disaster resilience in hazard prone areas improved	DMC	5	5				Private sector agencies	UNDP	
3.1	All	<b>Main output 3.1:</b> Disaster management plans for national and sub-national level state sector organizations in high and moderate risk areas developed and in operation	MDM, DMC,Dist. Sec., Div, Sec.,GN	20	5.5	7	7.5		Govt. organizations, general public		
3.4	All	<b>Main output 3.4:</b> Programme for sustainable housing in floods prone areas and micro insurance scheme to assist small farmers & low income groups to minimize impacts of disasters are available.		25.5	6	13	3.5	2	1	Farmers, community and NDRSC	GFDRR
3.5	All	<b>Main output 3.5:</b> At national and district levels, ability improved to conduct damage, loss and needs assessments to guide post disaster recovery	NPD	12.5	6.5	6			Economic planners	GFDRR	
3.6	Cyclone	<b>Main output 3.6:</b> Capacity of organizations and communities to respond to a potential cyclone and high wind is enhanced.	DMC	30	7.5	14.25	5.25	2	1	General public	GFDRR
3.7	All	<b>Main output 3.7:</b> Capacity of institutions and personnel for post disaster relief is enhanced.	NDRSC	200	6.5	49	62	50	32.5	NDRSC, general public	Communities, MC, Response Organizations

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year					Beneficiaries	Funding Source
					2014	2015	2016	2017	2018		
3.8	All	<b>Main output 3.8:</b> Capacity of institutions and personnel for disaster response enhanced	DMC	500	8	114	126	126	126	NDRSC, general public	
3.9	Human Induced	<b>Main output 3.9:</b> Community awareness on pre-hospital care and patient transportation during mass casualty incidents improved	M/Health	50	11	12	11	8	8	General public, health staff	Domestic
		<b>Total</b>		<b>843</b>	<b>56</b>	<b>215.25</b>	<b>215.25</b>	<b>188</b>	<b>1685</b>		

## Strategy H: Results based Monitoring and Evaluation

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year					Beneficiaries	Funding Source
					2014	2015	2016	2017	2018		
4.1	All	<b>Main output:</b> Comprehensive monitoring and evaluation (M&E) system in place	MDM,DMC	14	5	3	2	2	2	NCDM, MDM, DMC, general public	UNDP/ Domestic
4.3	All	<b>Main output:</b> Effective knowledge management and integration in to global conventions ensured	MDM, DMC	75	15	15	15	15	15	NCDM, MDM, DMC,DRM stakeholders, general public	Domestic/ UNDP
		<b>Total</b>		<b>89</b>	<b>20</b>	<b>18</b>	<b>17</b>	<b>17</b>	<b>17</b>		

Table 5.3: Summary of Investment Plan according to Eight Strategic Components

	Strategy	Total Budget (Rs. Mn)	Budget (Rs.Mn) & Year				
			2014	2015	2016	2017	2018
A	Institutional Mandates and Institutional Development	1,304.2	69.95	521.2	290.35	403.35	19.35
B	Multi-Hazard Early Warning and Effectiveness of Dissemination	414	58.7	186.7	161.2	5.2	2.2
C	Hazard, Vulnerability and Risk Assessment	860	17	214	273	208	148
D	Prevention and Mitigation of Disasters and Mainstreaming DRR Interventions to Development Sectors	24,252	139	3,831	7249	7408	5625
E	Reconstruction and Rehabilitation of Damaged Infrastructure	1200	18	335	508	339	0
F	Targeted and Effective Capacity Building at All Levels through Training and Awareness	85	16.4	25.45	22.65	11.75	8.75
G	Further Develop Preparedness, Relief and Response Capacity and Coordination	843	56	215.25	215.25	188	168.5
H	Results Based Monitoring and Evaluation	89	20	18	17	17	17
	<b>Total</b>	<b>29,047.2</b>	<b>395.05</b>	<b>5,346.6</b>	<b>8,736.45</b>	<b>8,580.3</b>	<b>5,988.8</b>

For further details refer **annexure 5-1**

### **5.3 Socio-Economic Cost Benefit Analysis**

The project-based economic analysis is undertaken to design and select projects that contribute to the welfare of the country and its people. The cost-benefit and related economic appraisal are applied to priority projects, which will give the highest return of investment.

SLCDMP consists of several projects directly related to DRR implemented by sector agencies. SLCDMP also proposes to mainstream DRR components in to economic development projects as natural hazards can have potentially serious implications for economic viability of a development project. Therefore, consideration of disaster risk as a part of economic analysis in development projects is essential to ensure sustainability of investment. However, there had been very little effort to incorporate disaster risk concerns in to the economic analyses of development projects. Even the manuals on economic cost benefit analysis provide no guidance on analysis of disaster risk.

In the absence of a specific methodology to assess the cost benefit of investment on DRR projects, the economic case for DRR is typically based on the need to reduce potential direct and indirect losses. Therefore, the benefits of the SLCDMP will be measured using the Key Performance Indicators.

SLCDMP proposes to undertake studies to develop a methodology to analyze the socio-economic cost benefit of projects directly related to DRR using probability based approaches to prioritize investments. Historical records on disaster damage assessments or estimates based on hypothetical disaster events ranging from very low to high probability need to be made available to develop probability curves to use probability based approaches.

DMC has undertaken an integrated post flood assessment for the May 2010 flood. Disaster damage and loss assessment information for disasters events have to be undertaken to provide information required. Undertaking assessments for past and future disaster events is included in the programme. SLCDMP also proposes to study the regional models used at present to determine the cost benefits of economic development projects incorporating DRR components to formulate suitable guidelines for the use of development agencies to prioritize projects based on sustainability of investment.

# Implementation Modality of SLCDMP

## 6.1 Mode of Commencement of Programme Activities by Various Partners

Outputs described in Chapter 4 indicate only a provisional budget for the total output as a total of all activities and sub-activities therein. Therefore, once the SLCDMP is launched, all agencies involved in the implementation of the programme will be expected to work out a realistic budget for each output activity or sub-activity assigned to the agency after developing a specific implementation plan. Each agency would have to develop proposals with respect to all such outcome activities and sub-activities in the format issued by the Department of National Planning with the annual breakdowns and submit for approval and for allocation of funds by the Treasury. Following this, the agency would be able to obtain fund allocations for the activity or sub-activity, with the annual breakdown.

The agencies are requested to submit a copy of the proposal submitted to the Department of National Planning with respect to each such outcome activity or sub-activity to the MDM.

Some outputs comprise several activities and sub-activities for which different agencies are responsible. For example, Outcome 1.2 consists of 4 main activities and as much as 10 sub-activities, with 9 agencies responsible for different sub-activities. On receiving the proposals with actual budgets for all activities and sub-activities, the SLCDMP secretariat established within the MDM for coordinating SLCDMP activities will come out with the realistic budgets for the outputs and update the project investment chart in chapter 5, giving the detailed budgets of activities and sub-activities.

**Annex 6-2** lists the agencies responsible for implementing SLCDMP.

## 6.2 Coordination of Activities in Implementing SLCDMP

As the SLCDMP is implemented as a multi-agency, multi-stakeholder partnership programme, two levels of co-ordination and facilitation is envisaged.

### **Highest level of coordination by the NCDM**

Highest level of coordination will be provided by the National Council for Disaster Management (NCDM) chaired by H.E. the President where Ministry of Disaster Management acts as the secretariat. NCDM also declares national emergencies to allow international assistance in case of an unprecedented disaster.

### Coordination at the NDMCC-level

Coordination and monitoring at the NDMCC level will include all government, non-government and private agencies, UN, universities, media and others. NDMCC meets monthly under the chairmanship of the Secretary. DMC with the assistance of SLCDMP secretariat will provide the logistical support for NDMCC-level coordination. The MDM has solicited nominations from senior and technical levels of government ministries and departments to establish two levels of focal points. The “senior” staff, at the additional secretary-level, designated as permanent focal points will meet every six months before the NCDM or as required. The technical personnel designated as operational focal points will attend monthly NDMCC meetings and core group discussions formed under the NDMCC to specific subject and make specific recommendations to NDMCC. Coordination support will be provided by DMC through the SLCDMP secretariat.

## 6.3 Arrangements for Implementation of SLCDMP

### Programme Organizational Structure

The programme will be implemented through an arrangement established in the MDM and the programme organization structure is shown in Fig. 6.2.

#### Steering Committee

A steering committee for SLCDMP will consist of representatives from ministries, state sector agencies and others as required. The steering committee will meet on a quarterly basis chaired by the Secretary, MDM. The implementation unit of the SLCDMP will provide secretarial assistance to the steering committee.

#### SLCDMP Implementation Unit

The Implementation Unit established to facilitate SLCDMP implementation will be housed in the MDM and headed by a National Programme Director. The Implementation Unit will include a minimum full time staff consisting of:

- Technical Advisor
- Knowledge Management Focal Point
- Information Management and Monitoring
- Preparedness and Mainstreaming

In addition, part time consultants will be engaged to carry out specific technical tasks identified by the Project Implementation Unit as and when required.

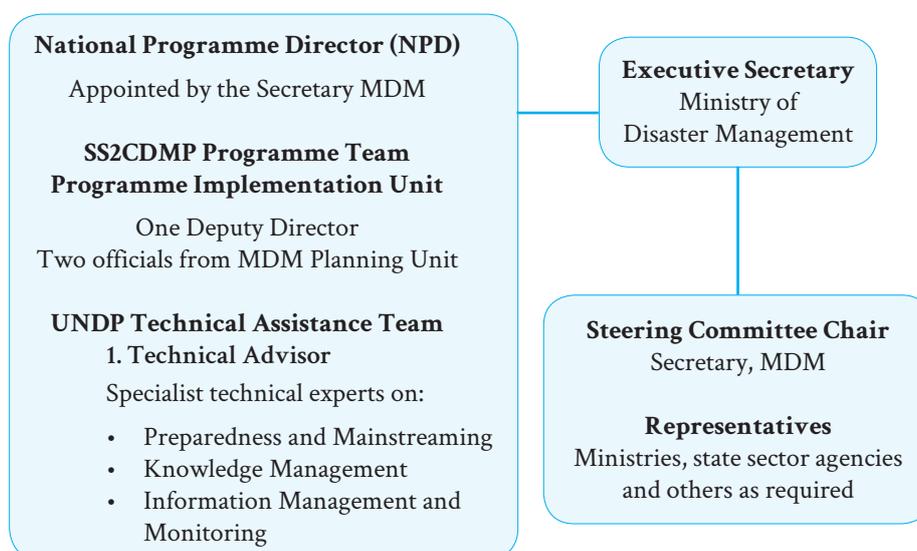


Fig. 6.1–Proposed Programme Structure

## **6.4 Implementation Modality**

- i. Disaster management is a cross cutting issue and needs the involvement of all relevant agencies. The SLCDMP will serve as the primary framework for disaster management in Sri Lanka and provide enabling environment for multi-sector and multi-agency interventions at the national, district, divisions and GN levels.
- ii. The SLCDMP will bring together key development agencies in order to mainstream DRR into development process. All government, non-government, UN, donor, and private sector agencies involved in disaster risk management will have to align their programs with the SLCDMP to ensure coherence of disaster management interventions performed based on national needs, and demonstrate their contribution in achieving the national objectives.
- iii. There are several outputs / activities / sub-activities identified in SLCDMP to improve the capacity of agencies to mitigate and respond to disasters. Ministries and agencies identified for implementation will have to develop project proposals and mobilise funding through national budget for implementation.
- iv. The MDM will be responsible for overall execution of the programme and the relevant agencies identified will be responsible for implementation.
- v. The SLCDMP implementation unit will facilitate to collate, analyse and share the national level progress for the use of SLCDMP stakeholders (NDMCC) and to the NCDM. NDMCC membership will help to improve the summary reports by the secretariat and provide a platform to improve / amend the SLCDMP interventions prior to the MDM submission to NCDM.
- vi. In addition, the implementation unit will support to conduct a number of technical interventions such as development of risk profiles, training manuals, studies and surveys. To support these activities, short term technical assistance will be obtained by the secretariat.
- vii. Once the areas of interests are identified by non-government sector member organisations of NDMCC, they will enter into an agreement or sign a memorandum of understanding with the relevant line agency responsible for the particular area within the SLCDMP, and the line agency and the non-government partner will monitor activities jointly. The progress of the work will be summarized by the implementation unit along with other activities.



# Monitoring and Evaluation

## 7.1 Monitoring and Evaluation System for SLCDMP

The SLCDMP will bring together more than 50 government agencies (Refer **Annex 6-1**) that are critical to provide a range of interventions to contribute to the realization of the five-year programme. An important component of the SLCDMP is an integrated Monitoring, Evaluation and Learning System to serve as a key management tool for tracking progress of implementation and evaluating the results and impacts taking into account the above mentioned challenges.

The development of the Monitoring and Evaluation System in the SLCDMP is based on the causal analysis considering the following:

1. Major problems and conditions that SLCDMP seeks to change,
2. Factors that cause the conditions,
3. Propose ways to influence the causal factors based on the relationship between the causes and likely solutions,
4. Key interventions to influence the causal factors,
5. The expected changes or desired outcomes.

The final goal, objectives, outcomes, outputs and time frames for implementation of Activities are based on key focus areas as described in Chapter 2, and the outcomes and outputs described in Chapters 3 and 4.

Some outputs comprise several activities and sub activities for which different agencies are responsible, and may have more detailed budgets, time frames, performance indicators etc. In such outputs, the monitoring & evaluation system will be further improved taking into consideration the detailed proposals for activities and sub activities from different implementing agencies.

The programme impact will be evaluated against the baseline that will be established, after a major disaster affecting more than 50,000 people as per the NCDM directive.

## 7.2 SLCDMP Monitoring and Evaluation Plan

The core of the M&E Plan for SLCDMP is the set of indicators developed for output level considering the goal, the objectives and the outcomes. The impact level indicators will be developed with the establishment of baseline information as detailed in output 4.3.

Four formats will be used to monitor the progress of the overall plan, performance of individual agencies, physical and financial progress and the overall performance of the different components of the M&E Plan.

### **Format 1: Overall Plan of the Programme**

The first format is the basic **Overall Plan for Monitoring and Evaluation of Outputs of the Programme** that describes the outputs, period & duration, output indicators, activities / sub-activities, responsible organization for the implementation of activities, and frequency of reporting. Where ever possible, the baseline information relevant to the respective activities is given. See **Annex 7-1**. This is the overall SLCDMP M&E Plan.

### **Format 2: M&E Matrices for Implementation of Activities by Individual Agencies and Ministries**

The second format would detail out the activities to achieve the final result by the individual agencies and ministries implementing the different activities. Activities of the 5 year program is planned to be implemented throughout 35 government agencies. These agencies are responsible to produce either individually or collectively the expected outputs. In order to facilitate the implementation and monitoring of activities, **M&E matrices for implementation of activities by individual agencies and ministries** will be developed based on this format. See **Annex 7-2**.

### **Format 3: Activity Progress Monitoring Gantt Charts**

In order to facilitate the implementation and monitoring of activities, the individual agencies will develop activity progress monitoring Gantt Charts based on the format that has been developed (**Annex 7-3**). This allows for monitoring individual activities on a quarterly basis indicating the % physical progress as well as the financial progress in money values. **Annex 7-3** includes a sample as well as a blank format for use by the agencies in developing these Gantt Charts.

This format in **Annex 7-3** indicates criteria such as **activities/ sub activities, budget/ planned expenditure & actual financial progress, and the time frame**, with provision for specifically detailing out the following:

- i. Time frame is indicated by shading the relevant cells in the rows allocated for the activity, specifying the commencement and completion on a quarterly basis.

#### **Physical Progress**

- ii. For every activity planned, physical bars are drawn in the relevant upper rows indicating the quarterly planned % in figures above the bar on a cumulative basis.
- iii. Implementing agencies should specify the criteria by which the planned and actual physical progress is given, for e.g., no. of plans, no. of training course etc.
- iv. During implementation, the actual physical progress bars are drawn in the lower rows assigned, indicating the actual physical % progress in figures beneath the bar, and continuing at the end of every quarter indicating cumulative quarterly % progress.

#### **Financial Progress**

- v. The budgeted / planned expenditure for each activity/ sub-activity should be indicated in the relevant column in the activity row.
- vi. Planned financial bars are drawn in the relevant upper rows indicating the planned money values above the bar on a cumulative basis.
- v. During implementation, the actual financial progress bars are drawn in the lower rows assigned, indicating the actual financial progress in money values beneath the bar, and continuing at the end of every quarter indicating cumulative quarterly financial progress.

### **Format 4: Broad Plan for Monitoring Progress of Outputs of the Programme**

The fourth format is for broad monitoring of **outputs of the programme** (**Annex 7-4**). This will be detailed and finalised with time frames after receiving the **activity plans by individual agencies**. As can be seen, this **Annex 7-4** is prepared in the order of outcomes and outputs and not in the order of agencies. This may be used for monitoring by the NCDM.

Narrative periodic reports to the NCDM and other policy makers will be prepared based on the achievements in the 16 interventions as given in Sections 2.3 and 2.4 of this report and analysing the information contained in the format 4 for the period under review.

### 7.3 SLCDMP Monitoring and Evaluation Process

The process of monitoring and evaluation of the SLCDMP will be executed at two levels:

1. At the level of National Council for Disaster Management (NCDM)
2. At the level of National Disaster Management Coordinating Committee level (NDMCC).

**National Council for Disaster Management (NCDM)** chaired by H.E. the President is the apex body responsible for policy formulation and making policy decisions in regard to the disaster management of the country. Based on the information provided to the NCDM on the implementation of the programme, policy changes and directives will be issued to the relevant implementing agencies. Secretary to the Ministry of Disaster Management acts as the secretary to the NCDM and provides the information on the progress of SLCDMP using the format in **Annex 7-4**. SLCDMP Secretariat of the Ministry of Disaster Management will assist the Secretary, MDM to compile SLCDMP progress to be presented to the NCDM.

**National Disaster Management Coordination Committee (NDMCC)** is a network of agencies representing the government, non-government, donor, academia and private sector agencies. NDMCC is convened by the DMC and chaired by the Secretary to the Ministry of Disaster Management. NDMCC is an effective and appropriate forum to monitor the implementation of SLCDMP on monthly and bi-annual basis. Monthly progress will be presented by the operational focal points of NDMCC representing the respective agencies. Bi-annual progress will be presented by the permanent focal points of NDMCC. Permanent focal points will also be responsible for preparing annual plans, submit project proposals for funding and implementation of the SLCDMP related activities. A copy of the annual plan will be submitted to the NDMCC by the permanent focal point.

Non-government organizations, UN agencies and donor communities will submit annual plans related to SLCDMP to NDMCC in order to monitor the progress at NDMCC level.

NDMCC could also be used as an appropriate platform for sharing best practices, lessons learned, innovative approaches etc.

#### Annexes relevant to monitoring and evaluation

**Annex 7-1:** *Overall plan for Monitoring and Evaluation of outputs of SLCDM.*

**Annex 7-2:** *M&E Matrices for Implementation of Activities by Individual Agencies and Ministries.*

**Annex 7-3:** Activity Progress Monitoring Matrix by Individual Agencies

**Annex 7-4:** *Broad Plan for Monitoring Progress of Outputs of the Programme.*

## References

1	Sri Lanka Disaster Management Act no.13 enacted in the Parliament of Sri Lanka in May 2005
2	Towards a Safer Sri Lanka, A Road Map for DRM – Volume 2: Project Proposals, Ministry of Disaster Management and Human Rights, April 2006
3	Report of Sri Lankan Parliament Select Committee on Natural Disasters, August 2005
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5	Draft National Disaster Management Policy – Ministry of Disaster Management, November 2013
6	National Disaster Management Plan – Ministry of Disaster Management, October 2013
7	DesInventar- Sri Lanka Disaster Information System ( <a href="http://www.desinventar.lk">www.desinventar.lk</a> ), Disaster Management Centre (DMC), Ministry of Disaster Management and Human Rights in partnership with UNDP Sri Lanka and Regional Centre, Bangkok - June 2007
8	Data from Emergency Operations Centre (EOC) of DMC
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11	Integrated Post Flood Assessment – May 2010, DMC, Ministry of DM Sri Lanka, August 2012
12	Design of Buildings for High Winds Sri Lanka, July 1980, Ministry of Local Government Housing and Construction; and Sessional Paper No. III - 1980: Report of the Committee on Design, Construction and Regulations for Building in the Cyclone Prone Areas of Sri Lanka
13	Review of Post-Tsunami Disaster Management programmes, Ministry of Disaster Management with UNDP and UNOCHA – 2011
14	Disaster Response Preparedness Assessment Mission to Sri Lanka - United Nations Disaster Assessment and Coordination UNDAC, November 2011
15	Hazard Profiles of Sri Lanka - DMC & UNDP, December 2012
16	MahindaChintana – Vision for the Future, Development Policy Framework, Government of Sri Lanka, NPD, 2010
17	National Climate Change Adaptation Strategy Sri Lanka, Ministry of Environment – December 2010
18	Draft Sri Lanka National Action Plan for Disability, Ministry of Social Services – June 2013
19	2011 Census - Department of Census and Statics
20	MahindaChinthana Vision for the Future; Public Investment Strategy 2014-2016, National Planning Department - 2013

**Annex 5.1**

**Details of Investment Plan According to  
Eight Strategic Components**

### Details of Investment Plan According to Eight Strategic Components

#### Strategy A: Policy environment and legal/institutional framework

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs mns)	Budget (Rs.Mn) & Year					Beneficiary organizations	Source of funding
					2014	2015	2016	2017	2018		
1.8	Flood	<b>Main Output 1.8:</b> Flood Ordinance amended to streamline intuitional mandates for managing floods	ID	0.6	0.3	0.1	0.2			ID, Agncies invloved with flood management & general public	Domestic
<b>Activities</b>											
1.8.1		Study the existing Flood Ordinance	ID	0.1	0.1						
1.8.2		Identify gaps in the Flood Ordinance in managing riverine, urban, coastal and reservoir induced floods	ID	0.1	0.1						
1.8.3		Draft amendments to the Flood Ordinance in consultation with related organizations	ID	0.4	0.1	0.1	0.2				
<b>1.8.4</b>		Submission of the Draft to the Legal Draftsman, Cabinet of Ministers and Parliament for approval	ID								
1.9	All	<b>Main Output 1.9:</b> Information management and analytical capacities on DM improved	DMC	30	5.9	13.1	9	2		General public,all agencies	UNDP

Activities										
1.9.1	Improve disaster management data collection mechanisms including damage and losses information on different sectors and locations.	0.3	0.3	0.3						
1.9.2	Pilot SDI covering disaster management and environment information as a start towards NSDI, which also include DesInventar and Sahana data bases.	1.5	2.5	1						
1.9.3	Create and open access to a web-based GIS system capable of collecting, transmitting and analyzing data and other information concerning risk and vulnerability on real time basis	4	24	10	8	2				
1.9.4	Improve the accuracy of DesInventar and Sahana data bases and the capacity of DMC at all levels to issue disaster trend analysis information to relevant agencies including the Department of Census and Statistics.	0.1	0.2	0.1						
1.9.5	Improve DesInventar software to record data at GN level and obtain reports		3	2	1					
1.10	<b>Main output 1.10 : Research and Development in DRR and CCA supported</b>	0.5	15	5	3.5	3			Universities, DMC, general public	UNDP

Activities										
1.10.1	Identification of priority research needs in DRR and CCA at sectoral and spatial levels	0.3	0.1	0.2						
1.10.2	Supporting a platform for technical experts to develop research concepts, methods and proposals in line with identified priorities.	0.4	0.2	0.2						
1.10.3	Establish a data and information exchange mechanism to support research.	0.3	0.15	0.15						
1.10.4	Develop a mechanism to financially support proposed research and, a monitoring and knowledge management system to promote findings.	13		4	3	3	3			
1.10.5	Adopt UN solution exchange concept to improve dialog between researchers, users of research findings and technology developers.	1		0.25	0.25	0.25	0.25			
2.1	All									
2.1.1	<b>Main output 2.1.</b> Legal framework improved to mainstream DRR concepts in the Local Government sector Arrange a consultative workshop with Commissioners of Local Government in PCs, SLJLG, Representatives of Associations of Mayors and Chairmen of LAs, to identify	30	7.6	8.1	5.1	5.1	5.1	4.1		Domestic DMC, Rate payers, local government staff, policy makers & councillors
		0.6	0.6							



2.2.2	Formulate regulations to use the Risk information in village development planning process a mandatory requirement	DMC	0.4	0.2	0.2						
2.2.3	Prepare and provide technical and operational guidelines for GN level risk based planning and Disaster Management	DMC	0.3	0.1	0.2						
2.3	<b>Main Output 2.3:</b> Legal provisions and procedures are available to mainstream DRR into the development process	MDM	6	0.5	2	3.5				Development agencies	Domestic
2.3.1	Amend the DM Act to include provisions to incorporate DRR concepts in to development processes as a mandatory measure- (MDM)	MDM	0.3	0.2	0.1						
2.3.2	Develop regulations and guidelines to minimize impacts of disasters on development and disasters triggered by development (DIA)	DMC	1.2	0.8	0.4						
2.3.3	Build the capacity of institutions and professionals to conduct DIA's for development projects and investments - (DMC)	DMC	4.5	2	1.5	1					
<b>2.12</b>	<b>Main Output 2.12:</b> Coastal risk reduction strategies developed	D/CC&CRM	5	2	3	1				Coastal communities, DMC	Domestic

Activities										
2.12.1	Identify and facilitate the transfer of DRR information to DCC&CRM led “Coastal Zone Development Plan” development process by strengthening the membership of the Technical Committee already appointed by the DCC&CDM by including DRR experts - (DMC)	DMC	1	1						
2.12.2	Promote the DRR incorporated Coastal Zone Development Plan through DRR incorporated village and local authority development plans and in the implementation of National Emergency Operational Procedures	D/CC&CRM	1.5	1	0.5					
2.12.3	Build the capacity of agencies to adopt the DRR included Coastal Zone Development Plan towards mainstreaming DRR as well as in approving development applications.	D/CC&CRM	1.5		1	0.5				
2.12.4	Conduct a study to impact of sea level rise on proposed National Physical Plan & Policy-2030 in coastal areas.	D/CC&CRM	1		1					
2.13	<b>Main Output 2.13.</b> Disaster Resilience incorporated in the National Physical Plan and Policy – 2030	NPPD	6	0.1	2.1	3.8			NPPD, Development & Sectoral agencies	Domestic

Activities										
2.13.1		Appoint a Technical Group to review the National Physical Plan taking into consideration the Sri Lanka Hazard Profiles, Strategic Environment Assessment recommendations, Census - 2011 information, Intergovernmental Panel on Climate Change (IPCC) led climate change related knowledge and target set up by the government to increase green cover by 6%		0.2	0.1	0.1				
2.13.2		Inter-agency consultations on the findings and update of the National Physical Plan – 2030(NPPD)		2.5	1	1.5				
2.13.3		Develop Terms of Reference (TOR) for a series of studies to evaluate the socio-economic-environmental aspects of the recommendations of the National Physical Plan. For example the costs and benefits (including social and environmental) of the NPP recommendation on the land use in fragile hills(NPPD)		2.5	1	1.5				
2.13.4		Develop investment proposals based on the National Physical Plan and the study findings(NPPD)		0.3		0.3				
2.13.5		Revise the NPP&P based on the study recommendation and consultations.		0.5		0.5				

2.16	All	Main output 2.16: Procedure and guidelines for the implementation of provisions in the National Housing Policy for reducing impacts in housing sector are available	M/Housing	2.6	0.3	0.8	1.5			Technical Officers, general public	Domestic
<b>Activities</b>											
2.16.1		Develop regulations and guidelines for the implementation of the provisions in the National Housing Policy to prevent/reduce disaster impacts		0.3	0.1	0.2					
2.16.2		Review the training modules used to train technical officers and incorporate DRR components		0.2	0.2						
2.16.3		Train technical officers on DRR measures and technologies to construct houses in hazard prone areas.		2		0.5	1.5				
2.16.4		Initiate discussion with Banks and lending institutions to consider impact of natural hazards on the proposed housing development before granting loans.		0.1		0.1					
3.3.A	All	<b>Main output 3.3.A:</b> Institutional capacity for developing human resource for DRM enhanced.	DMC	1200	50	485	262	392	11		Domestic / External
<b>Activities</b>											
3.3.A.1		Identify and procure a suitable land with in Western Province.	DMC	500	50	450					

3.3.A.2	Appoint a Consultant to prepare conceptual plan for a training facility, architectural and structural designs tender document & supervisions, etc.	DMC	70		35	12	12	11		
3.3.A.3	Construct the building and procure equipment required	DMC	630			250	380			
3.3.A.4	Create cadre positions, obtain the approval and Recruit staff required to operate the Training Centre	DMC								
3.10	<b>Main output 3.10:</b> Regulations and guidelines to empower District and Divisional Secretaries to take action in any disaster situation available	DMC	3	1.2	1.8				District Secretaries, Divisional Secretaries, Vulnerable communities	Domestic
<b>Activities</b>										
3.10.1	Review the legal provisions if any available empowering District or Divisional Administration to respond to disaster situation without delay.			0.3						
3.10.2	Consult district and divisional administrators regarding legal and administrative barriers they encounter and additional powers required to respond to a disaster situation without delay .			0.6	0.6					



### Details of Investment Plan According to Eight Strategic Components

Strategy B: Multi-hazard early warning and effectiveness of dissemination

Item No.	Hazard	Description	Responsible Agency	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year					Beneficiary	Source of funding
					2014	2015	2016	2017	2018		
1.1	Drought	<b>Main Output:</b> Timely issuance of seasonal climate forecast on drought is streamlined <b>Sub Output: Weather Prediction capacity of the Department of Meteorology is enhanced</b>		16	3.7	6.7	3.2	2.2	0.2		C/F
1.1.A		Develop the capacity (physical and human resources) of DoM to prepare and issue improved climate forecasts		14	3	6	3	2		DoM	
1.1.A.1		Develop a methodology to issue seasonal climate and weather forecast (weekly or bi-weekly) taking in to consideration meteorological and hydrological data, soil moisture contents, etc. including remotely sensed weather information		1	0.5	0.5				DoM	
1.1.A.2		Restructure/establish an inter-agency forum, led by the Ministry of DM, to periodically assess climate outlook, its implications for key socioeconomic sectors, and issue advisories. (Members of the forum: Ministry of DM, DoM, DI, MASL, DA, NWSDB, CEB, DAD, WRB and DMC)		1	0.2	0.2	0.2	0.2	0.2	DoM	
1.1.A.3											

1.1.B	All possible	Main Output: Timely issuance of seasonal climate forecast on drought is streamlined																	
		Sub Output: Weather Prediction capacity of the DoM is enhanced	20	3	12	2	2	1											
1.1.B.1		Training in NWP for a selected group of meteorological personnel	9	2	2	2	2	1											DoM
1.1.B.2		Development of a high speed computer laboratory for NWP at the DoM	10	1	9														
1.1.B.3		Development of a methodology at the DoM to incorporate numerical guidance in weather forecasting process	1		1														
1.1		Main Output: 1.1. Timely issuance of seasonal climate forecast on drought is streamlined																	
1.1.C	Drought	Sub Output: 1.1.C. Climate Change Scenarios for Sri Lanka for 2050 and 2100 developed using the latest model outputs	21	7	9	5													DoM,DMC, General public
1.1.C.1		Training in climate change scenario development for a selected group of meteorological personnel	15	5	5	5													C/F
1.1.C.2		Development of climate change scenarios for Sri Lanka for 2050 and 2100 utilizing state-of-the-art climate models	6	2	4														
1.2	Flood	Main Output: Timely issuance of flood early warning is streamlined	100	35	41	22	1	1											

1.2.1		Sub output: Establishment of Early Warning system for riverine floods (Kelani Ganga, Kalu Ganga, Gin Ganga and Nilwala Ganga, Malwathuoya, Deduruoya, Yan oya, Mundaliaru) –(ID).	ID	50	15	27	6	1	1	General public, DMC	
1.2.1.1.		Develop the capacity of irrigation Dept. to prepare flood inundation models for above rivers - (ID)		25	5	15	5				
1.2.1.2		Prepare inundation maps for different return periods of flood (5, 10, 25 and 50 year) - (ID)		20	10	10					
1.2.1.3.		Develop and practice a flood early warning system for identified rivers –(ID)		5		2	1	1	1		
1.2.2	Flood	Sub Output : Establish an EW system for floods generated by opening of spill gates of reservoirs	ID/MASL	20	5	7	8			General public, DMC	
1.2.2.1.		Identify list of large and medium level reservoirs that could generate flood in the downstream in the event of opening of spill gates– (ID / MASL).									
1.2.2.2		Prepare inundation maps for identified reservoirs at three levels of gate opening – (ID / MASL).		15	5	5	5				
1.2.2.3		Issue flood early warning to communities in downstream of reservoir – (ID / MASL).									
1.2.2.4		Establish a mechanism to disseminate EW message to communities at high risk areas – (DMC)		5		2	3				

1.2.3.	Sub Output: Introduce an early warning system for floods generated by overflow/breach of small (minor) tanks in village cascade – (DAD).	DDA	5	3	1	1	1	General public, DMC	
1.2.4.	Sub Output: Establishment of Early Warning system for urban floods (Colombo, Moratuwa, Wattala, Jaela, Peliyagoda, Galle, Matara, Kalutara, Ratnapura, Baticalao, Mannar and Puttalam).		25	12	6	7	General public, DMC		
1.2.4.1	Develop base maps 1:5000 scale for 17 Urban Local Authorities prone to floods and landslides (Colombo, Moratuwa, Wattala, Jaela, Peliyagoda, Galle, Matara, Kalutara, Ratnapura, Baticalao, Mannar and Puttalam, Kandy, Nuwaraeliya, Badulla, Bandarawela, Kegalle)	Survey dept	4	2	1	1			
1.2.4.2	Obtain the services of a technical agency to develop a flood model and flood inundation maps for 5, 10, 25 and 50 year return periods for identified urban centers – (ULA)	ULA	20	10	5	5			
1.2.4.3.	Develop a system to issue and practice flood early warning to rate payers at high risk areas – (Relevant ULA/LA)	ULA	1			1			
1.3	Main Output: 1.3. National and Community level landslide early warning systems are in place.	NBRO	155	10	70	75	General Public, DMC	GFDRR	
1.3.1	Install a system to issue landslide early warning automatically in locations identified as high risk		40	10	15	15			
1.3.2	Identify gaps and introduce additional automated rain gauges and cutting edge EW technologies to improve methods and accuracy of landslide early warnings issued.		90		45	45			

1.3.3.	Expand the distribution of manual rain gauges with threshold levels marked to all communities living in high risk locations; and train communities on the use of manual rain gauges to take decisions for self-evacuation		25			10	15											General public
1.4	Main Output: 1.4. Mechanisms to disseminate early warning messages are enhanced	DMC	102			48	54											
1.4.1	Assess the existing early warning mechanism to disseminate EW messages for all hazards and identify gaps																	
1.4.2	Develop a system to cover gaps in disseminating EW messages for floods (riverine, dam induced, urban and coastal), landslides, tsunami and cyclones		3			3												
1.4.3	Procure and install infrastructure required to fill the gap in EW dissemination system		70			30	40											
1.4.4	Conduct awareness programme on EW dissemination systems available and practice mock drills using all systems		10			5	5											
1.4.5.	Expand the inter government network to share real time data on flood, high winds, landslides, rock fall and cyclone		18			10	8											
1.4.6	Establish a mechanism to provide information on rain fall data and river water levels, reservoir water levels on real time basis to general public		1				1											
1.4.7	Pursue mobile operators to disseminate EW messages through their networks.																	

### Details of Investment Plan According to Eight Strategic Components

#### Strategy C Hazard, Vulnerability and Risk Assessment

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year				Beneficiary	Source of funding
					2014	2015	2016	2017		
1.5		<b>Main Output: 1.5. Disaster Risk Profiles are available at national level to capture the elements at risk and assess damage to capital assets and economic losses</b>		708	13	183	231	175	126	All agencies, General Public, DMC C/F
1.5.1		Complete the drought hazard maps taking in to account meteorological, hydrological and agricultural drought conditions - (DMC)	DMC	15	2	13				
1.5.2		Develop landslide hazard maps at 1:10,000 scale for all hazard prone districts. (Galle and Nuwara Eliya already completed) - (NBRO)	NBRO	240	10	75	85	50	30	
1.5.3		Develop flood inundation maps for eight selected river basins at 1:10,000 scale - (ID)	ID	368		80	110	90	88	
1.5.4		Prepare vulnerability and risk maps for landslide, drought and flood prone areas - (DMC)	DMC	90	1	15	36	32	6	
1.5.5.		Analyze risk, develop risk profiles and make available to policy makers and development agencies	DMC	5				3	2	

1.6	Flood Landslides	1.6. Detailed risk profiles are available for high risk major urban centers prone to floods and landslides	152	4	41	52	33	22		
1.6.1		Out-source the development of flood risk maps for 12 urban centers based on the inundation maps prepared under 1.2.3.2 – (DMC)	60		15	20	15	10		
1.6.2		Develop Landslide susceptibility maps for Kandy, Nuwaraeliya, Badulla, Bandarawela, Rathnapura, Kegalle Urban Centers – (NBRO)	36		6	12	12	6		
1.6.3		Outsource the development of landslide risk maps for 6 urban centers named in 1.5.2 – (DMC)	12				6	6	General Public, Planners. DMC Development agencies	C/F
1.6.4		Develop criteria to prioritize urban centers prone to landslides and floods in Pura Neguma (town development) programme separately (DMC)								
1.6.5		Develop risk maps for LA listed under Pura Neguma Programme prone to landslides and floods	40	4	16	20				
1.6.6		Prepare a manual based on the experience of City Resilient programme to develop hazard maps and risk maps with the participation of relevant Local Authorities	4		4					

### Details of Investment Plan According to Eight Strategic Components

#### Strategy D: Disaster mitigation and mainstreaming DRR into development

Item No.	Hazard	Description	Responsible Agency	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year				Beneficiary	Source of funding
					2014	2015	2016	2017		
	<b>Floods</b>	<b>Main Output: 1.7. Organizational capacity for management and operation of reservoirs to minimize flood impacts is enhanced</b>	ID/ MASL	100	4	31	55			Domestic
1.7.1		Identify major and medium level reservoirs, where management and operation capacities need to be enhanced.								
1.7.2		Introduce inflow recorders, rain-gauges and software/ hardware plus training required to synchronize the spill gate opening with rainfall		85		35	50			
1.7.3		Develop inundation maps downstream of dams, establish early warning system, identify safe routes, safe locations, conduct awareness programmes, mock drills and train communities to evacuate to safe locations		15	4	6	5			





2.10.2		Prepare plans and estimates to reduce landslide risks based on different options that also include engineering as well as land use measures.		100	30	70													
2.10.3		Implement mitigation activities to stabilize identified slopes.		3500		600	1600	700	600										
2.10.4		Mitigate potential slope failure locations in identified ULAs.		2380		330	1300	450	300										
2.11	<b>Drought</b>	Main Output: 2.1.1. Drought risk reduction strategies developed		320	7	63	105	85	60									Farmer community, DMC, DS, M/DM	Domestic
2.11.1		Facilitate policy dialogues with relevant stakeholder institutes and individuals on an integrated approach for reducing drought impacts.	DMC	2	1	1													
2.11.2		Appoint a Technical Group consisting of members from DA, HARTI, ID, DoM, Climate Change Secretariat, DAD and WRB to develop a comprehensive plan for drought mitigation in the country.	DMC																
2.11.3		DMC to provide services of technical experts/consultants, if required, and secretarial services for the committee.	DMC	4	2	2													

2.11.4	Committee to submit the recommendations in 6 months	<b>DMC</b>																	
2.11.5	Capacity development of relevant institutions to implement the drought mitigation plan and the necessary information management	<b>DA</b>	28	3	10	15													
2.11.6	Develop and operationalize a coordinated monitoring system by agencies to evaluate the extent and impact of drought and effectiveness of the responses.	<b>DMC</b>																	
2.11.7	Identify, develop and promote suitable crop varieties and agricultural practices suitable for drought/flood conditions	<b>DoA</b>	50		10	15	15												
2.11.8	Scientific land management to reduce land degradation and ensure longevity of soil moisture and soil health	<b>DoA</b>	235		40	70	45												
2.11.9	Empower legal aspect of land management	<b>LUPPD</b>	1	1															
2.14	Main Output: 2.14.Safeguarding water resources from industrial, agrochemical and domestic point and non-point source pollution		10	3	6	1													<b>Domestic</b>
																			<b>General Public, NWSDB</b>



2.15.1		Development of land use plan for 106 DS divisions affected by conflict. (Div. Secretary)	Div.Sec	150			75	75			do	
2.15.2		Establishing important forest connectivity and controlling human activities within the forest connectivity. (Div. Secretary)	Div.Sec	439			439				do	
2.15.3		Controlling elephant movements within human habitations which includes electric fencing and other barriers (DWC)	DWC	2814.2			1034	890	890		do	
2.15.4		Enrichment of elephant habitat which include renovation and establishment of tanks, removal of invasive plants and maintenance of grasslands (Div. Secretary)	Div.Sec	54			18	18	18		do	
2.15.5		Education, awareness, communication, strengthening coordination and providing relief	DWC	60			15	15	15			
2.17	All	Main Output: 2.17. Strategic Environment Assessment integrating disaster risk reduction concerns are available at Provincial level to facilitate sustainable and resilient development.	CEA	55			20	20			Development and Planning agencies, CEA Partner agencies	Domestic
2.17.1		Preparatory work including formation of teams, initial brainstorming and training) on ISEA										



### Details of Investment Plan According to Eight Strategic Components

#### Strategy E: Reconstruction and rehabilitation of damaged infrastructure

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs. Mns)	Budget (Rs.Mn) & Year				Beneficiary	Source of funding
					2014	2015	2016	2017		
2.7	Floods	<b>Main Output: 2.7. Safety of small village level tanks and bunds improved</b>	DAD	1200	16	335	508	339		Domestic
2.7.1		Complete and publish the database on small dams on GIS format / Remote sensing technology.		1	1					
2.7.2		Train Agriculture Research and Production Assistants (ARPAs) of DAD to identify tanks and assess the physical condition		15	8	7				
2.7.3		Compilation of information on dams and prepare detail estimates for rehabilitation and eco-system management and development including watersheds		20	3	17				
2.7.4		Prepare a priority list of tanks for rehabilitation including improvement of institutional capacity to implement and monitor the programme		2						
2.7.5		Integrate small tank rehabilitation programme with village development planning process		3	3					
2.7.6		Strengthen existing agro-meteorological data collection with respect to small tanks		15	1	6	8			
2.7.7		Support knowledge management related to 'socio-economic, environment and DRR aspects' of tank, village development and livelihoods including cost benefit analysis of investments.		5		5				
2.7.8		Reconstruction and rehabilitation of damaged village level tank bunds and related structures		1139		300	500	339		

### Details of Investment Plan According to Eight Strategic Components

Strategy F: Targeted and effective capacity building at all levels through training and awareness

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs. Mn)	Budget (Rs. Mn) & Year				Beneficiary	Source of funding	
					2014	2015	2016	2017			2018
2.4	All	<b>Main Output: 2.4.</b> DRR concepts are mainstreamed into primary, secondary, tertiary education institutes, universities and National & Provincial level Sectoral Training Institutes including Technical colleges.	Min Education, Universities, ICTAD, VTA, DTET, PTS, NTS,SLILG	49	8	16.3	15.3	6.25	3.25	Students, Teachers, Technical Officers	Domestic/External
<b>Activities</b>											
2.4.1		Review and update the curriculum (text books & teachers' guide) on school disaster safety and carryout awareness programs for zonal officers, principals & teachers on school disaster safety - (Ministry of Education / NIE)	Min. Education /NIE	15	5	5	5			Teachers	
2.4.2		Undertake training of trainers programmes related to DRR for teachers in National Colleges of Education (NCEs) & Education Leadership Development Centre - (Ministry of Education / NIE)	Min. Education /NIE	4	2	2				teachers	
2.4.3		Introduce a rewarding system for advance level students doing projects related to DRR - (Ministry of Education / NIE)	Min. Education /NIE	1	0.25	0.25	0.25	0.25	0.25	Students,	
2.4.2		Enhance the quality and standards of the Masters, Post graduate diplomas, Diplomas & certificate courses related to disaster management, including the promotion of collaborations with universities abroad	Universities	4	1	1	1	1	1	students	

2.4.5		Undertake training of trainers programme for lecturers in Technical colleges to incorporate DRR in to curricula	VTA, DTET	5	1	4							
2.4.6		Study the training curricula of ICTAD, VTA, DTET, PTS, NTS,SLILG and identify training material where DRR concepts could be incorporated and develop required training material/modules	ICTAD, VTA, DTET, PTS, NTS,SLILG and DMC	10	2	2	2	2	2	2	2	2	
2.4.7		Assist national training institutions to conduct Training of trainers programmes to enhance the capacity of instructors.	DMC	10		2	5	3	5.5	5.5	5.5		
<b>3.2</b>		<b>Main Output: 3.2. Awareness of communities on DRR is improved</b>	DMC, DoM	30	6.5	7	5.5						Domestic/External
<b>Activities</b>													
3.2.1		Assess the available awareness materials on DRR and identify gaps.	DMC										
3.2.2.		Collect global, regional and local level printed, audio and visual materials available on hazards and disaster risk, and select suitable material; produce in local languages.		0.5	0.5								
3.2.3		Develop awareness materials on hazards and DRR, and make them accessible to disabled as well		2	0.5	1.5							
3.2.4.		Conduct awareness programmes on DM for different target groups including youth, school children, disables, women, elders, etc		5	1	1	1	1	1	1	1	1	
3.2.5.		Use national festivals including the National Safety Day Commemoration Programme and media to take risk messages to the general public	DMC	2.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	



### Details of Investment Plan According to Eight Strategic Components

#### Strategy G: Preparedness & response

Item No.	Hazard	Description	Responsible Agency	Budget (Rs.Mn)	Year					Beneficiary	Source of funding
					2014	2015	2016	2017	2018		
2.5	All	<b>Main Output: 2.5. Private Sector disaster resilience in hazard prone areas improved</b>	DMC	5	0.6	2.6	1.6	0.1	0.1	private Sector agencies	UNDP
		<b>Activities</b>									
2.5.1		Identify private sector agencies in disaster prone areas needing assistance to develop disaster management plans	DMC	0	0						
2.5.2		Develop awareness programmes to convince the need and importance of contingency planning and conduct training programmes to private sector organisations on the development of disaster management and business continuity plans with teh assistance of Chambers of Commerce and Bankers Associations	DMC	1.5	0.5	0.5	0.5				
2.5.3		Monitor, review and recognise disaster management and business continuity plan development capacity plus the risk transfer systems adopted by individual/ private sector organisations	DMC	0.5	0.1	0.1	0.1	0.1	0.1		
2.5.4		Investigate the potential to use new risk transfer systems used globally and regionally to strengthen the country capacity such as pool funding, emergency fund access mechanisms, re-insurance etc.	DMC	3	2	1					
2.9		<b>Main output: 2.9. Village development programmes are resilient to multiple disasters</b>	M/ED	28	12.5	10.2	5.2	4.1		Village communities and officers working at village level	UNDP/ Domestic

Activities																				
2.9.1	Amend/Develop manual for village development planning incorporating disaster risk reduction concepts.	DMC	0.5	0.5																
2.9.2	Improve the capacity of officers working at the GN level and community leaders working at GN level on disaster risk reduction and prepare hazard, vulnerability and risk maps at GN level	DMC	8	5	3															
2.9.3	Enhance the capacity of retired professionals, disabled and volunteers to assist the communities in the development planning, training and monitoring of the programme implementation	DMC	2	2																
2.9.4	Develop GN level risk profiles and identify potential interventions to minimize disaster risks at GN level based on risks in consultation with community organizations	DMC	17	5	7	5														
2.9.5	Develop a set of criteria to identify and prioritize GN divisions based on disaster risks	MED																		
2.9.6	Incorporate interventions into GN level development programmes.	MED	0.5		0.2	0.2	0.1													
3.1	<b>Main Output: 3.1. Disaster Management Plans for National and Sub-national level state sector organisations in high and moderate risk areas developed and in operation</b>		20	5.5	7	7.5														Govt. organisations, general public
3.1.1.	Prepare/improve guidelines for development of institutional disaster management plans - (DMC)	DMC																		

3.1.2	Train focal points from Ministries and state sector agencies about the use of guidelines to prepare IDMP.	DMC	12.5	3	4.5	5				
3.1.3	Develop/amend the disaster management plan for districts, divisional Secretary offices and vulnerable GN divisions	Dist. Sec., Div, Sec., GN	6	2	2	2				
3.1.4	Assist and monitor the development of IDMP	DMC	1.5	0.5	0.5	0.5				
3.1.5	With the approval of the NCDM, publish in the gazette a date for the completion of development of disaster management plans - (MDM)	MDM								
3.1.6	Submit plans for NCDM approval	MDM								
3.4	<b>Main Output: 3.4. Programme for sustainable housing in floods prone areas and Micro Insurance scheme to assist small farmers &amp; low income groups to minimize impacts of disasters are available.</b>		22.5	3.5	10	6	2	1		GFDRR
3.4.1	Assess damage to infrastructure and agricultural losses due to disasters during last 30 years. (DMC)	DMC								
3.4.2	Study the suitability of risk transfer schemes developed by World Bank and implemented by countries in the Asian Region to the Sri Lankan situation. (DMC)	DMC	1.5	0.5	1					
3.4.3	Develop a mechanism to share risk information with insurance agencies. (DMC)	DMC							farmers, community and NDRSC	GFDRR
3.4.4	Encourage the private sector to develop and implement insurance schemes for paddy, cash crops and housing. NDRSC to provide seed capital to pay insurance premium for low income category on pilot basis.	DMC								

		NDRSC	10	1	3	3	2	1		
3.4.5	Conduct awareness programme for general public regarding the risk and feasibility of insuring against disaster risks. (DMC)	NDRSC	10	1	3	3		1		
3.4.6.	Analyse the housing assistance provided during last 5 years and identify households receiving financial assistance annually to repair/rehabilitate damaged/destroyed houses due to floods.	NDRSC	8	2	6					
3.4.7.	Develop a programme to relocate communities continuously affected by floods based on study conducted by NDRSC	Min. Housing	3			3				
3.4.8.	Develop guideline for providing government assistance taking in to consideration the recommendation of the above study.	NDRSC								
3.5	<b>Main Output:3.5. At national and district levels ability improved to conduct damage, loss and needs assessments to guide post disaster recovery</b>		12.5	6.5	6				Economic Planners	GFDRR
3.5.1	Identify the organizations and the staff to be trained at national and sub national levels to conduct disaster damage, loss and needs assessment )	NPD								
3.5.2	Prepare the training modules in local languages	DMC	0.5	0.5						
3.5.3	Undertake Training of Trainers programmes	DMC	1	1						
3.5.4	Conduct training programmes to improve the capacity of national and sub national level staff to undertake assessment	DMC	3	3						
3.5.5	Conduct and prepare reports on damage, loss and needs assessment for major disaster events in the last three years -	Sectoral Agencies	5	2	3					



3.7.2.		Develop a training manual on how to determine the number of disaster victims based on hazard maps/ vulnerability /risk profiles (DMC)	DMC	0.5	0.5								
3.7.3.		Conduct training programme for officers on the use of the training manual (NDRSC)	NDRSC	10	2	5	3						
3.7.4.		Equip the welfare centers prior to disasters with required cooking utensils (NDRSC)	NDRSC	177.5		40	55	50	32.5				
3.7.5.		Develop SOPs for management of relief distribution (NDRSC)	NDRSC										
3.7.6.		Establish a mechanism to engage youth from National Youth Council in response & relief activities	NDRSC	2									
3.8		<b>Main Output: 3.8. Capacity of institutions and personnel for disaster response enhanced</b>		500	8	114	126	126	126				
3.8.1.		Identify the equipment and training requirements of S&R Teams of Armed Forces (DMC)	DMC										
3.8.2.		Identify equipment required by other organisations to respond to disasters and assess their capacity to maintain same (DMC)											
3.8.3.		Identify gaps and procurement plan for 2014-2018 (DMC)											
3.8.4.		Procure and deliver to respective organizations (DMC)		485		110	125	125	125				
3.8.5.		Finalize and operationalize the National Emergency Operations Plan (NEOP) (DMC)		0.5	0.5								
3.8.6.		Conduct a study to assess the possibility of clustering the local authorities to respond to all disasters and the system to share the maintenance and operational cost (M/LG&PC)	M/LG&PC	5	5								

3.8.7.		Establish a system to detect and respond to emergency situations that could be created by biological, chemical, radiological and nuclear accidents (AEA)	AEA, CEA, Weapons Convention Authority, M/Health	2	1	1													
3.8.8.		Improve the safety and capacity of the institutions to coordinate international assistance in a case of a mega disaster (custom clearance, immigration, quarantine, Trade & tariff etc.) – (DMC)		2		2													
3.8.9.		Further improve the capacity of emergency call center of DMC – (DMC)		5	1	1	1	1	1	1									
3.8.10		Conduct public awareness programmes through media on the use of call centre – (DMC)		0.5	0.2	0.2	0.1												
<b>3.9</b>	<b>Human Induced</b>	<b>Main Output: 3.9 Community awareness on pre-hospital care and patient transportation during mass casualty incidents improved</b>	<b>M/Health</b>	<b>50</b>	<b>11</b>	<b>12</b>	<b>11</b>	<b>8</b>	<b>C/F</b>										
<b>3.9.1</b>		Identify Community Groups involved in disaster response and needing training on pre hospital care including casualty transportation (DMC)		<b>10</b>	<b>3</b>	<b>4</b>	<b>3</b>												
<b>3.9.2</b>		Conduct training programmes for the identified community groups on pre hospital care		<b>35</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	
3.9.3		Launch a campaign to improve the awareness of general public on safe methods of casualty handling and transportation		5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

### Details of Investment Plan According to Eight Strategic Components

#### Strategy H: Results based Monitoring and Evaluation

Item No.	Hazard	Description	Agency Responsible	Total Budget (Rs.Mn)	Budget (Rs.Mn) & Year					Beneficiary	Source of funding
					2014	2015	2016	2017	2018		
4.1	All	<b>Main output:</b> Comprehensive Monitoring and Evaluation (M&E) system in place		14	5	3	2	2	2	NCDM, MDM, DMC, General public	UNDP
<b>Activities</b>											
4.1.1	All	Establish dedicated Information and Communication Technology Unit at the MDM to provide technical support to operate web based M&E system.	MDM	4	1.5	1	0.5	0.5	0.5		UNDP
4.1.2		Introducing a centralized, web based platform for effective coordination.	MDM	1	1	0	0	0	0		UNDP
4.1.3		Build the capacity of stakeholder agencies to monitor the implementation of SLCDMP	MDM	3.5	1	1	0.5	0.5	0.5		UNDP
4.1.4		Assist the Planning Unit of the Ministry for Information Management and Build the capacity in analysing the information to support the outcome	MDM	2.5	0.5	0.5	0.5	0.5	0.5		UNDP
4.1.5		Quarterly and annual reviews of SLCDMP progress by NCDM	MDM	0.5	0.1	0.1	0.1	0.1	0.1		UNDP
4.1.6		Quarterly and annual reviews of SLCDMP by the NDMCC	DMC	2.5	0.9	0.4	0.4	0.4	0.4		UNDP

4.3	All	Main output: Effective knowledge management and integration in to global conventions ensured	MDM	75	15	15	15	15	15	15	15	NCDM, MDM, DMC, DRM Stateholders, General public	UNDP
<b>Activities</b>													
4.3.1	All	Supporting M&E related research (establishment of baseline and indicators for impact evaluation, periodic impact evaluation etc.)	MDM	40	8	8	8	8	8	8	8		
4.3.2		HFA reporting	MDM	2.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
4.3.3		Capturing best practices and lessons learnt	MDM	5	1	1	1	1	1	1	1		
4.3.4		Promoting Sri Lanka as a knowledge hub for disaster management	MDM	22.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		
4.3.5		Experience sharing	MDM	5	0.8	0.8	0.8	0.8	0.8	0.8	1.8		

**Annex 6-1**

**Agencies Responsible for implementing SLCDMP**

## Agencies Responsible for Implementing SLCDMP

Proposed list of participants	Contact Number	Fax Number	Email
<b>Responsible Ministries</b>			
1 Ministry of Agriculture	Mr. R. M. D. B. Meegasmulla (Secretary) Tel: +94 11 2868920 Mobile: +94 77 7818000	+94 11 2863497	Sec.agri@yahoo.com meegasmulla@yahoo.com
2 Ministry of Child Development & Women Affairs	Ms. D.S.Wijesekara (Additional Secretary, Admin and Finance) Tel : +94 11 2187266 Mobile : +94 71 8004715	+94 11 2187249	<a href="mailto:addrsec_mcdwa@yahoo.com">addrsec_mcdwa@yahoo.com</a>
3 Ministry of Construction, Engineering Services, Housing and Common Amenities	Mr. P.H.L.W. Perera (Secretary) Tel : +94 11 2862225, Mobile : +94 77 3581186	+94 11 2864765	<a href="mailto:secretary@houseconmin.gov.lk">secretary@houseconmin.gov.lk</a>
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7 Ministry of Environment and Renewable Energy	Mr. B.M.U.D. Basnayake (Secretary) Tel : +94 11 2877290	+94 11 2877292	<a href="mailto:secoffice@menr.lk">secoffice@menr.lk</a>
8 Ministry of External Affairs	Mrs. Kshenuka Senevirathna (Secretary) Tel : +94 11 2438263	+94 11 2380280	<a href="mailto:sfa@mea.gov.lk">sfa@mea.gov.lk</a>
9 Ministry of Finance & Planning (MOF)	Dr. P.B. Jayasundera (Secretary to the Treasury) Tel : +94 11 2484510	+94 11 2344993	<a href="mailto:sf@mo.treasury.gov.lk">sf@mo.treasury.gov.lk</a>
10 Ministry of Fisheries and Aquatic Resources	Mr. A. P. G. Kithsiri (Secretary) Tel : +94 11 2327060	+94-11 2541184	<a href="mailto:secretary@fisheries.gov.lk">secretary@fisheries.gov.lk</a>

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## **Overall Plan for Monitoring and Evaluation of Outputs of the SLCDMP**

**Outcome 1: National and sub national level agencies are capable of assessing disaster risk and make decisions for short, medium and long term disaster management**

Outputs	Indicators	Activities	Frequency of reporting
Output 1.1 - Timely issuance of seasonal climate and weather forecast is streamlined			
1.1.A - Timely issuance of seasonal climate forecast on drought is streamlined	Advisories on effect of climate issued quarterly	1.1.A.1. Develop the capacity (physical and human resources) of DoM to prepare and issue improved climate forecasts 1.1.A.2. Develop a methodology to issue seasonal climate and weather forecast (weekly or bi-weekly) taking in to consideration meteorological and hydrological data, soil moisture contents, etc. including remotely sensed weather information 1.1.A.3. Restructure/establish an inter-agency forum, led by the MDM, to periodically assess climate outlook, its implications for key socioeconomic sectors, and issue advisories (Members of the forum: Ministry of DM, DoM, DI, MASL, DA, NWSDB, CEB, DAD, WRB and DMC)	Quarterly

Outputs	Indicators	Activities	Frequency of reporting
1.1.B – Weather Prediction capacity of Department of Meteorology is enhanced	Daily weather forecast improved to 80% accuracy	1.1.B.1. Training in NWP for a selected group of meteorological personnel 1.1.B.2. Development of a high speed computer laboratory for NWP at the DoM 1.1.B.3. Development of a methodology at the DoM to incorporate numerical guidance in weather forecasting process	Quarterly
1.1.C - Climate Change Scenarios for Sri Lanka for 2050 and 2100 developed using the latest model outputs	Climate Change Scenarios	1.1.C.1. Training in climate change scenario development for a selected group of meteorological personnel 1.1.C.2. Development of climate change scenarios for Sri Lanka for 2050 and 2100 utilizing state-of-the-art climate models	Quarterly
Output 1.2 – Timely issuance of flood early warning is streamlined	Flood early warning is issued on time for riverine, reservoir and urban floods	1.2.1. Establishment of Early Warning system for riverine floods (Kelani Ganga, Kalu Ganga, Gin Ganga & Nilwala Ganga, Malwathuoya, Deduruoya, Yan oya, Mundaliaru) – (ID) 1.2.1.1. Develop the capacity of Irrigation Dept. to prepare flood inundation models for above rivers - (ID) 1.2.1.2. Prepare inundation maps for different return periods of flood (5, 10, 25 and 50 year) – (ID) 1.2.1.3. Develop and practice a flood Early Warning system for identified rivers – (ID) 1.2.2. Establish EW system for floods generated by opening of spill gates of reservoirs – (ID / MASL) 1.2.2.1. Identify list of large and medium level reservoirs that could generate flood in the downstream in the event of opening of spill gates–(ID / MASL)	Quarterly

Outputs	Indicators	Activities	Frequency of reporting
Output 1.3 – National and community level landslide early warning systems are in place	% of landslide prone GNs covered by automated and manual early warning systems	<p>1.2.2.2. Prepare inundation maps for identified reservoirs at three levels of gate opening – (ID / MASL)</p> <p>1.2.2.3. Issue flood Early Warning to communities downstream of reservoir – (ID / MASL)</p> <p>1.2.2.4. Establish a mechanism to disseminate EW message to communities at high risk areas – (DMC)</p> <p>1.2.3. Introduce an Early Warning system for floods generated by overflow/ breach of small (minor) tanks in village cascade – (DAD).</p> <p>1.2.4. Establishment of Early Warning system for urban floods (Colombo, Moratuwa, Wattala, Jaela, Peliyagoda, Galle, Matara, Kalutara, Ratnapura, Batticaloa, Mannar and Puttalam).</p> <p>1.2.4.1. Develop base maps 1:5000 scale for 17 Urban Local Authorities prone to floods and landslides (Colombo, Moratuwa, Wattala, Jaela, Peliyagoda, Galle, Matara, Kalutara, Ratnapura, Batticaloa, Mannar and Puttalam, Kandy, Nuwaraeliya, Badullia, Bandarawela, Kegalle) – (Survey Dept.).</p> <p>1.2.4.2. Obtain the services of a technical agency to develop a flood model and flood inundation maps for 5, 10, 25 and 50 year return periods for identified urban centers – (DMC)</p> <p>1.2.4.3. Develop a system to issue and practice flood early warning to rate payers at high risk areas – (Relevant Urban/ Local Authority).</p>	Quarterly
		<p>1.3.1. Install a system to issue landslide Early Warning automatically in locations identified as high risk</p> <p>1.3.2. Identify gaps and introduce additional automated rain gauges and cutting edge EW technologies to improve methods and accuracy of landslide early warnings issued</p> <p>1.3.3. Expand the distribution of manual rain gauges with threshold levels marked to all communities living in high risk locations; and train communities on the use of manual rain gauges to take decisions for self-evacuation</p>	

Outputs	Indicators	Activities	Frequency of reporting
Output 1.4 – Mechanisms to disseminate early warning messages are enhanced	% of geographical coverage achieved	<p>1.4.1. Assess the existing early warning mechanism to disseminate EW messages for all hazards and identify gaps</p> <p>1.4.2. Develop a system to cover gaps in disseminating EW messages for floods (riverine, dam induced, urban and coastal), landslides, tsunami and cyclones</p> <p>1.4.3. Procure and install infrastructure required to fill the gap in EW dissemination system</p> <p>1.4.4. Conduct awareness programme on EW dissemination systems available and practice mock drills using all systems</p> <p>1.4.5. Expand the inter government network to share real time data on flood, high winds, landslides, rock fall and cyclone</p> <p>1.4.6. Establish a mechanism to provide information on rain fall data and river water levels, reservoir water levels on real time basis to general public</p> <p>1.4.7. Pursue mobile operators to disseminate EW messages through their networks.</p>	Quarterly
Output 1.5 - Disaster Risk Profiles are available at national level	Disaster risk profiles available for all districts	<p>1.5.1. Complete the drought hazard maps taking in to account meteorological, hydrological and agricultural drought conditions - (DMC)</p> <p>1.5.2. Develop landslide hazard maps at 1:10,000 scale for all hazard prone districts. (Galle and Nuwara Eliya already completed) - (NBRO)</p> <p>1.5.3. Develop flood inundation maps for eight selected river basins at 1:10,000 scale - (ID)</p> <p>1.5.4. Prepare vulnerability and risk maps for landslide, drought and flood prone areas - (DMC)</p> <p>1.5.5. Analyze risk, develop risk profiles and make available to policy makers and development agencies - (DMC)</p>	Quarterly

Outputs	Indicators	Activities	Frequency of reporting
Output 1.6 - Detailed risk profiles are available for high risk major urban centers prone to floods and landslides	<p>Disaster Risk Profiles available for urban centers</p> <p>Detailed risk profiles for floods and landslides are available for urban centres identified in the Pura Naguma programme</p>	<p>1.6.1. Out-source the development of flood risk maps for 12 Urban centers based on the inundation maps prepared under 1.2.3.2 – (DMC)</p> <p>1.6.2. Develop Landslide susceptibility maps for Kandy, Nuwaraeliya, Badulla, Bandarawela, Rathnapura, Kegalle Urban Centers – (NBRO).</p> <p>1.6.3. Outsource the development of landslide risk maps for 6 urban centers named in 1.5.2 – (DMC).</p> <p>1.6.4. Develop criteria to prioritize urban centers prone to landslides and floods in Pura Neguma (town development) programme separately.</p> <p>1.6.5. Develop risk maps for LA listed under Pura Neguma Programme prone to landslides and floods.</p> <p>1.6.6. Prepare a manual based on the experience of City Resilient programme to develop hazard maps and risk maps with the participation of relevant Local Authorities</p>	Quarterly
Output 1.7 - Organizational capacities for management and operation of reservoirs to minimize flood impacts are enhanced	Number of reservoirs/tanks where new gate operation procedure introduced	<p>1.7.1. Identify major and medium level reservoirs, where management and operation capacities need to be enhanced.</p> <p>1.7.2. Introduce inflow recorders, rain-gauges and software/ hardware plus training required to synchronize the spill gate opening with rainfall</p> <p>1.7.3. Develop inundation maps downstream of dams, establish early warning system, identify safe routes, safe locations, conduct awareness programmes, mock drills and train communities to evacuate to safe locations</p>	Quarterly
Output 1.8 - Flood ordinance amended to streamline institutional mandates for managing floods	Amended flood ordinance	<p>1.8.1. Study the existing Flood Ordinance - (ID)</p> <p>1.8.2. Identify gaps in the Flood Ordinance in managing riverine, urban, coastal and reservoir induced floods - (ID, MASL, CC&amp;CRMD, SLLRDC, M/ PC&amp;LG)</p> <p>1.8.3. Draft amendments to the Flood Ordinance in consultation with related organizations - (ID)</p>	Quarterly

Outputs	Indicators	Activities	Frequency of reporting
Output 1.9 - Information management and analytical capacities for disaster management improved	Number of reports generated annually with analyzed disaster information	<p>1.8.4. Submission of the Draft to the Legal Draftsman, Cabinet of Ministers and Parliament for approval - (ID)</p> <p>1.9.1. Improve disaster management data collection mechanisms including damage and losses information on different sectors and locations.</p> <p>1.9.2. Pilot SDI covering disaster management and environment information as a start towards NSDI, which also include DesInventar, Sahana data bases.</p> <p>1.9.3. Create and open access to a web-based GIS system capable of collecting, transmitting and analyzing data and other information concerning risk and vulnerability on real time basis</p> <p>1.9.4. Improve the accuracy of DesInventar and Sahana data bases and the capacity of DMC at all levels to issue disaster trend analysis information to relevant agencies including the Department of Census and Statistics.</p>	Quarterly
Output 1.10 - Research and Development in DRR and CCA supported	Number of research findings disseminated	<p>1.10.1 Identification of priority research needs in DRR and CCA at sectoral and spatial levels</p> <p>1.10.2 Supporting a platform for technical experts to develop research concepts, methods and proposals in line with identified priorities.</p> <p>1.10.3 Establish a data and information exchange mechanism to support research.</p> <p>1.10.4 Develop a mechanism to financially support proposed research and, a monitoring and knowledge management system to promote findings.</p> <p>1.10.5 Adopt UN solution exchange concept to improve dialog between researchers, users of research findings and technology developers.</p>	Quarterly

**Outcome 2: Key development sectors are able to incorporate DRM in their respective development initiatives/ processes/ activities at different administrative levels**

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
Output 2.1 – Legal framework improved to mainstream DRR concepts in Local Government sector	Number of LAs adopting DRR through improved planning	<p>2.1.1. Arrange a consultative workshop with Commissioners of Local Government in PCs, SLJLG, Representatives of Associations of Mayors and Chairmen of LAs, to identify activities that the local government has to perform with regard to the policy statement given - (M/PC&amp;LG).</p> <p>2.1.2. Support to develop LA land use plans, guidelines and regulations/ bylaws with special attention to DRR and CCA</p> <p>2.1.3. Action to improve capacities and understanding of policy makers and staff of LAs, through training and exposure events, in order for them to acknowledge the value of DRR in planning and management. Also pass necessary resolutions to allocate funds for DRR in the annual budgets - (PCs &amp; LAs)</p> <p>2.1.4. Support PCs and LAs to introduce systems to monitor the DRR and CCA interventions, evaluate and provide guidance - (Sri Lanka Institute of Local Governance-SLJLG)</p>	Quarterly
Output 2.2 – Legal provisions and community capacity for the mandatory use of DRR and CCA incorporated plans at Grama Niladhari (GN) level established.	Regulations, Guidelines	<p>2.2.1. Introduce legal provisions for the establishment of DM Committees and engagement of NGO's and Sri Lanka Red Cross like agencies at the GN level in the village development process - (MDM)</p> <p>2.2.2. Formulate regulations to make mandatory the use of Risk information in village development - (MDM)</p> <p>2.2.3. Prepare and provide technical and operational guidelines for GN level risk based planning and Disaster Management - (DMC)</p>	Quarterly
Output 2.3 – Legal provisions are available for mainstreaming DRR into the	Regulations	<p>2.3.1. Amend the DM Act to include provisions to incorporate DRR concepts in to development processes as a mandatory measure - (MDM)</p> <p>2.3.2. Develop regulations and guidelines to minimize impacts of disasters on development and disasters triggered by development by combining EIA and DIA approaches - (DMC)</p>	Quarterly

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
development process as a mandatory requirement		2.3.3. Build the capacity of institutions and professionals to jointly carry out EIA and DIA's for development projects and investments - (DMC)	
Output 2.4 – DRR concepts are mainstreamed into primary, secondary, tertiary education institutes, technical colleges and universities	Number of curricula (text books & teachers' guide) on school disaster safety reviewed and updated; Number of trainer training courses for teachers & NCEs strengthened; Rewarding system for A-level students doing projects related to DRR introduced; Number of trainer training courses for teachers of Tech. Colleges	<p>2.4.1. Review and update the curriculum (text books &amp; teachers' guide) on school disaster safety and carryout awareness programs for zonal officers, principals &amp; teachers on school disaster safety - (Ministry of Education / NIE)</p> <p>2.4.2. Undertake training of trainers programmes related to DRR for teaching staff in National Colleagues of Education (NCEs) &amp; Education Leadership Development Centre - (Ministry of Education / NIE)</p> <p>2.4.3. Introduce a rewarding system for advance level students doing projects related to DRR - (Ministry of Education / NIE)</p> <p>2.4.4. Enhance the quality and standards of the Masters, Post graduate diplomas, Diplomas &amp; certificate courses related to disaster management, including the promotion of collaborations with universities abroad - (Universities)</p> <p>2.4.5. Undertake training of trainers programme for teaching staff in technical colleges to incorporate DRR in to curricula – (VTA, DTET).</p> <p>2.4.6. Study the training curricula of ICTAD, VTA, DTET, PTS, NTS, SLILG and identify training material where DRR concepts could be incorporated and develop required training material/modules.</p> <p>2.4.7. Assist national training institutions to conduct Training of Trainers programmes on DRR to enhance the capacity of teaching staff .</p>	Quarterly

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
Output 2.5 - Private sector disaster resilience in hazard prone areas improved	<p>conducted to incorporate DRR in to curricula;                      Number of DRR incorporated sectoral training programmes</p>		
Output 2.5 - Private sector disaster resilience in hazard prone areas improved	<p>Number of plans</p>	<p>2.5.1. Identify private sector agencies in disaster prone areas needing assistance to develop disaster management plans (DMC).                      2.5.2. Develop awareness programmes to convince the need and importance of contingency planning and conduct training programmes to private sector organisations on the development of disaster management and business continuity plans (DMC)                      2.5.3. Monitor, review and recognise disaster management and business continuity plan development capacity plus the risk transfer systems adopted by individual/private sector organisations(DMC)                      2.5.4. Investigate the potential to use new risk transfer systems used globally and regionally to strengthen the country capacity such as pool funding, emergency fund access mechanisms, re-insurance etc (DMC)</p>	<p>Quarterly</p>
Output 2.6 - The	<p>Number of</p>	<p>2.6.1. Implement the recommendation of Amapara -Batticaloa flood mitigation</p>	<p>Quarterly</p>

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
<p>potential impacts of flood reduced in flood prone districts of Batticaloa, Ampara, Colombo, Gampaha, Kalutara, Trincomale, Anuradhapura, Puttalam, Kurunegala, Galle, Matara, Pollonaruwa, Ratnapura &amp; Mulathivu</p>	<p>mitigation sub projects implemented in Ampara &amp; Batticaloa districts.</p> <p>Number of mitigation interventions identified for mitigation</p>	<p>study: a) Irrigation sub projects (ID), b) Urban sector sub projects - (UDA)</p> <p>2.6.2. Undertake studies including Hydro-meteorological modeling covering river basins Kalu Ganga, Gin Ganga, Nilwala Ganga, Malwathuoya, DeduruOya, Yan Oya, MudalAru and AthanagaluOya and identify appropriate interventions to minimize flood impacts - (ID)</p>	
<p>Output 2.7 - Safety of small village level tanks and bunds improved</p>	<p>Number tanks with developed rehabilitation plans/programmes</p>	<p>2.7.1. Complete and publish the database on small dams on GIS format / Remote sensing technology.</p> <p>2.7.2. Train Agriculture Research and Production Associates (ARPA) of DAD to identify tanks and assess</p> <p>2.7.3. Compilation of information on dams and prepare estimates for rehabilitation and eco-system management and development including watersheds</p> <p>2.7.4. Prepare a priority list of tanks for rehabilitation including improvement of institutional capacity to implement and monitor the programme</p> <p>2.7.5. Integrate small tank rehabilitation programme with village development planning process</p> <p>2.7.6. Strengthen existing agro-meteorological data collection with respect to small tanks</p> <p>2.7.7. Support knowledge management related to 'socio-economic, environment and</p>	<p>Quarterly</p>

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
Output 2.8 –Flood impacts in selected Urban Local Authorities mitigated	Number of urban plans with improved drainage concepts incorporated; No. of training programmes for LG officers; No. of investment proposals	<p>DRR aspects’ of tank, village development and livelihoods including cost benefit analysis of investments.</p> <p>2.8.1. Develop an Information Centreof storm water drainage related information that also house studies conducted around the country during last 10 years by UDA, SLLRDC and M/PC&amp;LG, mainly in Galle, Matara, Gampaha, Trincomalee, Mannar, Chilaw, Peliyagoda , Nugegoda, Puttiam, and Colombo Metropolitan areas (SLILG/UDA)</p> <p>2.8.2. Review the literature, update where necessary and identify interventions to mainstream flood risks into urban development (UDA)</p> <p>2.8.3. Conduct training programmes for local government officers to develop mitigation, preparedness and response plans at local levels – (DMC)</p> <p>2.8.4. Develop investment proposals for each urban area (DMC)</p>	Quarterly
Output 2.9 - 2.9. Village development programmes are resilient to multiple disasters	Number of villages implementing DRR integrated plans; GN level risk profiles and DRR programmes; Criteria developed to identify and prioritize GN divisions based on disaster risks; No. of interventions identified.	<p>2.9.1. Improve the capacity of officers and community leaders working at GN level to prepare hazard, vulnerability and risk maps at GN level - (DMC)</p> <p>2.9.2. Develop GN level risk profiles and DRR programmes in consultation with community organizations - (DMC)</p> <p>2.9.3. Develop a set of criteria to identify and prioritize GN divisions based on disaster risks - (DMC)</p> <p>2.9.4. Involve retired professionals, disabled and volunteers in the training, planning and monitoring- (DMC)</p> <p>2.9.5. Identify potential interventions to minimize disaster risks at GN level based on risks – (MED)</p> <p>2.9.6. Incorporate interventions in proposals and programmes for GN level development - (MED)</p>	Quarterly

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
Output 2.10 - Slopes stabilized in identified high risk landslide and rock fall sites	Number of slopes stabilized	<p>2.10.1. Undertake landslide risk assessment, cost benefit analysis and prioritize high risk sites that need stabilization after considering, social, economic and ecosystem benefits.</p> <p>2.10.2. Prepare plans and estimates to reduce landslide risks based on different options that also include engineering as well as land use measures.</p> <p>2.10.3. Implement mitigation activities to stabilize identified slopes</p> <p>2.10.4. Mitigate potential slope failure locations in identified ULAs</p>	Quarterly
Output 2.11 - Drought risk reduction strategies developed	Operationalized drought management plan	<p>2.11.1. Facilitate policy dialog with relevant stakeholder institute and individuals on an integrated approach for reducing drought impacts(DMC).</p> <p>2.11.2. Appointing a technical group consisting of members from DA, HARTI ,ID. DoM, Climate Change Secretariat, DAD, WRB to develop a comprehensive plan for drought mitigation in the country.</p> <p>2.11.3 DMC to provide services of technical experts/consultants, if required, and secretarial services for the committee.</p> <p>2.11.4 Committee to submit the recommendations in 6 months</p> <p>2.11.5 Capacity development of relevant institutions to implement the drought mitigation plan and the necessary information management</p> <p>2.11.6 Develop and operationalize a coordinated monitoring system by agencies to evaluate the extent and impact of drought and effectiveness of the responses.</p> <p>2.11.7 Identify, develop and promote suitable crop varieties and agricultural practices suitable for drought/flood conditions.</p> <p>2.11.8 Scientific land management to reduce land degradation and ensure longevity of soil moisture and soil health</p> <p>2.11.9 Empower legal aspect of land management</p>	Quarterly
Output 2.12 - Coastal risk reduction	Number of development plans approved	2.12.1. Identify and facilitate the transfer of DRR information to DCC&CRM led “Coastal Zone Development Plan” development process by strengthening the membership of the Technical Committee already appointed by the DCCC&CDM by	Quarterly

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
strategies developed	with DRR	including DRR experts - (DMC) 2.12.2. Promote the DRR incorporated Coastal Zone Development Plan through DRR incorporated village and local authority development plans and in the implementation of National Emergency Operational Procedures. 2.12.3. Build the capacity of agencies to adopt the DRR included Coastal Zone Development Plan towards mainstreaming DRR as well as in approving development applications. 2.12.4. Conduct a study to impact of sea level rise on proposed National Physical Plan & Policy-2030 in coastal areas.	
Output 2.13 - Disaster resilience incorporated in the National Physical Plan and Policy-2030	Updated national Physical Plan and the Policy considering the disaster risk and climate change impacts	2.13.1. Appoint a Technical Group to review the National Physical Plan taking into consideration the Sri Lanka Hazard Profiles, Census - 2011 information, and Intergovernmental Panel on Climate Change (IPCC) led climate change related knowledge(NPPD) 2.13.2. Inter-agency consultations on the findings and update of the National Physical Plan – 2030(NPPD) 2.13.3. Develop Terms of Reference (TOR) for a series of studies to evaluate the socio-economic-environmental aspects of the recommendations of the National Physical Plan. For example the costs and benefits (including social and environmental) of the NPP recommendation on the land use in fragile hills(NPPD) 2.13.4. Develop investment proposals based on the National Physical Plan and the study findings(NPPD)	Quarterly
Output 2.14 - Safeguarding water resources from industrial, agro chemicals and domestic	Inter-agency work group to on water pollution  Number of	2.14.1. Appoint a Technical Working Group (TWG) consisting of members from NWSDB, DA, HARTI, ID, CEB, DAD, WRB, CEA, MDM and other agencies responsible for quality and quantity issues of water - (MDM) 2.14.2 Identify gaps in the present system of environmental regulations, safe guards and barriers for proper enforcement including the concerns of industries and public - (MDM)	Quarterly

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
point and non-point source pollution	guidelines/regulations developed to minimize water pollution	<p>2.14.3 Develop TOR and commission a number of relevant assessments to support develop systems of monitoring, reporting and reviewing of environmental health of water resources - (CEA)</p> <p>2.14.4. Inter-agency consultative process to develop interventions to manage the contamination potential of water resources (CEA)</p> <p>2.14.5 Capacity building of agencies to implement the multi-agency pollution prevention system (CEA)</p>	
<b>Output 2.15-</b> Potential impacts of lives and properties due to Human elephant conflict reduced.	Number of deaths reduced	<p>2.15.1 Development of land use plan for 106 DS divisions affected by conflict. (Div. Secretary)</p> <p>2.15.2 Establishing important forest connectivity and controlling human activities within the forest connectivity. (Div. Secretary)</p> <p>2.15.3 Controlling elephant movements within human habitations which includes electric fencing and other barriers (DWC)</p> <p>2.15.4 Enrichment of elephant habitat which include renovation and establishment of tanks, removal of invasive plants and maintenance of grasslands (Div. Secretary)</p> <p>2.15.5 Education, awareness, communication, strengthening coordination and providing relief</p>	Quarterly
<b>Output 2.16-</b>	regulations and guidelines	<p>2.16.1 Develop regulations and guidelines for the implementation of the provisions in the National Hosing Policy to prevent/reduce disaster impacts</p> <p>2.16.2 Review the training modules used to train technical officers and incorporate DRR components</p> <p>2.16.3 Train technical offers on DRR measures and technologies to construct houses in hazard prone areas.</p> <p>2.16.4 Initiate discussion with Banks and lending institutions to consider impact of natural hazards on the proposed housing development before granting loans.</p>	Quarterly

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
<p><b>Output 2.17-</b> Strategic Environment Assessment integrating disaster risk reduction concerns are available at Provincial level to facilitate sustainable and resilient development.</p>	<p>ISEA reports</p>	<p>2.17.1 Preparatory work including formation of teams, initial brainstorming and training) on ISEA                  2.17.2 Background/ primary data (baseline data) gathering and production of initial product- "Opportunity map 01                  2.17.3 Awareness sessions, initial thematic consultations and secondary data gathering                  2.17.4 Second brainstorming session                  2.17.5 Field visits, studies and data gathering (Development group and study group outputs) and preparation of opportunity map 02                  2.17.6 Third brainstorming session                  2.17.7 Synthesis, analysis and outputs and development of opportunity map 3                  2.17.8 Sharing of intermediate ISEA draft report and dissemination                  2.17.9 Consultation for improvement to the draft ISEA report                  2.17.10 Final ISEA report and launching.</p>	<p>Quarterly</p>

**Outcome 3: Communities, Local Governments and sub national agencies have necessary capacities and mechanisms to respond to and recover from disasters**

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
Output 3.1 - Disaster Management Plans for national and sub national levels sector organizations in high and moderate risk areas developed and in operation	Number of plans	3.1.1. Prepare/improve guidelines for development of institutional disaster management plans - (DMIC) 3.1.2. Train focal points from Ministries and State sector agencies about the use of guidelines to prepare IDMP 3.1.3. Develop/amend disaster management plan for districts, divisions, Secretary offices and vulnerable GN divisions 3.1.4 Asst. and monitor the development of IDMP. 3.1.5 With the approval of NCDP publishing a gazette a date for the completion of the DM plan 3.1.6 Submit plans for the NCDM approval	Quarterly
Output 3.2 – Awareness of communities on DRR is improved	Number of programmes conducted	3.2.1. Assess the available awareness materials on DRR and identify gaps. 3.2.2. Collect global, regional and local level printed, audio and visual materials available on hazards and disaster risk, and select suitable material; produce in local languages. 3.2.3. Develop awareness materials on hazards and DRR, and make them accessible to disabled as well 3.2.4. Conduct awareness programmes on DM for different target groups including youth, school children, disables, women, elders, etc 3.2.5. Use national festivals including the National Safety Day Commemoration Programme and media to take risk messages to the general public 3.2.6. Develop and implement an awareness programme for the general public on lightning and high winds.	Quarterly

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
Output 3.3 – Human resource capacity for DRM is enhanced			
3.3A - Institutional capacity for developing human resource for DRM enhanced	Well-equipped training center Training manuals	3.3.A.1 Identify a suitable land (preferably state land) with in Western Province. 3.3.A.2.Appoint a Consultant to prepare conceptual plan for a training facility,architectural and structural designs, tender documents etc. 3.3.A.3.Construct the building and procure equipment required 3.3.A.4.Recruit staff required to operate the Training Centre	Quarterly
3.3B - Child and women centered DRM programmes in practice.	Child and women centered guideline, and data collection manual	3.3.B.1. Develop guidelines to integrate gender perspectives in to DRM project proposals 3.3.B.2. Develop Child and Women centred DM guidelines and a manual for data collection 3.3.B.3. Conduct advocacy programmes on Women and Child centred DM for policy makers 3.3.B.4. Conduct awareness and training programmes for field officers and committee members at District, Divisional and GN levels 3.3.B.5. Collect gender and age (child) segregated data at district, divisional and GN levels in relation to disaster vulnerabilities and share with all relevant stakeholders	Quarterly

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
<p>Output 3.4 – Micro insurance schemes available to assist small farmers and low income groups to minimize impacts of disasters</p>	<p>Number of disaster risk insurance policies issued</p> <p>Number of awareness programme conducted for general public</p>	<p>3.4.1. Assess damage to infrastructure and agricultural losses due to disasters during last 30 years.</p> <p>3.4.2. Study the suitability of risk transfer schemes developed by World Bank and implemented by countries in the Asian Region to the Sri Lankan situation.</p> <p>3.4.3. Develop a mechanism to share risk information with insurance agencies.</p> <p>3.4.4. Encourage the private sector to develop and implement insurance schemes for paddy, cash crops and housing.</p> <p>3.4.5. Conduct awareness programme for general public regarding the risk and feasibility of insuring against disaster risks.</p> <p>3.4.6 Analysis the housing assistance provided during last five years and identify households receiving financial assistance annually to repair/rehabilitate/ damage destroyed houses due to floods.</p> <p>3.4.7 Develop a programme to relocate communities continuously affected by floods</p> <p>3.4.8 Develop a guidelines for providing government assistance taking into consideration the recommendation of the above study.</p>	
<p>Output 3.5 - At national and district levels ability improved to conduct damage, loss and needs assessment to guide post disaster recovery</p>	<p>Disaster needs assessment mechanism in place; Training modules are available in 3 languages; No. of TOT programs conducted; Damage, loss and need assessment reports are available for the</p>	<p>3.5.1. Identify the organizations and the staff to be trained at national and sub national levels to conduct disaster damage, loss and needs assessment - (NPD).</p> <p>3.5.2. Prepare the training modules in local languages - (DMC)</p> <p>3.5.3. Undertake Training of Trainers programmes - (DMC)</p> <p>3.5.4. Conduct training programmes to improve the capacity of national and sub national level staff to undertake assessment - (DMC)</p> <p>3.5.5. Conduct and prepare reports on damage, loss and needs assessment for major disaster events in the last three years - (DMC).</p> <p>3.5.6. Carry out a study to develop guidelines to conduct socio economic cost benefit analysis of DRR projects and DRR incorporated development projects (DMC)</p>	<p>Quarterly</p>

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
Output 3.6 - Capacity of communities and organizations is enhanced to respond to a potential cyclone hazard	Number of villages prepared for cyclone response	3.6.1. Identify probable cyclone paths and wind speeds for 4 scenarios - (DOM). 3.6.2. Develop a data base using with the assistance of Open Data for Reliance Initiative (Open DRI) to identify buildings within cyclone tracks, vulnerable population and critical infrastructure - (DMC). 3.6.3. Identify buildings that could be used as safe centers and numbers of people that could be accommodated - (DMC). 3.6.4. Undertake awareness programme to introduce evacuation routes and location of safe buildings - (DMC).	Quarterly
Output 3.7 - Capacity of institutions and personnel for post disaster relief is enhanced	Training manual, Number of officers and youth trained; Number of welfare centers equipped with required cooking utensils; SOPs for management of relief distribution	3.7.1. Train officers at district and divisional levels to conduct post disaster rapid needs assessment. (OCHA) 3.7.2. Develop a training manual on how to determine the number of disaster victims based on hazard maps/ vulnerability /risk profiles (DMC) 3.7.3. Conduct training programme for officers on the use of the training manual (NDRSC) 3.7.3. Equip the welfare centers prior to disasters with required cooking utensils (NDRSC) 3.7.4. Develop SOPs for management of relief distribution (NDRSC) 3.7.5. Establish a mechanism to engage youth from National Youth Council in response & relief activities (DMC)	Quarterly
Output 3.8 - Capacity for institutions and personnel for disaster response is enhanced	Number of institutions provided with equipment for response; Report on Clustering LAs; Emergency	3.8.1. Identify the equipment and training requirements of S&R Teams of Armed Forces (DMC) 3.8.2. Identify equipment required by other organisations to respond to disasters and assess their capacity to maintain same (DMC) 3.8.3. Identify gaps and procurement plan for 2014-2018 (DMC) 3.8.4. Procure and deliver to respective organizations (DMC)	Quarterly

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
3.9 Community awareness on pre-hospital care and patient transportation during mass casualty incidents improved	Operations Plan including EW, Call Centre fully operational.  Number of community groups trained	<p>3.8.5. Finalize and operationalize the National Emergency Operations Plan (NEOP) (DMC)</p> <p>3.8.6. Conduct a study to assess the possibility of clustering the local authorities to respond to all disasters and the system to share the maintenance and operational cost</p> <p>3.8.7. Establish a system to detect and respond to emergency situations that could be created by biological, chemical, radiological and nuclear accidents</p> <p>3.8.8. Improve the safety and capacity of the institutions to coordinate international assistance in a case of a mega disaster (custom clearance, immigration, quarantine, Trade &amp; tariff etc.)</p> <p>3.8.9. Further improve the capacity of national emergency call center of DMC.</p> <p>3.8.10. Conduct public awareness programmes through media on the use of call centre</p> <p>3.9.1 Identify Community Groups who respond in disasters needing training on pre hospital care including casualty transportation (DMC)</p> <p>3.9.2 Conduct training programmes for the identified community groups on pre hospital care</p> <p>3.9.3 Launch a campaign to improve the awareness of general public on safe methods of casualty handling and transportation.</p>	Quarterly
3.10 Regulations and guidelines to empower District and Divisional Secretaries to take action in any disaster situation available	Regulations and Guidelines	<p>3.10.1 Review the legal provisions if any available empowering District or Divisional Administration to respond to disaster situation without delay.</p> <p>3.10.2. Consult district and divisional administrators regarding legal and administrative barriers they encounter and additional powers required to respond to a disaster situation without delay .</p> <p>3.10.3. Draft regulations under the DM Act-2005 to guidelines empowering district and Divisional Administration to respond to disaster situations</p>	Quarterly

**Outcome 4: A system in place for continuous monitoring, learning and adapting to facilitate the ongoing planning and implementation process**

Outputs	Indicators	Activities / Sub activities; and responsible agency	Frequency of reporting
Output 4.1 - Comprehensive Monitoring and Evaluation system in place	Accurate monthly, quarterly & annual reports submitted on time	4.1.1. Establish dedicated Information and Communication Technology Unit at the Ministry of Disaster Management to provide technical support to operate web based M&E system. 4.1.2. Introducing a centralized, web based platform for effective coordination. 4.1.3. Build the capacity of stakeholder agencies to monitor the implementation of SLCDMP 4.1.4. Assist the Planning Unit of the Ministry for Information Management and Build the capacity in analysing the information to support the outcome 4.1.6. Quarterly and annual reviews of SLCDMP progress by NCDM 4.1.7. Quarterly and annual reviews of SLCDMP by the NDMCC	Quarterly
Output 4.2 – Technical Advisory committee are in operation	Number of committees functioning with NCDM approval	4.2.1. Submitting names of members and chairmen of Technical Advisory Committees to the NCDM for the approval (DMC) 4.2.2. Develop the TORs for committees and issue letters of appointments to the chairmen & members (DMC) 4.2.3. Provide secretarial support and allocate budgets as relevant.	Quarterly
Output 4.3- Effective knowledge management and integration into global conventions ensured	Number of baselines established, HFA assessment report	4.3.1. Supporting M&E related research (establishment of baseline and indicators for impact evaluation, periodic impact evaluation etc.) 4.3.2. HFA reporting 4.3.3. Capturing best practices and lessons learnt 4.3.4. Promoting Sri Lanka as a knowledge hub for disaster management 4.3.5. Experience sharing	Quarterly

**Annex 7.2**

***M&E Matrices for Implementation of Activities by Individual Agencies and Ministries***

**Monitoring Matrix for Individual Agencies**  
Atomic Energy Authority (AEA)

Activities	Time Frame												Budget	Contact person			
	2014			2015			2016			2017					2018		
	1	2	4	1	2	3	4	1	2	3	4	1			2	3	4
3.8.7. Establish a system to detect and respond to emergency situations that could be created by radiological and nuclear accidents																	
3.1.3. Develop Disaster Management Plan for the institution to mitigate and respond to radiological and Nuclear accidents																	

**Output Indicator**

System to detect radio activity established.  
DMP developed



**Monitoring Matrix for Individual Agencies**  
**Ceylon Electricity Board (CEB)**

Activities	Time Frame												Budget	Contact person				
	2014			2015			2016			2017					2018			
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4
1.7.1. Identify major and medium level reservoirs, where management and operation capacities need to be enhanced.																		
1.7.2. Introduce inflow recorders, rain-gauges and software/ hardware plus training required to synchronize the spill gate opening with rainfall																		
1.7.3. Develop inundation maps downstream of dams, establish early warning system, identify safe routes, safe locations, conduct awareness programmes, mock drills and train communities to evacuate to safe locations																		
3.1.3. Develop Disaster Management Plan for the institution and regional offices in hazard prone areas to mitigate and respond to disasters.																		

**Output Indicator**

1. Number of reservoirs/tanks, where new gate operation procedure is introduced
2. Inundation maps, EW systems and evacuation procedures available
2. DMP available

**Monitoring Matrix for Individual Agencies**  
**Department of Agrarian Development (DAD)**

Activities	Time Frame												Budget	Contact person				
	2014			2015			2016			2017					2018			
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4
1.2.3. Introduce an early warning system for floods generated by overflow/ breach of small (minor) tanks in village cascade – (DAD).																		
2.7.1. Complete and publish the database on small dams on GIS format / Remote sensing technology.																		
2.7.2. Train Agriculture Research and Production Assistants (ARPAs) of DAD to identify tanks and assess the physical condition.																		
2.7.3. Compilation of information on dams and prepare estimates for rehabilitation and eco-system management and development including watersheds.																		
2.7.4. Prepare a priority list of tanks for rehabilitation including improvement of institutional capacity to implement and monitor the programme.																		
2.7.5. Integrate small tank rehabilitation programme with village development planning process																		
2.7.6. Strengthen existing agro-meteorological data collection with respect to small tanks																		
2.7.7. Support knowledge management related to 'socio-economic, environment and DRR aspects' of tank, village development and livelihoods including cost benefit analysis of investments.																		

**Output Indicators**

1. Flood early warning is issued on time for tank induced floods
2. EW system established for minor tank induced floods
3. Number of tanks rehabilitation plans/programmes developed, Number of tanks rehabilitated

**Monitoring Matrix for Individual Agencies**  
Department of Agriculture (DA)

Activities	Time Frame												Budget	Contact person								
	2014				2015				2016						2017				2018			
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	1	2	3	4
2.11.5. Capacity development of relevant institutions to implement the drought mitigation plan and the necessary information management																						
2.11.6. Develop and operationalize a coordinated monitoring system by agencies to evaluate the extent and impact of drought and effectiveness of the responses.																						
2.11.7. Identify, develop and promote crop varieties and agricultural practices suitable for drought/flood conditions																						
2.11.8. Scientific land management to reduce land degradation and ensure longevity of soil moisture and soil health																						
2.11.9. Empower legal aspect of land management																						

**Output Indicators**

1. Operationalized drought management plan;
2. coordinated monitoring system by agencies to evaluate the extent and impact of drought and effectiveness of the responses,
3. Number of prosecutions against misuse of land

**Monitoring Matrix for Individual Agencies**  
**Department of Coast Conservation & Coastal Resource Management & (DCC & CRM)**

Activities	Time Frame												Budget	Contact person								
	2014				2015				2016						2017				2018			
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	1	2	3	4
2.12.2. Promote the implementation of DRR incorporated Coastal Zone Management Plan through DRR incorporated village and local authority development plans and National Emergency Operational Procedures.																						
2.12.3. Build the capacity of agencies to adopt the DRR included Coastal Zone Management Plan towards mainstreaming DRR as well as in approving development applications.																						
3.1.3. Develop Disaster Management Plan for the institution to mitigate and respond to disasters																						

**Output Indicators**

1. Number of development plans approved with DRR incorporated;
2. DMP available

**Monitoring Matrix for Individual Agencies**  
**Department of Irrigation (DOI)**

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
1.8.1. Study the existing Flood Ordinance																			
1.8.2. Identify gaps in the Flood Ordinance in managing riverine, urban, coastal and reservoir induced floods - (ID, MASL, CC&CRMD, SLLRDC, M/PC&LG)																			
1.8.3. Draft amendments to the Flood Ordinance in consultation with related organizations.																			
1.8.4. Submission of the Draft to the Legal Draftsman, Cabinet of Ministers and Parliament for approval.																			
1.2.1. Establishment of Early Warning system for riverine floods (Kelani Ganga, Kalu Ganga, Gin Ganga and Nilwala Ganga, Malwathuoya, Deduruoya, Yan oya, Mundaliaru).																			
1.2.1.1. Develop the capacity of irrigation Dept. to prepare flood inundation models for above rivers.																			
1.2.1.2. Prepare inundation maps for different return periods of flood (5, 10, 25 and 50 year).																			
1.2.1.3. Develop and practice a flood early warning system for identified rivers.																			
1.5.3. Develop flood inundation maps for eight selected river basins at 1:10,000 scale																			

1.7.1. Identify major and medium level reservoirs, where management and operation capacities need to be enhanced.									
1.7.2. Introduce inflow recorders, rain-gauges and software/ hardware plus training required to synchronize the spill gate opening with rainfall									
1.7.3. Develop inundation maps downstream of dams, establish early warning system, identify safe routes, safe locations, conduct awareness programmes, mock drills and train communities to evacuate to safe locations									
2.6.1. Implement the recommendation of Amapara - Batticaloa flood mitigation study: a) Irrigation sub projects									
2.6.2. Undertake studies including Hydro-meteorological modeling covering river basins Kalu Ganga, Gin Ganga, Nilwala Ganga, Malwathu oya, Deduru Oya, Yan Oya, Mudal Aru and Atthanagalu Oya and identify appropriate interventions to minimize flood impacts									

**Output Indicator**

1. Clear mandate given to agencies for managing floods
2. Flood early warning is issued on time for riverine, reservoir/tank induced and urban floods
3. EW system established for riverine, reservoir induced floods;
4. Flood inundation maps available for eight river basins
5. Number of reservoirs/tanks, where new gate operation procedure is introduced
6. Number of flood mitigation interventions identified for implementation in 8 river basins.

**Monitoring Matrix for Individual Agencies**  
Department of Meteorology(DoM)

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	4	1	2	3	4	1	2	3	4	1			2	3	4		
1.1.A.1. Develop the capacity (physical & human resource) of DoM to prepare and issue improved climate forecasts																			
1.1.A.2. Develop a methodology to issue seasonal climate and weather forecast(weekly or bi weekly) taking in to consideration meteorological, hydrological data, soil moisture contents, etc. including remotely sensed weather information.																			
1.1.A.3. Restructure/establish an inter-agency forum, led by the Ministry of DM, to periodically assess climate outlook, its implications for key socioeconomic sectors, and issue advisories. (Members of the forum: Ministry of DM, DoM, DI, MASL, DA, NWSDB, CEB, DAD, WRB and DMC)																			
1.1.B.1 Training in NWP for a selected group of meteorological personnel																			
1.1.B.2 Development of a high speed computer laboratory for NWP at the DoM.																			
1.1.B.3 Development of a methodology at the DoM to incorporate numerical guidance in weather forecasting process.																			
1.1.C.1. Training in climate change scenario development for a selected group of meteorological personnel																			
1.1.C.2. Development of climate change scenarios for Sri Lanka for 2050 and 2100 utilizing state-of-the-art climate models																			

1.1.C.1. Training in climate change scenario development for a selected group of meteorological personnel									
3.6.1. Identify probable cyclone paths and wind speeds for 4 scenarios - (DOM).									

**Output indicators:**

1. Advisories on effect of climate issued quarterly,
2. Daily weather forecast improved to 80% accuracy, raining conducted
3. Climate Change Scenarios for Sri Lanka for 2050 and 2100 developed

**Monitoring Matrix for Individual Agencies  
Urban Local Authorities**

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	1	2	3	1	2	3	1	2	3			1	2	3		
1.2.4.2. Obtain the services of a technical agency to develop a flood model and flood inundation maps for 5,10, 25 and 50 year return periods for identified urban centers – (ULA)																			
1.2.4.3. Develop a system to issue and practice flood early warning to rate payers at high risk areas – (Relevant Urban Local Authority).																			

**Output indicators:**

1. Flood early warning is issued on time for urban floods
2. Flood models & flood inundation maps developed for identified ULAs
3. System to issue and practice flood EW available.

**Monitoring Matrix for Individual Agencies**  
Central Environmental Authority

Activities	Time Frame												Budget	Contact person			
	2014			2015			2016			2017					2018		
	1	2	4	1	2	3	4	1	2	3	4	1			2	3	4
2.14.2. Identify gaps in the present system of environmental regulations, safe guards and barriers for proper enforcement including the concerns of industries and public																	
2.14.3. Develop TOR and commission a number of relevant assessments to support develop systems of monitoring, reporting and reviewing of environmental health of water resources																	
2.14.3. Inter-agency consultative process to develop interventions to manage the contamination potential of water resources																	
2.14.4. Capacity building of agencies to implement the multi-agency pollution prevention system																	
2.17.1. Preparatory work including formation of teams, initial brainstorming and training) on ISEA																	
2.17.2. Background/ primary data (baseline data) gathering and production of initial product- "Opportunity map 01																	
2.17.3. Awareness sessions, initial thematic consultations and secondary data gathering																	

2.17.4 Second brainstorming session									
2.17.5 Field visits, studies and data gathering (Development group and study group outputs) and preparation of opportunity map 02									
2.17.6. Third brainstorming session									
2.17.7. Synthesis, analysis and outputs and development of opportunity map 3,									
2.17.8. Sharing of intermediate ISEA draft report and dissemination									
2.17.9. Consultation for improvement to the draft ISEA report									
2.17.10. Final ISEA report and launching.									
3.8.7. Establish a system to detect and respond to emergency situations that could be created by chemical accidents (CEA,)									

**Output Indicators**

1. Number of guidelines/regulations developed to minimize water pollution
2. ISEA Reports and maps for Central, Sabaragamuwa, Eastern, North Wester and North Central provinces available

**Monitoring Matrix for Individual Agencies  
Disaster Management Centre (DMC)**

Activities	Time Frame												Budget	Contact person								
	2014			2015			2016			2017					2018							
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4				
1.9.1. Improve disaster management data collection mechanisms including damage and losses information on different sectors and locations.																						
1.9.2. Pilot SDI covering disaster management and environment information as a start towards NSDI, which also include DesInventar, Sahana data bases.																						
1.9.3. Create and open access to a web-based GIS system capable of collecting, transmitting and analyzing data and other information concerning risk and vulnerability on real time basis																						
1.9.4. Improve the accuracy of DesInventar and Sahana data bases and the capacity of DMC at all levels to issue disaster trend analysis information to relevant agencies including the Department of Census and Statistics.																						
1.10.1. Identification of priority research needs in DRR and CCA at sectoral and spatial levels																						
1.10.2. Supporting a platform for technical experts to develop research concepts, methods and proposals in line with identified priorities.																						







2.8.3. Conduct training programmes for local government officers to develop mitigation, preparedness and response plans at local levels									
2.8.4. Outsource the development of investment proposals for each urban area and implement									
2.11.1. Facilitate policy dialogues with relevant stakeholder institutes and individuals for an integrated approach for reducing drought impacts.									
2.11.3. DMC to provide services of technical experts/consultants, if required, and secretarial services for the committee .									
2.11.4. Committee to submit the recommendations in 6 months.									
2.4.4. Assist to enhance the quality and standards of the Masters, Post graduate diplomas, Diplomas & certificate courses related to disaster management, including the promotion of collaborations with universities abroad - (DMC/Universities)									
2.4.6. Study the training curricula of ICTAD, VTA, DTET, PTS, NTS, SLILG and identify training material where DRR concepts could be incorporated and develop required training material/modules.									
3.2.2. Collect global, regional and local level printed, audio and visual materials available on hazards and disaster risk, and select suitable material and produce in local languages.									
3.2.3. Develop awareness materials on hazards and DRR, and make them accessible to disabled as well									







3.8.4. Procure and deliver to respective organizations including S&R teams (DMC)									
3.8.5. Finalize and operationalize the National Emergency Operations Plan (NEOP) (DMC)									
3.8.10. Conduct public awareness programmes through media on the use of call center – (DMC)									
3.9.1 Identify Community Groups involved in disaster response and needing training on pre hospital care including casualty transportation									
4.3.1. Supporting M&E related research (establishment of baseline and indicators for impact evaluation, periodic impact evaluation etc.)									
4.3.2. HFA reporting									
4.3.3. Capturing best practices and lessons learnt									
4.3.4. Promoting Sri Lanka as a knowledge hub for disaster management									
4.3.5. Experience sharing									

**Output Indicators**

1. Number of reports generated annually with analysed disaster information
2. Number of research findings disseminated
3. Legal Provisions, Regulations, Guidelines for mainstreaming DRR in to village development planning process
4. Regulations; Guidelines; Institutional capacity built to conduct DIA
5. Well-equipped training Centre,

6. Regulations and Guidelines to empower District and Divisional Secretaries
7. Number of committees functioning with NCDM approval
8. 90% land area prone to hazards covered to disseminate EW messages
9. Disaster Risk Profiles available for floods and landslides in all the districts
10. Detailed risk profiles for floods and landslides are available for urban centers in Pura Naguma programme
11. No. of training programmes for LG officers;
12. No. of investment proposals and projects implemented
13. Drought mitigation plan available
14. Number of DM programmed assisted in universities
15. Number of DRR incorporated sectoral training programmes
16. Number of awareness programmes conducted on DRR
17. Number of DM plans developed for the private sector business enterprises
18. Number of officers trained at village level to prepare development plans
19. Number of disaster risk insurance policies issued; No. of awareness programme on disaster insurance conducted for general public,
20. Disaster loss, damage and needs assessment mechanism in place;
  - No. of TOT programs conducted; Damage, Training modules are available in 3 languages; Damage, loss and need assessment reports are available for floods and drought experienced in 2011 and 2012
21. Number of villages prepared to respond to cyclone
22. Training manual, Number of officers and youth trained
23. Emergency Operations Plan including EW, Fully operational call center
24. Number of institutions provided with equipment for response;
  - Emergency Operations Plan including EW, Fully operational call center, Number of institutions provided with equipment for response;
25. Number of baselines established, HFA assessment report

**Monitoring Matrix for Individual Agencies**  
Mahaweli Authority of Sri Lanka

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
1.2.2. Establish an EW system for floods generated by opening of spill gates of reservoirs – (ID / MASL).																			
1.2.2.1. Identify list of large and medium level reservoirs that could generate flood in the downstream in the event of opening of spill gates– (ID / MASL).																			
1.2.2.2. Prepare inundation maps for identified reservoirs at three levels of gate opening – (ID / MASL).																			
1.2.2.3. Issue flood early warning to communities in downstream of reservoir – (ID / MASL).																			
1.7.1. Identify major and medium level reservoirs, where management and operation capacities need to be enhanced.																			
1.7.2. Introduce inflow recorders, rain-gauges and software/ hardware plus training required to synchronize the spill gate opening with rainfall																			
1.7.3. Develop inundation maps downstream of dams, establish early warning system, identify safe routes, safe locations, conduct awareness programmes, mock drills and train communities to evacuate to safe locations																			

**Output Indicators**

1. Flood early warning is issued on time for reservoir/tank induced floods
2. EW system established for for reservoir induced floods
3. Number of reservoirs/tanks, where new gate operation procedure is introduced

**Monitoring Matrix for Individual Agencies**  
**Medical Research Institute (MRI)**

Activities	Time Frame												Budget	Contact person								
	2014			2015			2016			2017					2018							
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4				
3.8.7. Establish a system to detect and respond to emergency situations that could be created by biological accidents																						

**Output Indicator**

System to detect biological elements due to biological accident available

**Monitoring Matrix for Individual Agencies**  
**Ministry of Construction, Engineering Services, Housing and Common Amenities**

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
2.16.1. Develop regulations and guidelines for the implementation of the provisions in the National Housing Policy to prevent/reduce disaster impacts																			
2.16.2. Review the training modules used to train technical officers incorporating DRR components																			
2.16.3. Train technical offers on DRR measures and technologies to construct houses in hazard prone areas.																			
2.16.4. Initiate discussion with Banks and lending institutions to consider impact of natural hazards on the proposed housing development before granting loans.																			
3.4.7. Develop a programme to relocate communities continuously affected by floods. (Min. Housing)																			
3.1.3. Develop a Disaster Management Plan for the Ministry, Institutions under the ministry and regional offices.																			

**Indicators**

1. Regulations and guidelines,
2. Number of Technical Officers Trained
3. Number of Housing schemes developed.

**Monitoring Matrix for Individual Agencies**  
**Ministry of Disaster Management**

Activities	Time Frame												Budget	Contact Person								
	2014				2016				2017						2018							
	2	3	4	1	2	3	4	1	2	3	4	1			2	3	4	1	2	3	4	
1.1.A.3. Establish an inter-sectoral forum, led by the Ministry of Disaster Management, to periodically assess climate outlook, its implications for key socioeconomic sectors & issue advisories. (Members of the forum – Ministry of Disaster Management, Meteorological Department, Irrigation Dept., Mahaweli Authority, Dept. of Agriculture, NWS&DB, CEB, Dept. of Agrarian Services Development, WRB and DMC)																						
2.2.1. Introduce legal provisions for the engagement of DM Committees at GN level in the village development process																						
2.3.1. Amend the DM Act to make it mandatory the incorporation of DRM concepts in to development process																						
2.11.1. Appoint a Technical Group consisting of members from DA, HARTI, ID, DoM, Climate Change Secretariat, DAD and WRB to develop a comprehensive plan for drought mitigation in the country.																						
3.1.4. With the approval of the National Council Of Disaster Management publish in the gazette a date for the completion of development of disaster management plan by all Ministries, Govt. Departments and public corporations as provided in the DM Act.																						



**Output Indicators**

- Technical Working Group to develop comprehensive plan for drought mitigation appointed
- Inter- sectoral Forum established
- Technical Group responsible for quality and quantity issues of water sector appointed
- Amendments made to the DM Act
- Availability of guidelines for the development of DM plans for sectoral agencies
- Regulations are available to make mandatory the use of Risk profile and the Disaster Risk Reduction measures in developing village development plans
- Legal provisions are enacted for the engagement of DM Committees at GN level in the village development planning processes
- Inter-agency Working Group to work on water pollution
- Number of DM plans submitted to NCDM
- Monthly and Quarterly reports
- Number of Technical Advisory Committees in operation

**Monitoring Matrix for Individual Agencies**  
**Ministry of Economic Development**

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
2.9.5. Identify potential interventions to minimize disaster risks at GN level based on risks - (MED)																			
2.9.6. Incorporate interventions in proposals and programmes for GN level development- (MED)																			

**Output Indicators**

1. Number of villages implementing DRR integrated plans;
2. GN level risk profiles and DRR programmes
3. Criteria developed to identify and prioritize GN divisions based on disaster risks;
4. No. of interventions to reduce risk at GN level identified

**Monitoring Matrix for Individual Agencies**  
Ministry of Education

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
2.4.1. Review and update the curriculum (text books & teachers' guide) on school disaster safety and carryout awareness programs for zonal officers, principals & teachers on school disaster safety - (Ministry of Education / NIE)																			
2.4.2. Undertake training of trainers programmes related to DRR for teaching staff in National Colleagues of Education (NCEs) & Education Leadership Development Centre - (Ministry of Education / NIE)																			
2.4.3. Introduce a rewarding system for advance level students doing projects related to DRR - (Ministry of Education / NIE)																			
3.1.3. Develop a Disaster Management Plan for the Ministry, and school ins hazard prone areas.																			

**Output Indicators**

1. Number of curricula (text books & teachers' guide) on school disaster safety reviewed and updated
2. Number of trainer training courses for teachers & NCEs strengthened.
3. Rewarding system for A-level students doing projects related to DRR introduced
4. Disaster Management Plan available

**Monitoring Matrix for Individual Agencies**  
**Sri Lanka Institute of Local Governance**

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
2.1.4. Support PCs and LAs to introduce systems to monitor the DRR and CCA interventions, evaluate and provide guidance																			
3.1.2. Undertake training programmes to assist the Local Authorities to develop Disaster Management Plan for Local Authorities prone to hazards																			

**Indicator**

Number of LAs adopting DRR through improved planning  
 Number of officers trained to develop DMP

**Monitoring Matrix for Individual Agencies**  
**Ministry of Fisheries and Aquatic Resources**

Activities	Time Frame												Budget	Contact person				
	2014			2015			2016			2017					2018			
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4
1.4.5. Expand the inter government network to share real time data on flood, high winds, landslides, rock fall and cyclone																		
1.4.7. Establish a system to receive early warning messages on tsunami and high wind and disseminate to fishermen in coastal waters (Min of Fisheries)																		
1.4.8. Pursue mobile operators and radio channels to disseminate EW messages through their networks.																		

**Output Indicators**

System establish to receive early warning on high winds and cyclones

Mobile operators and radio channels disseminate EW on high wind and cyclone

**Monitoring Matrix for Individual Agencies**  
Ministry of Health

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
3.9.2. Conduct training programmes for the identified community groups on pre hospital care																			
3.9.3. Launch a campaign to improve the awareness of general public on safe methods of casualty handling and transportation																			

**Output Indicator**

Number of Community Groups trained

**Monitoring Matrix for Individual Agencies**  
Ministry of Highways, Ports & Shipping

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
3.1.3. Develop a Disaster Management Plan for the Ministry, and Institutes under the Ministry located in hazard prone areas as per guidelines issued by the DMC.																			

**Output Indicator**

Disaster Management Plan available

**Monitoring Matrix for Individual Agencies**  
**Ministry of Local Government & Provincial Councils (M/LG&PC)**

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	4	1	2	3	4	1	2	3	4	1			2	3	4		
2.1.1. Arrange a consultative workshop with Commissioners of Local Governments in PCs, SLILG, Representatives of Associations of Mayors and Chairmen of LAs, to identify activities that the local government has to perform with regard to the policy statement given - (M/PC&LG).																			
2.1.3. Action to improve capacities and understanding of policy makers and staff of LAs, through training and exposure events, in order for them to acknowledge the value of DRR in planning and management. Also pass necessary resolutions to allocate funds for DRR in the annual budgets - (PCs & LAs)																			
3.8.6. Conduct a study to assess the possibility of clustering the local authorities to respond to all disasters and the system to share the maintenance and operational cost (M/LG&PC)																			

**Indicators**

1. Number of LAs adopting DRR through improved planning
2. Report on clusterinf of LA for response available

**Monitoring Matrix for Individual Agencies**  
**National Building Research Organization (NBRO)**

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	4	1	2	3	4	1	2	3	4	1			2	3	4		
1.3.1. Install a system to issue landslide early warning automatically in locations identified as high risk																			
1.3.2. Identify gaps and introduce additional automated rain gauges and cutting edge EW technologies to improve methods and accuracy of landslide early warnings issued.																			
1.3.3. Expand the distribution of manual rain gauges with threshold levels marked to all communities living in high risk locations; and train communities on the use of manual rain gauges to take decisions for self-evacuation																			
1.5.2. Develop landslide hazard maps at 1:10,000 scale for all hazard prone districts. (Galle and Nuwara Eliya already completed) - (NBRO)																			
1.6.2. Develop Landslide susceptibility maps at 1:5000 scale for Kandy, Nuwaraeliya, Badulla, Bandarawela, Rathnapura, Kegalle Urban Centers – (NBRO)																			
2.10.1. Undertake landslide risk assessment, cost benefit analysis and prioritize high risk sites required to be stabilized after considering, socio economic and ecosystem benefits.																			

2.10.2. Prepare plans and estimates to reduce landslide risks based on different options that also include engineering as well as land use measures.									
2.10.3. Implement mitigation activities to stabilize identified slopes.									
2.10.4. Mitigate potential slope failure locations in identified ULAs.									

**Output Indicator**

1. % of LS prone GN divisions covered by the automatic EW systems
2. % of communities in high risk areas covered by the manual EW system
3. Hazard maps for 8 districts available at 1:10,000 scale
4. Landslide susceptibility maps at 1:5000 scale for Kandy, Nuwaraeliya, Badulla, Bandarawela, Rathnapura, Kegalle Urban Local Authorities available
5. Number of sites identified and stabilized in landslide prone districts and Urban Areas

**Monitoring Matrix for Individual Agencies  
National Disaster Relief Service Centre (NDRSC)**

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
3.4.6. Analyse the housing assistance provided during last 5 years and identify households receiving financial assistance annually to repair/rehabilitate damaged/destroyed houses due to floods.(NDRSC)																			
3.4.8. Develop guideline for providing government assistance for housing taking in to consideration the recommendation of the above study(NDRSC).																			
3.7.3. Conduct training programme for officers at divisional level to determine the number of people that could be affected based on hazard maps and vulnerability information before a disaster strikes. (NDRSC)																			
3.7.4. Equip the welfare centers prior to disasters with required cooking utensils and equipment (NDRSC)																			
3.7.5. Develop SOPs for management of relief distribution (NDRSC)																			

**Output Indicator**

1. Report on the housing assistance provided during last five years
2. Guidelines for providing housing assistance developed
- 3.Number of welfare centers equipped with required cooking utensils;  
SOPs for management of relief distribution.

**Monitoring Matrix for Individual Agencies  
National Physical Planning Department (NPPD)**

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
2.12.4. Conduct a study to assess the impact of sea level rise on proposed National Physical Planning Policy-2030 in coastal areas.																			
2.13.1. Appoint a Technical Group to review the National Physical Plan taking into consideration the Sri Lanka Hazard Profiles, Strategic Environment Assessment recommendations, Census - 2011 information, Intergovernmental Panel on Climate Change (IPCC) led climate change related knowledge and target set up by the government to increase green cover by 6%																			
2.13.2. Develop Terms of Reference (TOR) to conduct studies to evaluate the socio-economic-environmental aspects of the recommendations of the National Physical Plan regarding land use in central hills and Northern Province. Obtain the approval of Technical group for TOR and conduct the study.																			
2.13.3 Inter-agency consultations on the study findings and recommendation of technical group for revision of the NPP&P.																			
2.13.4 Revise the NPP&P based on the study recommendation and consultations.																			

**Output Indicator**

Study Report on the impact of sea level rise on proposed national physical planning policy in coastal areas  
Updated National Physical Plan and the Policy with hazards and Climate Change incorporated

**Monitoring Matrix for Individual Agencies**  
National Planning Department (NPD)

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
3.5.3. Identify the organizations and the staff to be trained at national and sub national levels to conduct disaster damage, loss and needs assessment - (NPD)																			
3.5.5. Coordinate and monitor the conduct of damage, loss assessment for floods and drought experienced in 2011 and 2012 and prepare reports.																			

**Output Indicator**

List organizations and staff to be trained available  
Detailed Loss and damage reports available

**Monitoring Matrix for Individual Agencies  
Road Development Authority**

Activities	Time Frame												Budget	Contact person								
	2014				2015				2016						2017				2018			
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	1	2	3	4
2.3.2. Develop regulations and guidelines to minimize impacts of disasters on development and disasters triggered by development (DIA)																						
2.3.3. Build the capacity of engineers to conduct Disaster Impact Assessment for development projects and investments																						
3.1.3. Develop Disaster Management Plan for head office and Regional offices																						

**Output Indicator**

Number of Road projects with DIA studies undertaken  
Number of DMP completed.

**Monitoring Matrix for Individual Agencies  
Sri Lanka Land Reclamation & Development Corporation (SLLRDC)**

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
1.2.4.2. Develop a flood model and flood inundation maps for 5, 10, 25 and 50 year return periods for identified urban centers based on the outputs of Metro-Colombo Urban Development Project.																			
2.8.2. Review the studies conducted by all agencies, update where necessary and identify interventions to reduce flood impacts in identified Urban Local Authority areas.																			

**Output Indicator**

Flood inundation model available for identified urban centers  
Investment proposals available.

**Monitoring Matrix for Individual Agencies  
Survey Department**

Activities	Time Frame												Contact person								
	2014			2015			2016			2017				2018							
	1	2	3	4	1	2	3	4	1	2	3	4		1	2	3	4				
1.2.4. Establishment of Early Warning system for urban floods (Colombo, Moratuwa, Wattala, Jaela, Peliyagoda, Galle, Matara, Kalutara, Ratnapura, Baticaloo, Mannar and Puttalam).																					
1.2.4.1. Develop base maps 1:5000 scale for 17 Urban Local Authorities prone to floods and landslides (Colombo, Moratuwa, Wattala, Jaela, Peliyagoda, Galle, Matara, Kalutara, Ratnapura, Baticaloo, Mannar and Puttalam, Kandy, Nuwaraeliya, Badulla, Bandarawela, Kegalle) – (Survey Dept.).																					

**Output Indicator**

1. Base maps at 1:5000 scale developed for 17 Urban Local Authorities

**Monitoring Matrix for Individual Agencies**  
Vocational Training Authority

Activities	Time Frame												Budget	Contact person								
	2014			2015			2016			2017					2018							
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4				
2.4.5. Undertake training of trainers programmes for teaching staff in technical colleges to incorporate DRR in to curricula – (VTA, DIET).																						

**Output Indicator**

Number of teaching staff trained.

**Monitoring Matrix for Individual Agencies**  
Divisional secretary

Activities	Time Frame												Budget	Contact person									
	2014			2015			2016			2017					2018								
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4					
2.15.1. Development of land use plan for 106 DS divisions affected by conflict. (Div. Secretary)																							
2.15.2. Establishing important forest connectivity and controlling human activities within the forest connectivity. (Div. Secretary)																							
2.15.4 Enrichment of elephant habitat which include renovation and establishment of tanks, removal of invasive plants and maintenance of grasslands (Div. Secretary)																							

**Output Indicator**

1. Number of human lives lost

**Monitoring Matrix for Individual Agencies**  
 Department of Wildlife Conservation

Activities	Time Frame												Budget	Contact person					
	2014			2015			2016			2017					2018				
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4	
2.15.3. Controlling elephant movements within human habitations which includes electric fencing and other barriers (DWC)																			
2.15.5 Education, awareness, communication, strengthening coordination and providing relief (DWC)																			

**Output Indicator**

1. Number of human lives lost,
2. Length of electrical fence constructed

**Monitoring Matrix for Individual Agencies  
Department of Technical Education and Training (DTEET)**

Activities	Time Frame												Budget	Contact person								
	2014			2015			2016			2017					2018							
	1	2	3	4	1	2	3	4	1	2	3	4			1	2	3	4				
2.4.5. Undertake training of trainers programmes for teaching staff in technical colleges to incorporate DRR in to curricula – (VTA, DTEET).																						

**Output Indicator**

1. Number of trainer training courses for teachers of Tech. Colleges conducted to incorporate DRR into curricula

### **Activity Progress Monitoring Matrix by Individual Agencies**

For monthly & bi-annual progress monitoring

SLCDMP

**Name of Agency:**

**Permanent focal points of NDMCC:**

**Operational focal points of NDMCC:**



**Annex 7-4**

**Broad Plan for  
Monitoring Progress of Outputs of the Programme**

**SLCDMP**

Item	Project Outputs	Time frame				
		2014	2015	2016	2017	2018
1.1	Timely issuance of seasonal climate and weather forecast is streamlined					
1.1.A	Timely issuance of seasonal climate forecast on drought is streamlined					
1.1.B	Weather prediction capacity of DoM is enhanced					
1.1.C	Climate Change scenarios for Sri Lanka 2050 and 2100 developed using the latest model outputs					
1.2	Timely issuance of flood early warning is streamlined					
1.3	National & community level landslide early warning systems are in place					
1.4	Mechanisms to disseminate early warning messages are enhanced.					
1.5	Disaster Risk Profiles are available at national level					
1.6	Detailed risk profiles are available for high risk major urban centers prone to floods and landslides					
1.7	Organizational capacities for management and operation of reservoirs to minimize flood impacts are enhanced					

<b>1.8</b>	Flood ordinance amended to streamline institutional mandates for managing floods						
<b>1.9</b>	Information management and analytical capacities for disaster management improved						
<b>1.10</b>	Research and Development in DRR and CCA supported						
<b>2.1</b>	Legal framework improved to mainstream DRR concepts in Local Government sector						
<b>2.2</b>	Legal provisions and community capacity for the mandatory use of DRR and CCA incorporated plans at GramaNiladhari (GN) level established.						
<b>2.3</b>	Legal provisions are available for mainstreaming DRR into the development process as a mandatory requirement						
<b>2.4</b>	DRR concepts are mainstreamed into primary, secondary, tertiary education institutes, technical colleges and universities						
<b>2.5</b>	Private sector disaster resilience in hazard prone areas improved						

<b>2.6</b>	The potential impacts of flood reduced in flood prone districts of Batticaloa, Ampara, Colombo, Gampaha, Kalutara, Trincomalee, Anuradhapura, Puttalam, Kurunegala, Galle, Matara, Pollonaruwa, Ratnapura & Mulathivu						
<b>2.7</b>	Safety of small village level tanks and bunds improved						
<b>2.8</b>	Urban sector capacity to manage floods improved						
<b>2.9</b>	Village development programmes are resilient to multiple disasters						
<b>2.10</b>	Slopes stabilized in identified high risk landslide and rock fall sites						
<b>2.11</b>	Drought risk reduction strategies developed						
<b>2.12</b>	Coastal risk reduction strategies developed						
<b>2.13</b>	Disaster resilience incorporated in the National Physical Plan and Policy-2030						
<b>2.14</b>	Safeguarding water resources from industrial, agro chemicals and domestic point and non-point source pollution						

<b>2.15</b>	Potential impacts of lives and properties due to Human elephant conflict reduced						
<b>2.16</b>	Procedure and guidelines for the implementation of provisions in the National Housing Policy for reducing impacts in housing sector are available						
<b>2.17</b>	Strategic Environment Assessment integrating disaster risk reduction concerns are available at Provincial level to facilitate sustainable and resilient development						
<b>3.1</b>	Disaster Management Plans for national and sub national levels sector organizations in high and moderate risk areas developed and in operation						
<b>3.2</b>	Awareness of communities on DRR is improved						
<b>3.3</b>	Human resource capacity for DRM is enhanced						
<b>3.3A</b>	Institutional capacity for developing human resource for DRM enhanced						
<b>3.3B</b>	Child and women centered DRM programmes in practice.						

<b>3.4</b>	Micro insurance schemes available to assist small farmers and low income groups to minimize impacts of disasters							
<b>3.5</b>	At national and district levels ability improved to conduct damage, loss and needs assessment to guide post disaster recovery							
<b>3.6</b>	Capacity of communities and organizations is enhanced to respond to a potential cyclone hazard							
<b>3.7</b>	Capacity of institutions and personnel for post disaster relief is enhanced							
<b>3.8</b>	Capacity for institutions and personnel for disaster response is enhanced							
<b>4.1</b>	Comprehensive Monitoring and Evaluation system in place							
<b>4.2</b>	Technical Advisory committee are in operation							
<b>4.3</b>	Effective knowledge management and integrations in to global conventions ensured							