

National Disaster Management Plan **2023-2030**

Disaster Management Centre
Ministry of Defence
Government of Sri Lanka



National Disaster Management Plan **2023-2030**

Disaster Management Centre
Ministry of Defence
Government of Sri Lanka

July 2023

National Disaster Management Plan 2023 - 2030

©Disaster Management Centre. All rights reserved.

First published : 2023

Published by : Disaster Management Centre

120/1, Vidya Mawatha
Colombo 7, Sri Lanka

www.dmc.gov.lk

ISBN : XXX-XXX-XXX-XX-X

Funded by :

Designed by:.....

Printed by :

The updated National Disaster Management Plan 2023-2030 of Sri Lanka has been approved by the Cabinet of Ministers onthe of 2023.

(Cabinet paper No. XX/XXXX/XXX/XXX)

Citation:

DMC (2023). National Disaster Management Plan 2022-2030. Colombo, Sri Lanka: Disaster Management Centre. XX+157 pp.

Message from H.E. the President of the Democratic Socialist Republic of Sri Lanka

The world has been experiencing an increase in natural disasters in the face of climate change and global warming. As a nation, Sri Lanka has been impacted by various natural as well as man-made disasters, making it imperative to work together both nationally and internationally, to mitigate and manage such future adversities. It is therefore encouraging that the Disaster Management Centre (DMC) has prepared an improved and updated National Disaster Management Plan (NDMP) for the period 2023 to 2030.

The DMC has admirably delivered on the undertaking of developing the NDMP, comprising a strategic framework for the country's disaster management efforts. The Plan emphasizes the need for multi-stakeholder engagement, together with its unreserved implementation. It is the responsibility of all stakeholders, both government and non-government institutions including the private sector, to execute this plan by discharging their assigned responsibilities in a time-bound manner. Such action is imperative, as the consequences of disasters would have a significant setback in the efforts to achieve the country's economic and development goals.

I wish to highlight the need for continued support and investment in disaster management efforts. It is essential to allocate resources towards disaster preparedness, mitigation, response and recovery, together with securing international assistance. Additionally, there must also be continued interests to invest in research and development, to improve the understanding of disaster risks in order to develop more effective approaches in their management.

I take this opportunity to reiterate to all stakeholders, the urgent need to build a safer, more resilient and sustainable Sri Lanka for the present and future generations, through the implementation of the NDMP 2023/30.

Ranil Wickremesinghe

President of the Democratic Socialist Republic of Sri Lanka
13 June, 2023

Message from the Hon. State Minister

I am delighted to endorse the efforts taken by the Disaster Management Centre in preparing a dynamic and actionable National Disaster Management Plan (NDMP) 2023-2030 which further accentuates the deliverables outlined in the previous NDMP 2013 – 2017.

Sri Lanka, being a tropical island in the Indian Ocean, has been ranked among the countries most vulnerable to climate change induced disasters and hazards. Hence with the enactment of the Sri Lanka Disaster Management Act No.13 of 2005, the Disaster Management Centre undertook the arduous responsibility of effectively facing the challenging situations arising due to the impacts caused by natural and man-made disasters.

The NDMP 2023-2030 is more pragmatic and futuristic in supporting the country's ambitious objective of reaching sustainable development goals amidst current unprecedented times. This is another milestone in the history of disaster management in Sri Lanka. This revised plan which has done justice to all phases of disaster management would be a strategic guide in implementing the identified activities during the next seven years in building a "safer Sri Lanka".

In moving forward, as a nation we need to align with our national as well as strategic global frameworks in mainstreaming disaster risk reduction with an inclusive approach. Moreover, our sustainable development desires should be disaster resilient and adaptive to climate change impacts enhancing environmental sustainability. Keeping this in mind, the NDMP 2023-2030 has adopted a new dimensional approach in addressing the country's present concerns in disaster management as well as mainstreaming disaster risk reduction in future development activities.

It is imperative to establish coherence among all key stakeholders related to disaster management and they revolve around this plan, to implement the proposed actions from national to local level.

We fervently hope that this new plan will prove to be more practical and effective in addressing the challenges of disaster risk reduction experienced by all government and non-government institutions, to lessen the impact of disasters experienced by vulnerable communities in our country.

I wish to extend my gratitude to the H.E. the President, Secretary of my ministry and Secretaries of all ministries, heads and senior officers of government institutions, heads and senior officials of all non-governmental institutions both international and local and other professionals for their unstinted support and valuable input provided, in preparing the NDMP 2023-2030.

I convey my best wishes to the Director General and other officials of the Disaster Management Centre for their effort and congratulate all associated with, completing this mammoth task.

Premitha Bandara Tennakoon

State Minister of Defence

Message from the Secretary

The rapid change in global climate has given rise to many disasters that pose a severe threat to human life, property and infrastructure. Sri Lanka has a long history of disaster risk reduction (DRR) that has embraced an eco-system-based approach to disaster management and is one of the leading countries in the Asian region, which has adopted effective methodologies in all phases of the disaster management cycle.

The National Disaster Management Plan (NDMP) 2023-2030, which is an enhanced version of the previous plan has put special emphasis on adopting a cohesive and broadminded approach in collaborating with government and private sector institutions, international and local non-governmental organisations, professionals and community based groups to minimise the impact of potential disasters. The key components of the NDMP 2023-2030 based on the four priorities of the Sendai Framework for Disaster Risk Reduction (SFDRR), addresses mitigating and building greater resilience against current macro level disasters, as well as potential catastrophes to be experienced as an island nation.

Human activities have been the main driver of climate change and today more than ever, people are experiencing the consequences in diverse ways. The NDMP 2023-2030 enshrines a broader and long-term vision of change in ensuring that the country's economic and development sectors adopt sustainable and climate resilient practices for the betterment of our people. Accordingly, the plan identifies the priorities and initiatives that need to be undertaken by various stakeholders in Sri Lanka, with the support of international partners to become a disaster resilient nation.

As a country, there is so much work to be done to achieve the targets set by global frameworks and agreements in adapting to unforeseen consequences of natural and man-made disasters. Adaptation and resilience are required everywhere but it is essential to prioritise the actions stated in this plan, to support the most vulnerable with the fewest resources.

I am confident that with political patronage at the highest level and support from all stakeholders at national and international level including UN agencies, donors and communities, the Disaster Management Centre will strive towards achieving the key objectives of NDMP 2023-2030.

I express my sincere appreciation to H.E. the President and Hon. State Minister for providing needed policy guidance and also to the Director General and senior officials of the Disaster Management Centre, for their diligence and commitment in preparing this national document of significant importance.

General Kamal Gunaratne (Retd)

WWV RWP RSP USP ndc psc MPhil
Secretary
Ministry of Defence

Message from the Director General, Disaster Management Centre

As the Director General of the Disaster Management Centre, I am pleased to present to you the National Disaster Management Plan (NDMP) from 2023 to 2030. The process of preparing this plan was exhaustive, as it was a two pronged approach that was adopted to improve the existing content and add new contemporary dimensions. The time taken was extensive and this plan has been prepared in a participatory manner with the help of all our key stakeholders, in the field of disaster management.

As a nation, we have faced numerous natural disasters over the years and these events have had a profound impact on our communities. They have caused loss of life, damage to property and disruption to our daily lives. However, as a country, we have also shown resilience and determination to rebuild and recover. This plan is a testament to that spirit.

The NDMP 2023-2030 is formulated in accordance with the Disaster Management Act No. 13 of 2005 and based on key principles of international agendas such as the Sendai Framework, Paris Agreement and Sustainable Development Goals. The Sendai Framework states that to strengthen resilience, countries must prevent new and reduce existing disaster risks. Thus, the new NDMP outlines the four global priorities for action to reduce disaster risk and highlights adopting a coordinated and multi-sectoral approach. Moreover, in preparing this plan, much emphasis has been laid on the consequences of climate change and its significant impact on the frequency and intensity of disasters across the globe, in the recent past.

A country's National Disaster Management Plan provides the framework and direction for the respective government institutions and all other related stakeholders about the specific responsibilities of managing disasters, at different phases. The significance of this national plan developed for the period of 2023 – 2030, is the forward thinking and dynamic approach espoused in formulating the action plans aligning with the Sendai Framework. Much consideration has been given to making this plan inclusive, with special importance placed on gender-based susceptibilities, children, the elderly, persons with disabilities and on special needs of other vulnerable communities.

We recognise that achieving these priorities will require a collective effort from all stakeholders. With the experience to be gained in implementing this plan, we will be able to garner more insights to be incorporated in future revisions. We need to work together to build a culture of safety and resilience, reduce our exposure to disaster risks and ensure that we are prepared to respond effectively when disasters occur.

I take this opportunity to thank everyone involved in developing this national document and sincerely appreciate the support extended by the World Bank, United Nations Development Programme, World Food Programme and ADRiMP for backing us throughout this arduous journey of developing and publishing the NDMP 2023-2030.

Sudantha Ranasinghe RWP RSP MSc ndu psc

Major General (Rtd)
Director General
Disaster Management Centre

Preface

The National Disaster Management Plan 2023-2030 (NDMP 2023-2030) embodies the shared responsibility and commitment of Sri Lanka, towards building a resilient nation capable of effectively managing and reducing disaster risks while adapting to the challenges posed by climate change. This plan is the result of extensive collaboration among various stakeholders, including government institutions, private sector organisations, INGOs, NGOs, UN organisations, civil society organisations, and local communities.

The genesis of modern disaster management in Sri Lanka can be traced back to the aftermath of the devastating floods and landslides that befell the nation in 2003. The imperative for a comprehensive approach became strikingly apparent following the unprecedented Indian Ocean Tsunami in 2004. Since then, Sri Lanka has made substantial progress in disaster risk management, guided by international frameworks such as the Hyogo Framework for Action (HFA) and more recently, the Sendai Framework for Disaster Risk Reduction (SFDRR).

Sri Lanka's hazard and vulnerability profile is expected to be further aggravated by the impacts of climate change, presenting numerous challenges for agencies and communities involved in disaster management. The enactment of the Disaster Management Act No. 13 of 2005 necessitated the preparation of the NDMP as the guiding document encompassing the key phases of the disaster management cycle, including mitigation, preparedness, response, coordination of relief, rehabilitation, and reconstruction. The revised plan places special emphasis on promoting coherence among all stakeholders, facilitating improved institutional arrangements and disaster risk reduction mechanisms to effectively address future disaster situations.

The NDMP 2023-2030 represents a crucial milestone in Sri Lanka's ongoing journey towards disaster resilience. It is designed to be a dynamic and adaptable plan, allowing for regular updates and adjustments to align with emerging challenges, technological advancements and evolving global frameworks. This underscores the collective responsibility of all stakeholders, from government agencies and non-governmental partners to civil society organisations and local communities, in working together to build a safer and more resilient nation.

The SFDRR has provided a solid foundation for the country's disaster risk reduction efforts, emphasising the importance of risk informed approaches, multi-sectoral collaboration and the engagement of all stakeholders. Building upon this framework, the NDMP 2023-2030 expands the scope to include climate change and ecosystem-based approaches to disaster risk reduction, underscoring the need for integrated solutions.

Extensive efforts have gone into the development of the NDMP 2023-2030, including rigorous internal discussions with experts in the disaster management fraternity. These discussions were followed by an inclusive consultation workshop, bringing together a diverse range of stakeholders and domain experts from government ministries, technical agencies, private sector organisations, international non-governmental organisations (INGOs), non-governmental organisations (NGOs), UN organisations, academia, civil society organisations (CSOs) and volunteers. The draft document was then circulated among the key stakeholders, allowing sufficient time for feedback and validation. Incorporating the received suggestions and comments, the final version was meticulously refined and approved by the Interim Management Committee (IMC) members of the Disaster Management Centre (DMC).

The NDMP 2023-2030 will be effective and successful only by precisely implementing its Action Plan. Therefore, it places great importance on mainstreaming DRR measures into development plans and

policies at national and local levels. Furthermore, this plan provides essential guidance for integrating DRR strategies into relevant institutional plans, aligning closely with the SFDRR.

Disasters disproportionately affect certain sections of the community, primarily due to their vulnerabilities and varying capacities arising due to socio-economic, physical, gender, age and other factors. The revised NDMP gives careful consideration to addressing the special needs of these vulnerable communities at all stages of the disaster management process, making it a progressive national document.

Comprising six (6) comprehensive chapters in addition to the Executive Summary, the NDMP 2023-2030 outlines the roles and responsibilities of stakeholders explicitly, aligning with key international agreements post 2015 and the Sustainable Development Goals (SDGs). Furthermore, recognising the significance of disaster risk management and the universal restructuring of disaster management principles, the updated plan places substantial importance on the Community-Based Disaster Risk Management (CBDRM) approach.

Great care and dedicated efforts have been invested in preparing the NDMP 2023-2030, addressing the necessary revisions to the current plan. This version represents an upgraded form of the previous plan and recognises the dynamic nature of a document of this magnitude. Moreover, it allows room for further enhancements in the future, informed by the experience gained through its implementation.

The NDMP 2023-2030 will serve as a comprehensive roadmap to guide identified actions and planned investments, ultimately leading to a safer and more resilient Sri Lanka.

Together, as responsible stakeholders, it is vital to rise to the challenge of building a future where the risks posed by disasters are significantly reduced, communities are empowered and prepared and the country's natural and built environments coexist harmoniously with resilience.

Acknowledgements

The development of the National Disaster Management Plan (NDMP) 2023-2030 of Sri Lanka has been made possible through the invaluable contributions and support of numerous individuals and organisations. This plan represents a significant achievement in the nation's commitment to disaster management, showcasing collective efforts, dedication and expertise from diverse stakeholders.

The process of revisiting and revising the current NDMP embarked on a comprehensive approach, focusing on both improving existing content and introducing new dimensions. Extensive efforts were undertaken to gather updated information, followed by a series of expert discussions to ensure the plan's effectiveness and relevance.

We sincerely thank the senior officials of the Presidential Secretariat, the Ministry of Defence and the Disaster Management Division of the ministry for their unwavering commitment to disaster management. Their visionary leadership and dedication have been pivotal in shaping the NDMP 2023-2030 and aligning it with national priorities and development goals.

Special recognition is due to the teams of experts representing the disaster management fraternity, including academics and professionals, who provided crucial support and guidance in formulating the necessary guidelines to revise the NDMP. Their expertise, sharing of best practices and technical assistance laid the foundation for this significant undertaking.

We also express our gratitude to the officials of key technical agencies, government ministries, private sector organisations, UN agencies, international and local non-governmental organisations, civil society organisations (CSOs) and volunteer groups. Their active participation in the consultative process has been instrumental in shaping the plan, ensuring its relevance and making it applicable at grassroot level. The engagement of these stakeholders is vital for the successful implementation of the plan and the development of resilient communities.

The Board of Directors of the Disaster Management Centre (DMC) deserves commendation for their invaluable contribution to the development of the NDMP 2023-2030. The tireless efforts of the DMC in coordinating and facilitating the plan's formulation and commitment to incorporating diverse perspectives and engaging various stakeholders have resulted in a comprehensive and inclusive document that reflects the nation's needs and aspirations.

We also extend our gratitude to the key technical agencies, ministries and government departments of Sri Lanka. Their valuable suggestions, comments and contributions were shared during the review process and appropriately incorporated into the final draft of the NDMP 2023-2030.

The efforts of the Association of Disaster Risk Management Professionals (ADRIIMP) and representatives of key UN organisations deserve special recognition. Their contributions have enriched the content of the NDMP 2023-2030, making it a valuable and progressive document.

Furthermore, we thank the editors, translators (Sinhala and Tamil languages), graphic content developers, designer and printers involved in the production of this document. Their diligent work has ensured the quality and presentation of the NDMP, making it accessible to a wider audience.

Our gratitude extends to the international partners and organisations that have supported and provided their expertise in formulating the NDMP 2023-2030. Their collaboration and partnership have strengthened our collective ability to face and mitigate the impacts of disasters. We would like to specifically acknowledge the financial support provided by the World Bank, United Nations

DRAFT

Development Programme (UNDP) and World Food Programme (WFP) at different stages, which enhanced the quality and effectiveness of the plan.

We express our deep appreciation to everyone directly or indirectly involved behind the scenes in supporting the extensive undertaking of launching the NDMP 2023-2030. Your support and contributions have been invaluable and together we are taking significant steps towards a more resilient Sri Lanka.

Contents

Message from H.E. the President of the Democratic Socialist Republic of Sri Lanka.....	iv
Message from the Hon. State Minister.....	v
Message from the Secretary	vi
Message from the Director General, Disaster Management Centre	vii
Preface.....	viii
Acknowledgements	x
Contents.....	xii
List of Tables.....	xvi
List of Figures.....	xvii
Abbreviations.....	xix
Executive summary.....	1
Background	1
Main pillars of NDMP 2023-2030.....	2
Structure of the plan.....	3
1 Introduction	4
1.1 Country context.....	4
1.2 Socio-economic context.....	5
1.3 Damages and losses.....	5
1.4 Climate change challenges.....	6
1.5 Disasters and ecosystem nexus.....	7
1.6 Recognising the complexity.....	7
1.7 Disaster management framework.....	8
1.8 Rationale for an updated National Disaster Management Plan	9
1.9 National Disaster Management Plan (NDMP) 2023- 2030	10
1.9.1 Multi stakeholder approach.....	11
1.9.2 Multi hazard approach.....	11
1.9.3 Guiding principles.....	11
1.9.4 Scope.....	12
1.9.5 Objectives.....	13
1.9.6 Methodological approach	14
1.9.7 Operational framework.....	14
1.9.8 Volunteerism.....	16
1.9.9 Coordination with national and international development partners.....	16
1.10 Social inclusiveness.....	17
1.10.1 Gender Equality Disability and Social Inclusive (GEDSI) in disaster management	17
1.10.2 Child Centred Disaster Risk Reduction (CC-DRR).....	18
1.10.3 Persons with Disabilities (PWDs).....	18
1.10.4 Elderly.....	18
1.10.5 Migrant workers.....	19
1.11 Global and national frameworks related to Disaster Risk Reduction.....	20
1.11.1 Sustainable Development Goals (SDGs).....	20
1.11.2 Sendai Framework for Disaster Risk Reduction (SFDRR).....	21

1.11.2.1 Sendai Framework for Disaster Risk Reduction in Sri Lanka	22
1.12 National Environment Policy (NEP) and National Adaptation Plan (NAP)	23
1.13 Time frames	24
1.14 Future revisions and updates	25
2 Risk profile	26
2.1 Multi-hazard risks and vulnerabilities	26
2.2 Impact extent of common disasters	27
2.2.1 Floods	27
2.2.2 Drought	28
2.2.3 Landslides	30
2.2.4 Cyclone/ high winds	32
2.2.5 Tsunami	33
2.2.6 Sea level rise	33
2.2.7 Storm surge	35
2.2.8 Coastal erosion	35
2.2.9 Lightning	36
2.2.10 Fire	36
2.2.11 Earthquake	37
2.2.12 Building collapses	37
2.2.13 Coastal and marine pollution	38
2.2.14 Pollution of inland waters	38
2.2.15 Air pollution	39
2.2.16 Industrial	41
2.2.17 Nuclear and radiological accidents	41
2.2.18 COVID-19 pandemic	41
2.2.19 Emerging health hazards	42
2.2.19.1 Vector borne diseases	42
2.2.19.2 Non communicable diseases	43
2.2.20 Road Traffic Accidents (RTAs)	43
2.2.21 Railroad accidents	44
2.2.22 Animal attacks	44
2.2.23 Animal or plant disease	46
2.2.24 Drowning	46
2.3 Risk understanding	48
2.4 Understanding climate change related risks	48
2.5 Hazard, vulnerability, capacity and risk assessment	50
2.6 Hazard assessment and hazard mapping	50
2.7 Hazard mapping at community level	51
2.8 Vulnerability and risk assessments	51
2.9 Capacity assessments	51
2.10 Data for risk assessment	52
2.11 Risk informed planning	52
3 Disaster Risk Management approach	55
3.1 Investing in Disaster Risk Reduction (DRR)	55
3.2 Mainstreaming DRR into development sector	57
3.3 Mainstreaming DRR within urban development	57
3.4 Sustainable livelihoods	58
3.5 Innovative financing for risk transfers	58
3.6 Nature based solutions	58
3.6.1 Improved governance to support Nature- based solutions (NbS)	59

3.7 Institutional strengthening for disaster risk governance.....	60
3.8 Road Map for Safer Sri Lanka	61
3.9 NDMP (2013-2017) and SLCDMP (2014-2018).....	61
3.10 Disaster management at national level.....	62
3.10.1 Ministry of Disaster Management	63
3.10.2 Disaster Management Centre.....	63
3.10.3 Technical Advisory Committee.....	64
3.10.4 Emergency Response Committee	64
3.11 Disaster management at sub-national levels.....	64
3.11.1 District level disaster management.....	64
3.11.2 Divisional level disaster management.....	65
3.11.3 Local governments in disaster management	65
3.11.4 Grama Niladhari level disaster management	66
3.12 Hazard monitoring and forecasting.....	66
3.12.1 Standard Operating Procedures (SOPs).....	67
3.12.2 Early warnings.....	67
3.13 Preparedness for response.....	68
3.14 Private sector preparedness planning.....	69
3.15 Emergency Operations.....	70
3.15.1 National Emergency Operations Plan (NEOP).....	70
3.15.2 Functions of the Emergency Operations Centre (EOC).....	71
3.15.3 District Emergency Operations Centres.....	72
3.16 Coordination of emergency response	72
3.16.1 Disaster Victim Identification (DVI).....	72
3.16.2 Role of media	72
3.16.3 Role of mobile service providers.....	73
3.17 Search and rescue operations	73
3.18 Relief and recovery	73
3.18.1 Managing safety centres.....	74
3.19 Rehabilitation and reconstruction	74
4 Capacity building for Disaster Risk Management	75
4.1 Strengthening information exchange.....	76
4.1.1 Partnership with data providers.....	76
4.1.2 Partnerships with international agencies.....	76
4.2 Disaster management trainings	76
4.2.1 Training of trainers.....	77
4.2.2 Training facilities.....	77
4.3 Awareness and education.....	77
4.3.1 School education.....	77
4.3.2 University education	78
4.3.3 Tertiary education.....	78
4.4 Community based Disaster Risk Management	78
4.5 Research and development.....	79
5 NDMP 2023 - 2030 programme.....	80
5.1 Operational strategies.....	81
National Disaster Management Plan (NDMP) 2023 – 2030	84
6 Implementation and monitoring.....	129
6.1 Multiphase Programmatic Approach (MPA)	130
6.2 Resource mobilisation	131

6.3 Coordination of monitoring and evaluation.....	131
7 References.....	a
8 Glossary	c
9 Annexures	f
9.1 Annexure 1: Relevant Sustainable Development Goals and targets linked with DRR.....	f
9.2 Annexure 2: Colombo Declaration of Multi-Hazard Early Warning and Disaster Risk Reduction: 2020....	h
9.3 Annexure 3: Disaster Management Act No. 13 of 2005.....	k
9.4 Annexure 4: Agencies responsible for hazard mapping / hazard information.....	l
9.5 Annexure 5: Required hazard map scales	n
9.6 Annexure 6: Guideline of the preparation of Disaster Management Plans of Different National and Provincial Ministries / Departments / Institutes / Agencies.....	o
9.7 Annexure 7: IFC's Environmental and Social (E&S) Performance Indicators for Capital Markets (Corporates).....	s
9.8 Annexure 8: Ministries / Agencies responsible for various types of technological hazards / accidents w	
9.9 Annexure 9: Tsunami Early Warning and Evacuation Process : "Last mile - Last man"	x
9.10Annexure 10: Stakeholder participation.....	y

List of Tables

Table 1. Analysis of road traffic accidents (2018 – 2022).....	44
Table 2. Analysis of railroad accidents - humans and animals (2018 – 2022).....	44
Table 3. Future disaster trends and impacts.....	49
Table 4. Implementation progress review of the Road Map against SFDRR priorities.....	61
Table 5. Comparison of SLCDMP against the SFDRR priorities.....	62
Table 6. SFDRR approach for capacity building.....	75

List of Figures

Figure 1. Climate change impact.....	6
Figure 2. Disaster risk drivers	7
Figure 3. Present structure of the National Council for Disaster Management	8
Figure 4. Rational for an updated NDMP	9
Figure 5. Four pillars and respective operational strategies of the NDMP 2023-2030.....	13
Figure 6. Operational framework for disaster management.....	15
Figure 7. Sustainable Development Goals (SDGs)	20
Figure 8. Coherence and strengthening of SDGs and Sendai Framework.....	21
Figure 9. Sendai Framework's priorities	22
Figure 10. Seven national SFDRR targets adopted by Sri Lanka.....	23
Figure 11. Envisaged time frames for completion of priority actions – NDMP 2023-2030.....	24
Figure 12. Total persons affected by floods – district wise from 2010-2022	27
Figure 13. Spatial distribution of floods in Sri Lanka.....	28
Figure 14. Drought hazard profile.....	29
Figure 15. Number of affected persons due to drought from 2010 – 2021	30
Figure 16. Impact of the drought – district wise from 2010 to 2022.....	30
Figure 17. Landslide zonation maps.....	31
Figure 18. Cyclones and tracks from 1811 - 2021	32
Figure 19. Persons affected due to high winds and cyclones – District wise (2010 to 2022)	33
Figure 20. Tsunami inundation.....	34
Figure 21. Predicted sea level rise - 2100	34
Figure 22. Simulated peak surge heights.....	35
Figure 23. Deaths and injuries due to lightning	36
Figure 24. Nitrate nitrogen content in the Kelani river	39
Figure 25. Exceedance of Coliform standards in the Kelani river	39
Figure 26. Dynamic air quality map.....	40
Figure 27. Sri Lanka's Air quality index	40
Figure 28. COVID -19 pandemic statistics in Sri Lanka (2020-2022).....	42
Figure 29. District Secretariat divisions affected with HEC	45
Figure 30. Deaths due to drowning (2012 to 2022)	47
Figure 31. Top drowning locations in Sri Lanka.....	47
Figure 32. Vertical and Horizontal Disaster Management Planning.....	53

Figure 33. Disaster Preparedness Planning framework.....	53
Figure 34. IUCN Global Standards for NbS.....	59
Figure 35. Institutional framework for Disaster Risk Management.....	62
Figure 36. Coordination of DM committees at sub-national level.....	65
Figure 37. Process of last mile dissemination of early warning messages	68
Figure 38. Emergency Operations Centre operational structure.....	71
Figure 39. Integrated Digital Dashboard System (IDDS) to track the effectiveness of the implementation of NDMP 2023-2030.....	130

Abbreviations

AASL	Airport and Aviation Services (Sri Lanka) Ltd.
ADB	Asian Development Bank
AEA	Atomic Energy Authority
AI	Artificial intelligence
AIDS	Acquired immunodeficiency syndrome
AMCDRR	Asian Ministerial Conference for Disaster Risk Reduction
AQI	Air quality index
ASD	Agrarian Services Department
BCP	Business Continuity Plan
CAT DDO	Catastrophe Deferred Draw-Down Option
CB	Citizens band
CBDRM	Community Based Disaster Risk Management
CBOs	Community Based organisations
CBRNE	Chemical, Biological, Radiological, Nuclear and High Yield Explosives
CC & CRM	Coast Conservation and Coastal Resource Management
CCA	Common Country Assessment
CCAP	Climate Change Adaptation Policy
CCC	Ceylon Chamber of Commerce
CC-DRR	Child Centred Disaster Risk Reduction
CCS	Climate Change Secretariat
CDLG	Capacity Development of Local Government
CEA	Central Environmental Authority
CEB	Ceylon Electricity Board
CECB	Central Engineering Consultancy Bureau
CEJ	Centre for Environment Justice
CFR	Case fatality rate
CGIAR	Consortium of International Agricultural Centres
CIMIC	Civil Military Cooperation
CKDu	Chronic kidney diseases of unknown etiology
CMA	Condominium Management Authority
COP	Conference of the Parties
COVID-19	Coronavirus disease
CPC	Ceylon Petroleum Corporation
CPP	Climate Prosperity Plan
CresMPA	Climate Resilience multi phase programmatic approach project
CRIP	Climate Resilience Improvement Project
CRIWMP	Climate Resilient Integrated Water Management Project
CSBL	Central Bank of Sri Lanka
CSIAP	Climate Smart Integrated Agriculture Project
CSOs	Civil-society organizations
CSR	Corporate social responsibility
DAD	Department of Agrarian Development
DaLA	Damage and Loss Assessment
DB	Department of Buildings
DCC	District Coordinating Committee

DCS	Department of Census and Statistics
DDMCUs	District Disaster Management Coordination Units
DivS	Divisional Secretary
DM	Disaster Management
DM Act 2005	Disaster Management Act No. 13 of 2005
DMC	Disaster Management Centre
DMPs	Disaster Management Plans
DoA	Department of Agriculture
DoArc	Department of Archaeology
DoGI	Department of Government Information
DoM	Department of Meteorology
DoSS	Department of Social Services
DPL	Development Policy Loan
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DS	District Secretary
DVI	Disaster victim identification
DWC	Department of Wildlife Conservation
E&S	Environmental and Social
EbA	Ecosystem-based adaptation
Eco-DRR	Ecosystem-based Disaster Risk Reduction
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMP	Emergency Management Plan
EOC	Emergency Operations Centre
EPL	Environment Protection Licence
ERC	Emergency Response Committee
FD	Forest Department
GBCSL	Green Building Council of Sri Lanka
GCF	Green Climate Fund
GEDSI	Gender Equality Disability and Social Inclusive
GFDRR	Global Facilitation for Disaster Risk Reduction
GIS	Geographic Information System
GIZ	German Agency for International Cooperation
GN	Grama Niladhari
GoSL	Government of Sri Lanka
GSMB	Geological Survey and Mines Bureau
HARTI	Hector Kobbekaduwa Agrarian Research Institute
HE	His Excellency
HEC	Human Elephant Conflict
HEVR	Hazard, Exposure, Vulnerability and Risk
HF	High Frequency
HFA	Hyogo Framework for Action
ICS	Incident Command System
ICTA	Information and Communication Technology Agency
ICTAD	Institute for Construction Training and Development
ID	Irrigation Department
IDDS	Integrated Digital Dashboard System

IDPs	Internally Displaced People
IEEs	Initial Environmental Examinations
IGP	Inspector General of Police
IHR	International Health Regulations
IMO	International Maritime Organization
INGO	International Non-Governmental Organisation
INSARG	International Search & Rescue Group
IOT	Internet of Things
IPCC	International Panel for Climate Change
IT	Information technology
IUCN	International Union for Conservation of Nature
JICA	Japan International Cooperation Agency
LAs	Local Authorities
LD	Labour Department
LDD	Legal Draftsman's Department
LGBTQI+	Lesbian, gay, bisexual, transgender, queer and intersex
LNGOs	Local Non-Governmental Organisations
LSA	Life Saving Association (LSA)
M/DM&HR	Ministry for Disaster Management and Human Rights
MACA	Military Aid to Civil Authorities
MAoSL	Mahaweli Authority of Sri Lanka
MDGs	Millennium Development Goals
MEPA	Marine Environment Protection Authority
MFARD	Ministry of Fisheries & Aquatic Resources Development
MHEW	Multi Hazard Early Warning
MHPPS	Mental health and psychosocial support services
MoA	Ministry of Agriculture
MoD	Ministry of Defence
MoDM	Ministry of Disaster Management
MoE	Ministry of Environment
MoEd	Ministry of Education
MoF	Ministry of Finance
MoFA	Ministry of Foreign Affairs
MOH	Medical Officers of Health
MoH	Ministry of Health
MoInd	Ministry of Industries
MoJ	Ministry of Justice
MoLands	Ministry of Lands
MoMM	Ministry of Mass Media
MoPHP&L	Ministry of Public Administration, Home Affairs, Provincial Councils and Local Government
MoPRD	Ministry of Petroleum Resources Development
MoSDVT	Ministry of Skills Development and Vocational Training
MoTHW	Ministry of Transport and Highways
MPA	Multiphase Programmatic Approach
MRCC	Maritime Rescue Coordination Centre
MRI	Medical Research Institute
MSMEs	Micro, small and medium enterprises

MWCASE	Ministry of Women, Child Affairs and Social Empowerment
NACWC	National Authority for Implementation of Chemical Weapons Convention
NAITA	National Apprentice and Industrial Training Authority
NAP	National Adaptation Plan
NAPA	National Adaptation Plan of Action
NBRO	National Building Research Organisation
NbS	Nature Based Solutions
NCCAS	National Climate Change Adaptation Strategy
NCDM	National Council for Disaster Management
NCDs	Non-Communicable Diseases
NCPA	National Child Protection Authority
NCT	National Certificate in Technology
NDCs	Nationally Determined Contributions
NDMCC	National Disaster Management Coordinating Committee
NDMO	National Disaster Management Organisation
NDMP	National Disaster Management Plan
NDRSC	National Disaster Relief Services Centre
NDT	National Diploma in Technology
NEL	Non-Economic Losses
NEOP	National Emergency Operations Plan
NEP	National Environment Policy
NERD	National Engineering Research & Development Centre
NGJA	National Gem and Jewellery Authority
NHDA	National Housing Development Authority
NIE	National Institute of Education
NITF	National Insurance Trust Fund
NOC PCO	National Operations Centre for Prevention of COVID-19
NOSCOP	National Oil Spill Contingency Plan
NPD	National Planning Department
NPPD	National Physical Planning Department
NSDI	National Spatial Data Infrastructure
NSE	National Secretariat for Elders
NSF	National Science Foundation
NSPWD	National Secretariat for Persons with Disabilities
NTWC	National Tsunami Warning Centre
NWSDB	National Water Supply and Drainage Board
NYSC	National Youth Services Council
OCDS	Office of the Chief of Defence Staff
PDNA	Post Disaster Needs Assessments
PEER	Programme for Enhancement of Emergency Response
PES	Payment for ecosystem services
PHIs	Public Health Inspectors
PPP	Public Private Partnership
PRA	Participatory Risk Assessment
PRISM	Platform for Real-Time Information and Situation Monitoring
PWDs	Persons with Disabilities
R2R	Ridge-to-Reef
RTAs	Road traffic accidents

SAR	Search and Rescue
SARS	Severe Acute Respiratory Syndrome
SBTs	Science based Targets
SD	Survey Department
SD&CC	State Development and Construction Corporation
SDGs	Sustainable Development Goals
SFDRR	Sendai Framework for Disaster Risk Reduction
SGBV	Sexual and gender based violence
SLCDMP	Sri Lanka Comprehensive Disaster Management Programme
SLCG	Sri Lanka Coast Guard
SLDM	Sri Lanka Disaster Management
SLDRN	Sri Lanka Disaster Resources Network
SLIDA	Sri Lanka Development Administration
SLLDLC	Sri Lanka Land Development Corporation
SLPA	Sri Lanka Ports Authority
LSLA	Sri Lanka Life Saving Association
SLTDA	Sri Lanka Tourism Development Authority
SMoHA	State Ministry of Home Affairs
SMS	Short Messaging Service
SOPs	Standard Operating Procedures
SOs	Standing Orders
STF	Special Task Force
TAC	Technical Advisory Committee
TORs	Terms of References
TOTs	Training of Trainers
TRC	Telecommunications Regulatory Commission
UDA	Urban Development Authority
UN	United Nations
UNDAF	UN Development Assistance Framework
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNOCHA	United Nations Officer for Coordination of Humanitarian Affairs
USDA	Urban Settlement Development Authority
VHF	Very High Frequency
WASH	Water, sanitation and hygiene promotion
WFP	World Food Programme
WHO	World Health Organisation
WNPS	Wildlife and Nature Protection Society

Executive summary

Background

Modern disaster management in Sri Lanka began with the 2003 floods and landslides and expanded rapidly after the 2004 Indian Ocean Tsunami. Post-Tsunami programmes included the “Roadmap for Safer Sri Lanka”, which included the establishment of national and sub-national systems and the generation of early warning systems. The launch of the DisInventar disaster event database in 2007 enabled Sri Lanka to maintain a national level database on reported disasters, that could be used for policy integration and programming over the years. Since then, UN agencies, bilateral and multilateral organisations along with the state budget have contributed to improve the disaster risk management capacity in the country as detailed in this National Disaster Management Plan 2023-2030.

According to the Hyogo Framework for Action (HFA) for the initial work, Sri Lanka readily adopted the Sendai Framework for Disaster Risk Reduction (SFDRR) and the proposed reporting structures. The SFDRR has been further strengthened by several national frameworks in the areas of health, education, climate change, biodiversity protection, land use, coastal and marine areas, local government, industry, etc. In particular, the Nationally Determined Contributions (NDCs) and associated policies outlined the value of including climate change adaptation to reduce vulnerabilities.

In addition, the Climate Change Conference of the Parties (COP 27), held in Sharm El-Sheikh, Egypt in November 2022 and the UN Biodiversity Conference (COP 15), held in Montreal, Canada in December 2022, have highlighted the need to invest in the conservation of ecosystems and ecosystem services to reduce disaster potential and eliminate vulnerabilities, while promoting innovative financing mechanisms to minimise damage and loss and provide resources for conservation.

The Sri Lanka National Disaster Management Plan 2023-2030 (NDMP 2023-2030) took SFDRR as a basis and expanded the scope to include climate change and ecosystem-based approaches to disaster risk reduction, including ecosystem-based disaster risk reduction (Eco-DRR) and ecosystem-based adaptation (EbA). The use of Nature-based solutions (NbS) to reduce disaster risk along with green infrastructure has been promoted, also utilising the ecosystem based approaches found in ancient tank cascade systems in Sri Lanka's arid and intermediate zones. The same approach has been considered in protecting mangroves in coastal areas and green spaces in central hills to minimise the risk of natural disasters. New and emerging disasters such as chemical pollution in rivers and oceans, drowning, human animal conflict, health related epidemics and pandemics etc. have been included in the NDMP 2023-2030 beyond the traditional disasters.

The NDMP 2023-2030 was approved by the Interim Disaster Management Committee in December 2022 for the period 2023-2030, leaving room for amendments over the same period, if necessary, to reflect any additional requirements.

Main pillars of NDMP 2023-2030

This enhanced version of the NDMP is based on four (4) key thematic areas or pillars, which are built on the four (4) priorities for action identified under SFDRR. These pillars are considered as the four (4) key objectives of the NDMP's Action Plan 2023-2030 and accordingly, relevant broad operational strategies have been identified to implement the identified activities.

- **Priority 1: Understanding disaster risk:** Comprehensive comprehension of disaster risks is acknowledged as crucial for effective resource planning and allocation. The NDMP 2023-2030 integrates the latest scientific knowledge, technological advancements and data driven approaches to assess and monitor risks associated with various hazards and vulnerabilities. This understanding enables prioritization of interventions, enhancement of early warning systems and implementation of targeted measures to mitigate risks.
- **Pillar 1:** Risk informed planning and systems
- **Operational strategy 1:** Strengthening disaster risk management systems, capacities and partnerships through risk informed, technologically advanced and evidence based approaches covering all forms of hazards, disasters, vulnerabilities and risks.

- **Priority 2: Strengthening disaster risk governance:** Effective governance is at the heart of disaster risk reduction. The NDMP 2023-2030 emphasises the need for strong institutional frameworks, legal mandates and coordination mechanisms to facilitate multi-stakeholder engagement, informed decision-making and integrated planning. It underscores the importance of mainstreaming disaster risk reduction into national and sectoral policies, ensuring the participation of marginalised groups, and promoting accountability and transparency.
- **Pillar 2:** Improving risk governance and inclusive participation
- **Operational strategy 2:** Improving disaster risk governance at all levels through adequate legal mandates, disaster risk reduction integrated development and meaningful participation of stakeholders.

- **Priority 3: Investing in disaster risk reduction for resilience:** Investing in disaster risk reduction is an investment in collective resilience. The NDMP 2023-2030 highlights the significance of proactive measures that enhance the resilience of communities, infrastructure, and ecosystems. It encourages the adoption of nature-based solutions, such as ecosystem restoration and sustainable land use practices, to reduce vulnerabilities and enhance adaptive capacity. Furthermore, the plan emphasises the need for innovative financing mechanisms and risk transfer instruments to ensure sustainable funding for disaster risk reduction efforts.
- **Pillar 3:** Enabling environment for partnerships and finance
- **Operational strategy 3:** Enhance public and private investment for resilience through facilitating legislative and regulatory frameworks and instruments for risk financing, risk insurance and shock responsive social protection programme

- **Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction:** Preparedness is a cornerstone of effective disaster management. The NDMP 2023-2030 places a strong emphasis on strengthening early warning systems, enhancing community based preparedness and improving the capacity of response and recovery mechanisms. It highlights the importance of comprehensive risk communication,

training and capacity building programmes and the integration of disaster risk reduction into development planning processes.

- **Pillar 4:** Effective response and sustainable recovery
- **Operational strategy 4:** Ensuring effective preparedness for response and sustainable recovery of all sectors and communities affected by disasters and climate change, through efficient early warnings, building community resilience and fostering national and international partnerships.

Structure of the plan

In summary, the NDMP 2023-2030 document exemplifies a comprehensive and strategic approach to disaster risk reduction. It outlines a clear roadmap for effective planning, implementation and monitoring of initiatives aimed at reducing vulnerabilities and building resilience in the nation.

Chapter 1, the "Introduction," provides a contextual overview, highlighting the current challenges posed by disasters and the impact of climate change. It emphasizes the need for a multi-sectoral and multi-stakeholder approach to address these challenges, integrating ecosystem management with disaster risk reduction.

Chapter 2, "Risk profile," presents a detailed analysis of historical and spatial patterns of disasters. It not only captures known hazards but also introduces emerging and new types of disasters that extend beyond the scope of previous legislation. This comprehensive understanding of risks enhances preparedness for a wider range of potential hazards.

Chapter 3, "Disaster risk management approach," outlines specific approaches to reduce disaster risks. It emphasizes the importance of Nature-based Solutions and urban approaches, showcasing innovative strategies to mitigate vulnerabilities. Furthermore, this chapter draws lessons from past interventions, ensuring that lessons learned inform improved disaster management practices.

Chapter 4, "Capacity building for disaster risk management," underscores the significance of enhancing capacities for successful implementation of the NDMP 2023 - 2030. It stresses the need for partnerships and shared responsibilities among stakeholders, fostering a collaborative environment to strengthen the collective ability to respond to disasters.

Chapter 5, "NDMP 2023-2030 programme," provides a comprehensive overview of the prioritised activities developed in consultation with stakeholder agencies. These initiatives are aligned with the four (4) thematic areas of the NDMP and serve as a practical guide for implementing targeted measures to reduce risks and enhance resilience.

Chapter 6, "Implementation and monitoring," outlines the responsibilities, timelines and information required to ensure effective management and progress tracking of the NDMP. By establishing a robust framework for monitoring and evaluation, progress can be continually assessed, allowing for necessary adjustments to achieve disaster risk reduction goals.

Through its meticulous organisation and strategic focus, the NDMP 2023-2030 sets a clear direction for the nation in reducing disaster risks and building resilience. By adopting the recommended approaches and implementing the prioritised activities, proactive measures can be taken to address challenges, protect communities and create a safer and more resilient future for all.

1 Introduction

1.1 Country context

Sri Lanka is a tropical island in the Indian Ocean, located between latitudes 5°55' and 9° 51' N longitudes 79° 41' and 81° 53'E, with an area of 65,610 sq. km. and a population of approximately 22 million¹. With its tear dropped shape, Sri Lanka is blessed with amazingly diverse features of topography. As distinguished by the varied elevation, three (3) distinctive zones can be identified as the central highland, plains and the coastal belt that enhances the country's rich natural resources, alongside its vibrant cultural heritage.

The administration structure of Sri Lanka consists of nine (9) provinces, which are divided into a total of 25 districts. The governance structure of districts is made up of 331 Divisional Secretariats (DS) under which, a total of 14,022 Grama Niladharis (GN) or village officers function at the lowest level of administration to carry out necessary administrative tasks and duties.

From a country perspective, Sri Lanka is very vulnerable to the impacts of frequent disasters such as floods, landslides, cyclones and drought. These climate related extreme events affect the lives and safety of both humans and animals. The adverse impacts of these disasters, disturb the livelihoods of people by causing damage to properties and infrastructure, thus impacting the overall economic and development activities of the country.

About 87% of Sri Lanka's population live in moderate or severe hotspots for disasters². Population dynamics, increasing demands for natural resources such as water and land, rapid and ad hoc urbanisation, unplanned development devoid of disaster risk and exposure are some of the key contributory factors for the increasing trend in disasters. Moreover, being a tropical island in the Indian Ocean, Sri Lanka is identified as among the countries that are most vulnerable to climate change induced hazards despite its low carbon footprint³.

The monsoon driven climate provides an annual average rainfall of 1,860 mm with a high spatial variability ranging from 5,500 mm in the central hill slopes (above 2,000 m above mean sea level) to about 950 mm in the coastal dry areas in northwest and southeast. The average annual ambient temperature varies between 24°C to 31°C in the plains and between 18°C to 27°C in central hills.

Floods and landslides in 2016, reported the highest recorded rainfall in more than 18 years, inducing exceptional flooding in

Sri Lanka Government is fully committed to supporting the Paris goals of limiting global warming to 1.5 centigrade. As a climate-vulnerable developing country this is a matter of vital national security. If this target is not met, Sri Lanka will stand to lose much of its coastlines, ecosystems and agriculture.

(Climate Prosperity Plan of Sri Lanka, November 2022)

¹ Department of Census and Statistics (2022). Socio Economic Indicators. URL: <https://www.statistics.gov.lk>

² World Bank (2018), South Asia's Hotspots: The Impact of Temperature and Precipitation Changes on Living Standards. South Asia Development Matters

³ Ministry of Environment (2021). Updated Nationally Determined Contributions under the Paris Agreement, Colombo: Climate Change Secretariat

24 of the 25 districts, possibly a climate change influence. Further, the Ridge-to-Reef (R2R) connectivity in Sri Lanka with 103 rivers originating from central hills and flowing to the Indian Ocean, radially plays a key role in hydro meteorological disasters, highlighting the importance of balancing development and conservation of ecosystems all around the country to ensure a resilient and sustainable nation.

Sri Lanka is emerging after the Coronavirus disease (COVID-19) pandemic and is taking needed measures to arise from an unprecedented economic crisis.

Based on the Global Climate Risk Index⁴, Sri Lanka is considered among the top 30 countries impacted by climate change. Sectors such as tourism, fisheries, plantations and agriculture which contribute significantly to Sri Lanka's economy are climate sensitive and impacted by disruptions due to monsoons and altered patterns of rainfall which vary based on duration, timing and intensity.

1.2 Socio-economic context

Sri Lanka is classified as a lower-middle-income country, which is depended mainly on the service sector (58% in 2019)⁵ that provides jobs for about 30% of the workforce. The country is significantly dependent on fossil fuel and imports of inputs to agriculture and industry, highlighting the vulnerability to global shocks as well as sensitivity to global economic trends. Over two million are involved in agriculture, mostly small scale and variations in climate is a major concern. Sri Lanka economy and social conditions are on a gradual recovery process after the COVID-19 global pandemic which is compounded by the recent devaluation of Sri Lanka Rupee, due to the scarcity of foreign currency reserves to stabilise the local currency. Government's main strategy is to improve the investments in production and services sector, which would help to mitigate the prevailing economic downturn with appropriate policies, fiscal incentives and technical assistance, while capitalising on green growth aspects.

1.3 Damages and losses

Natural disasters such as floods, landslides, cyclones, coastal erosion etc. and slow- onset events such as drought, sea level rise, increasing temperatures, ocean acidification, industrial, agriculture and urban pollution has led to water quality deteriorations, salinization, land and forest degradation, loss of biodiversity and desertification, life and property losses and damages causing direct and indirect impacts. Agriculture, fisheries, energy, transport, water, urban development, industry and commerce have been recognised as major sectors that experience significant losses and damages due to frequent hazards.

According to World Bank⁶, Sri Lanka experience disaster losses amounting to LKR 50 billion (US\$ 313 million) annually in housing, infrastructure, agriculture sectors and also as assistance provided for relief and reconstruction of damaged properties. Out of the total estimated losses an amount of LKR 32 billion (US\$ 200 million) incurred has been attributed to floods. Damages from cyclones and high winds accounts to LKR 11 billion (US\$ 68 million), with droughts and landslides accounting for LKR 5.2 billion (US\$ 32 million) and LKR 1.8 billion (US\$ 11million) respectively. It is equivalent to 0.4 % of gross domestic product (GDP) or 2.1 % of the total Government of Sri Lanka (GoSL) expenditure. These losses place a significant financial burden on the government. Further, the estimated

⁴ Global Climate Risk Index 2021 - World | ReliefWeb

⁵ Central Bank of Sri Lanka. 2020 Annual Report

⁶ PreventionWeb 2020

damages and losses indicate the economic losses due to temporary absence of the damaged assets, losses on production, business and revenue etc. However, there is an equally important set of Non-Economic Losses (NEL) due to the negative impacts of slow-onset disasters including climate change which are difficult to measure or quantify. Common NELs include human life, meaningful places, cultural artefacts, biodiversity, ecosystem services, communal sites, production sites, value systems, identity etc.

Damage to public infrastructure invariably disrupts business operations and supply chains thus adding to the overall economic losses. The private sector bears a major part of the asset and infrastructure losses during disasters. Public investments in climate resilient critical infrastructure areas, including transport, energy, construction, water, communication, education and health are vital to build resilient societies and businesses. Risk sensitive development is important for both public and private sectors to minimise damages and losses and towards achieving United Nations (UN) Sustainable Development Goals (SDGs), considering the replacement and opportunity costs of disaster impacts.

1.4 Climate change challenges

Potential impacts of climate change (Figure 1) are reduction in water regulation in mountain habitats; lack of quality water in many arid and semi-arid regions; adverse effects on many ecological systems; less reliability on hydro power; decline in agricultural productivity; adverse impacts on fisheries; threats to food security; rise of sea level and inundation of low lying coastal areas; salinity intrusion to coastal land resulting in agricultural unproductive and increased incidents of vector borne diseases such as malaria and dengue. As such, climate change can adversely impact several critical sectors in the country including agriculture, fisheries, tourism, infrastructure and coastal development. Climate change has become an extremely important concern, requiring greater attention and action in areas such as climate mitigation and climate adaptation as well intensively pursuing climate financing to support disaster risk reduction.

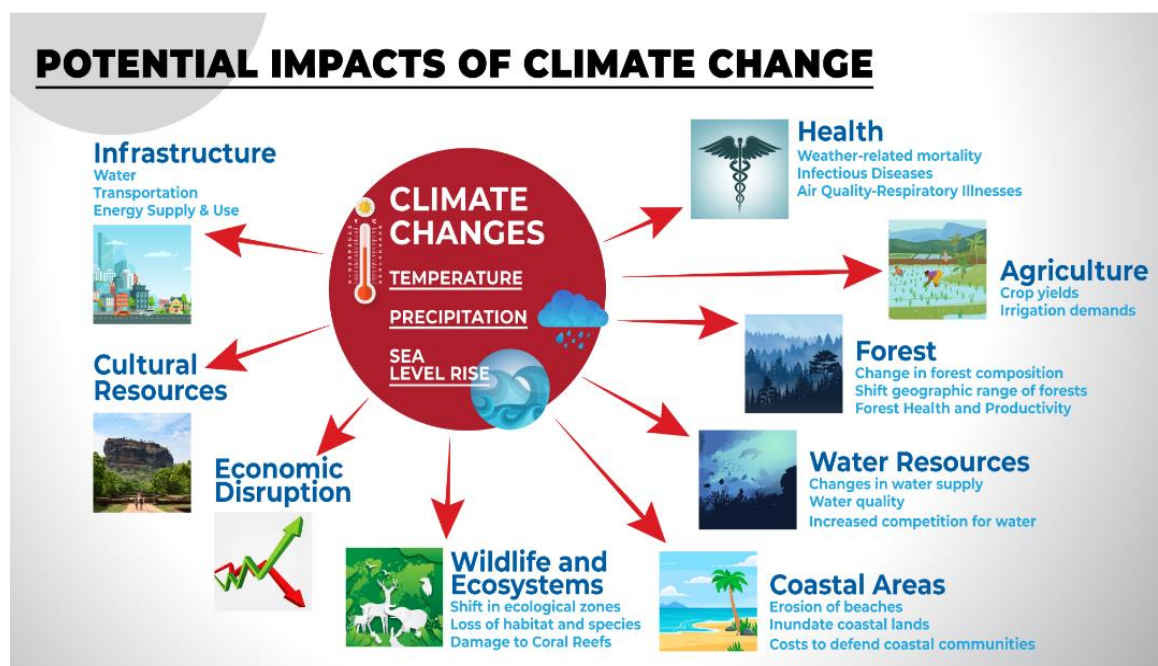


Figure 1. Climate change impact

1.5 Disasters and ecosystem nexus

The diversity of climatic conditions, topography and other features have blessed Sri Lanka with a high biodiversity and availability of highly valuable set of ecosystems and related services in both inland and coastal and marine settings. These ecosystems are critical for the sustainability of agriculture, tourism, fisheries, industries, urban services, etc. and also to popularise Sri Lanka as a leading tourist destination. Continuing destruction of sensitive ecosystems and deterioration of ecosystem services, contribute to the magnitude of disaster events. Land degradation in central hills and deforestation, minimised cloud capture, increased erosion and siltation of tanks and reservoirs influence the water systems, which lead to drought, floods and landslides affecting the availability of water for agriculture, irrigation, urban services and hydropower generation. Coastal and marine related ecosystem degradation aggravates coastal hazards and minimise the productivity of fisheries, tourism and other coastal livelihoods.

1.6 Recognising the complexity

Hazards, exposure and vulnerability are disaster risks which are further compounded and made complex by additional drivers. Poorly planned development, poverty related environmental degradation and climate change (Figure 2) are some of the key drivers which needs to be addressed in disaster risk management, planning and monitoring⁷.

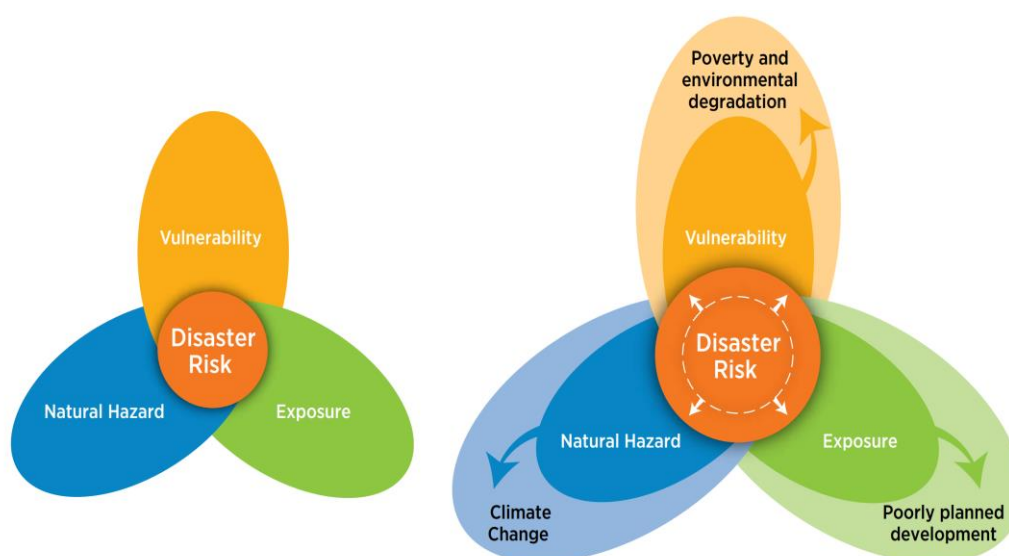


Figure 2. Disaster risk drivers

Social, economic and environment drivers create a significant cumulative impact to different sectors, requiring synergetic efforts in risk reduction. Hence, it is required to work simultaneously on multiple sectors and stakeholders to create opportunities in order to mainstream disaster risk reduction, while building the capacity of multiple stakeholder entities.

Successful disaster management planning, implementation, financing and monitoring require traditional science and technology based knowledge, best practices, legal and convention related adoptions, ability to adapt to new and emerging situations with multi-sector and multi-stakeholder

⁷ World Bank – Integrating Climate and Disaster Risks into Development – <https://documents1.worldbank.org/curated/en/653931468340471918/pdf/826480WP0v20Bu0130Box379862000UO090.pdf>

combinations and creating a working environment for these factors to function synergistically, in a synchronised manner.

Above enabling environment for effective engagement in disaster management is supported by the country's governance systems related to disaster management, as well as by global frameworks, knowledge and experience gained by professionals in related spheres. Risk informed, climate and ecosystem sensitive and inclusive enabling environment is envisaged in the updated version of Sri Lanka's National Disaster Management Plan (NDMP).

1.7 Disaster management framework

The overarching disaster management framework of the country was formulated based on the recommendations made by the Parliament Select Committee, which was appointed immediately after the devastating Indian Ocean Tsunami tragedy in 2004, which led to the formulation of the Disaster Management Act No. 13 of May 2005.

The enactment of the Disaster Management Act No. 13 of 2005 (herein after referred as the DM Act 2005) provided the legal foundation, strategic direction and the institutional structure to coordinate disaster related matters at national and sub-national levels.

The provisions of the act are currently implemented by the National Council for Disaster Management (NCDM), chaired by H.E. the President with Hon. Prime Minister as the Vice Chair.

The Opposition Leader along with five parliamentarians from the opposition, Chief Ministers of the provincial councils and Ministers in charge of the twenty one (21) subjects mentioned in the present DM Act 2005, forms the rest of the NCDM (Figure 3). Sri Lanka's disaster management strategies are mainly governed by the National Disaster Management policy approved by the Cabinet of Ministers on 28th December 2010 with revisions made in 2013.



Figure 3. Present structure of the National Council for Disaster Management

1.8 Rationale for an updated National Disaster Management Plan

Damages and losses from disasters continue to make significant negative impacts on the economy and people. Rising costs incurred in recovery and resettlement activities, call for mainstreaming of disaster risk reduction (DRR) both at national and local levels and in socio-economic sectors. In addition, to the hazards described in the DM Act 2005, there are emerging pandemics, chemical related slow- onset disasters, climate induced changes to traditional disaster patterns etc. which needs to be considered in planning. A recent review of the implementation effectiveness of the past disaster management programmes and current local and global developments on disaster management, highlighted the following as key concerns (Figure 4) for reviewing and updating of the preceding National Disaster Management Plan (NDMP) 2013-2017.

Gaps in aligning and mainstreaming disaster risk for resilient development:

Over the years, the country has developed sector policies, practices and standards relevant to disasters, climate change, water management etc. However, uncoordinated, inefficient and lack of information driven integrated management tracking systems have contributed to less than optimal development results, weakening mainstreaming of disaster risk and climate change adaptation in development.

Implementation of the Disaster Management Act No. 13 of 2005 for its full potential in mainstreaming DRR:

The full potential of the National Council for Disaster Management (NCDM) and provincial, district and local government mechanisms in the country should be mobilised to adopt risk reduction approaches. Risk informed development planning, including strong baselines, use of new technologies for planning and DRR incorporated development tools such as Environmental Impact Assessments (EIAs), Initial Environmental Examinations (IEEs), Strategic Environmental Assessments (SEAs).

Coordination among government donors and other international and regional sponsors:

There are multitude of government, Green Climate Fund (GCF), Global Environment Fund (GEF), private sector, international non-governmental organisations (INGOs), local non-governmental organisations (LNGOs), other bilateral and multilateral projects focused on achieving various objectives in sustainable development. These projects would be more resilient and sustainable with the incorporation of DRR and climate smart approaches. Coordinated management tracking and communications will enhance opportunities of innovation, advance technologies, sustainable financing and partnerships including DRR and climate sensitive approaches.

Figure 4. Rational for an updated NDMP

Addressing the needs of climate smart sustainable development has emerged as a critical national priority in disaster risk management, which is associated with insecurities related to food, energy and other revenue generating produce and services. Systematic, consistent disaster and climate risk management strategies and plans with short, medium and long term objectives and actions, could effectively minimise disaster damages and losses, strengthen resilience of investments and improve the quality of life of people, leading to sustainable development.

1.9 National Disaster Management Plan (NDMP) 2023- 2030

The National Disaster Management Plan (NDMP) 2023 - 2030 therefore, is developed as a holistic approach to reduce risk in all sectors to protect lives, livelihoods and properties by incorporating disaster risk into development planning and investment decisions. The NDMP 2023 - 2030 also focuses on avenues of seeking finances and appropriate advanced technology, capacity development, carrying out in depth research and recruiting trained human resources in all development sectors, towards mainstreaming disaster risk reduction across the country.

The Disaster Management Centre, developed the NDMP 2023- 2030 in line with national priorities and international policy frameworks on sustainable development, disaster risk reduction and climate change mitigation and adaptation. The NDMP aims to set the country's 2030 strategic direction for disaster risk management in the country, in line with the vision for national development and the commitments to be contented under the Sendai Framework for Disaster Risk Reduction 2015-2030, UN Sustainable Development Goals, Paris Agreement and post 2020 Global Biodiversity Agenda. Further, Sri Lanka also launched the "Climate Prosperity Plan (CPP)" at the UN Climate Change conference (COP 27), with the aim of powering faster economic recovery and achieving net negative carbon emissions and the NDMP 2023-2030 elucidates related actions and strategies in achieving these set outcomes. Sri Lanka's CPP has set a striving target of increasing the generation of renewable energy inclusive of similar ambitious targets being set for water, forestry, transport and tourism sectors. The CPP also provides a pathway for Sri Lanka to attract foreign investments to revive the economy, boost employment and overall economic growth, while fast tracking climate adaptation.

The NDMP 2023 - 2030 is developed based on the provisions of the DM Act 2005 and the National Policy on Disaster Management of 2013. Its strategic direction is derived through a multi sectoral approach towards building a resilient nation with greater emphasis towards risk reduction. The plan builds on lessons learned in the past, experiences gained in implementation of disaster risk management in the country and region, while considering the current and futuristic disaster context, encompassing all phases of the disaster continuum.

The NDMP 2023 - 2030 has incorporated number of climate smart ecosystem based approaches in risk reduction, while taking advantage of climate and biodiversity related financing. It also capitalises on the advantages of historical disaster management systems, such as river and tank cascade systems and associated traditional knowledge in addition to global best management practices in ecosystem-based Disaster Risk Reduction (Eco-DRR)⁸, ecosystem-based adaptation (EbA)⁹ and Nature- based solutions (NbS)¹⁰. The NDMP 2023- 2030 also facilitates mainstreaming of equitable, inclusive, gender responsive, child centred and participatory disaster risk reduction planning and implementation, at national and sub national levels to ensure that the most vulnerable people are engaged in decision making. Thus, the NDMP 2023- 2030 enables risk-sensitive and sustainable development planning in building resilience in the national development agenda.

⁸ UN Environment – Disasters, Environment and Risk Reduction – Eco-DRR Master's Module, Instructor's Manual | UNEP - UN Environment Programme

⁹ FAO – Ecosystem-based Adaptation | Integrating Agriculture in National Adaptation Plans (NAPs) | Food and Agriculture Organization of the United Nations fao.org)

¹⁰ IUCN Global Standards for Nature based Solutions - <https://www.iucn.org/resources/publication/iucn-global-standard-nature-based-solutions-first-edition>

This plan is expected to provide guidance to the national and sub-national level (i.e. provincial, district, divisional, local government, Grama Niladhari) government organisations, Tri forces and Police, UN agencies, INGOs, NGOs, private sector, civil-society organisations (CSOs), community based organisations (CBOs), academia, researchers, professional organisations etc. on actions and strategies for effective disaster management, encompassing all phases of the disaster management cycle.

1.9.1 Multi stakeholder approach

The multi stakeholder approach adopted in the NDMP 2023-2030 will allow public-private-people partnership and opportunities in order to avoid duplications, while effectively using the minimum amount of available resources. Some of the weaknesses observed under the overall disaster risk management framework could be addressed effectively, coupled with common information handling, cooperation, coordination and capacity building. The NDMP 2023-2030 promotes innovative partnerships with stakeholder organisations, particularly with local civil society organisations, academia, private sector, international and local volunteers, Tri forces and Police etc. to achieve resilience and to maximise the use of resources.

1.9.2 Multi hazard approach

The frequency, intensity and impact of different hazards vary along with the spatial patterns in exposure. As such, to achieve long term resilience and meet challenges arising due to multiple hazards, it is necessary to adopt a scientific multi-hazard approach for risk management with climate smart and resource efficient practices. A multi hazard approach will also facilitate innovative financing systems, including ecosystem based approaches and financing.

1.9.3 Guiding principles

The NDMP 2023-2030 signifies another paradigm shift in Sri Lanka's disaster management process, which would move from a relief centric attitude to a more proactive approach being adopted in prevention, mitigation and preparedness mechanisms. It should be noted that, while natural disasters cannot be avoided, effective preparatory actions, adequate mitigation and DRR measures can help Sri Lanka avert common hazards becoming major disasters. The NDMP 2023-2030 proposes a multi-pronged approach for DRR and is developed based on the following guiding principles.

- Embrace national level commitments together with an adequate policy and legal environment towards inclusive risk sensitive development planning, preparedness, response and building resilience in leaving "no one behind".
- Create policies and legally enabling environment to coordinate, regularise and empower sectoral agencies for integrated risk reduction investments, implementation and joint monitoring.
- Strengthen end-to-end, people centric, multi hazard early warning systems along with enhanced knowledge on risks across societies, to understand the drivers of hazards and take appropriate action at different levels.

Vision

The vision of the NDMP 2023-2030 is "to ensure substantial reduction of disaster losses and damages and strengthening resilience".

Goal

The goal of the NDMP is to "prevent new risks, reduce existing risks and strengthen resilience"

- Enhance institutional capacities and risk informed decision making processes to reduce physical, human, environmental, social and economic vulnerabilities.
- Ensure disaster risk reduction provisions are mainstreamed and practiced at national physical planning, zonation planning, land use planning and are used to guide major development projects and investments.
- Forge equal opportunities for all persons, mainstreaming Gender Equality Disability and Social Inclusive (GEDSI) across all disaster management actions including data sharing, planning at national and community levels, towards better disaster risk reduction interventions.
- Ensure children and youth have the skills, knowledge, understanding and increased opportunities to contribute to the design, implementation and decision making of disaster risk reduction and climate change adaptation initiatives, in all sectors at national and sub national levels.
- Leveraging the essential knowledge, skills, resources and experiences of women, marginalised communities, displaced persons and other high-risk groups by securing their participation and leadership towards inclusive DRR.
- Administer coordinated disaster preparedness, response and relief operations integrated with social protection mechanisms in the country, ensuring household food security, access to medical and other essential services.
- Build enabling environment for effective disaster recovery mechanisms, including relocation, livelihood and infrastructure support in the build back better process.
- Foster inter agency relationships towards joint planning and shared responsibilities for optimal resource usage in disaster risk management initiatives.
- Adopt coordinated and inclusive approaches to promote national and international stakeholder co-operation and partnerships, including the private sector.
- Assure participatory management effectiveness tracking systems in disaster management to support, monitor, adjust, expand recording lessons with innovative Information Technology (IT) applications, in line with global and national frameworks.

1.9.4 Scope

The NDMP contains key areas as reflected in the DM Act 2005, which includes the different phases and aspects of disaster management inclusive of capacity building, based on the responsibilities and roles of different government ministries/ departments. It adopts a strategic approach in identifying specific actions with stipulated time frames and budgets with a multi-disciplinary participatory approach (i.e. multi sectoral, inter-ministerial, inter agency and multi stakeholder) encompassing disaster prevention and mitigation, preparedness, response and recovery. It is focused on establishing an overarching DRM framework and implementing identified programmes, activities, projects etc. at national and local administrative levels. The collaboration and close coordination of specified government ministries, organisations, agencies, departments etc. is vital for the successful implementation of actions detailed in the NDMP 2023-2030, in order to achieve the national DRR targets and SDGs. The plan envisages a holistic country specific disaster risk management process at all levels as explained below, in safeguarding the people and building a culture of safety, within the communities and family units.

1. Pre-disaster measures:

- Disaster risk management needs to be based on an understanding of disaster risk in all its dimensions

- Coherence of national and local frameworks of laws, regulations and public policies defining roles and responsibilities, guidance in taking action to address disaster risk
 - Public and private investment in disaster risk prevention and reduction through structural and non-structural measures to enhance the economic, social, health and cultural resilience
 - Disaster preparedness necessities to be strengthened for more effective response and ensuring capacities are in place for effective recovery
- 2. During disaster measures:** Emergency response methods (i.e. measures during and immediately after disaster impact)
 - 3. Post-disaster measures (short, medium and long term):** Relief and recovery; loss and damage assessment; rehabilitation; relocation and reconstruction; long term assistance to develop community resilience through build back better approach

1.9.5 Objectives

The NDMP is aimed at providing an overarching framework for disaster management for the entire country. The overall objective of the NDMP 2023 – 2030 is to establish a holistic disaster risk management approach by integrating enhanced knowledge on disaster risk in all phases of the planning and development processes of all sectors and all levels of the country, adopting a multi stakeholder and participatory approach.

This objective will be accomplished through the following four (4) pillars as detailed in Figure 5.

- 1. Risk informed planning and systems**
- 2. Improving risk governance and inclusive participation**
- 3. Enabling environment for partnerships and finance**
- 4. Effective response and sustainable recovery**

1. Risk informed planning and system	Strengthening disaster risk management systems, capacities and partnerships through risk informed, technologically advanced and evidence based approaches covering all forms of hazards, disasters, vulnerabilities and risks.
2. Improving risk governance and inclusive participation	Improving disaster risk governance at all levels through adequate legal mandates, disaster risk reduction integrated development and meaningful participation of stakeholders.
3. Enabling environment for partnerships and finance	Enhance public and private investment for resilience through facilitating legislative and regulatory frameworks and instruments for risk financing, risk insurance and shock responsive social protection programmes.
4. Effective response and sustainable recovery	Ensuring effective preparedness for response and sustainable recovery of all sectors and communities affected by disasters and climate change, through efficient early warnings, building community resilience and fostering national and international partnerships.

Figure 5. Four pillars and respective operational strategies of the NDMP 2023-2030

1.9.6 Methodological approach

The process adopted in developing the NDMP 2023-2030 was participatory and inclusive with the principal objective of identifying local and national DRM priorities. The methodology included the following:

1. Literature review to collect global and local initiatives and current disaster risk reduction practices
2. Findings validated through a series of consultations with key stakeholders and experts
3. Interviews and meetings with national level nodal technical agencies in disaster management
4. Stakeholder consultations with members of district, divisional and village level Disaster Management Committees
5. Discussions with local authorities and the communities affected by disasters
6. District level consultative events to further refine the findings and experience on the severity of disasters
7. District consultations in most vulnerable and disaster prone districts and gathering of information based on After Action Review (AAR) exercises
8. Consultations with inter-agency working groups in line with the National Disaster Management Coordination Committee (NDMCC)¹¹
9. Consultation workshop and review discussions of the draft NDMP with government agencies including local authorities, UN agencies, bilateral and multi-lateral agencies, INGOs, CBOs, academia and research groups, private sector and community representatives
10. Validation of the final draft content with multi sectoral key stakeholders
11. Edits and refinements by a multi-agency working group to refine the identified strategies, action plans and content

1.9.7 Operational framework

The proposed operational framework for NDMP 2023-2030 (Figure 6) was designed to facilitate the required legal and institutional arrangements and to deliver outcomes of the proposed actions stated therein, with defined roles and responsibilities for key actors.

The plan capitalises on global risk governance developments such as post COVID-19 experience, low-input or climate smart green development that promote healthy ecosystems, climate resilience etc. In line with "leave no one behind" approach, it will harness the inputs, resources and support of government authorities, private sector, international agencies, civil societies and communities at international, national and sub-national levels to promote accepted and innovative systems and practices. The NDMP 2023 - 2030 aims to improve and create an effective enabling environment for better disaster governance including policies, strategies and actions for specific disaster related elements of importance.

¹¹ Country's National Platform for Disaster Risk Reduction

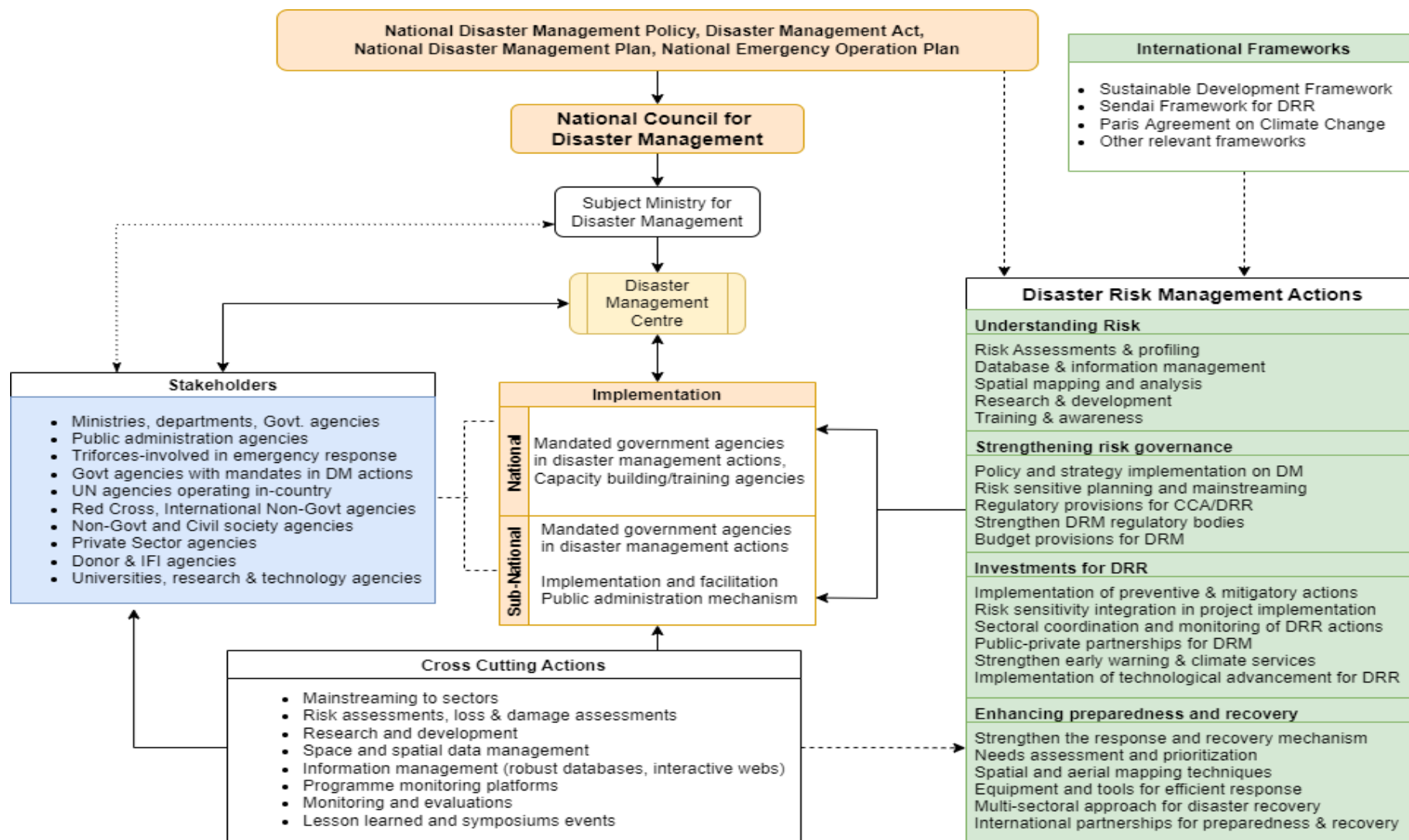


Figure 6. Operational framework for disaster management

1.9.8 Volunteerism

In present day disaster management situations, volunteerism is being practiced and promoted by local and international organisations with formal approaches, while community members volunteer to work as first responders to support each other during emergencies in the respective communities. Volunteerism is not a novel concept to Sri Lanka and to a greater extent it is embedded in the culture and personalities of the local people. The private sector practices volunteerism through corporate social responsibility and sustainability programmes, engaging the staff and clients. At community level, volunteerism for disaster risk reduction is introduced through "Citizen science" approaches.

NDMP 2023 - 2030 aims to capitalise and promote volunteerism in community awareness, education and expand the use of citizen science in monitoring, early warning dissemination, participatory planning and implementation, relief management etc. as needed.

Citizen science can be used as a methodology where public volunteers help in collecting data while improving community's capacity, thereby enhancing the direct involvement of communities in learning and research including the understanding of their environment, risks and health hazards in their own communities. School programmes such as "Environment Pioneers" led by the CEA encourage student participation in citizen science projects.

The NDMP also promotes international volunteer participation, provided the exchange of knowledge and skills can add value to Sri Lankan projects and programmes. Current volunteering efforts of some of the local and international NGOs, UN agencies, private emergency health service respondents, community volunteer groups etc. have strengthened the country's disaster management response work significantly. Further opportunities exist to combine ongoing environment programmes such as Central Environment Authority (CEA)'s "Environment Pioneers" and "Scout" programmes, to enrich DRR related volunteerism. International programmes such as "Health Parks – Healthy People"¹² mainly funded by the insurance industry with multiple volunteering options, helps to improve the resilience of disabled, elderly etc.

1.9.9 Coordination with national and international development partners

Led by the UN system through the UN Sustainable Development Framework for Sri Lanka, the international humanitarian and development partner agencies play an active and vital role in supporting the national and sub national level disaster risk management approaches. The government and the subject ministry of disaster management together with DMC, will coordinate with international agencies as required with regard to various aspects of disaster management. Currently, DMC acts as the focal point in coordinating with the humanitarian agencies, INGOs, NGOs and other supporting and volunteer organisations, in addressing the emergency response requirements and disaster relief assistance in preparedness for disaster and emergency situations.

International assistance and inputs have helped to shape the existing capacities of disaster management significantly and continues to do so. In post Tsunami, the disaster response and system establishment from 2005 to 2008 mostly focused on capacity development and also improving the legal and institutional frameworks. Considering the country's current status quo of disaster management, international collaboration and support could add innovation financing towards

¹² Park Victoria. Healthy Parks Healthy People - <https://www.parks.vic.gov.au/healthy-parks-healthy-people>

incorporating new and emerging concepts and approaches. The identified key areas include but not limited to sustainable financing, climate smart ecosystems based DRR and adoption of information technology related advances, extending to data monitoring using Internet of Things (IOT) and Artificial Intelligence (AI).

During the post Tsunami period, international private sector agencies played a key role in strengthening the early warning systems of the Emergency Operations Centre (EOC) of DMC. Further, during the COVID-19 pandemic, the private sector played multiple roles in supporting the government's response efforts. Gradually, the private sector is factoring the advantages of investing in risk reduction efforts to ensure business continuity and related programmes. At present, the event organised by the Ceylon Chamber of Commerce (CCC) named "Best Corporate Citizen Award" recognises the corporates' level of readiness for disasters and environment hazards. Scope for the corporate sector with international partners is high in terms of insurance, information management, health, energy, logistics etc. and the NDMP 2023 - 2030 advocates a significant expansion in the involvement of the private sector in disaster management, including transferring the benefits of climate financing and green innovation to risk reduction efforts, through industrial and urban pollution management, reforestation and rehabilitation connected with carbon benefits and ecosystem improvements.

1.10 Social inclusiveness

The DRR efforts are expected to give consideration to the complex and varied nature of social concerns and properly analyse the needs of all marginalised and vulnerable groups of persons. Social inclusion strategies in disaster risk management (DRM) need to identify the challenges faced by different groups of persons in the society and develop appropriate local DRR strategies, with the objective of "leaving no one behind".

1.10.1 Gender Equality Disability and Social Inclusive (GEDSI) in disaster management

The existing inequalities in society gets worsened due to vulnerabilities connected with hazards and it is particularly evident among women, children, elders and also persons with disabilities (PWDs). Identified as "socially differentiated impacts", different individuals and groups of people can experience varied effects due to climate change, as a result of deep rooted and inequitable views and cultural norms, unequal access to critical resources, education, facilities etc. and imposed physical obstacles. This phenomenon is evident in Sri Lanka as well, since women and men experience adverse effects of disaster events and impacts of climate change differently. Within the population groups, there are differences in vulnerability, adaptation and coping capacities, determined by social and economic status, age and physical abilities. Moreover, each vulnerable and marginalised group which includes PWDs, adolescence, lesbian, gay, bisexual, transgender, queer and intersex (LGBTQI+) and the impoverished women tend to be the most helpless and the greater at risk category, suffering from the negative effects. As such, planning and implementation of disaster management activities including representation of DRR policies, necessitate the adaptation of gendered approaches.

1.10.2 Child Centred Disaster Risk Reduction (CC-DRR)

On average, children and adolescents represent 30%¹³ of Sri Lanka's total population. Disaster induced impacts on children include deaths, injuries, separation from families and lack of access to critical services such as health, nutrition, water, sanitation, education and protection. Due to children's physical, economic and social frailty, children are highly vulnerable to natural or human-made disasters and climate change induced extreme weather events, compared to adults. Moreover, children's safety needs and exposure to risks need to be looked into, encompassing a greater range beyond the common disasters or hazards. Further, the affected children should not be neglected and need to be free from any type of abuse, trafficking, molestation and sexual exploitation while supporting them to continue their lives, in a safe environment. In geographic areas with other prevailing vulnerabilities such as poverty, children are increasingly vulnerable to chronic nutrition deprivation, food insecurity, increased school dropout and child labour. Children and young people also include the generation, that will be required to deal with future climate change related adverse impacts and therefore, their involvement in resilience building and decision making on climate change, would make them much stronger to tackle this global crisis as future leaders.

1.10.3 Persons with Disabilities (PWDs)

Persons with Disabilities (PWDs) are one of the key vulnerable categories who are affected by disasters disproportionately and the level of resilience and ability to recover is uneven due to the varied types of disabilities. Many PWDs are isolated from society and also logistically they often get left behind due to their varied disabilities. Lack of access to early warnings and evacuation notifications, scarcity of suitable emergency transportation facilities and needed medical equipment, communication difficulties etc. are some of the challenges experienced by the PWDs, when affected by disasters. According to information stated in the census and statistics report 2012¹⁴, the number of PWDs in Sri Lanka amount to 8.7 % (above the age of 5 years) of the total population, which consists of about 43% male and 57% female disabled persons. Failure to include PWDs in the efforts to reduce disaster risk would lead to dramatic consequences and therefore, it is imperative that their special needs are considered and representatives of various categories of PWDs are fully engaged in the development as well as implementation of national and local DRR strategies. It is important to improve inclusiveness of the disability populace in DRR and to ensure their involvement in relevant activities. Special attention needs to be given in ensuring that, the PWDs are not been abandoned in calamities and a support system is developed with the assistance of the local community to assist them.

1.10.4 Elderly

Globally the ageing population is on an increasing trend and various types of disasters and emergencies exacerbate the prevalent vulnerabilities of elderly or older people. In most instances, the older population has wider experience, skills and knowledge, which are deep rooted in the context of local environmental hazards. Nevertheless, the combination of extreme climate changes and increased trend of disasters coupled with less emphasis on adapting DRR responses to the elderly or ageing population, tends to increase their vulnerability to various hazards and disasters. Moreover, the women in particular become more vulnerable simply due to the gender aspect and their needs tend to be overlooked leading to greater distress. Many old people are frail, suffering

¹³ Sri Lanka College of Paediatricians - <https://slcp.lk/>

¹⁴ Disability:IN

from various disabilities and are experiencing difficulties in mobility thus requiring additional support from another adult. Accordingly, many would find it difficult to flee or evacuate and look after themselves, in times of adversities or emergencies. As per statistics the aged (i.e. 60 years or older) population was 12.5%¹⁵ of the total population in 2012, which highlighted Sri Lanka as the country with the highest proportion of elders or older adults in South Asia. It is a serious challenge, as forecasts predict that about 25% or more than one in four persons¹⁶ will be over 60 years of age in another fifteen years' time. This demographic transition would create severe social, health, economic and infrastructure challenges which, would also reflect the limitations of the older population in their disaster preparedness. Hence, planning and adopting preparedness mechanisms for various disasters need to pay special attention to the elderly population's physical and psychological vulnerabilities, impaired mobility, weakened sensory attentiveness and poor health conditions, which are expected to deter their adaptability and constrain the capacity to respond.

1.10.5 Migrant workers

Migrant workers provide an invaluable contribution to the socio-economic development of countries of origin and countries of receiving. These workers are a vital source of finance and foreign exchange for households and governments. As such, the government is expected to ensure their comfort, rights and protection in each step of their journey. The contribution made by the migrant workers is one of the main sources of income generation for Sri Lanka. During the period of 2016 to 2019, annually on average new registration and renewed contracts¹⁷ amounted to 217, 272 while a significant drop was witnessed in 2020, which could be attributed due to the COVID-19 global pandemic. However, year 2021 witnessed a re-emergence of migration with a total of 122,264 migrating through registered foreign missions and the Sri Lanka Foreign Employment Bureau (SLBFE)¹⁸, which comprised of 66.34% male and 33.66% female workers. The nature of crisis situations faced by each host country (or country of destination) varies and the type of natural disasters and other calamities experienced by these countries would be more "country specific", while being exposed to other global risks emerging due to man-made disasters and emergencies. In crisis situations, migrant workers are subjected to severe vulnerabilities in their host countries due to various reasons. Vulnerable groups such as women, pregnant women, children, PWDs and elderly are at greater risk and evacuation would be a complicated issue during disasters, especially when affected persons need to be repatriated to their countries of destination. As such, it is important to develop a detailed official emergency response plan which would address all likely crisis scenarios, gaps and vulnerabilities in the form of an Emergency Responsive, Recovery and Re-integration Plan (ERRRP)¹⁹ bringing them back home, which minimises the risk of Sri Lankan migrant workers.

¹⁵ World Bank Blogs - <https://blogs.worldbank.org/endpovertyinsouthasia/sri-lanka-must-increase-its-efforts-protect-and-promote-human-capital-elderly>

¹⁶ *ibid*

¹⁷ Framework of Safe Labour Migration Project – Sri Lanka- Phase IV – International Labour Organisation project, Developing an Emergency Evacuation/Response Plan: Inception Report, November 2022

¹⁸ *ibid*

¹⁹ *ibid*

1.11 Global and national frameworks related to Disaster Risk Reduction

In 2015, the member states of the United Nations agreed on encompassing a coherent 2030 agenda for sustainable development. "Leave no one behind" is the cornerstone of the 2030 agenda for sustainable development, which is a key guiding principle of all DRR policies, strategies, plans and actions.

Governed by the Sustainable Development Act of 2019, the Sustainable Development Council of Sri Lanka facilitates the synergy among sector agencies to achieve the set goals, including risk reduction related Sustainable Development Goals (SDGs). The Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030, Paris Agreement on Climate Change, New Urban Agenda, Addis Ababa Action Agenda on Financing for Development and the Agenda for Humanity, are all in coherence with the United Nations Sustainable Development Goals. These agreements consider elements of DRR and resilience in the respective scopes and content.

1.11.1 Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs) consists of 17 global goals and 169 targets (Figure 7), which focuses on a universal call to eradicate poverty and ensure that all human beings are able to live in peace and prosperity while protecting the planet. Though the 17 goals are developed based on the realisation of the Millennium Development Goals (MDGs), new areas such as innovation, climate change, sustainable consumption, economic inequality and peace and justice have been considered as priorities, which are also interconnected when implementing actions and strategies to achieve the expected results.



Figure 7. Sustainable Development Goals (SDGs)

It is understood that sustainable development needs to be closely interwoven with DRR as past global disasters and devastations have significantly impacted the prevalent development activities and affected the economic progression of such affected countries. Either rapid onset or slow-onset disasters, the "shocks" of such incidents would cause short term as well as long term socio

economic harm. Further, climate change intensifies and multiplies the impacts due to both natural and human induced hazards and disasters. In the recent past, there has been an increase in the occurrence and severity of extreme weather related incidents across the globe, which has endangered and heightened the risks of the persons living in vulnerable and disaster prone areas.

Ten (10) of the 17 Sustainable Development Goals (SDGs) within the agenda 2030 have direct linkages (Figure 8) with disaster risk reduction (Annexure 1). Three (3) SDG goals share indicators of progress with the targets of the Sendai Framework. Though, each of the international agreements frames disaster risk and resilience from different perspectives, there is a common understanding that DRR is one of the prerequisites to building resilience, which is imperative to achieving sustainable development.

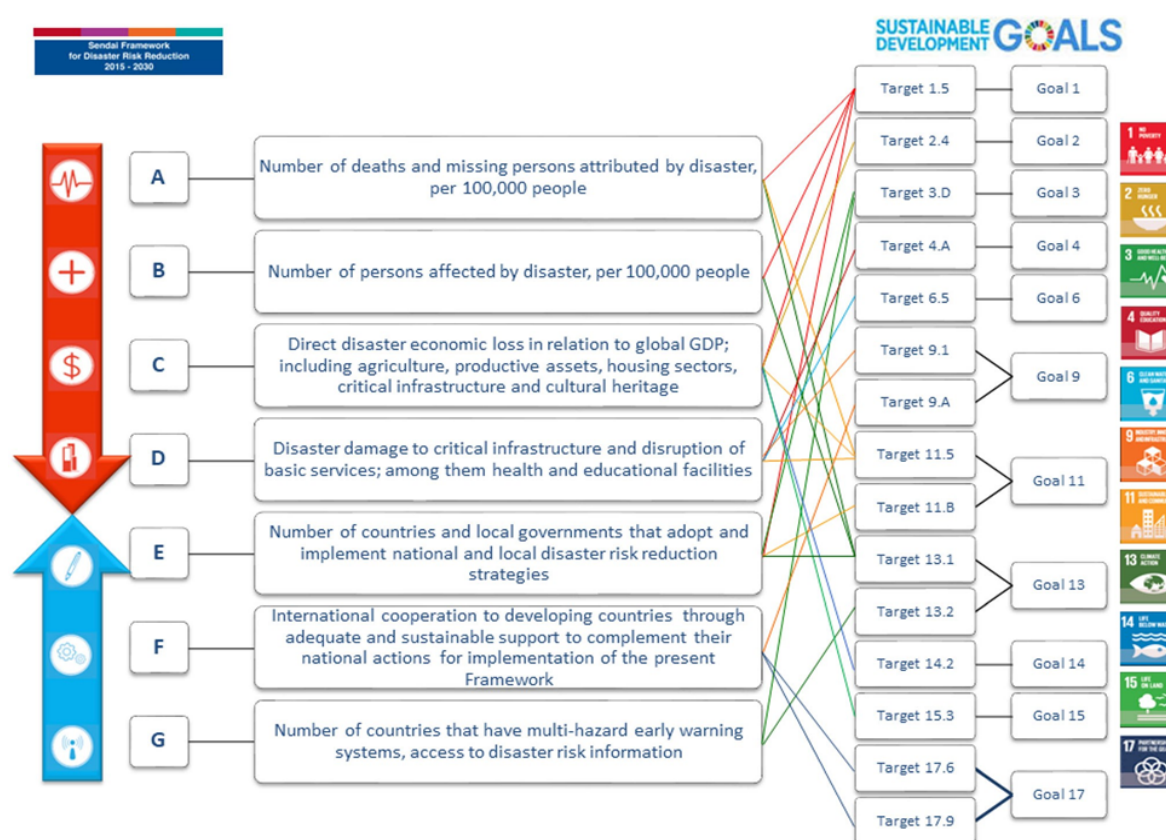


Figure 8. Coherence and strengthening of SDGs and Sendai Framework

1.11.2 Sendai Framework for Disaster Risk Reduction (SFDRR)

The third UN World Conference in Sendai, Japan in 2015, adopted the Sendai Framework for Disaster Risk Reduction (SFDRR) that serves as a global blueprint for disaster risk management. The framework will apply to assess the risk of small scale and large scale, frequent and infrequent, sudden and slow-onset disasters, caused by natural or manmade hazards as well as related environmental, technological and biological hazards and risks. This non-binding agreement aims to guide the multi-hazard management of disaster risk in development at all levels and across all sectors, towards "a substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries".

As per the Sendai Framework (Annexure 2), to reduce disaster risk, there is a need to address existing challenges and prepare for future risks by focusing on monitoring, assessing and understanding disaster risk and sharing such information.

The four (4) priorities for action under the Sendai Framework (Figure 9) are as follows:

Priority 1: Understanding disaster risk

Priority 2: Strengthening disaster risk governance to manage disaster risk

Priority 3: Investing in disaster risk reduction for resilience

Priority 4: Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

SFDRR recognizes the primary role of states and shared responsibility of local governments, private sector, civil society organisations and others to *"prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures. Risk reduction measures prevent and reduce hazard exposure and vulnerability to disaster, increases preparedness for response and recovery and thus strengthens resilience."*



Figure 9. Sendai Framework's priorities

1.11.2.1 Sendai Framework for Disaster Risk Reduction in Sri Lanka

Sri Lanka has adopted seven (7) targets of SFDRR to improve disaster management with the base line information extracted from 2005-2015. The **seven (7) National Targets** for disaster risk reduction are explained in Figure 10.

For the determination of the above mentioned targets, the base year has been considered as 2015 with the number of deaths due to disasters been identified as 152 and the number of affected people considered as 186,162 on an average basis. Compared to the base year, the national target is to reduce the number of deaths by 50% i.e. 76 and the number of victims by 50% i.e. 93,081 by year 2030. To achieve these targets, the support from all related stakeholders is essential and the DMC has been assigned with the task of implementing this programme appropriately and effectively.

Target 1	• Compared to the number of deaths from 2005 to 2015, reduce the annual death rate by 50% by 2030
Target 2	• Compared to the number of victims from 2005 -2015 period, reduce the number of affected by 50% by 2030
Target 3	• Compared to the annual direct economic loss to the GDP in 2005 - 2015 period, reduce the loss to GDP by 50% by 2030
Target 4	• Reduce the obstacles to education services due to disasters by 50%
Target 5	• More than 80% of local authorities to follow disaster risk reduction programmes and plans by 2025
Target 6	• Compared to 2005 - 2015, increase the effort in obtaining international support by 50% by 2030
Target 7	• Cover the total population at risk by multi hazard early warning systems by 2030

Figure 10. Seven national SFDRR targets adopted by Sri Lanka

1.12 National Environment Policy (NEP) and National Adaptation Plan (NAP)

Both climate change and disaster management are cross cutting subjects. Therefore, the opportunity exists to explore the synergies between climate change adaptation, climate mitigation and disaster risk management. National Environment Policy (NEP) and Climate Change Policy are key policies, which directly addresses climate change actions in Sri Lanka. Article No. 2.2.10 of the National Environment Policy of the Government of Sri Lanka states that *"the risks of climate change will be managed by implementing adaptive strategies that minimize the impact of climate change on both the people and the economy of Sri Lanka"*²⁰, giving more emphasis among others on reviewing the effect of climate change on Sri Lanka, through the development of impact scenarios. These would reflect on response strategies for sea level rise, changing available water resources including storm and drought frequency on agriculture production and the economy as a whole and for disaster response.

Consequently, the Climate Change Policy was enacted in 2012 by the Parliament of Sri Lanka to provide guidance and directives for all stakeholders enabling them to address the challenges. The National Adaptation Plan (NAP) for Sri Lanka (2016–2025) serves as the framework for the Sri Lankan government's responses to climate change consequences. It has identified the need to mainstream climate adaptation to key vulnerable sectors such as agriculture, livestock and fisheries, water, health, human settlements, energy and tourism²¹ in order to minimise the impacts of climate change on human life, ecosystems, national assets and the economy.

²⁰ National Environment policy of The Government of Sri Lanka

²¹ Ministry of Mahaweli Development and Environment, National Adaptation Plan for Climate Change Impacts of 2016-2025

The major goals of the NAP are to;

1. Raise the adaptive capacity of individuals, communities and the society to cope with impacts of climate change effectively
2. Reduce the vulnerability to climate risks by enhancing the resilience of communities and ecosystems
3. Capture any opportunities that arise due to changes for maximum gain for society and people

1.13 Time frames

The NDMP 2023-2030 sets out the key priorities, time frames and outlines the important thematic areas which need to be implemented in a coordinated and decentralised manner by the national and local government authorities adopting a multi stakeholder approach. As DRR mainstreaming is a fundamental part of the NDMP and accordingly the responsible authorities and partners for implementation of the priority actions need to adopt a holistic approach encouraging multi-stakeholder support and partnerships at all levels as appropriate. In a broader sense, the approach elucidated in the NDMP is applicable to everyone involved in disaster management and working for DRR in the country, whether government, private, INGOs, NGOs, humanitarian agencies, CSOs, CBOs, academia etc. Various other plans related to aspects of disaster management at national and local level, need to be prepared in accordance with the NDMP 2023-2030 and be consistent with the key objectives, priorities, strategies, actions and time frames. Furthermore, as mandated in the DM Act 2005, respective government ministries, government institutions, departments and agencies are required to implement the activities in accordance with the NDMP.

The NDMP is targeting a strategic focus from 2023-2030, following the timelines of international conventions, including UN SDGs and SFDRR. End of year 2030 is the time frame of the three key post 2015 international agreements i.e. SFDRR, SDG and Paris Agreement (COP 21). For consistency, Sri Lanka's NDMP has also adopted 2030 as the envisaged year for completion of all proposed actions by respective stakeholders and actors.

For practical purposes the key focus would be on multi-stakeholder implementation of the operational strategies and priority actions for seven years from 2023 to 2030, together with approximate timeframes (Figure 11). Further, the implementation of the measures in the plan are to be completed within short (T1), medium (T2) and long term (T3) while some are to be sustained on a continuous basis during the seven year time period.

Time frames envisaged in the NDMP 2023-2030			
Continuous	T1/T2/T3		
Short term (T1)	T1 (2024)		
Medium term (T2)	T1/T2	T2 (2026)	
Long term (T3)	T1/T2/T3	T2/T3	T3 (2030)

Figure 11. Envisaged time frames for completion of priority actions – NDMP 2023-2030

References made as short, medium and long are the timeframes needed for completion of the specific measures and does not signify any order in terms of priority. Certain actions envisaged may shift from a longer time duration to a shorter period and all efforts are required to ensure that the

planned actions are completed without taking any additional time. There is variation in the implementation status of the stated actions and for effective implementation each responsible ministry, government institution, department etc. must also identify and categorise these measures in the specific disaster management plans or organisational action plans, according to the set time frames.

1.14 Future revisions and updates

The NDMP can be considered as a “progressive document”, which will be reviewed periodically and DMC will continue to upgrade the plan as and when the situation in the country demands (i.e. either after a review in five year of implementation or after major disasters or in any other situation), ensuring multi stakeholder participation. It will be improved in line with the evolving knowledge and global best practices in disaster management and based on any updated and accepted national policies, regulations and practices. Annual national work plans are to be prepared based on the NDMP 2023 - 2030 to facilitate better planning, implementation and monitoring of the progress of the NDMP, in consultation with all key stakeholders.

2 Risk profile

2.1 Multi-hazard risks and vulnerabilities

Disasters are triggered by natural hazards or induced by humans or could be as a consequence of a combination of both. DesInventar categorises disasters arising from natural hazards into five (5) main types namely, geophysical, hydrological, meteorological, climatological and biological which is used internationally as well, for monitoring of SFDRR targets. The adversities created due to natural disasters tend to be greatly impacted by human induced factors, which has increased the intensity and frequency of extreme weather events. Moreover, while floods due to heavy rains, landslides, cyclones, drought etc. are all natural, the impacts have worsened due to human activity and climate change. The rapid urbanisation and increase of industrialisation related development activities have increased the threat and likelihood of human induced disasters, which increases the extent of probable loss of lives, injuries and destruction to property, fauna and flora. Further, people are also vulnerable to threats and emergencies or disasters arising due to Chemical, Biological, Radiological, Nuclear and High Yield Explosives (CBRNE) accidents, which tend to have long lasting consequences.

The rapid urbanisation and increase of industrialisation related development activities have increased the threat and likelihood of human induced disasters, which increases the extent of probable loss of lives, injuries and destruction to property.

The DM Act 2005 has listed 21 natural and manmade hazards (Annexure 3) affecting the island of Sri Lanka. Most common hazards in Sri Lanka are of hydro meteorological origin namely, floods, drought, landslides, cyclones/ high winds, storm surges and coastal erosion as well as Tsunamis, sea level rise, lightning, fire, earthquakes, industrial hazards, building collapses, oil spills and health hazards.

Human induced disasters include animal attacks, oil spills and environmentally destructive activities such as mismanagement of solid waste disposal and deforestation. There are various health hazards such as chronic kidney disease on the increase due to water pollution (i.e. micro plastics, chemicals, pesticides etc.) and also frequent epidemics such as dengue, which worsen during the monsoon seasons.

Risk information should be mainstreamed among stakeholders so as to make informed decisions on risk reduction, leading to resource efficiency and effectiveness of the interventions. Availability of tools and mechanisms for efficient sharing of risk information, harnessing technological advancement in risk assessment, ability to do visualisation and effective communication, provides better opportunities for making risk information available and for use in risk reduction approaches as well as in various programmes.

The NDPM has identified that, increase in population, unplanned rapid urbanisation, unauthorised development in vulnerable and high risk areas, environmental degradation together with climate change has aggravated Sri Lanka's vulnerability to various types of disasters. In the recent past, communities and animals have been exposed to higher risks mostly due to different man made disasters and accidents. Risks due to conflicts, insurrections, pandemics, CBRN threats, biological hazards and events, calls for enhanced and adequate preparedness and planning measures.

The following information highlights the status of several hazards based on DMC maintained DesInventar database²² and information obtained from stakeholder agencies and publications. Information between 2010 to 2022 (i.e. up to September 2022) have been used to identify the risk outlook of the common types of hazards and disasters impacting Sri Lanka.

2.2 Impact extent of common disasters

2.2.1 Floods

Floods are probably the most frequent, widespread and disastrous natural hazard in Sri Lanka and the negative impacts are not only limited to loss of life. The impact extends to infrastructure, environment, development activities, socio economics and related livelihoods, which is beyond the influence of disasters in the affected areas. Floods are mostly monsoon related with localised flash floods experienced in urban settings. The annual average loss due to floods has been estimated as US\$ 240 million²³. Type of floods include riverine floods, flash floods, localized floods and reservoir induced floods (i.e. due to breach of reservoirs).

From 2010 and 2022 (i.e. inclusive of both years) a total of 7,053,064 persons have been affected and a total of 401 deaths recorded. As per the DesInventar database information, years 2014, 2015, 2018 and 2021 were the worst affected, while 23 districts out of 25 districts were inundated. Districts of Batticaloa, Gampaha, Colombo, Ampara, Kalutara, Puttalam, Galle, Jaffna and Matara are the worst affected (Figure 12).

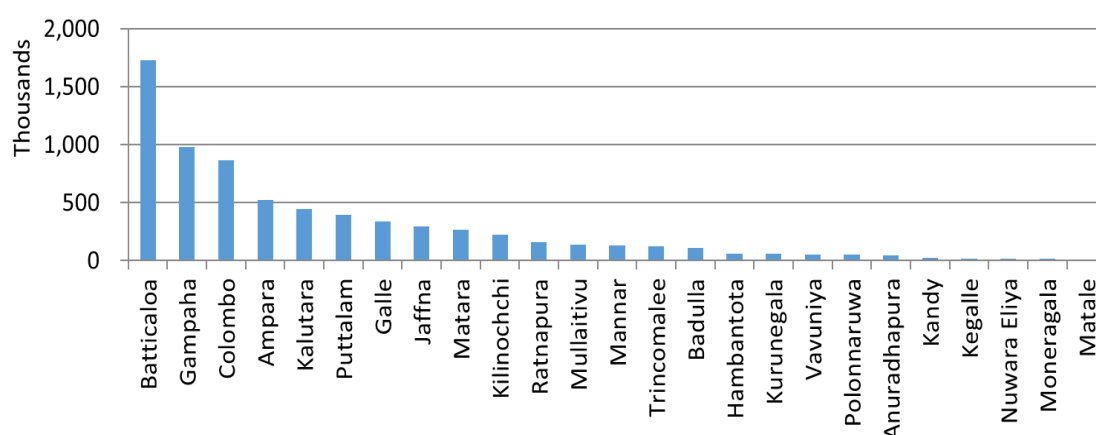


Figure 12. Total persons affected by floods – district wise from 2010-2022

The Irrigation Department (ID) is the lead technical agency in flood management and Sri Lanka Land Development Corporation (SLLDC)²⁴ is responsible for managing floods in the Colombo metropolitan region. Management of localised floods is the responsibility of the respective local authorities and the Ministry of Water Resources and Irrigation has carried out detailed flood (Figure 13) and drought risk assessments and developed river basin investment plans for ten (10) river basins (i.e. Kelani, Nilwala, Gin, Mahaweli ganga, Attanagalu oya, Maha oya, Deduru oya, Kala oya, Malwathu oya and Gal

²² Disaster Management Centre - Disaster Information Management system in Sri Lanka (desinventar.lk)

²³ Fiscal disaster risk assessment, The World Bank, March 2016

²⁴ Sri Lanka Land Development Corporation (SLLDC)

oya) under the Climate Resilience Improvement Project (CRIP) and also under the Climate Resilient Integrated Water Management Project (CRIWMP), which is carried out by the Ministry of Mahaweli Development jointly with Ministry of Irrigation with the financial support of the United Nations Development Programme (UNDP) and Green Climate Fund (GCF) and technical support offered by DMC and Department of Meteorology (DoM).

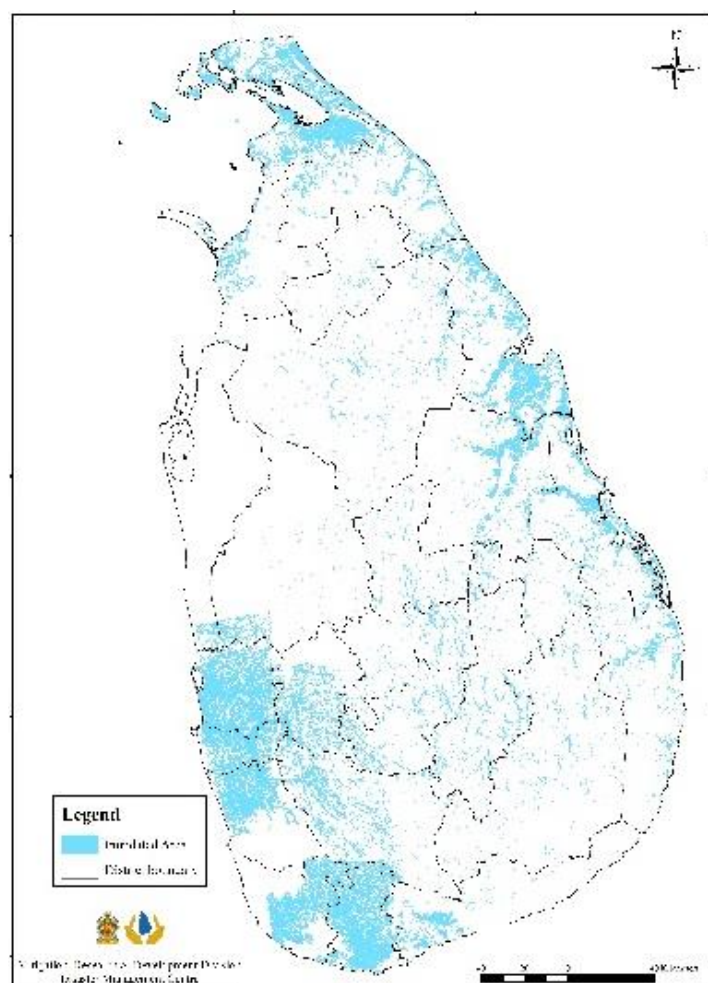


Figure 13. Spatial distribution of floods in Sri Lanka

2.2.2 Drought

Drought is a slow onset recurring phenomenon with widespread socio-economic impacts, which are felt not only in the drought prone dry zone of the country but also in the intermediate and wet zones. The frequency and the severity of drought has increased due to climate change, deforestation, land degradation etc. and also global phenomena such as El Niño.

The drought hazard profile developed by the Department of Agriculture²⁵ indicate high to very high drought potentials in the intermediate and dry zone areas (Figure 14). Data from the National Disaster Relief Services Centre (NDRSC) suggest that LKR 5.2 billion has been spent on providing compensation for crop losses in 2016, LKR 5.1 billion has been spent on drinking water supply and dry rations in 2017 and LKR 8.1 billion has been spent on drought relief in 2018 .

²⁵ Hazard profiles of Sri Lanka, Disaster Management Centre, 2012

Vulnerability to drought has increased due to increased population, unscientific land use planning, land degradation, intensive agriculture, poor water management and inadequate awareness and preparedness. Drought risk management requires a multi-agency and a well coordinated approach mainly due to its complex nature.

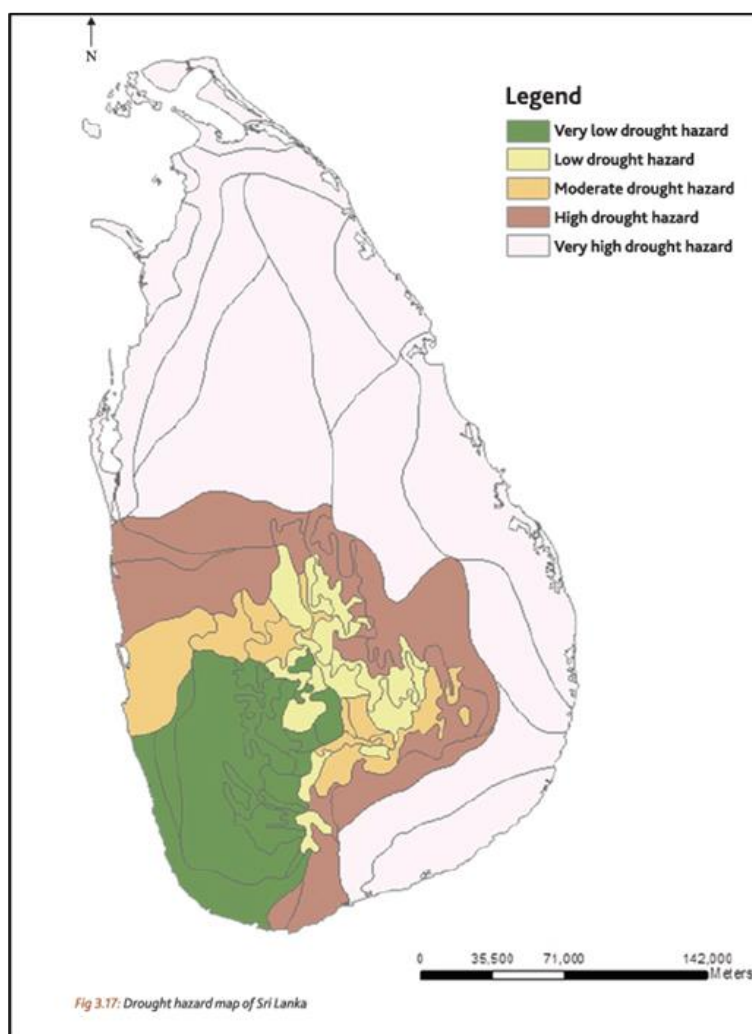


Figure 14. Drought hazard profile

According to the DesInventar database, from 2010 to 2021 a total of 9,621,862 persons have been affected, with 2014 and 2017 period recording the worst years (Figure 15). The annual average loss due to drought is estimated around US\$ 40 million²⁶. However, this could be an underestimate due to limited availability of sectoral drought impact data, beyond agriculture sector.

Kurunegala, Puttalam, Batticaloa, Jaffna and Pollonaruwa are the districts severely affected by drought, which are located in the intermediate and dry zones (Figure 16).

Two (2) Green Climate Fund (GCF) grant projects by the UNDP and International Union for Conservation of Nature (IUCN) and several donor programmes, including World Bank funded Climate Resilient Improvement Project (CRIMP) and Climate Smart Integrated Agriculture Project (CSIAP) are ongoing at present to minimise the drought impacts in identified districts. As in the case of

²⁶ Fiscal Disaster Risk Assessment, The World Bank, 2016

floods, the scope to work with nature based approaches for drought mitigation is significant in the Sri Lankan context.

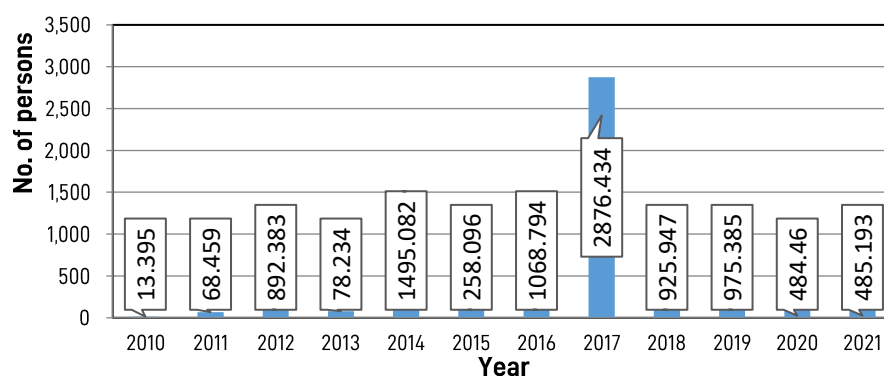


Figure 15. Number of affected persons due to drought from 2010 – 2021

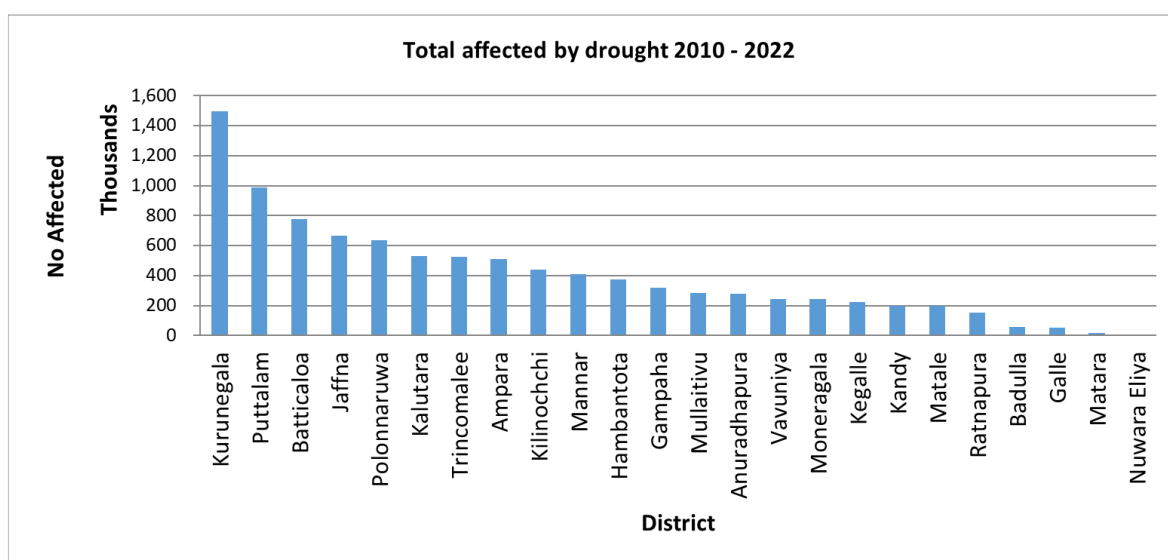


Figure 16. Impact of the drought – district wise from 2010 to 2022

2.2.3 Landslides

Landslides cover a wide variety of aspects that involve processes of down slope transport of soil and rock material under gravitational influence. Unauthorised and unplanned land use by people and landscape changes associated with agriculture, road construction, housing and urban infrastructure etc. have resulted in an increase in landslide probability in hill slopes, which have stood as safe areas for centuries in Sri Lanka.

Frequent landslides are typically associated with intense rain fall during monsoon and inter-monsoon seasons or due to pre-cyclonic rains. Climate change has increased the rainfall intensity in the wet zone of the country aggravating the landslide potential and nearly 20,000 km² (30% area of the country) in thirteen (13) administrative districts²⁷ are considered as landslide prone (Figure 17)²⁸.

²⁷Badulla, Colombo, Gampaha, Galle, Kalutara, Kandy, Kegalle, Kurunegala, Matale, Matara, Monaragala, Nuwara Eliya, Ratnapura,

²⁸ NBRO Report

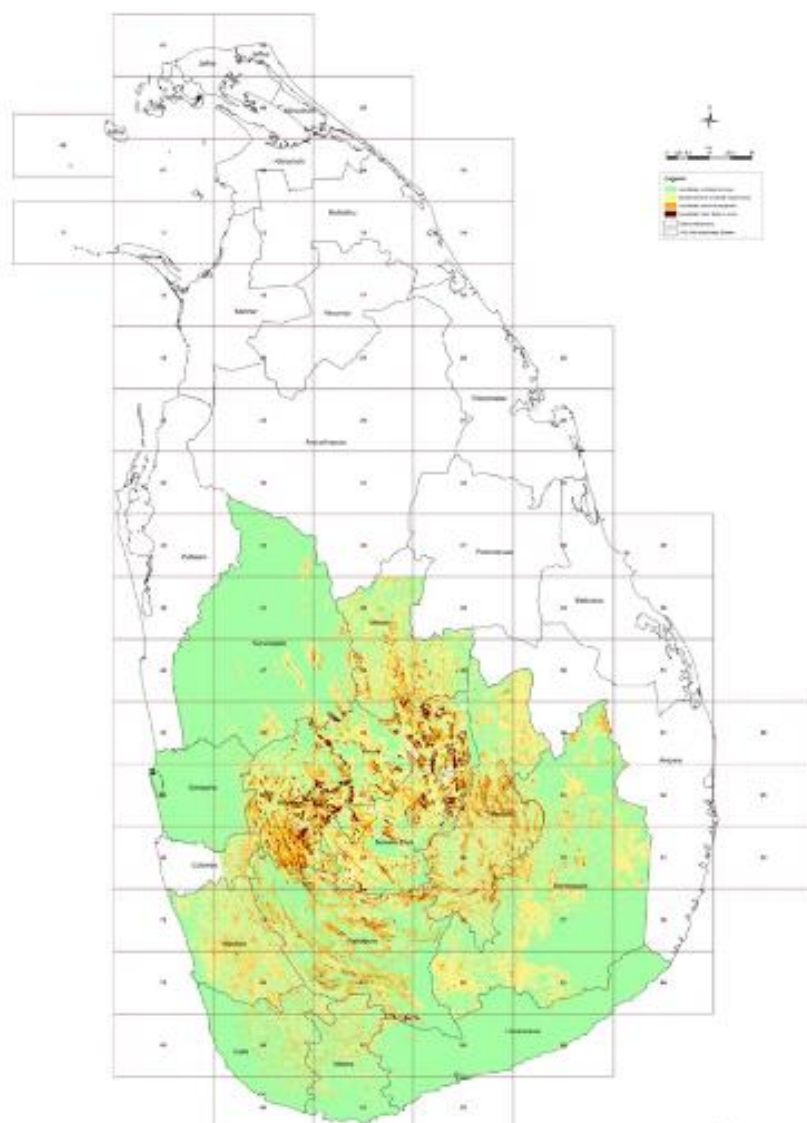


Figure 17. Landslide zonation maps

The National Building Research Organization (NBRO) is the lead agency for landslide hazards. Landslide zonation maps at 1:50,000 scale are available for 13 landslide prone districts and maps at 1:10,000 scale have been developed for identified critical areas based on past landslides. Furthermore, maps at 1:5000 are available for high risk urban areas. NBRO has identified 14,860 houses located in landslide high risk areas in nine (9) districts for future planning to minimise the risks.

As per DMC DesInventar data, from 2010 to 2022 a total number of 188,595 people have been affected by landslides with 232 reported deaths and 4,964 houses being damaged or destroyed.

2.2.4 Cyclone/ high winds

Sri Lanka, as an island in the Indian Ocean, gets affected by cyclones which cross the coast or when passing nearby, creating strong winds and heavy rainfall leading to floods. According to the DoM, during the past 140 year period (i.e. years 1881- 2020), only eleven (11) cyclonic storms and six (6) cyclones have crossed the island which have entered from the east coast of Sri Lanka, mostly in the months of November and December (Figure 18).



Figure 18. Cylcones and tracks from 1811 - 2021

According to historical data, a definite frequency of landfall of cyclones in the landmass of Sri Lanka has not been identified. There has not been sufficient evidence to demonstrate a firm return period either. DesInventar data from 2010 and 2022 indicate that the highest number of persons and worst affected districts by cyclones/heavy winds were Batticaloa, Jaffna, Kalutara and Galle (Figure 19).

Information related to cyclones which have impacted Sri Lanka indicate that localised high wind occurrences are more frequent than cyclonic storms and has caused severe damage to thousands of houses every year. More than 55,000 houses have got damaged during the period of 2010 – 2022, due to strong and localised winds as per the data of DoM and DMC.

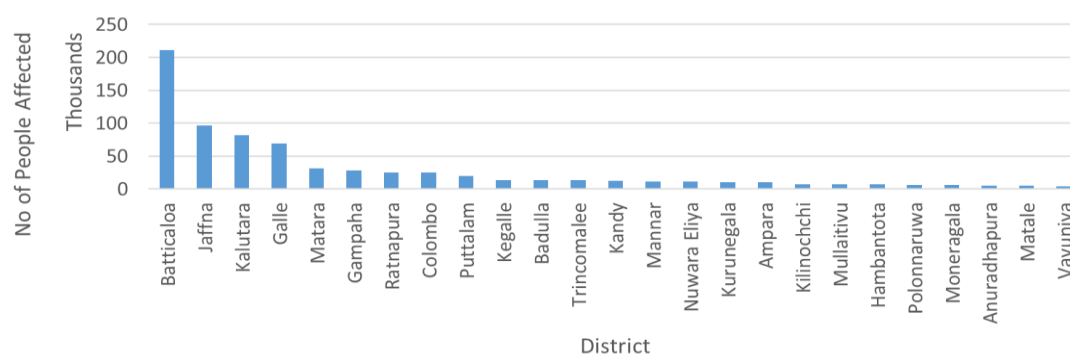


Figure 19. Persons affected due to high winds and cyclones – District wise (2010 to 2022)

The DoM has developed its capacity to detect in advance the formation of cyclones in the Bay of Bengal, giving sufficient time to issue early warnings and evacuate people to safer locations. Tropical cyclone profiles have also been completed, updated with latest information and made available in advance for reference of emergency response units, teams and agencies to identify the cyclone paths and to prepare for emergency assistance.

2.2.5 Tsunami

Sri Lanka was one of the countries worst affected by the Indian Ocean Tsunami, which struck the island nation on 26th December 2004 morning hours, triggered by a 9.3 magnitude earthquake that occurred off the west coast of northern Sumatra, Indonesia. This unprecedented event resulted in a death toll of more than 35,000 people and almost a million people were displaced. It damaged about 99,000 houses and an estimated 150,000 persons lost their primary source of livelihood. There was massive damage to infrastructure and capital assets, estimated at around US\$ 1 billion amounting to 4.5% of GDP, at that time. The worst impact to the economy was from tourism and fisheries sectors.

Tsunami is a low frequency, high-impact event for Sri Lanka and the hazard profile map has been prepared comprehensively in 1: 10,000 and 1: 50,000 scales, covering the entire coastal area of the country. The Tsunami inundation map (Figure 20) provides details such as the spatial extent and the height of the inundation, which contributes significantly for the decision making process related to the coastal zones of the country. The DoM acts as the nominated agency for Tsunami early warning (recognised as the National Tsunami Warning Centre - NTWC), while DMC is responsible for dissemination of warnings (recognised as the National Disaster Management Organisation – NDMO).

2.2.6 Sea level rise

The national hazard profile provides inundation maps due to sea level rise based on the International Panel for Climate Change (IPCC) scenarios and at 1:250,000 scale for 25, 50, 75 and 100 years from 2025 to 2100²⁹ (Figure 21).

Due to rise of sea level, saltwater intrusion into freshwater bodies and ground water intrusion in coastal areas has increased. This has considerable effect on the domestic water supply, agriculture and the environment. Unregulated use of ground water for agriculture and consumption of large quantities of ground water for other basic necessities including in the urban areas, could aggravate the potential of seawater intrusion.

²⁹ Hazard profiles of Sri Lanka, DMC, 2012

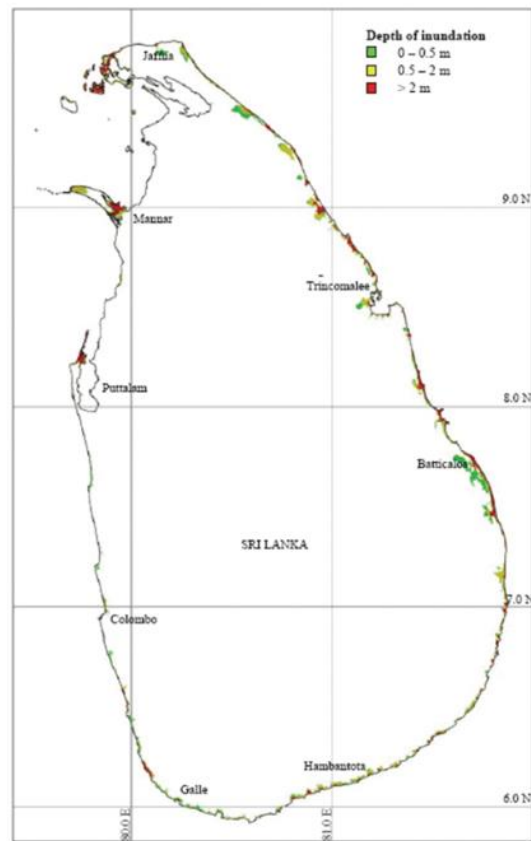


Figure 20. Tsunami inundation

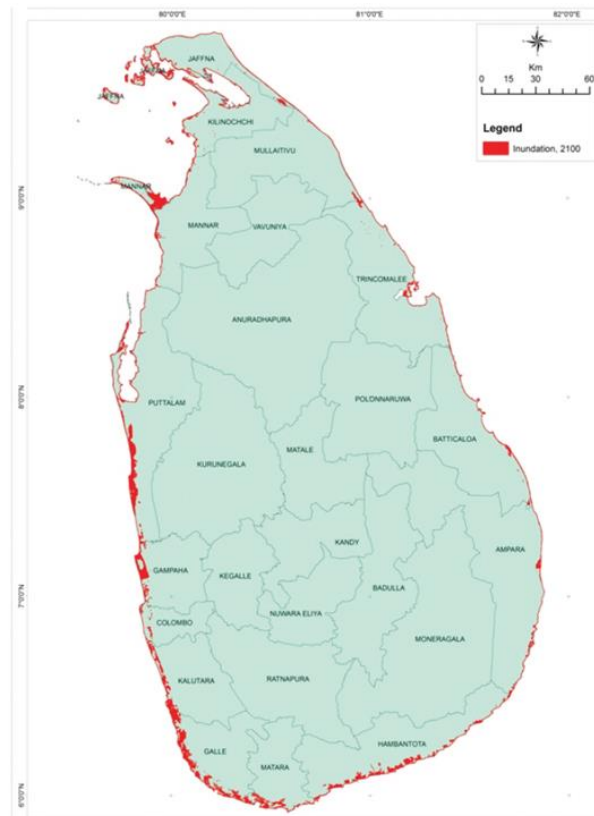


Figure 21. Predicted sea level rise - 2100

2.2.7 Storm surge

Most of the destruction during cyclones is caused due to storm surges and the eastern, northern and north western coasts in Sri Lanka are vulnerable to such hazards.

The National Hazard Profile of the country includes the storm surge profile, which has been prepared based on past data and numerical modelling following the 1:50,000 scale base maps. The model studies have been conducted at wind speeds varying from 110 km/hour, 160 km/hour, 215 km/hour and 275 km/hr corresponding to 10, 30, 90 and 300 year return periods. During these studies, the DoM collaborated with universities and coastal management authorities in developing and promoting this knowledge. The spatial distribution along with depth ranges are indicated in the inundation maps and the simulated peak surge heights by a cyclone event, with maximum sustained wind of 270 km/hr is shown in Figure 22.

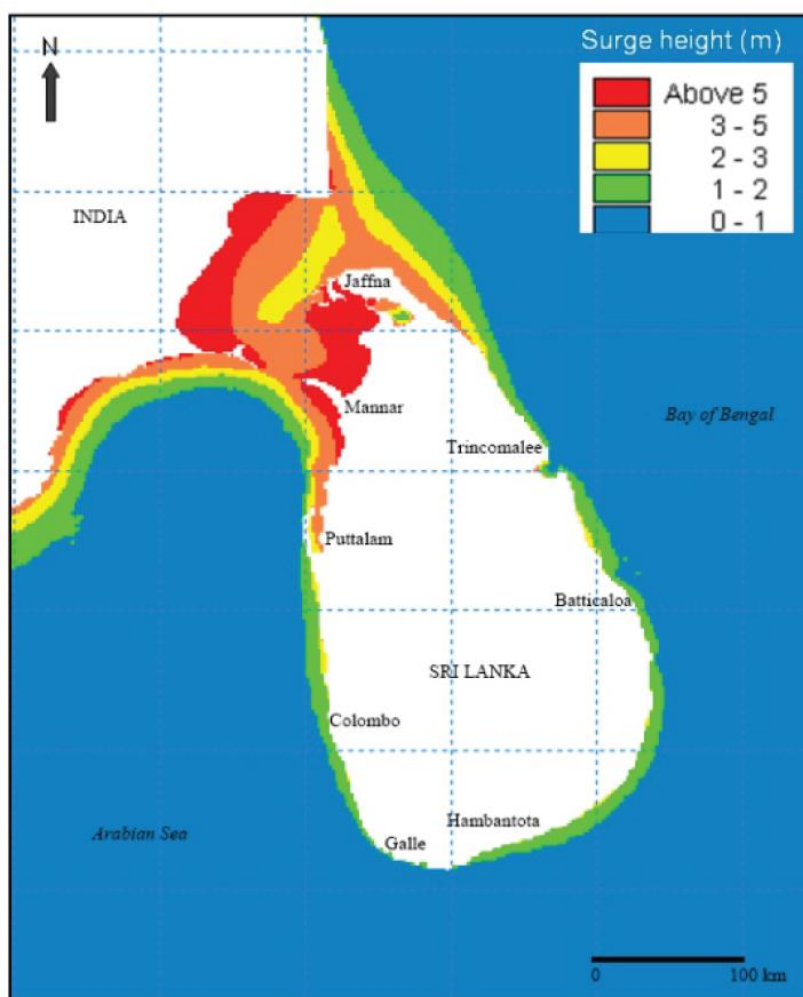


Figure 22. Simulated peak surge heights

2.2.8 Coastal erosion

Coastal erosion is a natural hazard which is exacerbated due to anthropogenic activities. It occurs due to loss of natural equilibrium of sediments in coastal areas, mainly due to over exploitation of sea sand for the construction industry and ill-suited artificial structures on and near shore areas. As an element in the natural environment, it is hard to revive the sediment process and the loss of ecosystem values. Coastal erosion has been recorded since 1960s and counter measures are taken

to mitigate the impacts, considering its importance on environmental sustainability, livelihoods of coastal communities and national development at large. In assessing the coastal erosion hazard, potential erosion intensities have been modelled, mapped and included in the National Hazard Profile of Sri Lanka. The coastal zone management practices directly and indirectly impact the ecosystem services supporting fisheries, coral health and the long term sustainability of coastal tourism. The Department of Coast Conservation and Coastal Resource Management (CC&CRM) with the support of other sector agencies, is responsible for assessing and managing the coastal risks and analysing the benefits from resilient coastal ecosystems, including mangroves.

2.2.9 Lightning

The DesInventar database information indicate that relatively higher incidents of lightning damage have been reported in the districts of Ratnapura, Galle, Kegalle, Anuradhapura, Kurunegala etc. (Figure 23). Lightning hazard profile prepared by the DoM provides details on regions where lightning occurs frequently, enabling to issue warnings during the rainy period for the safety of people. Lightning hazard maps have been completed for the entire country at the scale of 1:250,000. Monthly lightning maps as well as annual lightning hazard maps have been prepared based on past data and information obtained from 20 meteorological stations³⁰. This information could be utilised to conduct targeted awareness programmes to minimise loss of lives and damage to properties.

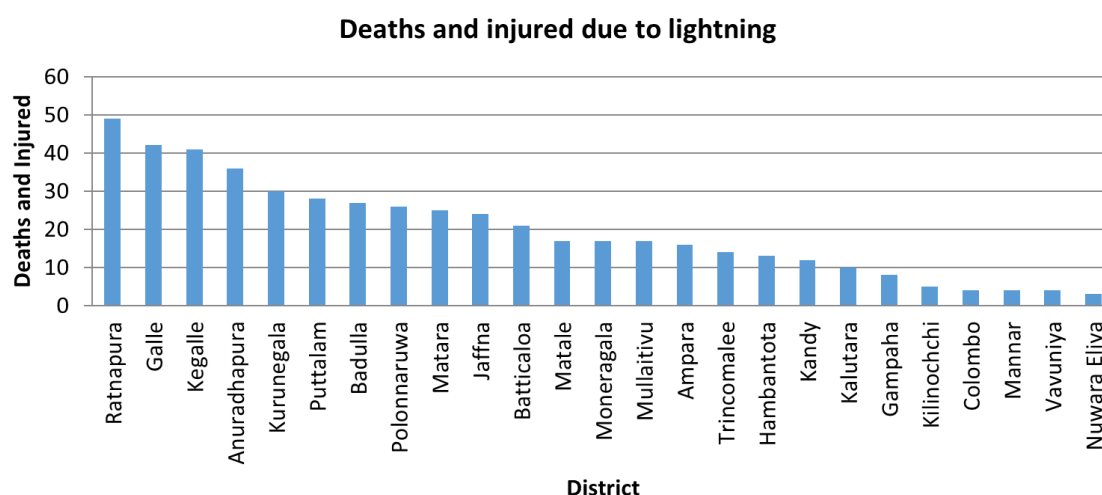


Figure 23. Deaths and injuries due to lightning

2.2.10 Fire

Forest fires and urban fires too have been identified as hazards affecting Sri Lanka. Forest fires are reported mainly in Badulla, Monaragala, Matale and Kandy districts caused by human interventions. During dry seasons (or drought) due to negligence or intentionally, people create fires in forests and in lands with shrubs. Opportunity exists to create greater awareness, improve fire preparedness and response mechanisms, including formulating an effective system to extinguish and control the spread of fire by combining the resources available across local government authorities, including municipalities and urban councils.

³⁰ Hazard Profile Sri Lanka

2.2.11 Earthquake

Though Sri Lanka has been identified as a country not affected by earthquakes, historical records of Geological Survey and Mines Bureau (GSMB) indicate that in year 1615, the Colombo Fort area had experienced an earthquake of a magnitude of 6.5 Richter scale, destroying 200 houses and recording a loss of 2,000 lives. In year 1800, information about several earthquakes in the epicentre within Colombo city limits have been recorded in empirical documents. Moreover, since 2005 several minor tremors were reported in a number of districts and the severity of some of these tremors have been studied in-depth by the GSMB with the assistance of local universities. Guidelines for designing buildings to resist earthquakes in urban areas were prepared by the DMC and forwarded for monitoring and implementation purposes by relevant government officials.

Although there are no records of earthquake occurrences in Sri Lanka, few earth tremors of differential intensity levels were reported in the recent past, in the eastern and southern parts of the country. These events highlight the importance of having systematic studies of dynamic behaviour of the earth crust around the epicentre clusters. During 2012 Ampara-Wadinagala tremor series was monitored, which was a strange and uncomfortable situation for the dwellers, within the affected area. In 2020 the Digana-Victoria tremor series was recorded and later with GSMB - German GFZ institutional collaborations, a temporarily seismic network was established for a period of nine (9) months and acquired data are used in research activities at present. Both 2012 (Senanayake Samudraya, Ampara) and 2020 (Victoria-Randenigala) tremor series occurred adjacent to the national reservoirs and specific attention among experts was on whether the incidents were related to induced-seismicity, due to water level fluctuations.

Recently in February 2023, Buttala-Wellawaya tremor series was monitored through all four (4) permanent stations and preliminary investigations were carried out. Further, additional seismic surveys were planned within the selected areas. Within the scope of seismic disaster mitigation, research activities were carried out on micro-seismicity in national scale. The seismic zonation mapping and formation of standards/parameters and the acquired knowledge is to be utilised to derive technical information for earthquake resilient building environment. Awareness programmes are focused on tremor prone areas, while the geological and geophysical studies are carried out by the GSMB to study the structural dynamics of eastern and southern parts of Sri Lanka

However, existing technology is inadequate of advance prediction of earthquakes or earth tremors. Therefore, risk reduction and preparedness for response are vital to minimise potential damages.

2.2.12 Building collapses

In the recent past, increasing incidents of building collapses were reported and it was identified that such incidents are mainly due to non-compliance with the building regulations or guidelines. Although, Sri Lanka does not have a specific building code, the NBRO and other government authorities such as the Condominium Management Authority (CMA) have issued adequate regulations and guidelines for safer and more resilient constructions. The government has initiated the process for developing a comprehensive building code together with a robust compliance monitoring mechanism to ensure resilience of the built environment.

2.2.13 Coastal and marine pollution

The ocean around Sri Lanka is highly vulnerable to oil spills and maritime hazards, as 25% of the world's oil transportation passes via Sri Lanka's Exclusive Economic Zone³¹ (EEZ). Further, there are risks associated with undersea pipelines transporting imported oil to refineries, expansion of maritime transport infrastructure, operations of the Trincomalee oil tank terminals and oil exploration within and near EEZ.

Sri Lanka has experienced five (5) oil spills and an incident of a ship catching fire during the last two decades. The X-Press Pearl maritime disaster, which occurred in 2021 is the worst which impacted Sri Lanka's sensitive coastal environment, fishing community and country's economy at large. The Marine Environment Protection Authority (MEPA) implements the National Oil Spill Contingency Plan (NOSCP) and has successfully coordinated the management of a number of small to medium scale spill incidents and the most recent incident being in September 2020, where an oil tanker caught fire inside the Sri Lankan coastal waters.

The disaster involving X-Press Pearl which was carrying plastics, chemicals and other cargo caused extensive damage to the western coast line of Sri Lanka. After the X-Press Pearl incident, the UN Environment Advisory Mission to Sri Lanka³² recommended the Sri Lankan government to 1) develop a maritime disaster plan (building on the existing NOSCP) 2) strengthen the institutional basis for its implementation and 3) conduct capacity building and training programme on maritime hazards and response. Currently, MEPA and Sri Lanka Navy are equipped with surveillance responsibilities and need systems to identify ships/ vessels including dangerous cargo, gas tankers etc. in the sea before entering the territorial waters of Sri Lanka. Further, the Sri Lanka Navy is presently functioning as the Maritime Rescue Coordination Centre (MRCC) in Colombo and obtaining International Maritime Organization (IMO) modifications of all ships/crafts entering into Sri Lankan waters. The facilities and technical capacity of the National Aquatic Resources and Research Agency (NARA) needs to be strengthened to undertake research on oil spill dissipation, ecological damage, recovery rates etc. among other ecosystem related research activities.

2.2.14 Pollution of inland waters

In Sri Lanka, there are certain hazardous substances which people are increasingly being exposed to, mainly due to unselective usage. Extreme use of chemical fertilizer and pesticides have become a major concern as chemical residues in high quantities are recorded in the water bodies³³ (Figure 24) such as in the Kalani river, which is exposed to industrial effluences.

In addition, significant amounts of bacteria counts have also been observed in water bodies³⁴ (Figure 25) that may pose a threat to consumption and bathing, including engaging in recreational activities in such contaminated water.

Similar level of contaminations during floods tend to easily spread into the wells of the households in the affected areas and also other water bodies in the vicinity.

Indiscriminate dumping of electronic waste and generation of micro plastics could pose future threats, significant economic and social impacts. Degradation of different plastic types used in

³¹ More than 500 tons of oil is transported every year in this region – National Oil Spill Contingency Plan - MEPA

³² X-Press Pearl Maritime Disaster Sri Lanka - Report of the UN Environmental Advisory Mission (July 2021) | UNEP - UN Environment Programme

³³ IUCN. 2016. Kelani River Multi-Stakeholder Strategy and Action Plan

³⁴ ibid

packaging, agriculture etc. and micro plastics has a tendency to absorb metal and bacteria, which carry the contaminants into food chains through fish, milk etc.

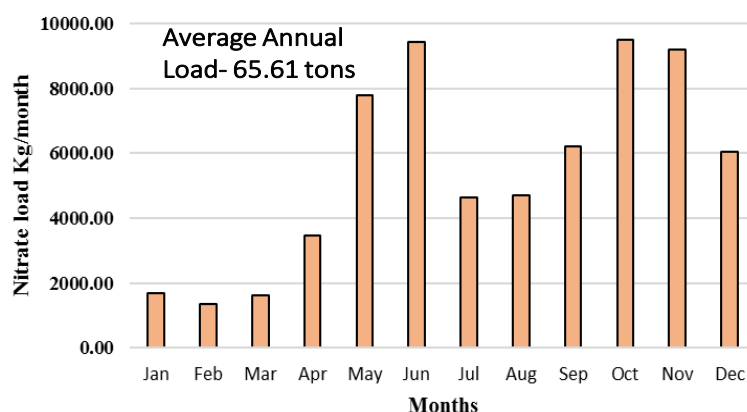


Figure 24. Nitrate nitrogen content in the Kelani river

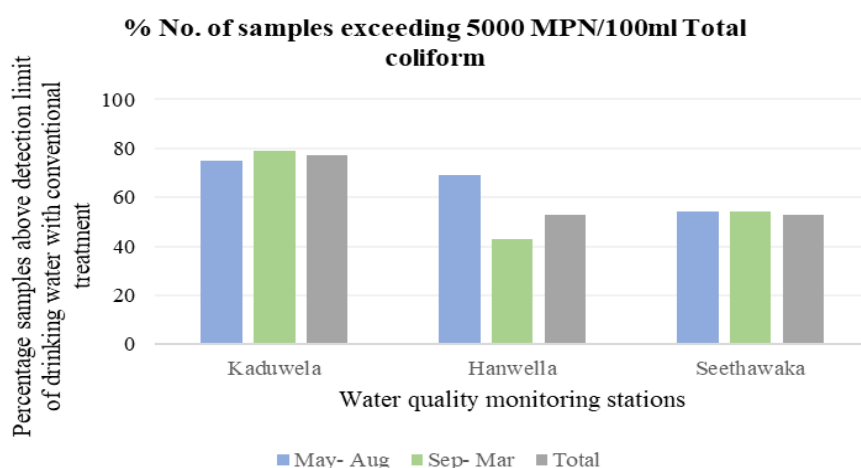


Figure 25. Exceedance of Coliform standards in the Kelani river

2.2.15 Air pollution

In recent times, air pollution has become one of the main environmental hazards in urban cities, as many urban areas in Sri Lanka (Figure 26) are expanding rapidly due to higher population growth, extensive construction activities, increased number of road vehicles and traffic congestion creating increased levels of stress on the natural environment. Since of lately, Sri Lanka has been experiencing frequent fog or mist conditions due to air quality reaching very unhealthy levels. Certain areas in the country recorded over 200 in the air quality index (AQI), mainly due to winds carrying polluted air across the Indian Ocean. Certain other causes which have been identified are transport emissions, mismanagement of waste, harmful agricultural practices, dust and pollutants due to various sources of industry and energy supplies.

The mortality rate caused by air pollution in Sri Lanka is higher, since more than 90% of the country's population is getting exposed to atmospheric particulate matter or PM_{2.5} levels exceeding the 2021 World Health Organisation (WHO) guideline values. According to health authorities, air pollution has been having direct impact on human health, causing headaches, skin irritations, cardiovascular and respiratory diseases, pneumonia, bronchitis, coughing, breathing difficulties etc. thus resulting in increased number of patients being admitted to hospitals for treatment. The impact has been

significantly felt in districts such as Colombo and Kandy where the average daily PM_{2.5} concentration was higher than the WHO specified guideline values.

At present, there is an air quality monitoring network with three (3) reference stations and district based real time monitoring units are in operation while, the data collected is being published in the website of the NBRO for public awareness. It is having been identified that air pollution is closely interlinked with climate change, crop production, bio diversity and eco system changes etc. and any adversities will significantly impact Sri Lanka's economy as well its rich bio diversity. Trans boundary movement of air pollutants across the country, especially during the northeast monsoon period has been a notable concern during which time period the health risks too have intensified. A comprehensive AQI has been developed for Sri Lanka (Figure 27) as well which categorises the specific levels³⁵SLAQI 150-200 (unhealthy); SLAQI 101-150 (unhealthy for sensitive groups); SLAQI 51-100 (moderate) and SLAQ 0-50 (good).

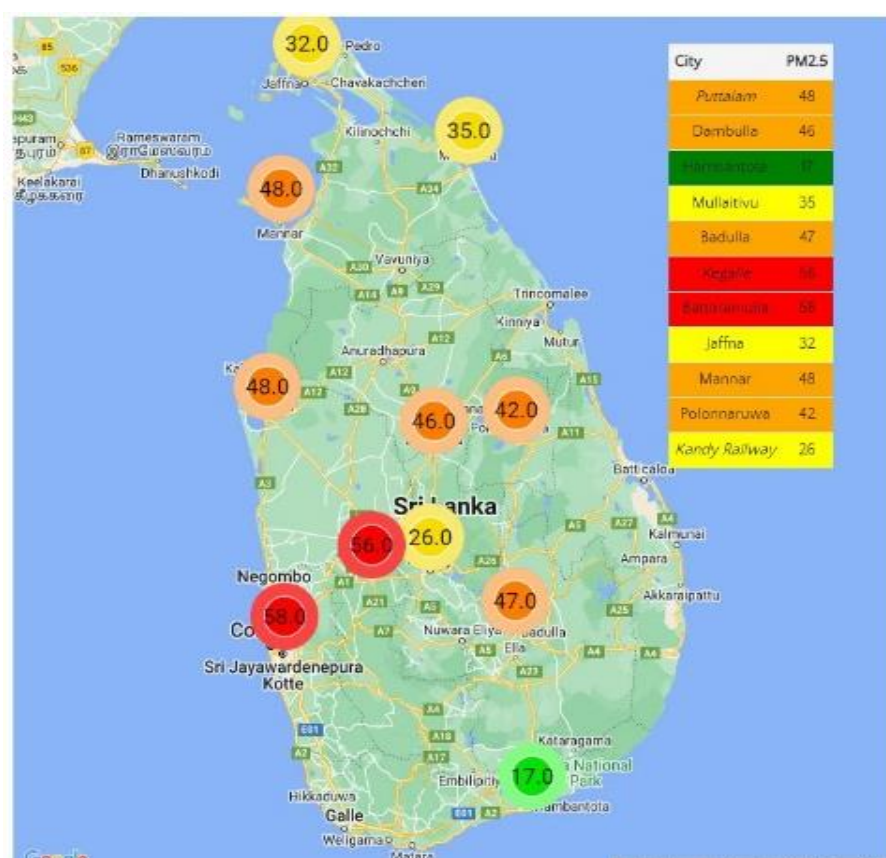


Figure 26. Dynamic air quality map

SLAQI 0 – 50	SLAQI 51 – 100	SLAQI 101-150	SLAQI 150-200
Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy

Figure 27. Sri Lanka's Air quality index

Efforts in managing air pollution problems should be considered both as national and local strategies and the identified gaps need to be looked into, in order to overcome major obstacles in achieving levels of clean air, which is safe for public health.

³⁵ Sri Lanka Air Quality Index - developed by: Dr. Wijemuni

2.2.16 Industrial

Chemical leakages, explosions in chemical or explosive storage facilities, radiological and nuclear waste handling, contamination of water bodies with industrial waste, collapse of garbage dumps are some of the potential industry related hazards. Certain chemical factories and warehouses located in residential areas in the country, increases the risk of communities living in such areas. Large scale industries involved in production and transportation of inflammable, hazardous and toxic materials have a mandatory responsibility to prepare on and off-site plans with simulation exercises or drills being performed with nearby communities, health authorities and police. In the same manner, small scale industries releasing toxic waste into surface water bodies, need to set up common effluent treatment facilities. Further, poison treatment centres with facilities for detoxification need to be established in hospitals near industrial estates. A comprehensive island wide risk assessment of industrial hazards, necessary contingency planning and community awareness for preparedness and response is crucial, including the institutions/organisations which come under the purview of the Ministry of Industries and Department of Labour. Similarly, the CEA led processes such as the Environment Protection Licence (EPL) and Environmental Impact Assessment (EIA) carried out on development projects need to be further strengthened.

2.2.17 Nuclear and radiological accidents

The national nuclear or radiological Emergency Management Plan (EMP) prepared by the Atomic Energy Regulatory Council is to be further strengthened with a multi-sector approach to reduce the risks or mitigate the consequences of any accidents and also prevent serious casualties and long term health effects due to radiation. As Sri Lanka's maritime boundaries expand, the responsibilities to monitor and mitigate potential threats in nuclear power ocean carriers including submarines are to be incorporated in the risk sensitive plans at national level. Further, necessary systems need to be strengthened to disposing of radiological waste from hospitals, laboratories and research institutions.

2.2.18 COVID-19 pandemic

The COVID-19 pandemic has created unprecedented socio economic impact and highlighted the need for pandemic preparedness. It has exposed new aspects of health, social and economic risks, while highlighting several pertinent aspects relevant to disaster risk management. Prior to COVID-19 pandemic, the Ministry of Health (MoH) in Sri Lanka with the assistance of the WHO had developed a framework in line with the International Health Regulations (IHR) to address trans-boundary risk of communicable diseases. The National Action Plan for Health Security, Sri Lanka 2019-2023 also highlighted the importance of preparedness and appropriate response to health hazards, which are transboundary in nature.

The risk of communicable diseases was managed by the Epidemiology unit of the MoH through an island wide network under Sri Lanka's Quarantine and Prevention of Disease Act.

Health information of the COVID-19 pandemic in Sri Lanka as updated by the MoH³⁶ indicate that between January 2020 to October 2022, a total of 671,465 confirmed positive cases (Figure 28) along with a total of 16,814³⁷ confirmed deaths were reported. Sri Lanka adopted a holistic governmental

³⁶ Coronavirus (COVID-19) Sri Lanka - Analytics Dashboard (health.gov.lk)

³⁷ WHO Coronavirus (COVID-19) Dashboard - https://covid19.who.int/?adgroupsurvey={adgroupsurvey}&gclid=EAlaIqobChMiz5-N37uY_AIVQZhmAh1RdgBgEAAAYASABEgKuWfD_BwE

and societal approach in combating COVID-19 pandemic. The MoH as the lead agency initiated pandemic prevention and control activities through its extensive network of grass root level public health facilities. Primary level public health workers such as the Medical Officers of Health (MOH) and Public Health Inspectors (PHIs) were at the forefront of country's response mechanism adopted to control the pandemic. This system was supported by the local hospitals at different levels, quarantine and isolation centres and laboratories across the country. Furthermore, early detection and screening of patients at the ports of entry into the country was also strengthened.

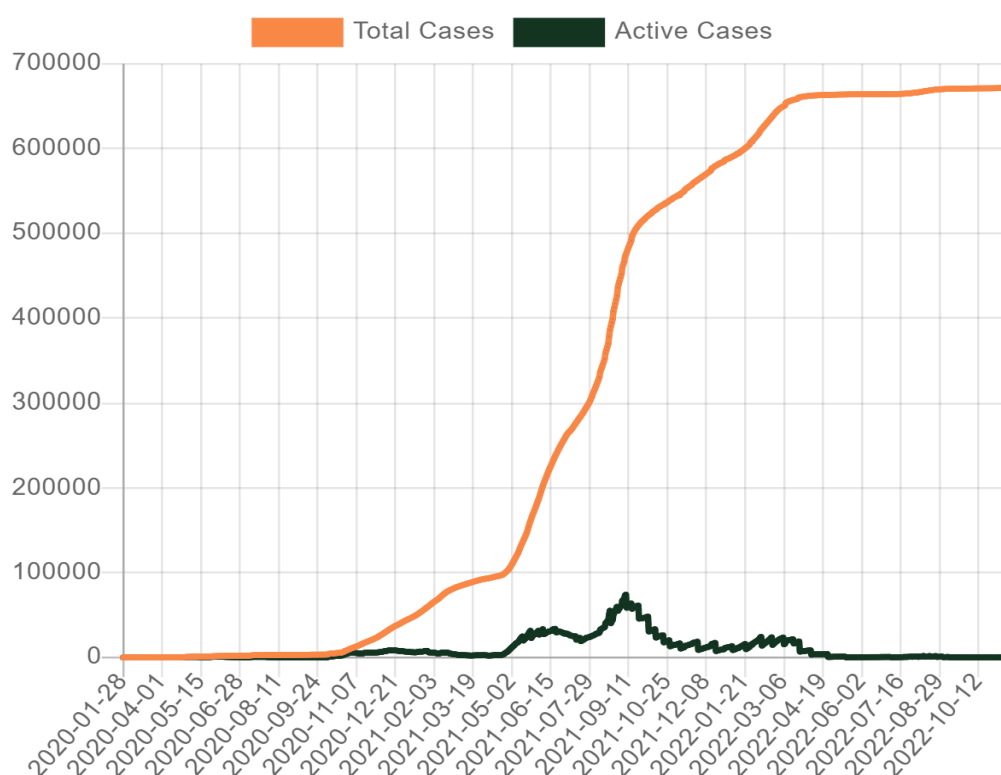


Figure 28. COVID -19 pandemic statistics in Sri Lanka (2020-2022)

With the establishment of the National Operations Centre for Prevention of COVID-19 outbreak (NOC PCO), a multi stakeholder platform was created to address numerous aspects of pandemic control including health sector strengthening, economic and social support, public awareness and risk communication, law and order and public security. There was notable contribution by the Tri Forces and Police facilitating the health response mechanism including but not limited to contact tracing, quarantine and isolation and thus it was instrumental in preventing large disease clusters and outbreaks within the island.

2.2.19 Emerging health hazards

2.2.19.1 Vector borne diseases

Although, Sri Lanka has been successful in eliminating malaria, other vector borne diseases such as dengue still pose a substantial threat to public health. Dengue, which demonstrates a seasonal pattern of outbreaks in line with the two monsoons periods, at present has spread to all geographical regions in the country, creating great concerns among health authorities. With the impact of climate change and subsequent extreme weather events, predicting the disease has become even more difficult. Schools, construction sites, religious places and public spaces are considered high risk for

dengue, with the routine Entomological reports revealing high vector breeding. Further, the economically productive age group of 20-49 years and school going children are identified as the most vulnerable for dengue mosquito bites. Affinity of its vector, *Aedes* mosquitoes to water and favourable tropical climate in the country has further complicated the activities of disease prevention and control. As at second week of December, 2022, Sri Lanka reported 71,980 dengue patients with nearly 60 fatalities.

Considering the increase in the number of reported dengue cases, a multistakeholder approach spearheaded by the National Dengue Control Unit of Ministry of Health and guided by the Presidential Task Force on dengue has been adopted to prevent and control the disease. While preventative strategies such as inspection of premises/locations, source reduction are at the forefront, public engagement and community awareness play a major role in disease prevention. These activities are supplemented by evidence based clinical management of dengue patients, which is apparent by the low case fatality rate (CFR), despite high incidence.

2.2.19.2 Non communicable diseases

Non-communicable diseases (NCDs) rank among the top ten causes of premature deaths in Sri Lanka. Although Sri Lankans live longer, the older population tend to suffer from diseases and disability including NCDs. In Sri Lanka, the life expectancy at birth is 74.9 years and healthy life expectancy at birth is 67 years³⁸.

Cardiovascular diseases, cancer, chronic respiratory diseases and diabetes are among the most common NCDs in Sri Lanka. Risk factors include harmful use of alcohol, tobacco, unhealthy diet and lack of physical exercise. Poverty and ill effects of air pollution too are considered as underlying factors for high prevalence of NCDs among Sri Lankans. With an aging population, NCDs are expected to cause a substantial burden on the country's health system and economy in the future.

Chronic kidney diseases of unknown etiology (CKDu), which is a disease characterised by absence of definitive causative factors, is prevalent in several provinces in Sri Lanka, mainly among the agriculture based populace. Some hypothesis linked the disease with contamination of ground water due to excessive use of agro chemicals, yet the exact cause is yet unknown. With all underlying socio-economic causes being associated with the agriculture based rural population cohorts vulnerable to this disease, it will exert a considerable burden on Sri Lanka's health care system in the future.

2.2.20 Road Traffic Accidents (RTAs)

According to the information issued by the Sri Lanka Police Traffic Admin & Road Safety Range, during the period of 2018 to 2022 a gradual decline in road traffic accidents (RTAs) has been witnessed. On average about 2,600 deaths were reported annually during this five year period (Table 1) while damages caused due to accidents has seen a reasonable decline as per the data stated below. It is estimated that in countries such as Sri Lanka, RTAs and subsequent injuries cost between 3-5% of the annual GDP.

³⁸ 2018 Health SDG Profile: Sri Lanka, WHO, South East Asia

Table 1. Analysis of road traffic accidents (2018 – 2022)

Nature of accident	Year				
	2018	2019	2020	2021	2022
Fatal	2,994	2,689	2,242	2,452	2,395
Grievous	8,795	7,718	6,949	6,669	6,231
Non-grievous	12,138	10,679	8,706	8,088	8,209
Damage only	11,918	9,391	5,807	5,638	5,118
Total	35,845	30,477	23,704	22,847	21,953
Deaths	3,150	2,852	2,363	2,557	2,515

Source: Traffic Admin & Road Safety Range, Sri Lanka Police (2022)

2.2.21 Railroad accidents

Fatalities due to railway accidents recorded a significant increase in the recent years. As per data released by the Sri Lanka Railways (SLR) the number of human deaths and injuries due to train accidents has witnessed a significant increase in 2022 when compared with the stats of 2021 (Table 2). According to SLR, 196 persons died from train related accidents in 2022 and these deaths were due to collisions at level crossings, trespassing rail tracks and suicides while more than 400 persons suffered from minor to severe injuries³⁹.

Furthermore, deaths of animals due to railroad accidents too have seen an increase with 31 cattle and 30 elephants reported as dead in 2022.

Table 2. Analysis of railroad accidents - humans and animals (2018 – 2022)

		Year				
		2018	2019	2020	2021	2022
Total number of human deaths		230	215	110	120	196
Total number of humans injured		474	371	238	200	403
Total number of animal deaths	Cattle	34	43	27	22	31
	Elephants	10	9	5	7	13

Source: Sri Lanka Railways (2022)

2.2.22 Animal attacks

Animal attacks could be considered as the impact created due to destroying of human livelihood, loss of human lives and also destruction of crops and properties by various animals. In Sri Lanka, animals such as elephants, leopards, crocodiles, wild boar, toque macaque, monkeys, peacocks, squirrels etc. have been creating large scale damages to the livelihoods of people.

Sri Lankan elephant has been identified and listed as an endangered species since 1986 and is a subspecies of the Asian elephant. Terrestrial protected areas have been established in Sri Lanka

³⁹ 200 die in 2020: Railways run out of steam to stop track tragedies, <https://www.sundaytimes.lk/230402/news/200-die-in-2020-railways-run-out-of-steam-to-stop-track-tragedies-516161.html>, 2nd April 2023 by Nadia Fazlulhaq

with the aim of protecting the country's rich bio diversity, including elephants as a prominent cultural symbol.

The primary causes of Human Elephant Conflict (HEC) include loss of connectivity of natural forests, loss of elephant habitat due to human encroachments into elephant corridors, settlement in lands adjacent to dense forests, commercial farming and degradation of elephant habitats. As a result, elephants frequently travel across or enter human settlements and farmlands. In addition to conflicts with elephants, clashes with monkeys and other species are also on the rise.

Deforestation is a major problem in Sri Lanka and currently the forest coverage has decreased to 16%. Since the 1920s, the forest cover in Sri Lanka has declined from 70% to about less than 20% at present.

Elephants are known to have an affinity towards salt and paddy stocks that are available in villages. This is further aggravated by poor waste management practices that allow elephants to taste salty food in discarded food, which is considered as an invitation for elephants to destroy houses in the process of looking for salt and food.

Most elephants live in the dry zone areas of the country. HEC is prominent in North Central, Eastern, Uva, North-western, Southern, Northern, Central and Sabaragamuwa provinces, in the decreasing order of magnitude (Figure 29). A total of 14,516 HEC incidents were recorded in the country during 2010–2019. A total of 807 human deaths, 579 human injuries and 10,532 property damages were caused by elephants while 2,631 elephant deaths⁴⁰ were also recorded.

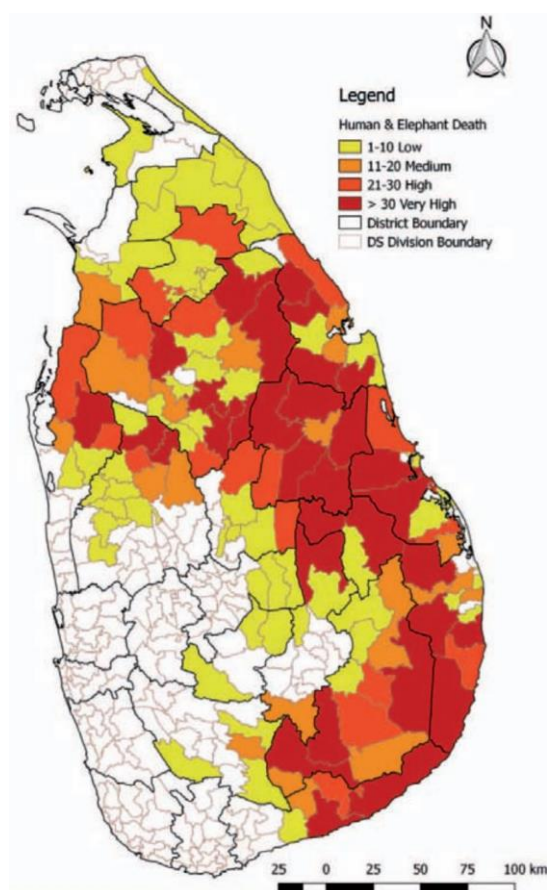


Figure 29. District Secretariat divisions affected with HEC

⁴⁰ Prakash TGSL, Wijeratne AW & Fernando P (2020) Human-elephant conflict in Sri Lanka: Patterns and extent. *Gajah* 51: 16-25

A comprehensive approach for HEC has been proposed by a Presidential Committee to prepare a National Action Plan for Human Elephant Conflict Mitigation⁴¹. It highlights the key multi-sector aspects and a holistic approach to address the HEC concerns.

As the District and Divisional Secretaries are increasingly entrusted with the management of lands and land resources, which are under the purview of government ministries and/or organisations of the subjects of Mahaweli, forests, land reclamation and wildlife, it is a critical requirement to build the capacities in the district administration and planning sectors on ecosystems, eco-capacity on land use planning and on ecosystem aspects, in order to prevent further escalation of HEC. Additionally, the current level of HEC occurrences could also be minimised, by possible adoption of early warning and other techniques that may include high level of technology such as GIS, IOT, imaging and tracking, AI etc. and upon fixing highly effective and expensive barriers/fences.

2.2.23 Animal or plant disease

Ensuring safer human consumption of plant produce, has become quite a challenge, particularly in the perspective of increased population growth, destruction of habitat and urbanisation. Growing demand for safer produce in this era of internal exports and imports of horticultural products and plant germplasm, has been a key concern in the food supply chain and at consumer level as well.

Diseases and pests continue to threaten food crops in the field as well as in storage, leading to considerable loss of crop annually, worldwide. Similarly, the increased and excessive usage of synthetic pesticides and herbicides, not only affect animal and human health adversely but also disrupt food webs in natural and agro-ecosystems, resulting in ecological instability of the environment.

Sri Lanka has been facing agriculture crop damaging situations due to pest outbreaks creating concerns of food security. During the last few years, the country's agriculture sector has experienced invasion of grass hoppers, worms, caterpillars, flies etc. damaging vast areas of crops leading to significant losses for farmers and home gardeners. In general, crops such as paddy, coconut, rubber, banana, maize etc. have been infested or attacked by pests such as gastropods, yellow spotted grasshopper, fall armyworm, mealybug etc.

Scientific evidence has revealed a link between climate change and insect outbreaks, which could perhaps explain some of the recent pest attacks throughout South Asia. These insects are also known for their ability to adapt to changes in climatic conditions and migrate to other habitats for survival. As threats from both old and new pests emerge, Sri Lanka is resorting to the use of new technology to combat them.

2.2.24 Drowning

Despite, awareness, education and posting of warning signs, astoundingly deaths and injuries due to drowning is on the rise and identified as one of the newly emerging trends in disasters. As per available DesInventar data 100 deaths were reported in 2020 and 2021 while data shown for 2022 is pending further updates. (Figure 30).

⁴¹ National Action Plan for Human Elephant Conflict Mitigation. 202

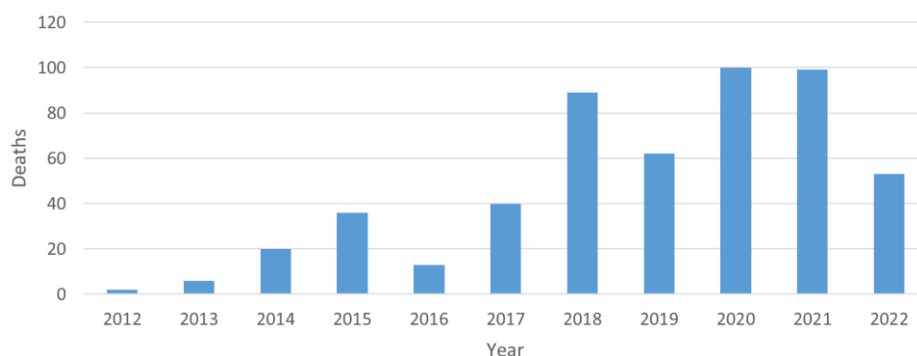


Figure 30. Deaths due to drowning (2012 to 2022)

Drowning is considered as the second highest cause of accidental death in Sri Lanka after road accidents. According to the Sri Lanka Life Saving Association (LSA), on average about 750 people drown each year (3.5 deaths per 100,000 population in Sri Lanka)⁴². In terms of gender as per the LSA during the period of 2001-2018, drowning accidents of males was 3.5 times higher with a drowning rate of 5.9 deaths per 100,000 population, when compared with 1.3 deaths per 100,000 for females. Importantly, the highest number of water related accidents are reported amongst children between the ages of 1-14 years. Nationally, lakes and other waterways were the top locations for 26% of all deaths during 2016-2018 (Figure 31) followed by canals (22%) and sea (21%).



Figure 31. Top drowning locations in Sri Lanka

This highlights the need for overall capacity enhancements in swimming skills for citizens as well as improved search and rescue capacity among the communities nearby the hot spots. The highest number of deaths were recorded in Puttalam, Galle, Kalutara, Hambantota and Badulla during the period of 2012 to 2022.

⁴² SLLS – Sri Lanka Life Saving - <https://srilankalifesaving.lk/>

2.3 Risk understanding

Analysis of data of disaster events in Sri Lanka between 1990 and 2018⁴³ indicate that the highest number of deaths have occurred due to landslides (35%) followed by animal attacks (34%) and floods (21%) in Sri Lanka. About 5% and 3% of the total deaths are due to cyclones and fire respectively. In terms of the impact created due to disasters, most number of people have been affected from drought (56%) and by floods (39.5%). During the same period the highest number of houses which have been damaged and destroyed, were due to cyclones and high winds, followed by landslides and floods. Understanding risk provides critical knowledge to be used in decision making which reduces disaster risk of exposed population and assets in the present context and also assisting in creating any future disaster risk.

Meanwhile since the adoption of the DM Act 2005 new hazards have emerged resulting in the alteration of the overall hazard profiles both due to climate change and human induced factors. There is widespread misuse of chemicals in the agriculture sector and other industries, atmospheric pollution due to vehicle and industrial emissions and deficiencies in environment management due to mismanagement of disposal of solid waste, electronic and hazardous waste etc. among others. Vector borne diseases such as dengue have become hazardous turning into spells of epidemics in most parts of the country.

From a perspective of positivity, the disaster management techniques have also changed with enhanced focus on demographic shifts, gender, age and disability issues, human rights concerns, intersectional nature of risk, socioeconomic variables and rapid digitalisation and technological advances⁴⁴.

The NDMP 2023- 2030 will promote tools and mechanisms for efficient sharing of risk information, harnessing on new technological advancement in risk assessment, visualization and communication which provides better opportunities for efficient availability of hazard information for risk reduction programmes as mentioned below.

1. Preventing and avoiding new risk (Prospective disaster risk management)
2. Strengthening social and economic resilience (Compensatory disaster risk management)
3. Reducing existing risk (Corrective disaster risk management)

International organisations and key technical agencies in Sri Lanka could play a key role in developing strategies and tools, directives, agreements, collaborations and contextualized approaches that can help to frame a comparable and coherent understanding of disaster and climate related risks to support economic, social and ecosystem resilience building opportunities and sharing of knowledge, experiences and lessons.

2.4 Understanding climate change related risks

Extreme climate indices⁴⁵ have shown an increasing trend in precipitation indices such as maximum one-day precipitation, maximum five-day precipitation and total precipitation on extreme rainfall days (R95p – heavy and R99p – very heavy).

⁴³ DesInventar Data Base, Disaster Management Centre

⁴⁴ European Forum for DRR. 2021. Roadmap for disaster-resilient European and Central Asian region by 2030. www.undrr.org

⁴⁵ Shiromani Priyanthika, I. M., Thanuja Darshika, D. W. T, Roshan C. Herath H. M., 2018, Recent Trends in Climate Extreme Indices over Sri Lanka, American Journal of Climate Change, 2018, 7, 586-599

The increase observed in precipitation extreme trends indicate occasions of heavy rainfall. The climate influence (rainfall and temperature) on hydrology and ecosystems of the country and identified potential mitigation measures are as follows⁴⁶:

- Rainfall captured in the highlands during the southwest and northeast monsoons has changed

[Mitigation: climate influence can be mitigated by strengthening the canopy structure]

- Extent of rainfall harvested by the highland landscape and landforms

[Mitigation: it is necessary to enhance rainwater harvesting and take measures to increase the availability of groundwater, drinking water and also to provide as surface or groundwater for agriculture and enterprises]

- Temperature gradient from lowlands to highlands due to altitude and wind regimes
- Shifting patterns of temperature (i.e. ambient, minimum and maximum daily temperatures) due to climate change
- Sea level rise and impact on surface and groundwater in the coastal areas

[Mitigation: manage ground water extractions to ensure water levels are safe and above sea level]

The mean annual temperature in Sri Lanka demonstrates largely homogeneous temperatures in the lowlands and rapidly decreasing temperatures in highlands. In lowlands, up to an altitude of 100 m to 150 m, the mean annual average temperature is 27°C and in the highlands, the temperature falls quickly as the altitude increases. The mean annual temperature of Nuwara Eliya at an altitude of about 1,800 m is 15°C. However, in the central hills during the period of January to mid February, the diurnal temperature variation in Nuwara Eliya is large and thus ground frost could be observed early in the mornings or nights for about 3 to 7 days, when the temperature closer to the ground falls below freezing point. Since lately, a significant decrease in the annual occurrence of cold nights and an increase in the annual occurrence of warm nights is evident.

Climate predictions using AR4 model of UNFCCC indicate the trends (Table 3) that are not favourable for humans and agriculture, including the dairy industry.

Table 3. Future disaster trends and impacts

Index	Trend
Maximum of maximum temperature	Positive
Maximum of minimum temperature	Positive
Minimum of maximum temperature	Positive
Minimum of minimum temperature	Positive
Cold days	Negative
Warm days	Positive
Cold nights	Negative
Warm nights	Positive
Simple daily intensity	Positive
Days above 20 mm	Positive
Annual total precipitation	Positive

⁴⁶ ibid

In the future, both minimum and maximum daily temperatures are expected to rise which could be considered as a sensitive factor, particularly for the dairy industry. Cold nights are necessary for agriculture especially for tuber crops while a decrease of such cold temperatures affect agriculture productivity. Extended warm nights will add challenges to the welfare and comfort measures of humans and animal husbandry, while adding to energy costs. Increased rainfall intensity enhances erosion and land degradation, impacting land and water management aspects of agriculture and other services. Increasing heat waves and worsened air quality impact the humans exposing them to various health risks.

2.5 Hazard, vulnerability, capacity and risk assessment

In the current context, there are multiple hazards beyond the traditional hydro-meteorological and geo-physical disasters leading to loss of lives and property damages. Such hazards include floods, landslides, cyclones/high winds, drought, lightning, tornadoes, coastal inundation and Tsunami as mentioned in the Hazard Profile of Sri Lanka. New areas that are emerging include but not limited to;

1. Health hazards, including epidemic prone infectious diseases, vector borne diseases and diseases that may arise from environmental pollution, consumption of unsafe foods, radiological events and CBRNE pose a significant impact on public health, economy and society.
2. Deforestation and land degradation in inland locations due to unplanned development and reduction of canopy cover in central highlands leading to reduced cloud capture.
3. Increased erosion resulting in siltation in tanks and reservoirs with impact on agriculture, urban services, power generation etc. through droughts, floods and landslides.
4. Degradation of coastal landscape including removal of mangroves and vegetation, creating multiple impacts such as increased erosion and less resistance to cyclones and sea surges, beyond the loss of habitats for fish and prawn farming thus aggravating socio-economic concerns.
5. Planned industrial expansions, oil exploration etc. resulting potential increase in industrial accidents, oil spills and radiological events etc.
6. Climate change induced pest, weed and disease attacks in crops resulting decrease in quality and quantity of yield such as armyworm damage in Maize, reported in 2019, that affected poultry feed production.
7. Animal attacks such as elephant, leopard, monkey etc. due to the damages to their habitats and corridors
8. Seawater intrusion and salinity due to sea level rise or extensive use of ground water pumps beyond the carrying capacity
9. Bush/forest fires with medium and long-term adverse effects to the national economy
10. Risk associated with earth tremors

2.6 Hazard assessment and hazard mapping

Hazard assessment is the process of identifying possible events that may cause life losses and property damages with the potential severity, duration, extent and impacts. Hazard zonation mapping is essential for preparing vulnerability and risk maps. Leading technical agencies responsible for hazard information, mapping and periodically updating in collaboration with DMC has been identified (Annexure 4) along with the appropriate scales for mapping at different landscape scales (Annexure 5).

In hazard mapping, the Survey Department is a key agency for resources on maps, as it develops the map layers using information from line agencies, government institutions, international collaborations etc. With regard to disaster information, DMC in collaboration with stakeholders has developed two digital information platforms. The Risk Info (www.riskinfo.lk) database provides multiple disaster related data layers while the DesInventar (www.Desinventar.lk) covers the events, loss and damages. NDMP 2023-2030 advocates developing maps with multiple hazards, in order to better understand, plan and invest on disaster risk reduction, preparedness and response in a given geography.

2.7 Hazard mapping at community level

Divisional Secretariats and the respective planning units collaborate with District Disaster Management Coordinating Units (DDCMUs) while working closely with CBOs, INGOs, NGOs, women networks, children and youth clubs working at community levels to develop hazard and vulnerability maps, usually through Participatory Risk Assessment (PRA) tools. The community maps should include risk areas, evacuation routes, safe areas and temporary shelters, etc. to the maximum extent possible, in addition to climate and ecosystem information. In the recent past digital mapping and use of open source mapping software such as Q-GIS has been popular among NGOs and communities.

2.8 Vulnerability and risk assessments

Vulnerability assessments combine the information from risk identification with an inventory of the existing (or planned) population, property and infrastructure (element at risk) exposed to hazards and help determine exposure, coping capacity and resilience of the physical structures and people. Social aspects of vulnerability consist of several vital determinants such as gender, age, abilities, access to resources i.e. income, knowledge and information, productive assets. Vulnerability assessments are conducted to determine conditions that increase susceptibility to damage and assess the capacity of the population to manage the consequences.

A holistic risk assessment considers all relevant hazards and vulnerabilities including direct and indirect consequences. Risk assessments would include diverse types of direct and indirect impacts of disaster which includes physical, social, economic, environmental and institutional. Moreover, this analysis would also provide information on the underlying drivers of risk such as climate change, poverty, inequality, weak governance and unplanned land use, urban development, etc. Risk assessments in disaster management can be done at national, sub-national, community or project based level and will vary depending on the scope but not limited to;

1. Prevention and mitigation
2. Planning for response and recovery
3. Enhance community level DRM with livelihood development and poverty reduction
4. Land use zonation, development and physical planning, major infrastructure development

2.9 Capacity assessments

Risk assessments should also consider an evaluation of the effectiveness of prevailing and alternative coping capacities with respect to likely risk scenarios. Capacity assessment identifies the strengths and resources available to reduce the level of risk or the effects of a disaster. The resources available to mitigate disaster risks are evaluated by analysing available strengths such as

skills, expertise, equipment, infrastructure etc. It is also important to evaluate how fast these resources can be deployed in an emergency and how durable or long lasting these resources are to varying degrees of severity of identified hazards.

2.10 Data for risk assessment

Data required for risk assessments can be accessed from national DRM agencies, government line agencies, statistical offices, specialised agencies (meteorological, hydrological or seismological), research institutes, universities, international development partners and local community groups. However, acquiring sufficient and appropriate data can be a challenge, as datasets will often be incomplete, outdated or simply unavailable. In addition, the reluctance of certain major mainstream agencies or institutions to share information/ data has also been identified as one of the critical downsides.

The Disaster Management Information System of Sri Lanka (i.e. DesInventar methodology) is in operation and being updated continuously. Interested stakeholder agencies and public can access the web based database at www.desinventar.lk to obtain required information. DMC further expands the data sharing for DRM, introducing Risk info spatial data sharing platform. DMC will continue and coordinate as appropriate, the activities of the National Level Emergency Information Database; Sri Lanka Disaster Resource Network (SLDRN). In addition, will continue to update the data collected by other relevant agencies.

2.11 Risk informed planning

Disaster management is a cross cutting subject and should be an integral part of all institutions and sectors. As per the DM Act 2005, all ministries, departments and statutory bodies should prepare risk informed disaster management plans, according to the specific mandates. NDMP 2023-2030 aims to ensure a resilience society and sustainable development, by capitalising on the inter-relationship with different disaster management plans of stakeholder entities at various levels. All implementing authorities including UN and international agencies, INGOs, NGOs and grass root level organisations will have their operational plans in conformity with the NDMP⁴⁷ highlighting the vertical and horizontal linkages (Figure 32).

DMC will design a system for capacity development towards generation of Disaster Management (DM) plans at all levels along with the guidelines, in line with Annexure 6. All plans developed by different sectors, administrative bodies and agencies etc. will form the overall planning framework that, can be used in disaster preparedness (Figure 33) and also develop or update the National Emergency Operations Procedure (NEOP), in order to introduce management effectiveness tracking tools to track and report the activities at different levels. DMC will coordinate and monitor the implementation and management effectiveness of the plans developed with the support of national, provincial and district level entities.

⁴⁷ Section 10 Sri Lanka Disaster Management Act No.13 enacted in the Parliament of Sri Lanka in May 2005

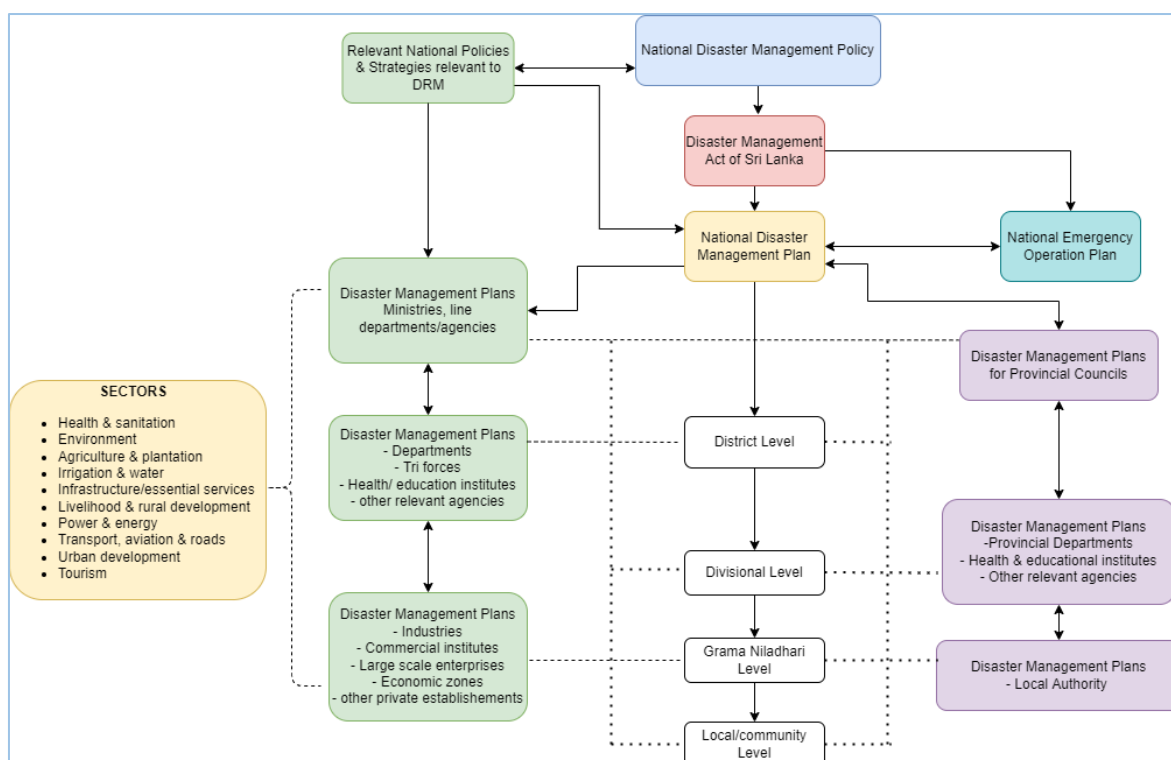


Figure 32. Vertical and Horizontal Disaster Management Planning

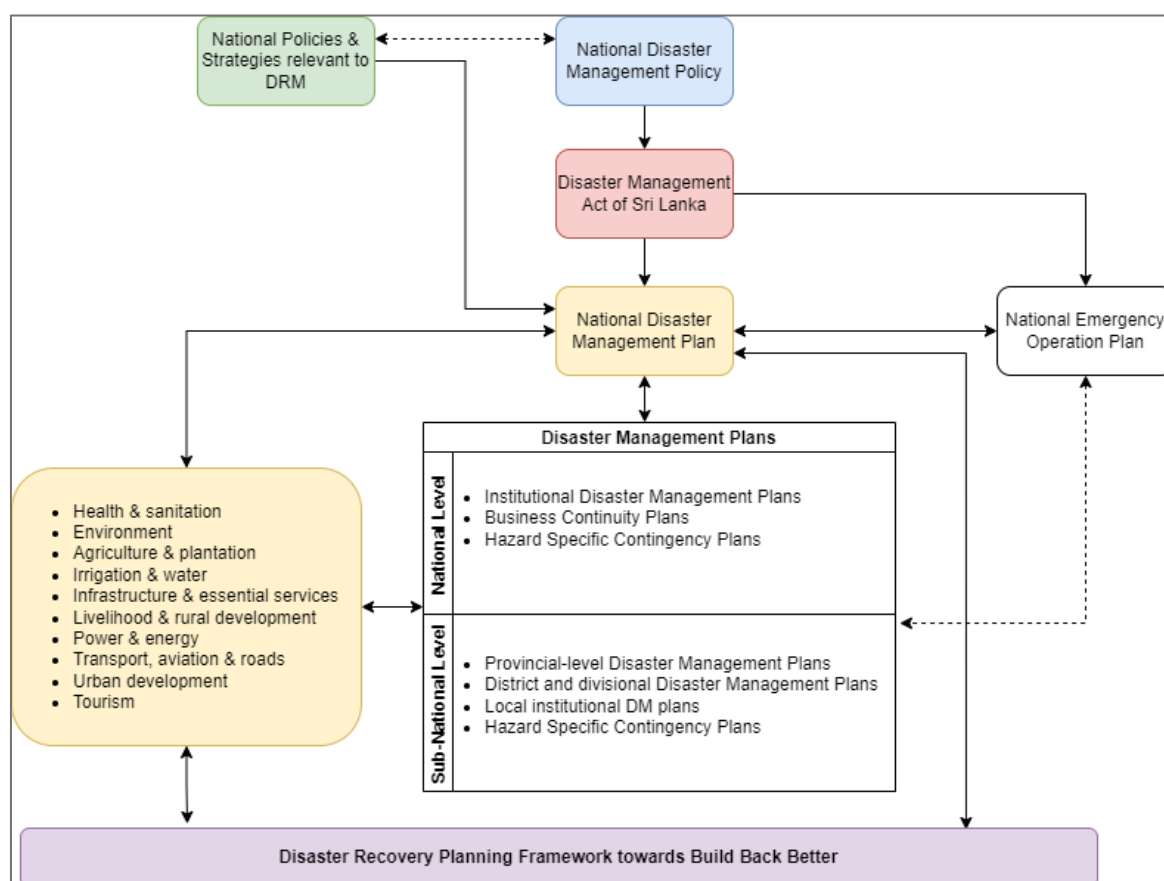


Figure 33. Disaster Preparedness Planning framework

Based on the DM plans the agencies will prepare or update risk sensitive Standard Operating Procedures (SOPs) as part of the NDMP 2023-2030 process encompassing the disaster management cycle. The DM plans mostly will be either in Sinhala or/and Tamil and the DDMCUs will be responsible for coordination of the preparation of such plans at sub-national levels (i.e. local government) along with the District Secretary or Divisional Secretary. These plans provide provision for all sub national level administrations to coordinate with each other namely, provincial councils, local authorities (LAs), Districts, Divisions and GN divisions. The DM plans should be updated five (5) yearly or reviewed and revised as required, especially after a major disaster or catastrophe.

DMC is mandated to specify time frames for developing DM plans of different ministries, departments / agencies and private sector giving due consideration to the following:

1. Vulnerability of the locality to different natural and man-made hazards
2. Vulnerable population density of the area or location
3. Areas with high-rise buildings
4. Buildings and residential buildings without adequate fire gaps and proper drainage systems
5. Risk profile / specific nature of the setting up (explosives, hazardous materials, chemicals and such storage places)

There are several humanitarian, volunteer and civil society agencies working in Sri Lanka to support disaster management planning at sub-national levels. The active participation and knowledge transfer of these agencies is valuable at sub-national level (district, divisional, GN/community etc.) planning. DMC would assist these agencies by way of;

- Assisting the planning process by providing formats and guidelines developed by DMC in obtaining the endorsement of district, divisional or village DM committees
- Helping to integrate databases, GIS maps and other tools into the government systems to facilitate implementation and promote lessons learned to improve the processes
- Ensuring transparency, addressing gender concerns and engagement of vulnerable communities in discussions
- Mobilising support from area based large projects to implement or mainstream DM plans as part of the project activities to ensure sustainability

3 Disaster Risk Management approach

The occurrence of natural disasters cannot be avoided but investing in sound plans to adequately mitigate disaster risks by public and private sectors can prevent hazards from becoming a major disaster. Investing in risk reduction helps to enhance economic, social, health and cultural resilience of persons, communities, businesses and safe guard the assets as well as the environment, which is a known proposition with high returns. NDMP 2023- 2030 proposes investing in structural and non-structural measures alongside the mixing of grey and green infrastructure to reduce risks of natural and human-induced disasters.

3.1 Investing in Disaster Risk Reduction (DRR)

Capitalising on climate finance based on Nationally Determined Contributions (NDCs) is a prudent approach given the climate vulnerability of the country, as outlined in the "Climate Prosperity Plan (CPP)" presented by the government at COP 27 in November 2022⁴⁸. The NDCs have outlined a number of investments to minimise climate impact by way of enhancing adaptation and mitigation actions in forestry, transport, energy, etc. Recognised as a bio diversity "hot spot" in the world⁴⁹, Sri Lanka as a country has taken progressive steps towards conservation of natural resources and climate action by embedding several policy decisions in its NDCs.

The "Sri Lanka Green Finance Taxonomy" fund launched by the Central Bank of Sri Lanka (CSBL) also provided several entry points to raise funds for disaster risk reduction combined with development sectors. According to CBSL's "Sri Lanka Green Finance Taxonomy" fund it would be a critical tool to guide financial institutions, investors, corporates and green bond issuers to navigate the transition to a low-carbon, climate resilient and resource efficient economy."

According to Central Bank "Sri Lanka Green Finance Taxonomy" would be a critical tool to guide financial institutions, investors, corporates and green-bond issuers to navigate the transition to a low-carbon, climate resilient and resource efficient economy."

Investments on disaster risk reduction is guided by a number of agro-climatic, geographic and historical experiences. Moreover, it is possible to combine risk reduction measures as regional projects or initiatives. The importance of below mentioned features have already been recognised in successful resource mobilisations from Green Climate Fund (GCF) by UNDP (i.e. restoration of tank culture) and IUCN (i.e. conservation and management of Knuckles range), among others.

1. Recognising the value of hydrologic civilisation including tank cascade water management in risk reduction
2. Variation of island climatic zones due to climate change and impact of high intensity rainfalls on disasters
3. Ridge to reef connectivity for quick transfer of floods and water from highlands to lower areas

⁴⁸ Vulnerable Group of 20. 2022. SRI LANKA CLIMATE PROSPERITY PLAN - V20: The Vulnerable Twenty Group (v-20.org)

⁴⁹ Conservation International (2016)

4. Sensitiveness of degrading central hills vegetation and quality of ecosystem services towards disaster risk
5. Role of coastal vegetation and coral reefs in minimising coastal hazards
6. Potential for improved city and land use planning to minimise hydro-geological disasters
7. Investing in DRR in industrial expansions by enhancing waste water governance and technologies

The UNDP anti-corruption initiative focuses on developing a platform for citizen engagement for accountability on unsanctioned environmental activities, response to increased community involvement and engagement in the face of rising incidents of illicit deforestation, degradation of wetlands and illegal wildlife poaching and trade. The UNDP Sri Lanka, in collaboration with the Ministry of Wildlife and Forest Resources Conservation, Department of Forest, Department of Wildlife Conservation and other related government institutions as well as with the Centre for Environment Justice (CEJ) and the Citra Social Innovation lab, is in the process of developing a digital citizen engagement platform which, aims to connect citizens who wish to formally inform about unsanctioned environmental activities to relevant government officials.

These initiatives capitalise on the growing recognition in investing in "green infrastructure" to reduce risks as a sustainability measure and to use "Natural Capital Assessments and Accounting"⁵⁰ principles to fund DRR investments in Eco-DRR, EbA, recovery related build back better etc. based on green and digital systems, supported by new strategies and investment mechanisms.

The private sector as supported by the Ceylon Chamber of Commerce and financial institutions, including the International Finance Corporation which is the private sector arm of World Bank and Asian Development Bank, are promoting safeguards which relate to DRR and business continuity planning as part of the organisation's growth, profitability and sustainability aspects, in addition to achieving the triple bottom line (i.e. environmental, social and economic). In this context, the NDMP 2023-2030 promotes Public Private Partnership (PPP) in green and resilient investments in sectors such as energy, water, transport, health, communication etc. towards inculcating DRR and enhancing climate resilience.

The policy paper presented by the World Bank at the third UN World Conference on DRR describes three (3) dividends for investing in DRR.

1. Avoiding direct impact - DRR investments, whether they are structural (e.g. green and grey infrastructure such as retention areas, dikes and dams) or non-structural measures (e.g. land use planning, early warning and building codes) contribute to reducing the immediate impact of disasters in terms of human and direct economic losses.
2. Enhancing economic potential - Perception of disaster risks are known to affect people and organisation's economic decisions including savings and investment behaviours. Lack of appropriate safety nets would lead to low yielding economic activities (e.g. low income farmers may be reluctant to adopt higher yielding crop varieties).
3. Generating development co-benefits - DRR investments can be routed for multi-purpose usage such as for construction of dams which provide benefits of flood mitigation, power generation and access to water, as well as for cyclone shelters, which can also be used as school and community buildings.
4. The NDMP 2023 - 2030, aims to promote risk sensitive investments in these areas with adequate regulatory framework and budgetary provisions during next seven (7) years, in line

⁵⁰ Natural Capital Accounting and Valuation of Ecosystem Services - <https://seea.un.org/home/Natural-Capital-Accounting-Project>

with the national development agenda and national policy for disaster management in the country.

3.2 Mainstreaming DRR into development sector

Mainstreaming DRR includes risk sensitive infrastructure investments combining climate mitigation and climate adaptation in all sectors, among other factors. Climate change adaptation includes actions aimed at making adaptations by people and systems for unavoidable consequences of global warming, changes to weather patterns and frequent extreme events, which will serve as a strong track for resource mobilisation under the Paris Agreement and new green challenges. The DM Act 2005 provides (i.e. clause 10-E of the Act) the enabling environment to all ministries, departments, public corporations, local authorities and other public and private organisations to integrate disaster risk management for specific institutions.

The NDMP 2023- 2030 advocates mainstreaming DRR into development through the following:

- Creating a national policy and regulatory framework for disaster risk sensitive development with climate smart approach
- Adopting disaster risk reduction through NbS
- Promoting risk reduction monitoring at all levels with appropriate indicators as a joint agency approach
- Promoting risk transfer and social protection mechanisms for business continuity and livelihood protection
- Protection of cultural heritage and risk sensitive heritage management
- Enhanced urban disaster risk reduction efforts combined with climate smart green approaches

Based on the NDMP 2023- 2030, DMC will facilitate defining the scope of DRR investments which are identified by line agencies, UN agencies INGOs, NGOs and CBOs.

3.3 Mainstreaming DRR within urban development

Mainstreaming of DRR within urban development undertakes the importance of building up the resilience of cities including planned development with climate smart approaches. Unsafe blocks of buildings in congested areas is a significant source of risks for highly populated cities. The NDMP advocates preparation and enforcement of building codes to ensure that new buildings are resistant to common natural hazards affecting the area and that all existing buildings are retrofitted to conform to the same standards. The latter is a more challenging task and it is beyond the capacity of municipal authorities to achieve. Therefore, the resolution may require innovative financing solutions combined with climate financing, including the resettlement of vulnerable groups to safer areas. Transparent and governance led, inclusive of social, gender and right based approaches are required in surveying and identifying vulnerable buildings, demolishing unsafe structures, offering incentives for retrofitting of constructions and imposing penalties for non-conformity with approved building practices.

3.4 Sustainable livelihoods

Despite the fact that often the poor are the most affected in disasters, it is too simplistic to assume that there is a direct and absolute correlation between poverty and vulnerability. Systematic integration of poverty reduction and disaster reduction programmes is crucial to achieve the SDGs and resilience, especially amidst climate change. The NDMP 2023-2030 promotes sustainable livelihoods and plans to ensure business continuity among the SMEs and other business entities, in disaster prone areas. These initiatives will be fronted by the DDMCUs in collaboration with donor agencies, INGOs, NGOs and CBOs which are active at community level.

3.5 Innovative financing for risk transfers

Common practice of risk transferring in Sri Lanka has been on reactive basis, comprising of funding from government budgets and through extensive financing from international donors. Such approaches could be improved to ensure that disasters do not drain resources allocated for critical human development. Further, these reactive approaches to risk financing would be unsustainable in the context of increasing vulnerabilities compounded by climate change impacts and shortage of global resources to support countries impacted by disasters.

A Development Policy Loan (DPL) with a Catastrophe Deferred Draw-Down Option (or CAT DDO), with support from the World Bank was set up following the 2016 floods and landslides to reduce the fiscal burden of the government through disaster risk financing options. Two risk management instruments namely, climate insurance scheme and fiscal mechanisms for disaster risk financing have been considered among other innovative financings such as Sustainable Insurance Financing⁵¹, Payment for Ecosystem Services (PES) to support ecosystem restoration to minimise natural disaster impacts. Further, the government has placed significant focus on promoting agricultural insurance as a tool to protect vulnerable farmers, enhance food security and channel agrarian credit. Index Based insurance has been identified as a viable instrument for handling risks associated with hydro-meteorological disasters.

There are noted gender based considerations when gaining access to available options of financing and insurance. In reality, the ownership of land and other financially valued assets including bank accounts by women, is less among the Sri Lankan population which deters their access to credit and insurance through formal schemes. In a patriarchal society, asset ownership and access to resources is largely based on the notion of a male being recognised as the head of a household. Nevertheless, the targeted poverty alleviation and free safety nets programmes are implemented without gender or socioeconomic differentiation.

3.6 Nature based solutions

In the context of disaster risk reduction in a changing climate, Nature-based solutions (NbS) provides an innovative link to bring climate change adaptation, climate mitigation and disaster risk reduction.

The NbS frameworks discuss societal benefits covering a range of topics important for resilience as outlined by IUCN Global

Nature-based solutions (NbS):
"Actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits."

⁵¹ V20. 2021. A Project Pipeline Development Facility for solutions to build resilient micro-, small- and medium-sized enterprises in V20 economies. https://climate-insurance.org/wp-content/uploads/2021/02/The-V20-led-SIF-at-a-Glance_January-2021.pdf

Standards for NbS that highlights how nature can be used to address most of the modern day challenges. This standard or approach is being widely used and advocated by UN system and World Banks as a futuristic tool for sustainable and resilient development.

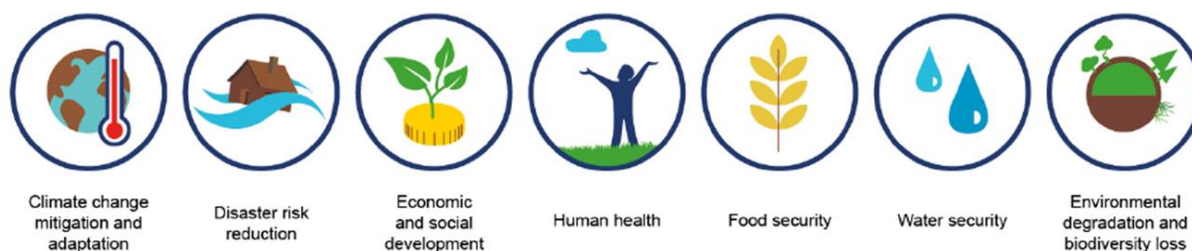


Figure 34. IUCN Global Standards for NbS

In the concept of Nature- based Solutions (NbS) it is believed that protection of ecosystems and ecosystem services not only reduce risks of disasters but also ensure the sustainability of lives and businesses, while addressing multiple societal challenges such as climate change and adaptation, DRR, socio-economic development, human health, food security, water security and environment degradation and biodiversity loss (Figure 34). NDMP 2023-2030 promotes ecosystem based disaster risk reduction (Eco-DRR) and ecosystem based adaptation (EbA) through the adoption of NbS, governance practices and compliance to regulations including the permits.

3.6.1 Improved governance to support Nature- based solutions (NbS)

Disaster related governance aspects plays a key role in order for NbS approaches to be effective. In this regard, during the implementation time frame of the NDMP 2023-2030, DMC will closely work with key agencies responsible for issuing of licenses / permits for extraction and use of natural resources for various development purposes and also in charge of restoration and conservation of these resources. These agencies include, CEA, GSMB, CC&CRMD, NARA, National Gem and Jewellery Authority among others institutions. In addition, Divisional Secretariats / local authorities are also involved in different aspects of management and monitoring the sustainable use of natural resources, which may require additional technical knowledge and monitoring capacities, especially with the recent addition of land management responsibilities to the District Secretariats.

As a part of disaster governance, NDMP 2023 - 2030 promotes education and empowering of knowledge among communities and citizens on the processes of eco systems and how degradation of eco systems enhance disasters including climate risks. Training will be provided to identified persons to participate in the monitoring aspects using citizen science approaches and to report through social media and formal networks facilitated by DMC, CEA and others. NDMP 2023 - 2030 aims to improve disaster governance while mobilising public, donor and private sector investments based on a set of activities with increased emphasis on climate and ecosystem resilience, which in turn enhances long-term financial feasibility and cost benefits. These investments are expected to minimise the fiscal burden of the government in providing disaster relief and incurring high costs for rehabilitation and also in addressing the direct and indirect impacts on quality of life of vulnerable groups and education of children.

3.7 Institutional strengthening for disaster risk governance

Elements of disaster risk governance include government institutions, private sector organisations, laws, regulations, norms and contributions from civil society and private sector that influence risk reduction. Since the Indian Ocean Tsunami tragedy in 2004, Sri Lanka has taken significant steps to strengthen disaster risk governance and some of the enactments and highlights of activities are as follows:

1. Enactment of the Disaster Management Act No. 13 of 2005 and establishment of the National Council for Disaster Management (NCDM)
2. Establishment of the Disaster Management Centre (DMC) in 2005 as the implementing body of the NCDM
3. Formation of the National Disaster Management Coordination Committee (NDMCC) in 2007
4. Development of DesInventar database on disaster events in 2007
5. Publishing the National Disaster Management Policy and National Disaster Management Plan in 2013
6. Strengthening the school curricular upon incorporating DRR from 2010
7. Establishment and commencement of activities of the Emergency Operations Centre (EOC) in 2016
8. Introduction of 117 call centre facility as a centralised public information exchange system
9. Publication on Hazard Profiles of Sri Lanka⁵²
10. International collaborations for information sharing including Japan Aerospace Exploration Agency (JAXA), Indian Satellites, Asian Disaster Preparedness Centre (ADPC), UN agencies, bilateral and multilateral donors, Red Cross Society, other international agencies and private sector entities
11. Post Disaster Needs Assessments (PDNA) were introduced between 2010 to 2016 with a Rapid Post Disaster Needs Assessment conducted in 2017 using Damage and Loss Assessment (DaLA) methodology
12. Based on the 2016/17 PDNAs, a comprehensive Post Disaster Recovery Plan for floods and landslides was developed reflecting SFDRR - Build Back Better principles
13. Drought hazard mapping system introduced using remote sensing techniques as a "Platform for Real-Time Information and Situation Monitoring" (PRISM) for drought monitoring
14. Online damage and loss reporting system enabling stakeholders to represent 13 sectors in the country in collaboration with the National Planning Department (NPD)
15. Launch of a comprehensive risk information platform "RiskInfo" and Disaster Risk Index of Sri Lanka
16. Active participation in the establishment of National Spatial Data Infrastructure (NSDI) as a platform, where government and private sector organisations can collaborate to manage, improve and exchange spatial data and information in line with international standards
17. Adaptation of the Colombo Declaration of Multi Hazard Early Warning and Disaster Risk Reduction (2020)
18. Guidelines published by DMC to facilitate the conduct of important national events in Sri Lanka (e.g. key government school examinations, elections etc.) amidst disasters
19. IDMP
20. Organising of national events to commemorate the International Day for Disaster Risk Reduction (IDDR) in 2021 and 2022
21. Organising of national events to commemorate the World Tsunami Awareness Day (WTAD) in 2021 and 2022

⁵² Disaster Management Center. 2016. Hazard Profiles of Sri Lanka (dmc.gov.lk)

22. Publication of guidelines for managing safety centres during COVID 19
23. Launch and sensitisation of "Handbook on Gender, Sexual and Gender Based Violence in Disasters"
24. Distribution of educational and informative publications (e.g. booklets, leaflets, pamphlets) on common disasters impacting Sri Lanka among school children and vulnerable communities

3.8 Road Map for Safer Sri Lanka

The initial disaster management work of the post Tsunami 2004 period commenced with the Road Map for Disaster Risk Management on the theme of "Towards a Safer Sri Lanka", which had two volumes covering the period between 2006-2016⁵³, in line with the Hyogo Framework for Action (HFA) 2005-2015. The Road Map focused on 109 projects under seven (7) thematic areas. Progress review of the implementation (Table 4) done by UNDP in 2010⁵⁴ revealed, that the enactment of the Road Map had resulted in a significant reduction of human casualties by about 51% against the total number of DRM projects completed, while some projects could not be completed partly due to lack of investments for prevention and mitigation of disasters and hazards. It was noted that, damage to infrastructure, economic losses and number of people affected continued to increase and an effective mechanism was not available for monitoring the implementation of the Road Map.

Table 4. Implementation progress review of the Road Map against SFDRR priorities

Activities under SFDRR priority areas	Level of implementation (%)		
	High	Moderate	Low
SFDRR Priority 1 (17)	29	24	47
SFDRR Priority 2 (16)	25	38	38
SFDRR Priority 3 (17)	16	32	53
SFDRR Priority 4 (42)	44	33	23

3.9 NDMP (2013-2017) and SLCDMP (2014-2018)

Subsequent to the Road Map for "Safer Sri Lanka" implementation, the next phase of disaster management planning included the preparation and launch of the National Disaster Management Plan for 2013-2017, which was immediately followed by a detailed action plan under the title of Sri Lanka Comprehensive Disaster Management Programme (SLCDMP), 2014-2018 yet again based on the HFA. The SLCDMP used much of the experience and lessons learned of Bangladesh's Comprehensive Disaster Management Programme (2012-2016).

The total estimated investment of SLCDMP 2014-2018 was about LKR 29 billion, with 83% of the resources earmarked for risk reduction, while 6.9% of the estimated amount was for preparedness for response and relief management. However, funds received for the programmes identified in the SLCDMP were marginal, with LKR 9 billion being received from the national budget and a contribution of LKR 100 million from UNDP.

⁵³ <https://www.preventionweb.net/english/professional/policies/v.php?id=17955>

⁵⁴ Unpublished report of UNDP on Road map Implementation Review 2010

The Sendai Framework was introduced during the implementation of SLCDMP and the forty five (45) activities adequately covered all four (4) priorities of the SFDRR (Table 5). Higher level of implementation success of the SLCDMP activities categorised under Priority 1(understanding risk) and Priority 3 (risk sensitive investment for resilience) areas of the SFDRR was observed.

Table 5. Comparison of SLCDMP against the SFDRR priorities

SLCDMP activities under SFDRR priority areas	Number of programmes	Level of implementation (%)		
		High	Moderate	Low
Understanding risk	11	0	18	82
Strengthening risk governance	12	17	33	50
Investing in risk reduction	10	10	30	60
Preparedness for early warning, response and recovery	12	17	42	41

3.10 Disaster management at national level

Considering the complexity of the disaster management institutional structure (Figure 35) the line ministry and DMC has a tremendous task in making sure that "no one is left behind" throughout all the aspects in the disaster management cycle.

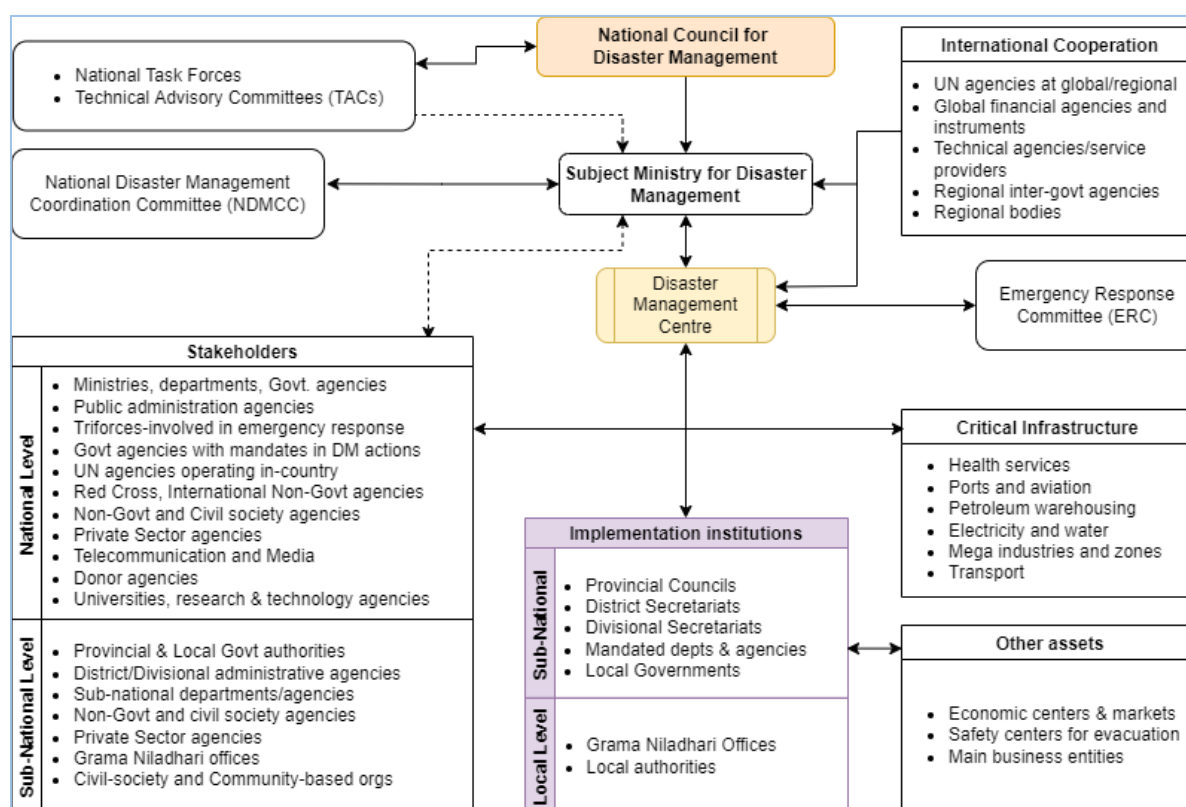


Figure 35. Institutional framework for Disaster Risk Management

3.10.1 Ministry of Disaster Management

In November 2005, a separate government ministry for disaster management was established under the Hon. Prime Minister followed by setting up of a new ministry dedicated for disaster management in January 2006 as the "Ministry for Disaster Management and Human Rights (M/DM&HR)." Subsequently, the subject of disaster management was carried out by several ministries including the Ministry of Disaster Management; Ministry of Irrigation Water Resources Management & Disaster Management and Ministry of Public Administration & Disaster Management & Livestock Development, Cabinet Ministry of Defence under the State Ministry of National Security and Disaster Management and presently the disaster management subject is placed under the cabinet Ministry of Defence with the following mandate⁵⁵:

- Provision of weather and climate related services
- Meteorological surveys and research
- Landslide disaster management and related research and development
- Forecasting natural disasters and sensitising relevant sectors regarding them
- Coordination of awareness programmes on natural and man-made disasters
- Conduct rescue operations during natural and man-made disasters
- Promotion of disaster resilient construction and provision of technical guidance

Following organisations are under the purview of the Disaster Management Division of the Ministry of Defence.

- Disaster Management Centre (DMC)
- Department of Meteorology (DoM)
- National Building Research Organisation (NBRO)
- National Disaster Relief Services Centre (NDRSC)

3.10.2 Disaster Management Centre

The Disaster Management Centre (DMC) was established as the executing agency of the National Council for Disaster Management (NCDM) using the provisions of the DM Act 2005. DMC is the focal agency for research and development, mitigation, preparedness, dissemination of early warnings, emergency response, coordination of relief and post disaster activities in collaboration with other key agencies. DMC's key mandate includes the following:

1. Assisting the council in the preparation, implementation and monitoring of the NDMP and NEOP and updating when required
2. Direct and coordinate the implementation of the NEOP upon declaration of a state of disaster
3. Providing guidance to prepare sectoral, ministerial and institutional disaster management plans (IDMP) while ensuring such plans conform with the NDMP
4. Submitting of plans to the NDMCC and assisting the process of obtaining financial assistance from the Treasury to implement, monitor and evaluate the plans implemented by relevant agencies/ institutions
5. Issuance of guidelines and instructions for local government authorities (e.g. District Secretaries) to be followed in preparedness for emergency response (e.g. preparation for southwest and northeast monsoons)

⁵⁵ Website State Ministry of Home Affairs, National Security and Disaster Management
<https://www.peps.lk/ministry/state-ministry-of-home-affairs-national-security-and-disaster-management/>

6. In the event of a disaster, considering the nature and magnitude of the disaster or catastrophe, coordinate appropriate search and rescue operations as mentioned in the NEOP, monitor provision of relief and implement recovery and reconstruction activities
7. Facilitate, coordinate and monitor the management of the disasters listed in the Disaster Management Act with its district level coordinating units
8. Promote research and development programmes, establish and maintain a data base on disaster management
9. Liaisoning with government authorities and agencies, private sector organisations, INGOs and NGOs and all other relevant agencies/institutions in activities related to disaster management

3.10.3 Technical Advisory Committee

The DM Act 2005 has granted provision for the appointment of a Technical Advisory Committee (TAC) for effective implementation of disaster management operations as defined in the said Act. Chairman and members of the TAC are to be appointed by the NCDM, consisting of professionals and experts having expertise in relation to the respective functions and responsibilities in disaster risk management.

3.10.4 Emergency Response Committee

The Emergency Response Committee (ERC) is established and coordinated by DMC, to support the country's entire emergency planning and implementation and especially to meet the needs in a major calamity which requires national level intervention from various agencies and sectors. ERC is empowered to discuss and agree on emergency actions stipulated in the NEOP and effect relevant activities or actions as per the prevalent emergency situation and status of the disaster situation. The committee is required to discuss on aspects such as the availability of human resources and equipment, mobilisation of funding arrangements and other resources, immediate preventive actions and identification of gaps for smooth emergency operations. In such situations, all relevant agencies/ institutions will be allowed to activate the specific contingency plans (or emergency actions as per the respective IDMPs) according to the situation and guided to take appropriate actions, in coordination with DMC.

3.11 Disaster management at sub-national levels

The DM Act 2005 provides for institutional arrangements at sub national stages namely, provincial, district and divisional levels connecting to the village level or the GN level, in coordination with the national level (Figure 36) authorities.

3.11.1 District level disaster management

District Disaster Management Coordination Units (DDMCUs) are established in the 25 administrative districts by the DMC for the purpose of coordinating disaster management activities at district level. The District Disaster Management Coordinating Committees (DDMCCs) comprise of representative heads of various government institutions, departments, technical agencies and representatives of CSOs and NGOs at district level. The District Secretary acts as the Chairperson of the Committee, while the DDMCU provides support to the secretariat. The DDMCC helps the District Coordinating Committee (DCC) of the Ministry of Home Affairs to coordinate and supervise all development activities at district level. The DCC is co-chaired by a senior minister of the government who is

appointed by the President and the Chief Minister of the Provincial Council. The DCC and the Divisional Coordinating Committee provide a potential forum and platform to pursue DRR mainstreaming and risk informed development at local level.

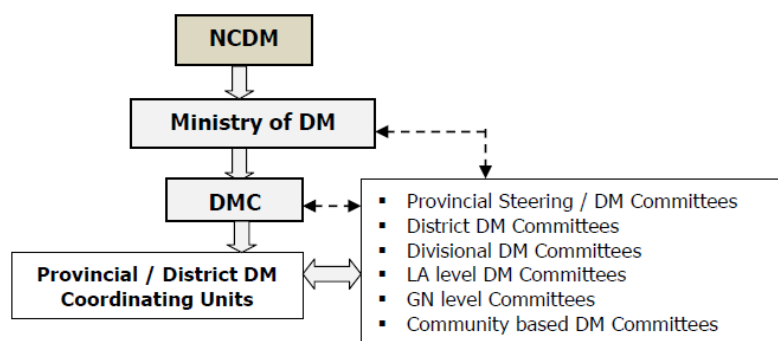


Figure 36. Coordination of DM committees at sub-national level

3.11.2 Divisional level disaster management

Representatives of government line ministries, authorities, departments, boards, NGOs and CSOs form the divisional level management committee. Under the guidance of the District Secretary, the Divisional Secretary together with the DDMCU officers coordinate the implementation of DRM activities at divisional level. It is the principal committee, which is responsible for the coordination and supervision of all development activities implemented within the respective area at divisional level. Divisional level disaster management is closely linked with the local government system for operational purposes.

3.11.3 Local governments in disaster management

Local Authorities (LAs) are mandated with the regulation, control and administration of all matters relating to public health, utility services and public thoroughfares. The national policy on local government⁵⁶ endorsed by the Parliament, has recognised LAs as a planning authority with area based jurisdiction and is required that LAs give the highest consideration to environment and hazard concerns in local planning. The policy further states that “the local authority shall be proactively involved in disaster preparation, risk reduction, mitigation and management within the overall district framework for disaster management”. These LAs are expected to identify the disaster prone areas, potential disaster risks and hazards towards formulating comprehensive, area specific plan of actions with locally identified strategies and response systems, in line with the operational aspects of the relevant regulatory Act⁵⁷. The LAs functioning under the Urban Development Authority (UDA) Act, have provisions to incorporate disaster risk reduction measures in preparing urban development plans and develop the regulatory processes. The UDA has issued guidelines to incorporate disaster risks in preparing zonation plans and in approving applications for development projects.

In 2019, as supported by Japan International Cooperation Agency (JICA), the “Preparation of Local DRR strategy” was initiated by the Ministry of Disaster Management jointly with the DMC to comply with “Target 5” of the Sendai Framework 2015-2030. As the first step of this process, two (2) Pradeshiya

⁵⁶ National Policy on Local Government. The Gazette of the Democratic Socialist Republic of Sri Lanka, No. 1632/26 – Friday, December 18, 2009

⁵⁷ *ibid*

Sabhas (PS) namely of Bulathsinhala PS, in Katutura district, Western province and Ayagama PS in Rathnapura district, Sabaragamuwa province were selected to develop local DRR plans. Based on the outcome of this project, steps were taken by the DMC to introduce the Local DRR strategy and concept to other disaster prone districts, with the support of UNDP under the Capacity Development of Local Government (CDLG) project. With the introduction of this strategy, the local authority institutional framework will be guided to coordinate with national and sub-national institutions to work collaboratively to address DRR initiatives identified at local level. A comprehensive monitoring mechanism is proposed complying with the provisions stated in the constitution of Sri Lanka and relevant regulations are derived to optimise the effectiveness in implementing DRR activities jointly, with the support of national and local authorities. This strategy will enable to effect the adherence of local authorities in following all "13 Guiding Principles" of the SFDRR and further strengthen the local, national, regional and global coordination, in addressing DRR concerns in an effective and timely manner.

3.11.4 Grama Niladhari level disaster management

Grama or village level Disaster Management Committees are established for frontline coordination of disaster risk management activities in general and for implementation of Community Based Disaster Risk Management (CBDRM) activities, in particular. This committee is expected to play a catalyst role in all activities related to disaster risk reduction. Potential exists to strengthen this level of administrative support by obtaining the services of Development Officers at the Divisional Secretary, including the newly appointed District Officers (DOs) for environment conservation under the Ministry of Environment. Furthermore, banks, micro financing institutions INGOs and NGOs extend support to strengthen CBOs at village level, which can be allied to divisional and district level disaster management operations. Potential areas identified for strengthening of disaster management capacity at GN level includes the following.

1. Generation of early warnings through observations (e.g. landslides)
2. Enhancing emergency response preparedness including in aspects such as swimming, search and rescue, first-aid, safety centre management etc.
3. Improving skills in hazard and vulnerability mapping including use of open source GIS, phone/mobile applications etc.
4. Creating greater awareness and education on ecosystem processes related to disasters and adaptation measures
5. Encouraging active participation in monitoring and use of tracking tools such as in measuring and recording of rain fall, monitoring water levels in identified rivers (i.e. flood prone areas), gauging of other environment sensitive factors etc.

3.12 Hazard monitoring and forecasting

Since the catastrophic Indian Ocean Tsunami in 2004, Sri Lanka has strengthened its disaster preparedness and response capacities significantly. DMC has been spearheading the national disaster preparedness and response efforts including local level activities through its district coordination units. The government took steps to establish a multi-hazard, impact based forecasting and early warning system while strengthening the agencies responsible for hazard forecasting and early warning.

NDMP 2023 - 2030 promotes an integrated system of hazard forecasting combined with risk assessments, communication and warning systems strengthened or designed with effective

implementation. Hazard monitoring, forecasting and developing early warnings is the responsibility of key technical agencies for specific hazards. Timely dissemination of warnings to the last mile is coordinated by DMC with the support of others. Emergency Operations Centre (EOC) employs number of mechanisms to disseminate early warnings and also to track the disaster impacts and response effectiveness. It maintains 117 call centre/ disaster hotline and also closely work with national networks (e.g. Police:119, Suwa Seriya: 1990, Fire:110) depending on the types of emergencies that occur, including incidents such as oil and chemical spills, in addition to common hazards or disasters such as floods, landslides, drought etc.

3.12.1 Standard Operating Procedures (SOPs)

Standard Operating Procedures (SOPs) in the context of disaster management are a set of agreed processes to be followed by a trained group of professionals or stakeholders at different stages of the disaster management process. The SOPs could be disaster specific, agency/ institution specific or time sensitive. Under NDMP 2023 - 2030, all agencies/ institutions involved in disaster management are required to develop agency/ institution specific SOPs that will include checklists / standing orders for actions to be taken by the agencies on preparedness and on receiving early warning, emergency response, recovery, rehabilitation and reconstruction work. These SOPs need to be included in the specific IDMPs prepared by the respective technical agencies and government institutions as required by the DM Act 2005. Standing Orders (SOs) for specific DM tasks and for various government departments / agencies need to be agreed upon and finalised under the respective SOPs with the approval of the NCDM and the Cabinet/ Parliament as appropriate.

3.12.2 Early warnings

As per the DM plans and SOPs, DMC will facilitate the execution of the early warning process (Figure 37) by;

- Coordinating with local technical agencies responsible for forecasting different hazards, who will be in constant communication with regional and international early warning agencies on respective hazards.
- Issuing messages and bulletins developed by the mandated technical agency on the nature of the disaster,
- impending threat and the warning level. EOC will analyse the technical messages received from respective technical agencies prior to the dissemination.
- Using the EOC of the DMC to disseminate early warnings to vulnerable communities with the support of DDMCUs and the district administrative authorities including GNs. The dissemination process would include the geographical areas likely to get affected along with the level of alert and how the community members are expected to respond. Message content could be verbal, SMS, CB, HF/VHF, fax, sign language and other formats delivered through media, mobile service providers, cell broadcasting, EW towers and other EW methods available at the EOC.
- Facilitating agency coordination with situation reports, international and local appeals for assistance etc. in a timely manner, including the adoption of Incident Command system as per approved SOPs.
- Creating greater awareness and providing regular situation updates to the media on early warning alerts, evacuation notifications, emergency response and support service contacts etc.

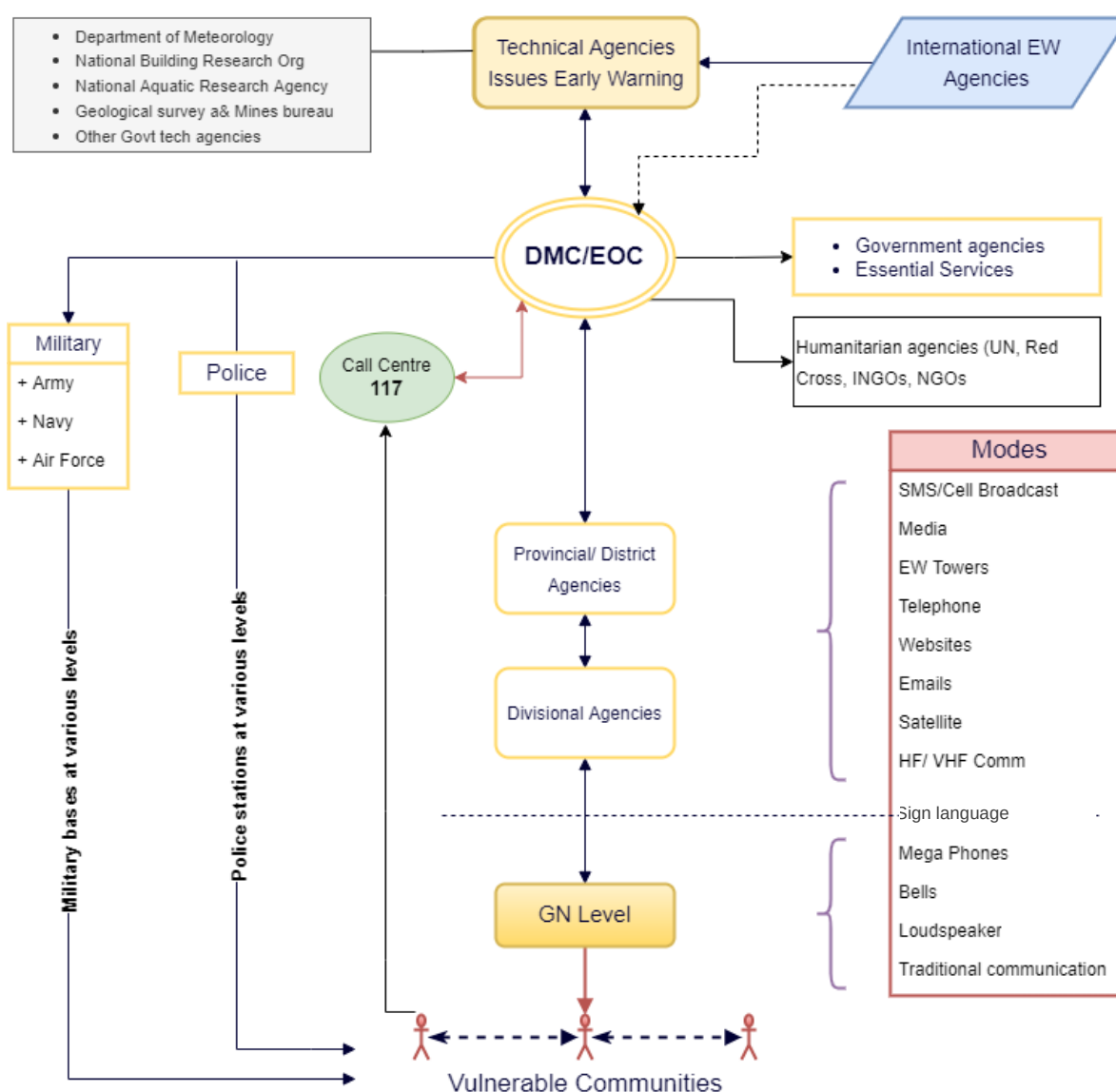


Figure 37. Process of last mile dissemination of early warning messages

3.13 Preparedness for response

The following activities are coordinated and carried out by the Preparedness Planning division of DMC as preparatory measures for emergency response.

- Coordination and organising of national level meetings annually with the support of key technical agencies (e.g. Department of Meteorology, Irrigation Department, National Building Research Organisation, Ministry of Health) for preparedness for emergency response for the southwest and north east monsoons. This also includes effective coordination of information gathering from key technical agencies and dissemination of early warnings/ alerts/ updates to all stakeholders through early warning mechanisms as well as coordinating emergency response and relief requirements.

- Guiding the District Disaster Management Coordinating Units (DDMCUs) of all twenty five districts to conduct meetings for disaster preparedness and emergency response at district, divisional and GN level to respond to natural calamities such as monsoons, floods, cyclones, landslides, drought, Tsunami etc. as well as endemics and pandemics.
- Preparation, review and finalising of District/Divisional Disaster Risk Management plans, District Operational plans and Monsoon Preparedness plans
- Conduct of preparedness drills or practical exercises, table top exercises (TTXs) at national and local level to create awareness and strengthen the level of preparedness with regard to frequent natural disasters and Tsunami threats experienced by vulnerable communities across Sri Lanka. These are conducted targeting schools, hospitals, hotels, key government institutions, small and medium enterprises (MSMEs) and communities at large.
- Implementing activities and programmes in strategising disaster risk reduction (DRR) among local authorities
- Preparation of SOPs for key natural disasters such as floods, landslides, cyclones and Tsunami
- Developing and sensitisation of the book on "Institutional Disaster Management Plan – Guidelines for preparation for all ministries, government institutions, departments and agencies" as obligatory by the DM Act 2005
- Preparation of emergency management plans for chemical accidents, oil spills and industrial hazards and organising national level evacuation drills and mock drills, awareness programmes for prevalent common and/or high-risk hazards.
- Coordination and preparation of Annual Action Plans of DMC encompassing the key areas in disaster management
- Reviewing and updating of key national documents on disaster management with the support of relevant stakeholders
- Sensitising the publication and guidelines on "Gender, Sexual and Gender Based Violence (SGBV) in Disasters" at national and local level for target groups of policy makers, response staff and community
- Handbook on "Management of Safety Centres Amidst COVID-19"

3.14 Private sector preparedness planning

The corporate or private sector is a vital part of preparedness in disaster management to ensure that the private sector led manufacturing, production, services and employment opportunities continue to function during a disaster and recover within a short time span in the aftermath of any disasters or emergencies. Each corporate entity is encouraged to develop "contingency plans" and integrate them with the district, divisional, local authority or other area based DM structures. The private sector entities could also participate actively in the preparation of DM plans in respective areas of business and localities and provide necessary resources to implement selected activities. Number of international disaster management agencies⁵⁸, the Ceylon Chamber of Commerce and multi-lateral donors support private sector disaster preparedness initiatives, including adoption of

⁵⁸ Asia Pacific Alliance (A-PAD). Asia Pacific Alliance – Sri Lanka – for disaster management (apad.lk)

International Finance Corporation (IFC) Environmental and Social (E&S) Performance Indicators for Corporates⁵⁹ (Annexure 7) and business contingency/ continuity planning.

Private sector could very well contribute to disaster preparedness by helping to minimise slow-onset disasters such as water pollution related diseases. It is advantageous for corporates to ensure that business related facility operations are in acceptable condition following science based targets (SBTs) in order to avoid any adverse impact to the community or area based ecosystems, mainly fulfilling as the entity's responsibility to society under its corporate social responsibility (CSR) segment. Importantly, minimising the ecosystem impact which in turn reduces disaster risk, which would help to position the products and services in line with global standards, as increasingly the export market is looking for businesses which are disaster resilient and offering low-carbon industrial services under the "EU Green Deal."⁶⁰

3.15 Emergency Operations

DMC is the lead agency for strengthening emergency response in collaboration with respective government authorities, Tri forces and Police, NGOs, CBOs etc. as per the DM plans of respective agencies. Disaster response protocol at national level and mode of response will depend on the severity of the disaster or emergency situation. If the magnitude of the disaster and/or emergency is beyond the management capabilities and capacity at local level, then necessary additional support is provided at national level through the DMC's EOC. For local emergencies such as fires, accidents etc. the district EOC unit under DDMCU will coordinate with the Tri forces, Police, relevant LAs and respond immediately to minimise the response time. The NDMP 2023-2030 advocates to develop and strengthen the capacity of LAs with necessary equipment (e.g. earth moving machines, boats, firefighting equipment, ambulances etc.) to support human resources. There are several non-government agencies, which complement local capacity for emergency operations in coordination with the DDMCUs in providing relief supplies, search and rescue equipment, first aid, managing safety centres and recovery efforts.

3.15.1 National Emergency Operations Plan (NEOP)

Emergency operations are based on the National Emergency Operations Plan (NEOP), which establishes the emergency operations mechanism detailing the state's response to emergencies and disasters while providing safety and security to the citizens. The NEOP is developed to streamline disaster response at national and local levels. It sets forth lines of authority, responsibilities and organisational relationships and shows how all actions will be coordinated among the agencies involved in emergency operations. In a large scale disaster, UN agencies, international humanitarian agencies and humanitarian military forces may be invited by the Government of Sri Lanka (GoSL) and will be coordinated by the ministry overlooking the subject or portfolio of disaster management and the DMC, in collaboration with the Ministry of Foreign Affairs under the overall guidance of NCDM.

⁵⁹ IFC. 2021. https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Company-Resources/ESG+Performance+Indicators_SA/

⁶⁰ European Union. 2019. A European Green Deal | European Commission (europa.eu)

3.15.2 Functions of the Emergency Operations Centre (EOC)

Emergency Operations Centre (EOC) of DMC is an important element to ensure an effective and coordinated response mechanism is in place to respond to any emergency or disaster situation. The EOC is well equipped, adequately staffed and operates on 24x7 basis to coordinate informed incidents and other required resources for effective disaster management. The operations of EOC involves analysing and interpretation of received information about various incidents related to disasters or any inquires of similar nature enabling effective decision making.

The EOC is linked with all key technical agencies on 24x7 basis to receive technical information and warning alerts related to disasters and emergency situations. The Call centre of DMC is opened for receiving of public inquiries and other telephone calls which are accommodated in all three languages (or tri lingual). The early warning system established in the EOC is geared to disseminate warnings up to the last mile, in coordination with the DDMCUs in 25 districts. Teams of Tri forces and Police along with specific communication systems are established in the EOC to effectively respond to early warnings and facilitate emergency response. In a national emergency situation, relevant stake holders along with the experts of technical agencies will join to support the EOC functions. Upstream and downstream early warning systems are in place, with different types of warning mechanisms being linked with other warning centres in Sri Lanka. The structure of the national EOC is schematically illustrated in Figure 38.

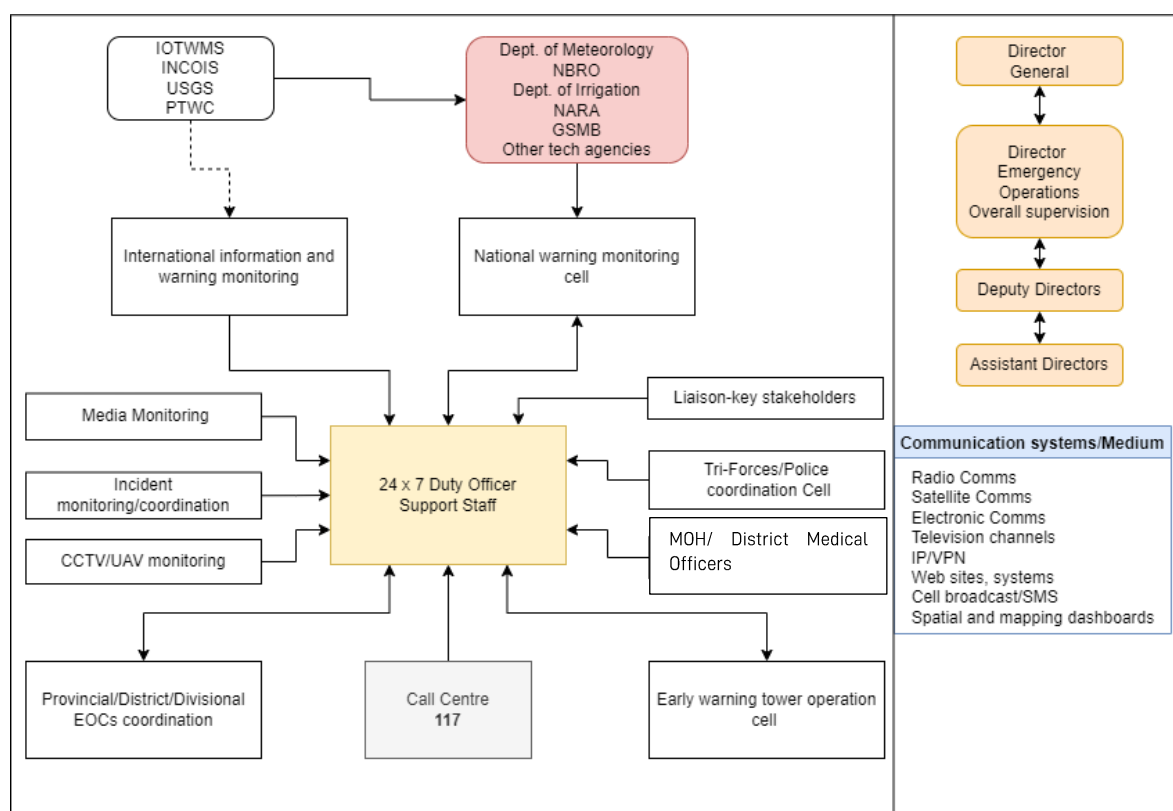


Figure 38. Emergency Operations Centre operational structure

As and when required the EOC operations will be supported by representatives of relevant stakeholders as coordinated by the DMC. The EOC at the DMC head office in Colombo will be linked with the relevant government institutions in provinces, districts and DS divisions through reliable communication mechanisms to disseminate early warnings and other vital information. In addition, it will also be linked to other main stakeholder agencies and media institutions. The dedicated public

hotline or emergency contact number (117) is free for any caller contacting from any local telephone (i.e. land and mobile) number and the service is available around the clock, to seek disaster related assistance including medical help.

3.15.3 District Emergency Operations Centres

The DDMCUs established with separate EOC units at district level as an extension of the national EOC are ready to be activated in case of an emergency at sub-national level or local level. These units are directly linked with the district administrative system, which supports the coordination of relevant stakeholders in the respective districts. The DDMCUs are geared to coordinate and support the dissemination of early warnings and cater to the needs of emergency response and relief assistance in the respective districts apart from being involved in other disaster management aspects such as creating awareness, preparedness, mitigation and DRR activities. The district EOC units need to maintain all necessary updated information such as contact information of important stakeholders involved in emergency response as well as other required resources including equipment, teams of skilled personnel and critical supplies etc. required for responding to disasters. These EOC units will be generally functioning or activated upon issuance of early warnings or on occurrence of a disaster or emergency situation.

3.16 Coordination of emergency response

The Emergency Response Committee at national level will be convened only upon identifying a major disaster or emergency event and necessary functionalities will be coordinated by DMC. Disaster and/or emergency response at district, divisional, local, GN and community levels will be activated through the respective Disaster Management Coordinating Committees, sub-committees, district offices of government departments, volunteer groups etc. which are mentioned in the respective disaster management plans. The emergency operations coordination structure during a Tsunami threat and flow of information at district level is shown in Annexure 9. The Tri-forces and Police will take a lead role in emergency response activities at all levels, in any part of the country.

3.16.1 Disaster Victim Identification (DVI)

In emergencies or disasters needing specialised attention such as bomb explosions or similar incidents, the DMC will coordinate and devise an appropriate response mechanism with the support of Tri forces and Police, using specially trained squads or emergency response teams. The necessary disaster victim identification (DVI) facilities will be collectively provided by the Attorney General's Department, MoH and Police.

3.16.2 Role of media

Media plays a critical role in emergency response and early warning in coordination with the EOC mechanism. The government and private media institutions are required to take a lead role in the management of disasters by educating, creating better awareness, disseminating confirmed early warnings, providing accurate updates and information on disasters and affected areas, assisting in relief operations etc. in a responsible manner. In times of disasters, social media platforms are often used by communities to stay connected and receive vital information and updates related to the status of disasters or emergencies. Similarly, these platforms are also used by the DM coordinating units at ground level to disseminate early warnings and provide necessary assistance through the contact groups that have been created for effective communication purposes. The social media

networks can enhance coordination among disaster management coordinating teams to support emergency response needs and relief assistance. DMC provides appropriate and necessary confirmed information to media organisations, with the intention that accurate information will be disseminated to the public.

3.16.3 Role of mobile service providers

Effective delivery of early warning to the public is critical to safe guard the lives and property in an emergency. Timely and accurate information supports emergency response and recovery, to ensure that members of the public take appropriate actions to protect themselves and others. DMC is in the process of offering a non-subscribe based SMS alert system with the collaboration of Telecommunications Regulatory Commission (TRC) and all mobile operators in Sri Lanka, in order to provide timely early warning to the general public of any impending disasters. A special mechanism is already (i.e. an early warning cell) set up within the DMC to initiate, interpret and release relevant early warnings to the mobile operators and TRC Sri Lanka. All mobile operators will be responsible for the dissemination of warnings and timely delivery of information to the public before and during an emergency as declared by the EOC of DMC. Priority is to be given for dissemination of early warning messages or alerts on Tsunami threats to the residents in 14 coastal districts and thereafter, DMC intends to extend the same protocol for all possible natural calamities and operate the mechanism with all telco service providers as a Multi Hazard Early Warning (MHEW) system.

3.17 Search and rescue operations

The Tri Forces and Police teams stationed at DMC work on 24 x 7 basis in order to respond and coordinate any search and rescue (SAR) operations coordinated by the Duty officer of the EOC. The SAR teams attached to the seven military command areas are in readiness to assist the civil administration at district and divisional levels in disaster situations, with the support of the officers of Sri Lanka Army, Sri Lanka Navy and Sri Lanka Air Force. These teams will also work along with staff of the DDMCUs in practical exercises, drills and other preparatory activities to ensure preparedness for emergency response and attend to immediate relief and recovery efforts. At sub-national level, the actions will be supported by Civil Military Cooperation (CIMIC) and Military Aid to Civil Authorities (MACA), coordinated by the Office of the Chief of Defence Staff (OCDS) together with Commanders of Tri-Forces and Inspector General of Police (IGP).

At national level, in collaboration with the respective mandated agencies, the response teams of Sri Lanka Army, Sri Lanka Navy, Sri Lanka Air force, Sri Lanka Police, fire brigade, Ministry of Health and Atomic Energy Authority have been trained and equipped for effective response, in case of an unforeseen emergency such as oil spills, hazardous material accidents and chemical and industrial accidents, radiological emergencies, disposal of lethal, toxic and adverse chemicals etc. (Annexure 8).

3.18 Relief and recovery

The National Disaster Relief Services Centre (NDRSC) is primarily assigned with the responsibility of attending to immediate relief measures during disasters, such as providing emergency funds for dry rations, meals and drinking water, distributing and coordinating relief items (i.e. in coordination with the district, division and GN division officers) to affected communities. In facilitating the relief operations, the DMC will also coordinate with relevant government institutions and other agencies, including UN organisations, humanitarian agencies, INGOs, NGOs, volunteers, private sector etc.

3.18.1 Managing safety centres

Minimum humanitarian standards as guided by the internationally accepted “Sphere standards” incorporating aspects such as water, sanitation and hygiene promotion (WASH), food security and nutrition, shelter, settlement and nutrition and health are maintained at emergency relief and temporary safety centres, coordinated by the DDMCUs with the assistance of NDRSC and LAs. Health sector organisations lead the rapid assessments with the support of other agencies on food and sanitary facilities, handling of dead, injured and displaced etc. in order for the national, provincial and district level units to carry out the necessary operations and services as identified in the DM plans and SOPs. DMC will coordinate at different levels of administration to facilitate the resources and operational arrangements, including work carried out by NGOs, INGOs, CBOs, well-wishers, donors (i.e. local or international), humanitarian agencies, CSOs etc. at district and divisional levels. Relief distribution will be conducted in manner to ensure, equitable distribution of relief; reduction in incidents of ad-hoc and disorganised relief distribution; equitable assistance to individuals affected by disasters; eradicate corruption in relief distribution and eliminate oversupply of relief to certain areas and undersupply to other remote areas by introducing an effective monitoring and control mechanism. Further, DMC has also launched publications and conducted sensitisation and TOT programmes to create greater awareness among policy makers, response staff and community, on sexual and gender based violence (SGBV) in disasters, especially at safety centre settings and long term shelters.

3.19 Rehabilitation and reconstruction

In the aftermath of any disaster, speedy rehabilitation and reconstruction should be given due consideration to uplift the livelihoods and social aspects. National, provincial, LAs including district/division level units of essential service providing agencies would take immediate action to revive the public utilities as per the SOPs stated in the respective IDMPs. With the coordinated support of DMC, maximum possible assistance will be provided in establishing livelihoods through government agencies and NGOs, adhering to social justice, neutrality, impartiality, values and culture of affected persons.

Depending on the scale of the disaster, immediate, medium and long term plans for rehabilitation and reconstruction will be developed with the support of relevant agencies. DMC will coordinate with other agencies and carryout assessments and studies to support the reconstruction process. The relevant nodal agencies (Annexure 9) will use hazard/ risk maps and other information to support the build back better process to be more resilient and sustainable. As indicated in the national DM policy, the key agencies responsible for infrastructure and housing development would provide better living conditions than of those which get damaged. Large disasters would require more coordination among relevant authorities in land use planning and risk assessments prior to commencement of any rehabilitation and reconstruction work. Risk transfer mechanisms could increase efficiency in targeting relief and rehabilitation for a particular area based on proper identification and mapping of disaster prone areas and vulnerable populaces. In this regard, insurance is extremely useful as it provides appropriate financial assistance following extreme events of disasters.

4 Capacity building for Disaster Risk Management

Capacity development is a central strategy for reducing disaster risk and it is needed to build and maintain the ability of people, organisations and societies to manage the risks successfully. This requires not only training and specialised technical assistance but also strengthening the capacities of communities and individuals to recognise and reduce risks in the respective localities. It includes sustainable technology transfer, information exchange, network development, management skills, professional linkages and other resources. Moreover, Capacity development needs to be sustained through institutions that support capacity building and capacity maintenance as a permanent ongoing activity. While there has been a notable progress in developing the capacities in managing disaster risks in recent years in Sri Lanka, the gains have lagged in relation to other international development endeavours.

Capacity development is a central strategy for reducing disaster risk and it is needed to build and maintain the ability of people, organisations and societies to manage the risks successfully.

The SFDRR priority 2 (strengthening DRR governance to manager disaster risk) and priority 3 (investing in DRR for resilience) are relevant to capacity development and is a common theme in all DRR activities. The competencies required to implement, impose and monitor various measures in mitigating disaster risks need to be improved at all levels, from national to local and strengthen the governance systems to be more responsive.

Capacity development on disaster management should cover all relevant sectors, organisations and institutions that are concerned with various aspects in disaster risk management. These sectors include social, economic, health, educational, infrastructure, production, environmental, cultural and regulatory sectors both within and outside the government. NDMP 2023- 2030 advocates integrated capacity building strategy for the successful implementation of the plan developed based on the following SFDRR⁶¹ approaches (Table 6). This capacity enhancement will also include a Training Need Assessment for human resources while also focusing on institutional, technology and equipment needs.

Table 6. SFDRR approach for capacity building

Stakeholder engagement	Initiates relationships and dialogue that advise and resource the programmes and forms the basis of partnerships
Capacity needs assessment	Identifies the cause and impact of capacity gaps, sets the stage for intervention planning and provides initial monitoring indicators
Define the intervention	Design of capacity development interventions on institutional capacity, leadership, knowledge and accountability
Partnership building	Capacity development through partnerships that lend credibility, access, human and financial resources, expertise etc.
Implementation	Flexible needs based and demand driven intervention programmes
Monitoring and evaluation	Measure progress towards the intended goals to ensure those goals are resulting in the changes required to meet capacity needs

⁶¹ Strategic Approach to Capacity Development for Implementation of the Sendai Framework for Disaster Risk Reduction

4.1 Strengthening information exchange

Based on the success of the DesInventar and RiskInfo, the opportunity exists to expand the management of disaster related information management. NDMP 2023-2030 promotes expanding the data sharing and quality assuring networks covering a range of agencies engaged in development sectors, climate smart approaches, social protection, information technology, research and development including universities, towards an enriched information exchange to add value to NDMP 2023-2030 work plan.

Under phase I of the World Bank funded Climate Resilience Improvement Programmatic Approach Project (CRESMPA), it has been proposed to establish an impact based early warning system focused on flood and landslide disasters in the country. The main objective of phase I of the project is to establish country specific data sharing system to enhance the risk based decision making. Further, it has also been proposed to establish a data lab at the DMC, enabling all stakeholders to use hazard, exposure and vulnerability data for the purpose of disaster risk reduction.

4.1.1 Partnership with data providers

NDMP 2023- 2030 aims to take advantage of this initiative to coordinate with the Census and Statistics Department, Survey Department, Information and Communication Technology Agency of Sri Lanka (ICTA), National Spatial Data Infrastructure ((NSDI) and DoM, Land Use Policy Planning Department, Urban Development Authority (UDA) etc. to integrate the statistical and other data relevant to vulnerability for disaster risk reduction. The NSDI platform shares, uses and integrates a wide range of spatial data for social, economic and environmental benefit and recognised as a key initiative of the government, where all stakeholders and the public can access relevant data. This platform has enabled data sharing, increased efficiency and collaboration among organisations while avoiding data duplication. A total of 26 government organisations including DMC has contributed with more than 65 spatial data layers for the development of the NSDI.

4.1.2 Partnerships with international agencies

Sri Lanka continues to collaborate and partner with resident and non-resident UN agencies in obtaining necessary data for research and expanding the scope on analytical studies on DRR and DRM. In addition to the UN data and information sharing systems, there are a range of universities, the Consortium of International Agricultural Centres (CGIAR), international agencies, multilateral and bilateral entities, INGOs etc. equipped with updated and advanced data and information systems that, can add value to the activities, programmes and projects identified in the NDMP 2023-2030. It is proposed to further strengthen the existing information systems of the UN and other donor agencies, which would augur well for the implementation of actions identified in the NDMP 2023-2030, especially in designing DRR and climate smart approaches.

4.2 Disaster management trainings

Training is a core function of the DMC towards the improved capacity of stakeholders for effective disaster risk management. The NDMP 2023-2030 envisages five types of trainings identified as; (1) sensitisation programmes, (2) development of functional capacities (3) development of technical capacities (4) awareness and education and (5) specialised programmes such as International Search & Rescue Group (INSARG) and Programme for Enhancement of Emergency Response (PEER) and local SAR and life saving.

To accommodate the specialised training programmes DMC has partnered with various training centres such as the Centre for Disaster Response Training in Gampola (Sri Lanka Army), Sri Lanka School of Military Engineering in Embilipitiya (Sri Lanka Army), Disaster Management Training School in GangaWadiya (Sri Lanka Navy), Disaster Management Training School in Mullaitivu (Sri Lanka Air Force), Disaster Management Training Centre in Katukurundda (Special Task Force, Sri Lanka) and Fire Brigade training centre in Wellawatte.

4.2.1 Training of trainers

Creating a skilled and qualified group of trainers at national and district level through Training of Trainers (TOTs) programmes is identified as a primary requirement, to cover the awareness and education related trainings and also to operationalise the NEOP and SOPs. The initial TOT programmes established after the post Tsunami period needs to be further revamped and accordingly an improved version of TOT programmes, along with an effective mechanism to continue the process is advocated in the NDMP 2023- 2030. Support from professional organisations, international donor agencies and local and international universities is to be sort to establish partnerships to develop and build a strong and qualified pool of trainers in disaster management.

4.2.2 Training facilities

The government departments and agencies are equipped with training centres to cater to the needs of various types of training and capacity development interventions and the Sri Lanka Development Administration (SLIDA) is one such state of the art institutions identified for public service trainings. SLIDA and several universities have initiated and adopted high quality training programmes related to disaster management. Further the offices of the District Secretariats and Divisional Secretariats are also geared to facilitate sub-national level trainings including community level capacity building programmes organised by the DMC in collaboration with other local partners such as NGOs and CSOs.

4.3 Awareness and education

Awareness and education plays a key role in all aspects of the disaster management cycle to promote elements of SFDRR, emergency preparedness, use of NbS and inculcate novel knowledge on DRR. The on going awareness programmes conducted for government officials involved in disaster management at sub-national level will be continued with regular updates, enhancements and improvements in line with global and local advances. The NDMP 2023-2030 advocates a quality assurance process of the awareness and education efforts originated by government, non-government, private sector entities, higher educational institutions across the country.

4.3.1 School education

Together with the Ministry of Education (MoEd), DMC will continue to implement the ongoing awareness and education activities and initiate specific programmes to introduce updated knowledge on subjects related to disaster management as a top priority. During the implementation period of the NDMP 2023 - 2030, DMC plans to collaborate with number of agencies such as the National Institute of Education (NIE), National Science Foundation (NSF), other international and local higher education institutions, INGOs, private sector etc. involved in promoting school level edification and awareness to support the MoEd in strengthening school level capacity in Climate Change Adaptation (CCA) and DRR. DMC has taken initiative in collaboration with MoEd to establish

Disaster Management clubs in all schools as well as to inculcate the subject of disaster management into the curriculum of cadetting, guiding and scouting. Further, DRR has been included into the curriculum of the Teacher Training colleges in order to ensure that all future teachers are educated in the subject of DRM.

4.3.2 University education

Most of the recognised universities in the country including Kotelawala Defence University, University of Colombo, University of Peradeniya etc. are conducting Masters level (MSc) higher education or degree programmes focused on disaster management. Certain other universities have incorporated disaster management aspects in specialised degree programmes such as engineering, agriculture, geography, social science, logistics and other subject areas. NDMP 2023-2030 recognises the need to streamline, support and ensure quality of the university level programmes and develop collaborations with international universities and the private sector to improve the standards of the degree programmes. Furthermore, partnerships and collaborations with international universities will also help to transfer new technologies and best practices into the curricular of current and any new or future higher educational programmes. Student exchange programmes with foreign educational institutions specialising in disaster management will add great value for post graduate level qualifications.

4.3.3 Tertiary education

Over the years, the DMC has been supporting teacher training programmes and in order to cater to future requirements, the programme content and training capacity of tertiary educational institutes could be further improved to facilitate the training requirements needed to operationalise SOPs, NEOP and other technical aspects in disaster management. The NDMP 2023-2030 advocates to integrate climate smart approaches and DRR drivers into induction trainings of public and private sector organisations, technical colleges and other training institutions involved in development of skills.

4.4 Community based Disaster Risk Management

Community based disaster risk management (CBDRM) and community based adaptation needs to be recognised as a main component in disaster risk management and climate resilience investment projects. Further, for such projects to be successful, it is essential that communities are engaged in dialogue with the government and CSOs to identify the root causes of disaster risk and vulnerability to climate change, in order to mobilise necessary resources to implement identified actions in a prioritised manner. Hence, following four (4) components have been acknowledged as national strategies of community based disaster risk reduction initiatives.

- Reducing probabilities of failures through applying risk reduction methods
- Reducing the consequences of failures in terms of reduced number of deaths, injuries and direct and indirect damages
- Reducing time needed for recovery
- Recognising forms of vulnerability that can develop during the process of reconstruction

As an implementation strategy of CBDRM activities, it is vital to promote and encourage the establishment of disaster risk management committees within community groups, under the

leadership of officials working at GN level who will be empowered with responsibilities, strengthened with sufficient resources and adequate knowledge on the subject of disaster management.

4.5 Research and development

Disaster risk reduction measures planned or implemented at various spatial scales and techniques used in vulnerability assessments to strengthen the resilience of buildings and infrastructure for sustenance against risks of different hazards and climate change and ecosystem related risk reduction measures, including adaptation options etc. require a combination of research in the fields of science, engineering, social, financial, legal, information technology (IT) etc. in order to maintain disaster risk reduction options in a cost effective, efficient, novel and innovative manner. The SFDRR advocates for integrated approaches across all key sectors and stakeholder types such as scientists, engineers, financiers, policy planners, etc. The NDMP 2023-2030 proposes to develop a national research agenda that can be carried out by stakeholder agencies and the private sector, in collaboration with international agencies including academia.

The DMC would take an active role in facilitating research within the scope of the NDMP 2023-2030 and as specified in section 8 of the DM Act 2005, necessary steps would be taken to promote collaboration with international agencies and educational institutions, on expanding research activities leading to post graduate work. Furthermore, the DMC will partner with NSF, universities and other local and global socio-economic and scientific institutions in identifying and implementing research and development activities, to suit the current context. With the growing connectivity between ecosystem conservation and disaster risk reduction, combined with blended financing, new research opportunities in economics of ecosystems related to disaster risk reduction is envisaged. Further the urban, coastal and river basin level disaster risk management initiatives are linked closely with climate finance, corporate sustainability and NbS, opening multiple opportunities for DRR related research exploring the use of IOT, AI and citizen science etc.

5 NDMP 2023 - 2030 programme

Socio economic challenges and increasing climate risks define the disaster management landscape in the country. It is important to develop the country capacity in aspects such as policy, legal and financial to reduce the ever increasing disaster risks, as well as unforeseen large and slow-onset disasters. The NDMP 2023-2030 provides scope for greater evidence based and risk mainstreamed development, with multi-sector and multi-stakeholder active participation strengthened by enhanced institutional capacity and modern technology. The plan aims to facilitate sustainable investments towards risk-informed development while emphasising the need to conserve ecosystems that help to minimize disaster risks. This process may require integrated sector information management and advance management effectiveness tracking tools to monitor different disaster related variables, extending to climate, water, pollution, health, etc.

The NDMP 2023-2030 promotes mainstreaming equitable, inclusive, gender responsive, children centred DRR approaches in planning and implementation of all sectors to achieve holistic results in disaster risk reduction at national and sub-national levels.

The NDMP 2023-2030 promotes mainstreaming equitable, inclusive, gender responsive, children centred DRR approaches in planning and implementation of all sectors to achieve holistic results in disaster risk reduction at national and sub-national levels. It also advocates mainstreaming Eco-DRR and EbA in sectoral development processes to minimise disaster risks, while being cognisant on new and emerging disasters due to climate change adverse impacts such as rise in temperature and sea levels and also due to pollution.

Large number of institutions and agencies will be involved in the implementation of the activities identified in the Action Plan of the NDMP 2023-2030. Monitoring and evaluation of the activities undertaken for implementation by a multitude of government and private sector organisations and NGOs will be a complex process. External assistance would be required to develop systems and mechanisms for collecting and analysing data to support the implementation of the NDMP 2023-2030 tracking its management effectiveness.

The NDMP 2023-2030 consists of four (4) main operational strategies to achieve the ultimate goal of the programme with each operational strategy outcome consisting of several outputs. It is expected that under the NDMP 2023 – 2030, all plans developed by various organisations at different stages need to be synchronised and converted to a system, where implementation efficacy can be monitored periodically, including the effectiveness of disaster risk management, risk reduction, preparedness for response and build back better activities.

The programmes and activities listed in the NDMP 2023- 2030 encompasses the requirements based on the current status quo and understanding. The plan is not a one-off document and it is considered a "live action plan", which could be improved and modified further as and when required to do so depending on the needs and vulnerabilities arising, due to climate change challenges. Such an approach would encourage collective participation of all responsible stakeholders and the respective organisations would be able to incorporate relevant actions into the particular corporate action plans.

5.1 Operational strategies

The NDMP 2023- 2030 is developed with the aim of adopting **four (4) main operational strategies** with each strategy detailing specific outputs or deliverables.

1. Strengthening disaster risk management systems, capacities and partnerships through risk informed, technologically advanced and evidence-based approaches covering all forms of hazards, disasters, vulnerabilities and risks.

The first strategy aims to introduce innovative information collection, processing and management tools and mechanisms to enhance risk understanding, while promoting partnerships to build enhanced capacity towards risk sensitive planning.

- 1.1. Strengthen scientific and evidence based, risk-informed plans and systems at all levels for informed decision making by all sectors
- 1.2. Standardisation and policy advocacy for climate action and disaster risk reduction
- 1.3. Availability of effective and regularly updated spatial supported data bases with HEVR analysis for knowledge management
- 1.4. Established risk informed systems prioritising on extreme heat and air pollution among vulnerable communities and schools
- 1.5. Incorporation of disaster resilience in national physical plans and policies
- 1.6. Availability of enhanced communication and dissemination strategies/ procedures for disaster risk awareness prioritising key decision makers, vital service providers and vulnerable communities/ groups at national and sub national level
- 1.7. Improved public, private and institutional capacity on understanding disaster risk reduction investments through transferring benefits of climate financing and green innovation
- 1.8. Enhance partnerships for capacity building, technological enhancement, disaster risk governance and risk financing
- 1.9. Mainstreaming disaster related statistics framework and improving capacities in collaboration with other related stakeholders
2. Improving disaster risk governance at all levels through adequate legal mandates, disaster risk reduction integrated development and meaningful participation of stakeholders.

The second strategy aims to enhance the legal, policy and enabling environment to design and implement risk reduction efforts that also promote inclusive approaches and partnerships supported by risk reduction investment planning and innovative monitoring.

- 2.1. Strengthen legal and regulatory mechanisms for disaster risk management at all levels
- 2.2. Institutionalise a multi-stakeholder, gender responsive, age sensitive and inclusive approach for disaster risk governance at all levels
- 2.3. Mainstreaming disaster risk reduction and climate action in all sectors at all levels
- 2.4. Engaging all sectors and communities at national and local level to support and guide the efforts and mechanisms initiated to reduce disaster risks and climate change
3. Enhance public and private investment for resilience through facilitating legislative and regulatory frameworks and instruments for risk financing, risk insurance and shock responsive social protection programmes.

The third strategy aims to focus on financing risk transfer mechanisms which will fund disaster risk reduction, climate adaptation, green infrastructure etc. in improving the capacity of resilience of vulnerable communities and corporates.

- 3.1. Improving access to resilience through risk avoidance investments, social protection systems and access to up-to-date risk information
 - 3.2. Invest in promoting and supporting effective and inclusive social protection safety nets
 - 3.3. Promote investment in critical infrastructure and systems from impacts due to climate change and future cascading disaster risks
 - 3.4. Engage and empower communities and MSMEs/businesses to make risk informed and climate resilient investments
4. Ensuring effective preparedness for response and sustainable recovery of all sectors and communities affected by disasters and climate change, through efficient early warnings, building community resilience and fostering national and international partnerships.

The fourth strategy aims to support generation of timely early warnings, establishment of effective response systems to facilitate build-back-better processes promoting local and global partnerships.

- 4.1. Enhance community resilience through community based disaster risk reduction programmes
- 4.2. Enhance disaster preparedness through access to scientific and evidence based global, regional, national and multi hazard early warning systems
- 4.3. Improved preparedness and response strategies, including coordination mechanisms and infrastructure
- 4.4. Enhanced and cohesive early warning dissemination mechanism supporting vulnerable groups
- 4.5. Augment global and regional co-operation and coordination for emergency preparedness, response, search and rescue, recovery and rehabilitation
- 4.6. Promoting coherent approaches to leverage "Build Back Better" in disaster risk reduction agendas
- 4.7. Strengthening delivery of health services during disasters and emergencies to address climate change impacts and emerging diseases
- 4.8. Promoting the concept of "Environmental and Social (E&S) Performance Indicators for Corporates"
- 4.9. Strengthen the specific key aspects/areas of the subject ministry of disaster management

The detailed strategies and envisaged outcomes are fundamentally a prelude to the comprehensive Action Plan of the NDMP 2023 – 2030 which outlines the priority, objective or pillar, key operational strategy, respective operational sub strategies, actions, indicators, relevant time frames, list of key responsible institutions and agencies and applicable SDGs. The four categories of time frames running concurrently in most cases are as follows:

1. Continuous (recurring/ regular)
2. Short term (T1, ending 2024)
3. Medium term (T2, ending 2026)
4. Long term (T3, ending 2030)

Signifying the global frameworks, the NDMP 2023-2030 highlights a paradigm shift from a reactive disaster response approach relying heavily on response and relief to a drastically different progressive approach, based on strengthening resilience through DRR, improved preparedness, investing meaningfully on DRR through proper understanding of hazards, reducing the creation of new risks due to development activities, mainstreaming DRR and improving overall governance.

National Disaster Management Plan (NDMP) 2023 – 2030

PRIORITY 1	UNDERSTANDING DISASTER RISK									
OBJECTIVE	Risk informed planning and systems									
Pillar 1										
Operational strategy 1: Strengthening disaster risk management systems, capacities and partnerships through risk informed, technologically advanced and evidence based approaches covering all forms of hazards, disasters, vulnerabilities and risks										
Operational sub strategies	Actions	Indicator	Time frame				Implementation responsibility (organisation/s)		SDG	
			CT	ST	MT	LT	Lead	Partners		
1.1 Strengthen scientific and evidence based, risk-informed plans and systems at all levels for informed decision making by all sectors	1.1.1 Strengthen evidence based and real time hazard specific observation and surveillance systems through research, use of modern technology and international cooperation and partnerships	Utilisation of the projections on disaster and climate risk scenarios by approx. 80% or above by the number of sectors for decision making.	✓				DoM, ID, NBRO, GSMB, NARA MAoSL, DoA, MFARD, academic/ research institutes (national/ international)	Relevant subject ministries/ institutions, PCs, LAs, international weather monitoring agencies	SDG-11 SDG-13	
	1.1.2 Improve monitoring of emerging disaster situations and weather events	Number of government, semi government and private sector institutions engaged in synergistic decision making in major projects and engagements.	✓							
	1.1.3 Undertake evaluation and supervision of the existing and required capacities and enabling environment within the community/ society and at institutional levels, to manage and reduce disaster risks and strengthen resilience		✓				DMC	Relevant technical agencies, subject ministries/ institutions, PCs, LAs	SDG - 1 SDG - 2 SDG -5 SDG -11	
	1.1.4 Update and upgrade the existing operational hydro-meteorological systems			✓				ID, DoM, NBRO, DoA, MAoSL, DMC	Relevant subject ministries/ institutions, PCs, LAs,	SDG-11 SDG-13

	1.1.5 Establish impact based early warning systems				✓		DMC, relevant technical agencies	INGOs, NGOs, Tri forces and Police	
1.2 Standardisation and policy advocacy for climate action and disaster risk reduction	1.2.1 Develop and implement a thought leadership programme linking disaster risks (both existing and emerging) and climate change challenges targeting policy advocacy and creating an enabling environment	- Availability of a functional platform established with subject experts and professionals to lead evidence generation - Readiness of geo referenced, hazard specific and disaggregated databases in the public domain with improved accessibility and minimum 75% or more effective usage			✓		DMC	Relevant technical agencies, PCs, LAs, academic/ research institutes (national/ international), INGOs, NGOs	SDG - 1 SDG - 2 SDG - 4 SDG-11 SDG-13
1.3 Availability of effective and regularly updated spatial supported data bases with HEVR analysis for knowledge management	1.3.1 Implementing new as well as updating existing knowledge management database(s) with analysis and updated data related to disaster events including man-made disasters such as impact of pollution (air, water, soil etc.) on humans and environment	Availability of updated spatial databases with HEVR analysis and timely information for accessibility at least by 75% or more beneficial users	✓				DMC, relevant technical agencies, academic/ research institutes (national/ international)	Relevant subject ministries/ institutions, MoE, INGOs, NGOs	SDG - 1 SDG - 2 SDG - 4 SDG - 5 SDG-11 SDG-13
	1.3.2 Prepare hazard specific and zonation maps to be made available at national to divisional levels for risk informed decision making on various hazards and multi- hazard scenarios	Availability of multi hazard/ hazard specific risk assessment and zonation maps at national to local level for usage at least by 75% of the focal point agencies/ institutions for sustainable development		✓			DMC, relevant technical agencies, academic/ research institutes (national/ international)	Relevant subject ministries/ institutions, SD, DB, SLLDC, UDA, USDA, NERD, NHDA, PCs, LAs, INGOs, NGOs	SDG - 1 SDG - 2 SDG - 4 SDG - 5 SDG - 9 SDG-11 SDG-13
	1.3.3 Conduct multi hazard and hazard specific risk assessments (hazard, exposure, vulnerability and capacity), mapping and				✓				

	zonation from national to divisional levels to inform structural and non-structural mitigation and sustainable development measures								
	1.3.4 Develop geo referenced hazard specific, exposure and vulnerability assessing disaggregated databases for public reference and use	Incorporation of GIS in 75% or more in disaster risk management information systems		✓					
	1.3.5 Establish GIS based disaster risk information management systems at national and local level with common data platform and inter-agency mechanism for data standardisation to build the level of awareness, literacy and management capacity of disaster risks	available at national and local level to enhance awareness and literacy on DRR		✓					
	1.3.6 Address knowledge gaps in disaster risk management in light of climate change adaptation and mitigation through capacity building programmes on disaster risk management	Increase the percentage of implemented capacity building programmes inclusive of climate change adaptation and mitigation up to 75% or more from the current level			✓		DMC, CCS, NSF,CEA, MoE,	Relevant technical agencies, relevant subject ministries/ institutions, PCs, LAs, academic/ research institutes (national/ international), INGOs, NGOs	SDG - 1 SDG - 2 SDG - 3 SDG - 4 SDG - 5 SDG - 9 SDG-11 SDG-13

1.4 Established risk informed systems prioritising on extreme heat and air pollution among vulnerable communities and schools	1.4.1 Develop and establish evidence based risk informed systems and mechanisms to mitigate the effects of extreme heat and air pollution affecting vulnerable communities particularly children	Number of new risk informed systems on extreme heat and air pollution established among vulnerable communities and in schools		✓			NBRO, CCS, MoE, CEA, MoEd, MoH, DMC	Relevant subject ministries/ institutions, INGOs, NGOs	SDG - 1 SDG - 3 SDG - 4 SDG - 5 SDG-11 SDG-13
1.5 Incorporation of disaster resilience in national physical plans and policies	1.5.1 Prepare and implement multi-hazard and hazard specific risk sensitive land use plans, development of zonation plans, national physical plans etc.	Minimum of 50% of the total land use plans/ development zonation plans and national physical plans to be made hazard specific and risk sensitive				✓	SD, SLLDC, UDA, USDA, DB, MoLands, NERD	Relevant subject ministries/ institutions, NHDA, PCs, LAs	SDG - 1 SDG -9 SDG-11 SDG-13 SDG-14 SDG -15
1.6 Availability of enhanced communication and dissemination strategies/ procedures for disaster risk awareness prioritising key decision makers, vital service providers and vulnerable communities/	1.6.1 Prepare communication and dissemination strategies and procedures for disaster risk awareness and information sharing (including application of technologies such as mobile apps, website, SMS, radio, television) at national to local level by giving priority to women, children, elderly and PWDs	Number of communication and dissemination strategies and procedures that have given priority to women, children, elderly and PWDs		✓			DMC, MWCASE, MoE, MoH, MoMM, DoGI	Relevant subject ministries/ institutions, PCs, LAs, telecommunication service providers, private media institutions, INGOs, NGOs	SDG -1 SDG -3 SDG- 4 SDG -5 SDG-11 SDG-13
	1.6.2 Setting up of gender and child centred disaster expert groups								

groups at national and sub national level	1.6.3 Build knowledge, understanding, capacity and skills on managing and responding to disasters, governance for disaster risk reduction, climate change risks and resilience at national and sub national level through targeted educational programmes for children, youth, women, PWDs and key service providers (health workforces, teachers etc.) and decision-makers	Number of training programmes conducted and events organised on capacity building and development of skills on DRR, climate resilience and governance for children, youth, women, PWDs and key service providers		✓					
	1.6.4 Strengthen the capacity of existing training centres with necessary human and logistic resources to scale up DRR related training programmes for all identified groups/ stakeholders	Number of training centres strengthened to accommodate DRR related training programmes		✓			DMC, MoD, MoE, Tri forces, Police	Relevant subject ministries/ institutions, government training institutions	SDG -1 SDG -3 SDG -4 SDG -5 SDG-11 SDG-13
1.7 Improved public, private and institutional capacity on understanding disaster risk reduction investments through transferring benefits of climate financing and green innovation	1.7.1 Promote private sector investments in disaster risk reduction through standardisation, incorporation of Environmental and Social (E&S) performance indicators into corporate goals/strategies	Availability of a national award system to recognise private sector contribution and innovation in DRR		✓			DMC, MoE, CEA, CCS, CCC	Relevant subject ministries/ institutions, relevant private sector organisations	SDG -1 SDG -2 SDG -3 SDG -5 SDG-9 SDG-11 SDG-13
	1.7.2 Facilitate and coordinate public and private sector involvement in green financing	Readiness of a mechanism to transfer benefits of climate financing and green innovation to disaster risk reduction				✓	DMC, MoE, CEA, CCC	Relevant subject ministries/ institutions, relevant private sector organisations INGOs, NGOs	

	1.7.3 Disaster risk management and climate change mitigation/adaptation concepts are mainstreamed into primary, secondary, tertiary and vocational education institutes, technical colleges and universities	Number of courses/ subjects established from school to the university level based on inter disciplinary modules/ curriculum on different aspects of DRR, DRM and CCA			✓	DMC, MoEd, CCC, academic/ research institutes (national/ international)	Relevant subject ministries/ institutions, PCs, LAs, DCS	SDG -1 SDG -3 SDG-4 SDG -5 SDG-11 SDG-13
1.8 Enhance partnerships for capacity building, technological enhancement, disaster risk governance and risk financing	1.8.1 Utilisation of mass media and other innovative (or novel) and diverse media platforms (e.g. print, social, electronics, audio etc.) for effective dissemination of information on disaster risks and emerging disaster risks	At least 50% of mass media and novel media platforms utilised for dissemination of information on disaster/ emerging disaster risks	✓			DMC, ICTA, MoMM, DoGI, relevant technical agencies, academic/ research institutes (national/ international)	Relevant subject ministries/ institutions, private media institutions, PCs, LAs, INGOs, NGOs, DCS	
	1.8.2 Collaborate with public, private, CBOs, INGOs and NGOs, political authorities and media for effective dissemination and sharing of disaster risk information from national to local level	Number of collaborations developed with public, private, CBOs, international non-governmental organisations, political parties and media for sharing of risk information	✓			DMC, ICTA, NPPD	Relevant subject ministries/ institutions, SMoHA, PCs, LAs, CBOs, INGOs, NGOs	SDG -1 SDG -3 SDG-4 SDG -5 SDG-9 SDG-11 SDG-13
	1.8.3 Ensure collaboration between district/divisional/local authority and non-governmental organizations to promote partnership between community based groups (e.g. local development organisations, women's' groups, youth clubs, children clubs) for disaster risk	Number of collaborations and partnerships established in district/divisional/local authorities and non-governmental organizations to promote partnership between community based groups for DRM		✓		DMC, DS, DivS, MWCASE, MoE, NYSC	Relevant subject ministries/ institutions, SMoHA, PCs, LAs, CBOs, INGOs, NGOs	

	management and decision-making								
	1.8.4 Promote bilateral, regional, and international cooperation in disaster risk information sharing	Number of new bilateral, regional, and international co-operations established on disaster risk information sharing				✓	DMC, MoFA, MoE, NPPD	Relevant subject ministries/ institutions, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-9 SDG-10 SDG-11 SDG-17
	1.8.5 Strengthen national and international collaboration with local and foreign/ regional organisations, universities, scientific institutions to create awareness, preparedness and contingency planning for emerging disasters risks (e.g. oil spills) and emergency situations (i.e. caused due to chemical, biological, radiological, nuclear and explosive incidents) in on closer to Sri Lankan territory (i.e. territorial waters and air space)	Number of international and regional collaborations established with scientific institutions, universities and organisations to develop evidences on disaster risks (i.e. prevailing and emerging) and climate impact on Sri Lanka				✓	DMC, MoD, CCS, NSF, MoE, CEA, MEPA, NARA, MoH, relevant technical agencies, academic/ research institutes (national/ international)	Relevant subject ministries/ institutions, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-6 SDG-8 SDG-9 SDG-11 SDG-13 SDG-17
1.9 Mainstreaming disaster related statistics framework and improving capacities in collaboration with other related stakeholders	1.9.1 Improve disaster related statistics knowledge and strengthen the capacity of existing training centres of the DCS through sharing and transferring of technical knowhow between neighbouring countries to prepare evidence based decision making for DRR	Number of officers trained and availability of relevant updated data which is accessible by minimum of 75% or more technical agencies and related stakeholders	✓				DMC, DCS, MoFA, NPPD, relevant technical agencies, academic/ research institutes (national/ international)	Relevant subject ministries/ institutions, INGOs, NGOs	SDG-1 SDG-2 SDG-3 SDG-4 SDG-5 SDG-6 SDG-7 SDG-9 SDG-11 SDG-13 SDG-14

									SDG-15 SDG-17
	1.9.2 Identification of stakeholder agencies and officers to establish disaster related statistics units and provide necessary technical and expertise and other required resources	Number of technical agencies/ relevant stakeholder organisations with established disaster related statistics units		✓			DMC, DCS, relevant technical agencies, academic/ research institutes (national/ international)	Relevant subject ministries/ institutions, INGOs, NGOs	SDG-1 SDG-2 SDG-3 SDG-4 SDG-5 SDG-6 SDG-7 SDG-9 SDG-11 SDG-12 SDG-13 SDG-14 SDG-15 SDG-17

PRIORITY 2	STRENGTHENING DISASTER RISK GOVERNANCE TO MANAGE DISASTER RISK									
OBJECTIVE	Improving risk governance and inclusive participation									
Pillar 2										
Operational strategy 2: Improving disaster risk governance at all levels through adequate legal mandates, disaster risk reduction integrated development and meaningful participation of stakeholders.										
Operational sub strategies	Actions	Indicator	Time frame				Implementation responsibility (organisation/s)		SDG	
			CT	ST	MT	LT	Lead	Partners		
2.1 Strengthening legal and regulatory mechanisms for disaster risk management at all levels	2.1.1 Ensure regulatory strengthening of the DMC authority and capacity to effectively and efficiently deliver national disaster risk management and emergency response and preparedness, based on the provisions under the DM Act No. 13 of 2005	Number of government organisations/ agencies and private entities that have incorporated legal provisions to mainstream DRR/CCA				✓	NCDM, relevant subject ministry of DMC, SMOHA, MoPHP&L	MoJ, LDD, relevant subject ministries/ institutions, PCs, LAs	SDG-1 SDG-3 SDG-8 SDG-9 SDG-11 SDG-12 SDG-13 SDG-16	
	2.1.2 Ensure compliance with legal provisions available for mainstreaming DRR/CCA into the development process as a mandatory requirement					✓				
	2.1.3 Establish and regularise national, provincial, district and divisional level disaster risk management coordination committees with clear mandates, Terms of References (TORs), SOPs and operational capacity	Number of TORs and SOPs developed in DRM committees at each level			✓		NCDM, DMC, SMOHA	Relevant subject ministries/ institutions, PCs, LAs	SDG-1 SDG-8 SDG-9 SDG-11 SDG-12 SDG-13 SDG-17	
	2.1.4 Develop and enforce regulations for effective disaster risk management in Sri Lanka based on relevant provisions	Number of government and private organisations that have incorporated provisions of the SLDM		✓			NCDM, relevant subject ministry of DMC, LDD, SMOHA, LAs, CCC, MoPHP&L	Relevant subject ministries/ institutions, private sector	SDG-1 SDG-8 SDG-9	

	under the SLDM Act and other relevant acts and legal frameworks	Act in the corporate (or organisation's) Action plans							SDG-11 SDG-12 SDG-13
	2.1.5 Strengthen the organisational structure of all government ministries and departments to develop and implement institutional DRM plans (i.e. IDMPs) based on the provisions and guidelines of the DM Act 2005	Number of institutions that have strengthened and implemented institutional DRM plans (i.e. IDMPs) as per the guidelines introduced by DMC based on the DM Act 2005		✓			NCDM, DMC, Relevant subject ministries/ institutions	PCs, LAs	SDG-1 SDG-6 SDG-8 SDG-9 SDG-11 SDG-12 SDG-13
	2.1.6 Incorporate disaster risk impact assessment in environmental impact assessments (EIAs) and health investment impact assessments (HIAs) of major or large scale development projects	Number of major and/or large scale development projects that have incorporated disaster risk impact assessments in EIAs and HIAs		✓			MoE, CEA, CCS, UDA, DB, CMA, SSLDC, DMC, SMoHA, GBCSL, MoPHP&L, MoTHW	Relevant subject ministries/ institutions, relevant technical agencies, academic/ research institutes (national/ international), INGOs, NGOs	SDG-1 SDG-3 SDG-8 SDG-9 SDG-11 SDG-12 SDG-13 SDG-15
2.2 Institutionalise a multi-stakeholder, gender responsive, age sensitive and inclusive approach for disaster risk governance at all levels	2.2.1 Ensure comprehensive and coherent disaster risk management programmes in all sectors at all levels by integrating gender sensitive, child centred, age appropriate and inclusive approaches, action plans and budgets for disaster risk management planning, implementation and monitoring	Number of gender sensitive, child centred, age appropriate and inclusive action plans and budgets included in DRM programmes in all sectors at all levels			✓		DMC, MWCASE, NCPA, DoSS, NSE, Community Police	Relevant subject ministries/ institutions, INGOs, NGOs	SDG -1 SDG -4 SDG-5 SDG-11 SDG-12 SDG-13
	2.2.2 Promoting women's participation in the disaster management mechanism from national level to local (village) level (i.e. aspects on disaster	Number of programmes/activities implemented at local(village) level			✓		DMC, MWCASE, NCPA, SMoHA, MoPHP&L	Relevant subject ministries/ institutions, PCs, LAs, INGOs, NGOs	SDG -1 SDG -3 SDG -4 SDG-5 SDG-11

	prevention, protection, rehabilitation)								SDG-12 SDG-13
	2.2.3 Prepare a handbook on gender based needs of victims of disaster or affected persons	Publication and launch of the handbook at national level and number of sensitisation programmes held or organised at local level		✓					
	2.2.4 Develop and implement specific programmes ensuring meaningful active engagement and participation of cohorts of children, women, PWDs (or persons with special needs) and elderly at community and divisional level decision making, disaster risk reduction planning and implementation	Number of DRR programmes which engaged children, women, PWDs (or persons with special needs) elderly at community and divisional level				✓	DMC, MWCASE, NCPA, DoSS, NSE, SMOHA, MoPHP&L, NSPWD, Community Police	Relevant subject ministries/ institutions, PCs, LAs, INGOs, NGOs	SDG -1 SDG -3 SDG -4 SDG-5 SDG-11 SDG-12 SDG-13
	2.2.5 Invest in DRR programmes and trainings related to employment, skill development and health services as per the interest and necessity of women, children and other marginalised communities to enhance the standards of living	Number of DRR programmes and trainings which included children, women and marginalised communities			✓		MoSDVT, NAITA, relevant Technical colleges, MWCASE, DoSS, MoEd, NSE, NCPA, Community Police	Relevant subject ministries/ institutions, PCs, LAs, INGOs, NGOs	SDG -1 SDG -3 SDG -4 SDG-5 SDG-11 SDG-12 SDG-13
	2.2.6 Establish mental health and psychosocial support services (MHPPS), care centres in major cities to handle post-disaster trauma among persons affected by disasters i.e. during and post disaster recovery stage/ phase	Number of mental health and psychosocial support services (MHPPS), care centres established in major cities/towns to handle post-disaster trauma among persons affected by disasters		✓			MoH, DMC, SMOHA, MoPHP&L	Relevant subject ministries/ institutions, PCs, LAs, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-11 SDG-13

2.3 Mainstreaming disaster risk reduction and climate action in all sectors at all levels	2.3.1 Availability of a strengthened coordination mechanism to integrate and implement DRR at all level (i.e. district, divisional and local government) across all sectors	Number of coordination mechanisms established to integrate and implement DRR at all levels and across all sectors			✓		NCDM, DMC, relevant technical agencies, SMoHA, MoPHP&L	Relevant subject ministries/ institutions, PCs, LAs, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-6 SDG-7 SDG-8 SDG-9 SDG-11 SDG-12 SDG-13 SDG-14 SDG-15
	2.3.2 Strengthen the development of local disaster risk reduction (DRR) plans for all local authorities across the country	Number of local authorities for which the local DRR plans have been developed, sensitised and implemented with effective monitoring mechanisms			✓		DMC, SMoHA, MoPHP&L	Relevant subject ministries/ institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-11 SDG-13
	2.3.3 Improve the mechanism and infrastructure of the operations of the emergency hotline (117) for multi-hazard and multi-stakeholder emergency response and coordination process in an effective and efficient manner	Emergency hotline (24x7 basis) operation extended to all types of hazards/ emergencies (i.e. multi hazards - e.g. health, marine disasters etc.)			✓		Subject ministry of DMC, DMC, MoH, MoD	Relevant subject ministries/ institutions, relevant technical agencies, INGOs, NGOs, Tr Forces, Police	
	2.3.4 Ensure efficient and mandatory mainstreaming of DRR into local governance by improving mainstream DRR	Number of local authorities adopting DRR through improved planning and familiarisation			✓		DMC, SMoHA, MoPHP&L, PCs, LAs	Relevant subject ministries/ institutions, relevant technical agencies, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-8 SDG-9

									SDG-11 SDG-12 SDG-13
	2.3.5 Regulate and standardise to ensure that all development projects are risk informed, environmentally sustainable and supports climate mitigation and adaptation	Published implementation evidence of relevant guidelines for risk-informed, environmentally sustainable development project planning			✓		NDMC, DMC, CCS, MoE, MoJ, LDD, SLLDC, UDA, CEA, DB, USDA, MoTHW, CCC, CMA, NHDA	Relevant subject ministries/ institutions, relevant technical agencies, SMoHA, MoPHP&L, PCs, LAs, private sector	SDG-1 SDG-3 SDG-8 SDG-9 SDG-11 SDG-12 SDG-13 SDG-15 SDG-16
	2.3.6 Develop and establish effective, modern and comprehensive forest fire management system	Number of forest fires controlled with minimal damage to the eco system			✓		DMC, FD, MoE	Relevant subject ministries/ institutions, SMoHA, PCs, LAs, CEA, DWC, WNPS, Tri Forces, Police, fire brigade, INGOs, NGOs	SDG-1 SDG-2 SDG-11 SDG-15 SDG-17
	2.3.7 Prepare, regularly update and monitor the DRM plans of district, divisional, local authority, GN divisions and village level Disaster Management Committees	Number of disaster management plans prepared, updated and monitored at sub-national levels	✓				DMC, SMoHA, MoPHP&L, PCs, LAs	Relevant subject ministries/ institutions, INGOs, NGOs	SDG-1 SDG-2 SDG-3 SDG-4 SDG-6 SDG-9 SDG-11 SDG-13 SDG-14 SDG-15 SDG-17
	2.3.8 Integrated river basin management planning approach and strengthened risk-informed planning adopted for 15 river	Ensure mainstreaming of disaster risk reduction into the integrated river basin management				✓	MoA, DoA, ADD, ASD, MAoSL, ID, DMC	Relevant subject ministries/ institutions, SMoHA, MoPHP&L, INGOs,	SDG-1 SDG-2 SDG-5 SDG-6

	basins in Sri Lanka with community participation, particularly women, children, youth, elderly and PWDs (or persons with special needs)	planning approach for 15 river basins with the participation of vulnerable communities						NGOs, relevant technical agencies, academic/ research institutes (national/ international)	SDG-11 SDG-12 SDG-13
	2.3.9 Ensure that climate change mitigation and adaptation systems, policies, strategies and plans are mainstreamed into relevant public and private organisational mandates in the agriculture sector in Sri Lanka	Number of agriculture based government and private organisations in the agriculture sector that have mainstreamed climate change in the relevant organisational mandates				✓	MoA, DoA, DAD, ASD, ID, DMC	Relevant subject ministries/ institutions, SMoHA, MoPHP&L, private sector, INGOs, NGOs, relevant technical agencies	SDG-1 SDG-2 SDG-3 SDG-6 SDG-11 SDG-13
	2.3.10 Establish and enhance sustainable land and water management practices in areas where anticipated climate vulnerability is severe	Number of sustainable land and water management practices established in climate vulnerable areas across the country			✓		MoA, DoA, DAD, ASD, ID, NWSDB, DMC		SDG-1 SDG-2 SDG-3 SDG-6 SDG-11 SDG-13
	2.3.11 Establish and promote local resource based green infrastructure at river basin level for flood, drought and landslide mitigation	Number of infrastructure projects that adapt local resource based green infrastructure initiatives at river basin level for flood, drought and landslide mitigation			✓		CEA, UDA, USDA, ID, SLLDC, NBRO, DMC, MoPHP&L	Relevant subject ministries/ institutions, SMoHA, private sector, INGOs, NGOs, relevant technical agencies	SDG-1 SDG-2 SDG-3 SDG-6 SDG-9 SDG-11
	2.3.12 Conserve, restore sustainably managed inland water bodies, including lakes, tanks, lagoons etc. by adopting nature-based solutions for disaster risk management	Number of nature based solutions for DRM adopted at all levels to sustainably manage inland water bodies				✓	MoE, CEA, DAD, DoA, ID, DMC	Relevant subject ministries/ institutions, INGOs, NGOs, relevant technical agencies	SDG-1 SDG-2 SDG-6 SDG-8 SDG-9 SDG-11 SDG-13 SDG-15

2.4 All sectors and communities are engaged in national and local mechanisms to connect and guide efforts to reduce disaster risk and climate change	2.4.1 Facilitate opportunities, platforms and mechanisms for mobilisation of non-governmental organisations (NGOs) for disaster preparedness, emergency response, recovery, reconstruction and rehabilitation	Number of non-governmental organisations mobilised for disaster preparedness, emergency response, recovery, reconstruction and rehabilitation	✓				DMC, MoD, NPD, SMOHA, MoPHP&L	Relevant subject ministries/ institutions, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-11 SDG-12 SDG-13 SDG-15 SDG-17
	2.4.2 Conduct social mobilisation programmes at local level for accessibility, representation and effective participation of communities at-risk, in formulating disaster risk management programmes	Number of social mobilisation programmes conducted at local level for effective participation of communities in DRM programmes		✓			DMC, MoPHP&L, MWCASE, NSPWD	Relevant subject ministries/ institutions, PCs, LAs, relevant technical agencies, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-6 SDG-8 SDG-11 SDG-13
	2.4.3 Promote national and international volunteerism for disaster risk reduction, emergency preparedness, response and recovery	Number of volunteering teams/platforms established for DRR, emergency/disaster preparedness, response and recovery		✓			DMC, MoPHP&L, MoEd, MWCASE, DoSS, CCC	INGOs, NGOs, private sector	SDG-3 SDG-4 SDG-5 SDG-9 SDG-11 SDG-13 SDG-17

PRIORITY 3	INVESTING IN DISASTER RISK REDUCTION FOR RESILIENCE								
OBJECTIVE	Enabling environment for partnerships and finance								
Pillar 3									
Operational strategy 3: Enhance public and private investment for resilience through facilitating legislative and regulatory frameworks and instruments for risk financing, risk insurance and shock responsive social protection programmes.									
Operational sub strategies	Actions	Indicator	Time frame				Implementation responsibility (organisation/s)		SDG
			CT	ST	MT	LT	Lead	Partners	
3.1 Improving access to resilience through risk avoidance investments, social protection systems and up-to-date risk information	3.1.1 Build knowledge, understanding and capacity of professionals, entrepreneurs and industrialists to encourage them for participation, responsibility and accountability in disaster risk management	- Number of capacity building programmes conducted for - professionals, entrepreneurs and industrialists on disaster risk management		✓			DMC, CCC, MoInd, MoSDVT, NAITA, DB	Relevant subject ministries/ institutions, relevant technical agencies, academic/ research institutes (national/ international), INGOs, NGOs	SDG-1 SDF-2 SDG-3 SDG-5 SDG-8 SDG-9 SDG-11 SDG-12 SDG-13
	3.1.2 Establish a regulatory mechanism to regulate the allocation and effective utilisation of minimum 2% of the annual budget for disaster risk management by all sectoral agencies	Number of sectoral agencies complied with the allocation and effective utilisation of 2% (minimum) for DRM annually		✓			MoF, MoE, NPD, NPPD	Relevant subject ministries/ institutions, SMoHA, MoPHP&L, PCs, LAs	SDG-1 SDG-3 SDG-5 SDG-8 SDG-11 SDG-13
	3.1.3 Establish an acceptable procedure and mechanism to permit transfer of budgets from development projects to utilisation in post disaster reconstruction	Number of development projects which have recognised budget transfer mechanisms for post disaster reconstruction		✓			MoF, NPD, NPPD	Relevant subject ministries/ institutions, SMoHA, MoPHP&L, UDA, SLLDC, DB, PCs, LAs, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-8 SDG-11 SDG-13

	3.1.4 Increased investment and engagement of mentors by the private sector in post disaster recovery and reconstruction through DRR programmes	Number of private investors or investments engaged with and contributed to post disaster recovery and reconstruction			✓		DMC, CCC	Private sector INGOs, NGOs, related government ministries/ institutions	SDG-1 SDG-3 SDG-4 SDG-5 SDG-11 SDG-13
	3.1.5 Develop public private partnership (PPP) to attract participation and investment of the private sector for disaster risk insurance and established risk sharing programmes	Number of public-private partnerships established for participation and investment of the private sector in disaster risk insurance and risk sharing mechanisms			✓		MoF, CCC, NPD, NPPD	Relevant subject ministries/ institutions, SMOHA, MoPHP&L, UDA, SLLDC PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-8 SDG-11 SDG-13 SDG-15
	3.1.6 Leverage public and private investments for scaling up Eco-DRR through mainstreaming, regularisation and standardisation of Eco-DRR practices including capacity building	Number of large-scale development projects incorporating Eco-DRR		✓			MoF, DMC, MoE, CEA, NPD, NPPD	Relevant subject ministries/ institutions, SMOHA, MoPHP&L, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-7 SDG-11 SDG-12 SDG-13
3.2 Invest in promoting and supporting effective and inclusive social protection safety nets	3.2.1 Ensure horizontal and vertical expansion of existing social protection safety net schemes to be more shock responsive in addressing essential needs of the most vulnerable, amongst disaster impacted populations/ communities	Number of shock responsive social safety net schemes established at all levels to protect vulnerable populations/communities			✓		MoF, MoD, DMC, MWCASE, NSPWD, SMOHA, MoPHP&L	Relevant subject ministries/ institutions, relevant technical agencies, NDRSC, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-11 SDG-13 SDG-17

	3.2.2 Introduction and implementation of legal provisions to encourage incentives of tax rebates and low interest credit for retrofitting of property, constructions in high risk areas and for investments in DRR activities made by the private sector	Number of legal provisions implemented at all levels introducing tax rebates and low interest credit benefiting property retrofitting, constructions in high risk areas and private sector investments in DRR		✓			MoF, MoJ, MoD, DMC, NPD, MoE, UDA, MoPHP&L	Relevant subject ministries/ institutions, SMOHA, PCs, LAs, private sector	SDG-1 SDG-3 SDG-4 SDG-11 SDG-13 SDG-15 SDG-17
	3.2.3 Develop and promote alternative and innovative financial instruments and mechanisms (e.g. Forecast based risk financing, micro investments, micro credit, insurance, re-insurance etc.) for disaster risk reduction	Number of alternative and innovative financial instruments and mechanisms introduced at all levels for DRR			✓		MoF, NPD, NPPD, CEA	Relevant subject ministries/ institutions, relevant technical agencies, private sector	SDG-1 SDG-3 SDG-4 SDG-11 SDG-13 SDG-15
	3.2.4 Operationalise viable financial support schemes/ mechanisms (e.g. micro finance, interest free loans, conditional cash transfers, insurance etc.) for persons (individuals) in communities affected by disasters	- Number of viable financial support schemes/ mechanisms effectively operationalised or offered - Number of persons (individuals) of disaster affected communities benefitted by the offered financial			✓		MoF, NPD, NPPD, DMC	Relevant subject ministries/ institutions, relevant technical agencies, NDRSC, private sector, INGOs, NGOs	SDG-1 SDG-4 SDG-5 SDG-8 SDG-11 SDG-13

		support schemes/ mechanisms							
	3.2.5 Ensure safety and security of community first responders involved in emergency response through life insurance policies	Number of first responders insured under life insurance schemes			✓		MoF, MoD, MoH, DMC, MoPHP&L	Relevant subject ministries, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-11 SDG-13
	3.2.6 Expand contribution based insurance schemes to protect means of livelihood, skills, equipment and investments of persons (individuals) affected from disasters at all levels	Number of established contribution based insurance schemes to protect persons (individuals) affected from disasters at all levels			✓		MoF, DMC, MoPHP&L, SMoHA	Relevant subject ministries, NDRSC, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-9 SDG-11 SDG-13
	3.2.7 Provide insurance entitlements and benefits for families living below the poverty line through an effective disaster impact assessment system developed using integrate records and updated data	Number of persons and families living below the poverty line considered for insurance entitlements through the developed disaster impact assessment system			✓		MoF, NPD, NPPD, DMC, MoPHP&L, SMoHA	Relevant subject ministries, NDRSC, PCs, LAs, ICTA, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-8 SDG-11 SDG-13
3.3 Promote investment in critical infrastructure and systems from impacts due to	3.3.1 Develop and operationalise hazard specific risk informed, gender responsive budgeting and financial systems for the country	Number of beneficiaries considered by hazard specific risk informed budgeting and financial systems				✓	MoF, NPD, NPPD, DMC, MoPHP&L, SMoHA, MWCASE, CEA	Relevant subject ministries/ institutions, relevant technical agencies, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-8 SDG-11 SDG-13

climate change and future cascading disaster risks	3.3.2 Establish monitoring mechanisms from national to local level to identify risks in public and private physical infrastructure developments (e.g. dams, schools, hospitals, archaeological and tourist sites, sports complexes etc.)	Number of public and private physical infrastructure developments monitored to identify risks at national and local level			✓		MoPHP&L, SMOHA, DMC, MoEd, MoH, NBRO, GSMB, UDA, DB, SLLDC, CCC	Relevant subject ministries/ institutions, relevant technical agencies, private sector, PCs, LAs	SDG-1 SDG-3 SDG-8 SDG-9 SDG-11 SDG-12 SDG-13
	3.3.3 Promote investments for safe schools, hospitals and other critical infrastructure to safeguard the occupants/ users of these institutions from potential adversities due to disasters	Number of programmes/ initiatives implemented for the safety of critical infrastructure in the country			✓		MoPHP&L, SMOHA, DMC, MoEd, MoH, NBRO, GSMB, UDA, DB, SLLDC, CCC	Relevant subject ministries/ institutions, relevant technical agencies, private sector, PCs, LAs, INGOs, NGOs	
	3.3.3 Update and enforce building regulations including construction of new structures and revise building codes in urban and rural areas	Number of new or updated building regulations and codes implemented at local government level			✓		NBRO, DB, ICTAD, DMC	Relevant subject ministries/ institutions, relevant technical agencies, private sector, PCs, LAs, INGOs, NGOs	SDG-1 SDG-3 SDG-8 SDG-9 SDG-11 SDG-12 SDG-13
	3.3.4 Prepare guidelines for retrofitting of high risk infrastructure (e.g. residential buildings, hotels, apartments, industrial buildings, historical and cultural heritage buildings and sites, schools, hospitals, community buildings, temporary shelters/ safety centres etc.)	Number of guidelines introduced and operationalised for retrofitting high risk infrastructure at national and local level			✓		NBRO, GSMB, DB, ICTAD, DMC, SLTDA, MoEd, CMA, UDA, DoArc, MoPHP&L, SMOHA	Relevant subject ministries and institutions, relevant technical agencies, private sector, PCs, LAs, INGOs, NGOs	

	3.3.5 Establish, formulate and implement plans for retrofitting and identifying other alternatives for strengthening the structures of critical and essential life line service providers during emergencies or disasters to ensure operational continuity	Number of critical and essential service providers (e.g. utilities) which have implemented plans to strengthen structural safety and disaster resilience		•	✓		NWSDB, CEB, ID, CPC, RDA, ICTAD, MoD	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, Tri forces	SDG-1 SDG-8 SDG-9 SDG-11
	3.3.6 Reconstruct/ renovate infrastructure of identified high and medium risk schools in disaster prone areas to enhance safety and security aspects	Number of identified schools in disaster prone areas that are renovated/ reconstructed in order to be disaster resilient		✓			MoEd, NBRO, GSMB, DMC	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs	SDG-1 SDG-4 SDG-9 SDG-11 SDG-13
	3.3.7 Introduce and enhance investment plans for retrofitting of high risk infrastructure (e.g. schools, hospitals, water supply structures, government and private buildings, historical and cultural heritages/sites, hydropower houses, power sub-stations etc.)	Number of investment plans for retrofitting of high risk infrastructure				✓	MoF, NPD, NPPD, NBRO, GSMB, DMC, MoPHP&L, SMOHA, CCC	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, private sector	SDG-1 SDG-3 SDG-4 SDG-5 SDG-6 SDG-7 SDG-9 SDG-11 SDG-13
	3.3.8 Establish and promote model climate-smart schools to build resilience and safety	Number of model schools established as climate resilient/smart				✓	MoEd, MoE, DMC	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, private sector	SDG-1 SDG-4 SDG-5 SDG-9 SDG-11 SDG-13

	3.3.9 Develop and implement structural mitigation strategies to protect archaeological sites against disasters	- Number of archaeological sites which adopted - structural mitigation measures against disasters			✓		DoArc, DMC, MoPHP&L, SMoHA	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs	SDG-9 SDG-13
	3.3.10 Undertake structural, system, human and operational capacity building and retrofitting of the existing airports, ports and fisheries harbours against natural and man-made disasters	Number of existing airports, ports and fisheries harbours considered and adopted retrofitting and capacity building initiatives against disasters				✓	AASL, MFARD, SLPA, MoD	Relevant subject ministries and institutions, PCs, LAs, Tri forces	SDG-11 SDG-13 SDG-14
	3.3.11 Strengthen disaster preparedness at national and local airports by conducting simulation exercises and mock drills regularly on the concept of <i>"Get Airports Ready for Disaster"</i>	Number of simulation exercises and mock drills conducted annually at national and local airports in line with the concept of <i>"Get Airports Ready for Disaster"</i>		✓			AAL, MoD, MoFA, DMC, MoH, SLTDA	Relevant subject ministries and institutions, Tri forces, relevant technical agencies, LAs, private sector, INGOs, NGOs	SDG-3 SDG-4 SDG-11 SDG-13 SDG-17
	3.3.12 Promote bio engineering methods (e.g. bio-dykes, afforestation, forest conservation, watershed protection etc.) for flood and landslide risk reduction	Number of bio engineering methods established in identified or specific sectors			✓		ID, DAD, ASD, DoA, MAoSL, NBRO, GSMB, MoLands, SLLDC, MoPHP&L	Relevant subject ministries and institutions, Tri forces, relevant technical agencies, PCs, LAs, academic/ research institutes (national/ international), private sector, INGOs, NGOs,	SDG-1 SDG-3 SDG-6 SDG-7 SDG-9 SDG-11 SDG-13

	3.3.13 Assess and adopt necessary structural pre-emptive measures for flood risk reduction (e.g. embankment, reservoirs, dams etc.)	Number of structural pre-emptive measures implemented or adopted for flood risk reduction at local level			✓		ID, DAD, ASD, DoA, MAoSL, SLLDC, NWSDB, MoPHP&L	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, private sector, academic/ research institutes (national/ international), INGOs, NGOs	SDG-2 SDG-3 SDG-6 SDG-7 SDG-9 SDG-11 SDG-13
	3.3.14 Assess and adopt relevant structural measures for landslide risk reduction (e.g. slope stabilisation, geometry modification, surface erosion control etc.)	Number of structural measures implemented or adopted for landslide risk reduction at local level			✓		NBRO, GSMB, RDA, DoA, SLLDC, MoPHP&L	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, private sector, INGOs, NGOs, academic/ research institutes (national/ international)	SDG-2 SDG-3 SDG-8 SDG-9 SDG-11 SDG-13
	3.3.15 Create awareness and endorse construction of scientific and well defined urban drainage systems while improving the existing to mitigate floods	Number of improved and newly constructed urban drainage systems complying with scientific and set standards to mitigate floods				✓	SLLDC, RDA, UDA, USDA, DB, DMC, MoPHP&L	Relevant subject ministries and institutions, relevant technical agencies, SMoHA, PCs, LAs, academic/ research institutes (national/ international), private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-6 SDG-9 SDG-11 SDG-13
	3.3.16 Introduce and promote disaster related insurance policies or covers for public/ government buildings, schools, hospitals and other critical infrastructure (e.g. heritage	Number of public/ government buildings, schools, hospitals and other critical infrastructure which have obtained				✓	MoF, NPD, NPPD, DMC, MoPHP&L, MoEd, MoH, NWSDB, CEB, CPC, AASL, MoTHW, CCC	Relevant subject ministries and institutions, relevant technical agencies, SMoHA, PCs, LAs,	SDG-1 SDG-3 SDG-6 SDG-7 SDG-8 SDG-9

	buildings/sites, bridges, water supply and sanitation systems, hydropower structures, fuel storages, cable/ transmission lines, airports) and review the existing relevant insurance policies	insurance covers/ policies to mitigate the impact of disasters						private sector, INGOs, NGOs	SDG-11 SDG-13 SDG-16
	3.3.17 Ensure safety of critical infrastructure including structures for accommodation and strengthening of essential communication facilities/ mechanisms, recreational facilities/ locations etc. in tourism sector to mitigate the impact due to disasters	Number of critical infrastructure including structures for accommodation and essential communication facilities, recreational facilities/ locations built or strengthened to mitigate disaster impacts in the tourism sector	✓				SLTDA, DB, NBRO, GSMB, SLLDC, UDA, DMC, TRC, MoPHP&L, CCC	Relevant subject ministries and institutions, relevant technical agencies, SMoHA, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-8 SDG-11 SDG-13 SDG-14
	3.3.18 Capitalise on climate finance options based NDCs for climate mitigation and adaptation and consider Sri Lanka Green Finance Taxonomy in improving investments in disaster risk reduction at all levels	Number of procedures/ processes, regulations and options introduced to capitalise on climate finance options to improve investments in DRR		✓			MoF, NPD, NPPD, DMC, CCC	Relevant subject ministries and institutions, relevant technical agencies, SMoHA, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-8 SDG-9 SDG-11 SDG-13 SDG-17
	3.3.19 Occupational health and safety standards to be established and adopted in all public/ government buildings, schools, hospitals and in other important infrastructure at national and local level	Number of public/ government buildings, schools, hospitals and other important infrastructure at national and local		✓			MoH, MoEd, MoE, BD, UDA, DMC, MoPHP&L, SMoHA	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-8 SDG-9 SDG-11 SDG-13

		level which have adopted occupational health and safety standards							
3.4 Engage and empower communities and MSMEs/ businesses to make risk informed and climate resilient investments	3.4.1 Create awareness and encourage environmentally sustainable and climate resilient diversified income generating livelihoods and markets for existing and prospective MSMEs	Number of MSMEs / businesses/ entrepreneurs involved in environmentally sustainable and climate resilient diversified income generating livelihoods and markets		✓			MoE, MoInd, CCC, MoPHP&L	Relevant subject ministries and institutions, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-2 SDG-3 SDG-5 SDG-11 SDG-13 SDG-17
	3.4.2 Create an enabling environment by providing technical assistance to non-government and/or private sector business entities/ corporates/ organisations/ institutions to prepare and implement business continuity plans (BCPs) for disaster recovery and sustainability	Number of non-government and/or private sector business entities/ corporates/ organisations/ institutions that have prepared and implemented BCPs for sustainability and as a disaster recovery measure		✓			CCC, DMC, MoInd	Relevant technical agencies, private sector, INGOs, NGOs	SDG-1 SDG-8 SDG-11 SDG-13 SDG-17

PRIORITY 4	ENHANCING DISASTER PREPAREDNESS FOR EFFECTIVE RESPONSE AND TO “BUILD BACK BETTER” IN RECOVERY, REHABILITATION AND RECONSTRUCTION									
OBJECTIVE	Effective response and sustainable recovery									
Pillar 4										
Operational strategy 4: Ensuring effective preparedness for response and sustainable recovery of all sectors and communities affected by disasters and climate change, through efficient early warnings, building community resilience and fostering national and international partnerships										
Operational sub strategies	Actions	Indicator	Time frame				Implementation responsibility (organisation/s)		SDG	
			CT	ST	MT	LT	Lead	Partners		
4.1 Enhance community resilience through community based disaster risk reduction programmes	4.1.1 Establish guidelines, standards and facilitate opportunities to mobilise community volunteers for emergency response	Number of awareness and capacity building DRR programmes conducted for community volunteers		✓			DMC, Tri forces, Sri Lanka Police	Relevant subject ministries and institutions, relevant technical agencies, NYSC, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-11 SDG-13	
	4.1.2 Establish adequate safety centres with required basic infrastructure and maintain acceptable structural standards in high risk and/ or disaster prone areas	Number of safety centres established with required basic infrastructure and structural standards in high risk and/ or disaster prone areas		✓			MoD, NDRSC, DMC, MoPHP&L, SMoHA, MoH	Relevant subject ministries and institutions, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-9 SDG-11 SDG-13	
	4.1.3 Adopting minimum humanitarian standards in managing safety centres	- Number of sensitising and training programmes conducted in managing safety centres as per the guidelines/ standards - Number of safety centres adopting minimum humanitarian standards		✓			NDRSC, DMC, MoPHP&L, SMoHA, MoH	Relevant subject ministries and institutions, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-9 SDG-11 SDG-13	

	4.1.4 Create awareness and conduct training programmes for vulnerable communities on the importance of following hazard-specific early warning messages	Number of awareness raising training programmes on following hazard-specific early warning messages conducted for vulnerable communities	✓			DMC, MoPHP&L, SMoHA	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-11 SDG-13
	4.1.5 Ensuring children and adolescents are equipped with skills and knowledge to contribute to the development and implementation of disaster risk reduction, preparedness for emergency response and climate change adaptation initiatives	Number of children that have been trained on child centred disaster risk reduction (CC-DRR) planning and on child protection in emergencies	✓			DMC, MoPHP&L, SMoHA, MoED, MWCASE, NCPA, MoH	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-11 SDG-13
	4.1.6 Development of children specific standards and regulations to ensure safety, security and well-being of children through consultation, engagement and empowerment of children and youth	Approval and adaptation of Sri Lanka Children's Charter for Disaster Risk Reduction by the political authorities or the members of the cabinet	✓			MoED, MWCASE, NCPA	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-11 SDG-13 SDG-16
	4.1.7 Extending prevailing community based flood EW systems to other river basins to establish an operational EW system for major hazards such as landslides, drought, lightning, high winds, extreme heat, fire, epidemics, endemics etc.	Number of existing community based flood EW systems extended to other river basins to establish an effective EW system for major hazards	✓			DMC, ID, NBRO, GSMB, DoM, MoH SMoHA, MoPHP&L	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, academic/ research institutes (national/ international), INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-11 SDG-13

	4.1.8 Identify strategies and implement community information centres for risk communication in high-risk and/or disaster prone areas	Number of community members gained training in risk communication through established community information centres	✓				DMC, ID, NBRO, GSMB, DoM, MoH SMOHA, MoPHP&L	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, academic/ research institutes (national/ international), INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-11 SDG-13
	4.1.9 Enhanced understanding and application of risk reduction measures for better prepared communities through strengthened existing community based disaster risk management systems	Number of operational/functional community-based disaster risk management committees at village level in high-risk and/or disaster prone areas		✓			DMC, SMOHA, MoPHP&L	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-11 SDG-13
	4.1.10 Expand and create a network of community based organisations for disaster risk management	Number of community based disaster risk management organisations established in all 25 districts		✓			DMC, SMOHA, MoPHP&L	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs	
	4.1.11 Develop opportunities and mechanisms to enhance knowledge, skills and capacities of community-based first responders and volunteers in emergency response	Number of community members trained as first-responders for emergency response in each district (i.e. 25 districts)		✓			DMC, SMOHA, MoPHP&L, MoD, Tri forces, Sri Lanka Police	Relevant subject ministries and institutions, relevant technical agencies, NYSC, PCs, LAs, private sector, INGOs, NGOs	SDG-1 SDG-3 SDG-4 SDG-5 SDG-11 SDG-13

	4.1.12 Enhance and empower community engagement in food security and prevention of lack of nutrition related diseases through capacity building of government officers, community leaders, volunteers and practitioners at grass root level	Number of capacity building programmes conducted at grass root level for government officers, community leaders, volunteers and practitioners on food security and prevention of lack of nutrition related diseases		✓			MoH, MoA, MoF, NPD, DMC, SMoHA, MoPHP&L	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs	SDG-1 SDG-2 SDG-3 SDG-5 SDG-6 SDG-8 SDG-11 SDG-12 SDG-13 SDG-14
	4.1.13 Provide specific support to develop capacities of established community organisations (e.g. Child clubs, Youth clubs, Women's/ Mothers groups, Senior citizen forums/ societies, etc.) for disaster preparedness and emergency response at all levels (i.e. national and local)	Number of persons (<i>NOTE: disaggregated by age, gender and ability</i>) equipped with necessary knowledge, skills and enhanced capacity in disaster preparedness and emergency response activities at all levels	✓				DMC, MoPHP&L, SMoHA, MoD, Tri forces, Sri Lanka Police Social Service Department	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs, private sector	SDG-1 SDG-3 SDG-4 SDG-5 SDG-8 SDG-10 SDG-11 SDG-13
4.2 Enhance disaster preparedness through access to scientific and evidence based global, regional, national and multi hazard early warning systems	4.2.1 Establish a "national emergency hub" as well as improve capacities of existing Emergency Operation Centres (EOCs) in key technical and service agencies/ institutions at relevant administrative levels with international expertise and assistance for multi-hazard coordination	Number of effective EOCs established and operational at relevant administrative levels in key technical and service agencies/ institutions and formation of a "national emergency hub"		✓			DMC, MoPHP&L, SMoHA, relevant technical agencies	Relevant subject ministries and institutions, MoD, Tri forces, Sri Lanka Police, PCs, LAs, INGOs, NGOs, private sector	SDG-1 SDG-3 SDG-5 SDG-9 SDG-11 SDG-13

	4.2.2 Leverage international and/or regional cooperation in capacity building and use of technological innovations and solutions for monitoring of emerging disaster risks, enhancing early warning and emergency response coordination mechanisms	- Number of instances or events international and/or regional assistance has been obtained - for capacity building in DRR and enhancing early warning and emergency response coordination mechanisms			✓		DMC, MoD, MoFA, NPD, NPPD	Relevant subject ministries and institutions, relevant technical agencies, MoD, Tri forces, Sri Lanka Police, INGOs, NGOs, private sector	SDG-1 SDG-4 SDG-9 SDG-10 SDG-11 SDG-13 SDG-17
	4.2.3 Develop institutional programmatic partnerships to link mass communication (e.g. print, radio, television, social media networks, SMS, mobile phones) and modern information technology to raise disaster risk awareness and improve EW	Number of public awareness campaigns/ programmes/ events conducted at national and local level to raise disaster risk awareness and improve EW		✓			DMC, MoMM, TRC, CCC, private sector	Relevant subject ministries and institutions, relevant technical agencies, MoD, PCs, LAs, Tri forces, Sri Lanka Police, INGOs, NGOs, academic/ research institutes (national/ international)	SDG-1 SDG-4 SDG-5 SDG-10 SDG-11 SDG-13
	4.2.4 Review the existing National Emergency Operations Plan (NEOP) and the Standard Operating Procedures (SOPs) to enhance the overall effectiveness and strengthen the functionalities of national and district level EOCs to cater to climate change risks and EWs	Adopting and practicing the SOPs of the reviewed NEOP and number of operationally strengthened EOCs at district level		✓			DMC, MoD, relevant technical agencies, MoH, NWSDB, CEB, MoPHP&L, SMoHA	Relevant subject ministries and institutions, Tri forces, Sri Lanka Police, INGOs, NGOs, private sector	SDG-1 SDG-3 SDG-5 SDG-11 SDG-13

4.3 Improved preparedness and response strategies, including coordination mechanisms and infrastructure	4.3.1 Develop and/or enhance command, coordination, communication systems and develop/simulate scenario based contingency plans for high risk and recurrent disasters at national and local level	Number of scenario based contingency plans developed and simulated at national and local level as preparatory measure for high risk and recurrent disasters		✓			DMC, MoD, relevant technical agencies, MoPHP&L, SMoHA	Relevant subject ministries and institutions, Tri forces, Sri Lanka Police, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-8 SDG-9 SDG-11 SDG-13
	4.3.2 Develop an Integrated National Disaster Response System (i.e. preparedness, communications, information management, resource management etc.) to enhance coordination through the incident management systems for emergency response	Implementation of the National Disaster Response System			✓		DMC, MoD, Tri forces, Sri Lanka Police, MoH	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-10 SDG-11 SDG-13 SDG-17
	4.3.3. Strengthen disaster mitigation, preparedness, awareness, emergency response, EW mechanisms, logistics, critical facilities of organisations/ corporates/ business entities in key economic contributory sectors (e.g. tourism, apparel, industrial, plantation etc.)	Number of organisations/ corporates/ business entities and the respective key economic contributory sectors strengthened to mitigate the impact of disasters			✓		DMC, MoE, NPD, NPPD, MoF, SLTDA, MoInd, MoPHP&L, SMoHA, CCC	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector	SDG-1 SDG-2 SDG-3 SDG-5 SDG-8 SDG-10 SDG-11 SDG-13
4.4 Enhanced and cohesive early warning dissemination mechanism	4.4.1 National early warning dissemination mechanism designed with participation of vulnerable groups (e.g. women, children, elderly and PWDs) to	Implementation of an effective early warning dissemination mechanism at national level to reach		✓			DMC, MoD, Tri forces, Sri Lanka Police, MoPHP&L, SMoHA, MWCASE, NCPA	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector	SDG-1 SDG-3 SDG-5 SDG-10 SDG-11 SDG-13

supporting vulnerable groups	ensure "last mile and last man" reach of EWs	"last mile and last man"							SDG-17
	4.4.2 Review and implement SOPs to guide the operation of early warning systems and the process of dissemination of early warning information between various key organisations involved in disaster management	Implementation of an effective EW information dissemination process between various key organisations involved in disaster management			✓		DMC, relevant technical agencies, MoPHP&L, SMoHA, MoD	Relevant subject ministries and institutions, Tri forces, Sri Lanka Police, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-10 SDG-11 SDG-13
	4.4.3 Develop an emergency evacuation/ response plan for the benefit of Sri Lankan migrant workers affected by a crisis/ disaster/ emergency in the host country	Implementation of a cohesive early emergency evacuation/ response plan for the benefit of Sri Lankan migrant workers			✓		MoFA, SLFEB, MoH, DMC	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs	SDG-1 SDG-3 SDG-5 SDG-10 SDG-11 SDG-13 SDG-17
	4.4.4 Enhance early warning information and communication capacity by incorporating digital technology and developing informative/ educational material to create awareness on EW systems among vulnerable communities (e.g. women, children, elderly persons, PWDs, indigenous persons/ communities etc.)	Number of persons in vulnerable communities familiar with EW systems through informative / educative technology driven information material			✓		DMC, MWCASE, NCPA, MoEd, MoPHP&L, SMoHA	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs	SDG-1 SDG-4 SDG-5 SDG-10 SDG-11 SDG-13
	4.4.5 Establish digital/ social media systems for early warning dissemination ensuring regular awareness and simulations through mass/digital/social media and community	Number of persons receiving EWs through established social media systems			✓		DMC, MoEd, MWCASE, NCPA	Relevant subject ministries and institutions, PCs, LAs, relevant technical agencies,	SDG-1 SDG-4 SDG-5 SDG-11 SDG-13

	mobilisation adopting child friendly and inclusive approaches							INGOs, NGOs, private sector	
	4.4.6 Use of modern science and information technology (i.e. web portals, apps etc.) to provide and disseminate forecast based weather/ climate updates for disaster preparedness and response	Frequency (i.e. number of times) of dissemination of forecast based weather/ climate updates to the public using modern technology (e.g. apps, web portals etc.) for disaster preparedness and response			✓		DoM, DMC, relevant technical agencies, TRC	Relevant subject ministries and institutions, INGOs, NGOs, private sector, academic/ research institutes (national/ international)	SDG-1 SDG-3 SDG-10 SDG-11 SDG-13
	4.4.7 Establish an integrated and technically advanced fire control (i.e. forest and urban) mechanisms with teams of trained personnel/ officers	- Number of integrated fire control teams established with increased capacity, skills and mechanisms at local level - Reduction of reported number of large scale fire incidents through effective and coordinated fire fighting mechanisms		✓			FD, DWC, DMC, Fire Service Department, Tri forces, Sri Lanka Police, MoPHP&L, SMOHA, MoE	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs	SDG-11 SDG-13 SDG-15
4.5 Augment global and regional co-operation and coordination for emergency preparedness, response, search and rescue,	4.5.1 Strengthen search and rescue capacities, standards and implement an integrated, coordinated search and rescue (SAR) programme at national and local level	Number of programmes conducted for capacity building and number of trained SAR teams/members at national and local level		✓			DMC, MoD, Tri forces, Sri Lanka Police, MoH, Fire Service Department, MoPHP&L, SMOHA, MoFA	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs, academic/ research institutes (national/ international)	SDG-10 SDG-11 SDG-13 SDG-17

recovery and rehabilitation	4.5.2 Reinforce collaboration and coordination among international, regional and national/ government and non-government organisations, universities, research institutions, United Nations organisations and development partners to strengthen DRR and DRM	Number of programmes/ events/activities conducted or organised to strengthen appropriate, effective and sustainable DRR and DRM initiatives and interventions at national and local level		✓			DMC, MoE, MoFA, MoEd, MoPHP&L, SMOHA	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs, academic/ research institutes (national/ international)	SDG-1 SDG-3 SDG-4 SDG-5 SDG-9 SDG-10 SDG-11 SDG-17
	4.5.3 Establish an effective policy and mechanisms to address air and maritime distress search and rescue operations equipped with enhanced capacities and infrastructure	Sensitisation of the implemented policy and mechanisms among related stakeholders		✓			MoE, MEPA, NARA, MFARD, SLPA, AASL, DMC, MoD, MoFA	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector	SDG-10 SDG-11 SDG-14 SDG-16 SDG-17
4.6 Promoting coherent approaches to leverage "Build Back Better" in disaster risk reduction agendas	4.5.4 Mobilise bilateral, multi-lateral and international resources for reconstruction of important infrastructure and heritage buildings/ sites of historic value to withstand the impact of disasters	Number of reconstructed/ renovated key infrastructure and heritage buildings/ sites of historical value with the support of bilateral, multi-lateral and international resources to withstand the impact of disasters				✓	MoFA, DoArc, DMC, MoPHP&L, SMOHA	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs	SDG-9 SDG-11 SDG-13 SDG-15 SDG-17

	4.6.1 Timely standardisation, regularisation, capacity building and guidance of emergency response, recovery, rehabilitation and reconstruction	Number of SOPs developed for implementation and adopted for emergency response recovery, rehabilitation and reconstruction at national and sub-national/ local levels to effectively coordinate and manage the impacts due to disasters and emergencies		✓			NCDM, DMC, MoD, MoH, NDRSC, Tri forces, Sri Lanka Police, NWSDB, CEB, CPC, MoA, MoPHP&L, SMoHA	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs, private sector	SDG-1 SDG-2 SDG-3 SDG-5 SDG-6 SDG-7 SDG-9 SDG-11 SDG-13 SDG-17
	4.6.2 Develop systems and mechanisms for handling and management of debris, solid and medical waste, e-waste, waste water etc. in the aftermath of disasters	Efficient systems, guidelines and procedures introduced and implemented at national and local level for effective handling and management of debris, solid and medical waste, e-waste, waste water etc. in the aftermath of disasters		✓			MoPHP&L, SMoHA, MoH, MEPA, NARA, DMC	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs, private sector	SDG-3 SDG-6 SDG-11 SDG-13
	4.6.3 Develop tools and methodology to standardise damage and loss assessment and recovery needs assessments through effective use of information technology	Implementation and availability of guidelines, tools and standards for post-disaster damage, loss			✓		DMC, MoF, relevant technical agencies, NPPD, MoE	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs, private sector	SDG-8 SDG-9 SDG-11 SDG-13

		and recovery needs assessments							
	4.6.4 Develop and establish a one-stop system to avoid duplications in mobilisation / collection of relief for distribution among communities/ persons affected by disasters	Streamlined systems and one stop concept implemented for mobilisation / collection of relief for distribution among communities/ persons affected by disasters		✓			DMC, NDRSC, MoD, MoPHP&L, SMoHA, MoH, CCC	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs, private sector	SDG-1 SDG-3 SDG-5 SDG-8 SDG-10 SDG-12 SDG-13 SDG-17
	4.6.5 Ensure specific prioritised focus to enhance effective accessibility to vulnerable communities and persons with economic hardships to provide post-disaster relief, rescue and rehabilitation services offered by government and non-governmental sectors	Number of effective and prioritised measures and systems implemented to provide post-disaster relief, rescue and rehabilitation services offered by government and non-governmental sectors to vulnerable communities and persons with economic hardships		✓			DMC, NDRSC, MoF, MoD, Tri Forces, Sri Lanka Police, MoPHP&L, SMoHA	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs, private sector	SDG-1 SDG-2 SDG-3 SDG-5 SDG-10 SDG-11 SDG-13 SDG-17
	4.6.6. Preparation and adoption of enhanced and timely guidelines for resettlement of affected persons/ families/ communities and rehabilitation of damaged infrastructure due to disasters	Implementation of timely government (or national/local) guidelines for resettlement of affected persons/ families/ communities and rehabilitation of damaged		✓			DMC, NDRSC, MoF, MoPHP&L, SMoHA, NBRO, ID, CCC	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs, private sector	SDG-1 SDG-5 SDG-9 SDG-10 SDG-11 SDG-13

		infrastructure due to disasters							
	4.6.7 Effective and systematic resettlement of internally displaced persons affected by disasters in safe and low risk areas	Implementation and adoption of approved guidelines for resettlement of internally displaced persons affected by disasters in safe and low risk areas		✓			DMC,NDRSC,MoF,MoPHP&L, SMoHA, NBRO, ID, CCC	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs, private sector, academic/ research institutes (national/ international)	
	4.6.8 Relocation of habitat, communities or settlements in high risk/ disaster prone areas to safe and low risk areas (i.e. less disaster prone)	Effective relocation of persons/ families residing in high risk/ disaster prone areas to safe and low risk areas (i.e. less disaster prone)				✓	NBRO, GSMB, DI, DMC, NDRSC, MoPHP&L, SMoHA	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs, private sector, academic/ research institutes (national/ international)	SDG-1 SDG-3 SDG-5 SDG-9 SDG-10 SDG-11 SDG-13 SDG-17
	4.6.9 Develop and/or reconstruct integrated settlements with appropriate physical infrastructure to support vulnerable communities (e.g. women, children, elderly and PWDs) to mitigate the impact due to disasters	Number of developed and/or reconstructed integrated settlements with appropriate physical infrastructure to support the vulnerable communities to mitigate the impact due to disasters				✓	DMC, NDRSC, MoPHP&L, SMoHA	Relevant subject ministries and institutions, relevant technical agencies, PCs, LAs, INGOs, NGOs, private sector, academic/ research institutes (national/ international)	SDG-1 SDG-3 SDG-5 SDG-9 SDG-10 SDG-11 SDG-13 SDG-17

	4.6.10 Formulate guidelines on "Build Back Better" (BBB) in green recovery, rehabilitation and reconstruction to foster economic growth and development	Implemented and adopted guidelines on "Build Back Better" in green recovery, rehabilitation and reconstruction to foster development		✓			NBRO, UDA, BD, USDA, MoLands, SLLDC, DMC, MoPHP&L, SMoHA	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector, academic/ research institutes (national/ international)	SDG-1 SDG-3 SDG-9 SDG-10 SDG-11 SDG-13 SDG-17
	4.6.11 Ensure developing of appropriate BBB and disaster resilience policies/ guidelines and institutional structures for post-disaster recovery and reconstruction inclusive of gender, age and physical ability concerns of persons	Implemented and adopted inclusive (i.e. based on gender, age, physical ability concerns) BBB and disaster resilience policies/ guidelines and institutional structures for post-disaster recovery and reconstruction		✓			NBRO, UDA, BD, USDA, NHDA, MoLands, SLLDC, DMC, NDRSC, MoE, MoH, MoPHP&L, SMoHA	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector	SDG-1 SDG-3 SDG-5 SDG-10 SDG-11 SDG-13 SDG-17
	4.6.12 Address the specific and essential needs of women, children, elderly and PWDS in reconstruction and/or renovation of physical infrastructure of special care homes and community buildings (e.g. retirement homes, orphanages, community buildings, safety centres etc.) to mitigate the impact due to disasters	Number of reconstructed and renovated physical infrastructure of special care homes and community buildings to mitigate the impact due to disasters		✓			BD, UDA, USDA, NHDA, DMC, NDRSC, NBRO, MoPHP&L, SMoHA	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector	SDG-1 SDG-3 SDG-5 SDG-10 SDG-11 SDG-13 SDG-17

	4.6.13 Promote research and development in construction technology, materials and infrastructure designing for management of disaster risk reduction and for climate change adaptation with specific focus on "Build Back Better" concept	Number of completed research studies assisting gaining knowledge in adopting appropriate construction technology and infrastructure designing for management of DRR with specific focus on BBB concept			✓		NSF, academic/ research institutes (national/ international), NBRO, GSMB, UDA, USDA, BD, SLLDC, CCC	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector	SDG-1 SDG-4 SDG-8 SDG-9 SDG-10 SDG-11 SDG-13 SDG-17
	4.6.14 Promote awareness raising programmes on disaster resistant, risk reduction and eco friendly construction procedures and guidelines through national and local media including social media	Number of informative media programmes aired on national, local media and social media channels to create public awareness on disaster resistant, risk reduction and eco friendly construction procedures and guidelines			✓		DMC, NBRO, MoMM, UDA, USDA, BD, SLLDC, CCC	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector	

	4.6.15 Regularise an effective monitoring system/ mechanism to ensure the requirement of adopting building codes and quality standards (i.e. quality certifications e.g. ISO) and approved/ permitted construction material in infrastructure/ structural constructions at national and local level to mitigate the impact of disasters and strengthen structural safety	Implementation of an effective and robust compliance system for monitoring use of quality construction material in and adoption of approved building codes in infrastructure/ structural constructions at national and local level to mitigate the impact of disasters and strengthen structural safety		✓			UDA, NBRO, GSMB, USDA, BD, SLLDC, NSF, DMC, academic/ research institutes (national/ international), MoPHP&L, SMOHA, CCC	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector	SDG-1 SDG-4 SDG-8 SDG-9 SDG-10 SDG-11 SDG-13 SDG-17
	4.6.16 Enhance the capacity of service providers and professionals (e.g. engineers, surveyors, builders, carpenters, mason, construction contractors, suppliers etc.) through training and awareness raising programmes on disaster resistant and on improved techniques on construction/ reconstruction of structures/infrastructure to mitigate disaster impacts through DRR methods	Number of programmes held to create awareness, educate and train professionals and service providers in the construction sector / industry on importance of adopting DRR measures to mitigate the impact of disasters and on progressive climate change adaptation practices	✓				NBRO, UDA, SLLDC, BD, NSF, DMC, MOEd, academic/ research institutes (national/ international)	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector	SDG-1 SDG-4 SDG-5 SDG-8 SDG-9 SDG-10 SDG-11 SDG-13 SDG-17

4.7 Strengthening delivery of health services during disasters and emergencies to address climate change impacts and emerging diseases	4.7.1 Emergency response in health sector improved through establishment of EOCs, standardisation, guidance and capacity building	Number of EOCs established in the health sector with enhanced capacities and standards		✓			MoH, DMC	Relevant subject ministries and institutions, MoPHP&L, SMoHA, INGOs, NGOs, private sector	SDG-3 SDG-5 SDG-9 SDG-10 SDG-11 SDG-12 SDG-13
	4.7.2 Prepare Standard Operating Procedures (SOPs) for health service EOCs at provincial, district and MOH levels	Implementation of approved SOPs to be adopted and followed by the EOCs established in the health sector at provincial, district and MOH levels		✓			MoH, DMC	Relevant subject ministries and institutions, MoPHP&L, PCs, LAs, SMoHA, INGOs, NGOs, private sector	
	4.7.3 Prioritise delivery of health services in specific areas such as basic health, hygiene, reproductive and sexual, maternal and child, adolescents, mental (psycho social) and nutrition in disaster prone areas and during disasters	Developed and implemented specific guidelines and standards to be adopted in delivery of health services in disaster prone areas and during disasters in an effective manner		✓			MoH, MWCASE, NCPA, DMC, MoPHP&L	Relevant subject ministries and institutions, PCs, LAs, SMoHA, INGOs, NGOs, private sector	SDG-3 SDG-4 SDG-5 SDG-10 SDG-11 SDG-13
	4.7.4 Enhance emergency response capacity of all health care institutions including hospitals and MOHs	Number of healthcare professionals trained on health emergency response, disaster victim identification, extraction, safe transport, basic life support and psychological first aid and management of dead during			✓		MoH, DMC, MoPHP&L	Relevant subject ministries and institutions, SMoHA, INGOs, NGOs, CCC, private sector	

		disasters/ emergencies							
	4.7.5 Enhance the capacity of health workers/ officers at each level for skill development in disaster victim identification, extraction, safe transport, basic life support, psychological first aid and management of dead during disasters	Number of health workers/ officers at each level equipped with enhanced skills in specific health care service areas and professional practices/ mechanisms related to disaster management		✓			MoH, MoED, DMC, academic/ research institutes (national/ international)	Relevant subject ministries and institutions, INGOs, NGOs, CCC, private sector	SDG-3 SDG-4 SDG-5 SDG-10 SDG-11 SDG-13 SDG-17
	4.7.6 Develop trained, and skilled human resources of the MoH as first responders, volunteers of CBOs in order to promote mental health aspects during disasters and delivery of psychological first aid	Number of medical professionals and healthcare workers/ officers trained and skilled to act as first responders and number of CBO volunteers trained on psychological first aid to provide necessary support during disasters			✓		MoH, MoED, DMC, NDRSC, academic/ research institutes (national/ international)	Relevant subject ministries and institutions, Tri forces, Sri Lanka Police, INGOs, NGOs, CCC, private sector	
	4.7.7 Develop a coordinated and efficient network of ambulance service providers to collaborate with first responders in government and other sectors to effectively respond to health and other disaster related emergencies	Established coordinated and effective network of ambulance service providers to respond to health and other disaster related emergencies		✓			MoH, DMC, Tri forces, Sri Lanka Police, MoPHP&L	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs, CCC, private sector	SDG-3 SDG-5 SDG-11 SDG-13

	4.7.8 Develop capacities, guidelines and SOPs on prevention and control of climate sensitive diseases including but not limited to vector borne diseases, diseases due to extreme weather conditions (e.g. heat stroke) and air pollution	Number of developed and implemented guidelines and SOPs to be followed for climate sensitive/induced diseases prioritising prevention and control at all levels				✓	MoH, MoE, DMC, MoPHP&L, CCC	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs, private sector	SDG-3 SDG-5 SDG-11 SDG-13 SDG-17
	4.7.9 Develop a dependent group of medical professional, practitioners and other healthcare workers/ officers at all levels skilled in responding to impacts on the health sector and well being of humans and animals due to climate change	Number of trained medical professional, practitioners and other healthcare workers/ officers at all levels skilled in responding to impacts on the health sector and well being of humans and animals due to climate change			✓		MoH, MoE, DMC, MoEd, relevant technical agencies, MoPHP&L, academic/ research institutes (national/ international)	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs, private sector	
	4.7.10 Enhancing inter sectoral collaboration, inter agency coordination and training in public health emergency preparedness, mitigation and response at all levels	Number of SOPs developed and implemented for effective coordination among sectors and agencies involved in public health emergency preparedness, mitigation and response at all levels			✓		MoH, relevant technical agencies, DMC, MoPHP&L	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs, CCC, private sector	SDG -3 SDG-11 SDG -13 SDG -17

	4.7.11 Develop capacities, SOPs and guidelines in addressing the impact on the health sector due to multi hazard scenarios, climate change related and other complex emergencies	Number of trainings and SOPs/ guidelines developed to enhance the capacities of the health sector to mitigate the impact due to multi hazard scenarios, climate change related and other complex emergencies			✓		MoH, relevant technical agencies, DMC, MoPHP&L	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs, CCC, private sector, academic/ research institutes (national/ international)	
4.8 Promoting the concept of "Environmental and Social (E&S) Performance Indicators for Corporates"	4.8.1 Encouraging the private sector corporates/ organisations to inculcate and include E&S performance indicators in the corporate goals, action plans and strategies in order to mitigate adverse impacts due to climate change and to adopt DRR measures	Number of business organisations or corporates in the private sector aligned with global practices in adopting DRR at corporate level and implemented relevant strategies with monitoring mechanisms to mitigate climate change impact		✓			CCC, MoE, DMC, relevant technical agencies	Relevant subject ministries and institutions, PCs, LAs, INGOs, NGOs, private sector, academic/ research institutes (national/ international)	SDG-1 SDG-3 SDG-10 SDG-11 SDG-12 SDG -13 SDG -17
4.9 Strengthen the specif key aspects/areas of the subject ministry of disaster management	4.9.1 Review and strengthen the specific key areas and enhance overall capacities (i.e. including development of skills and knowledge of staff) and structures of the subject ministry of disaster management to align with current global standards in disaster management	Enhanced and efficient level of operations provided aligned with global standards in disaster management			✓		NCDM, DMC, relevant subject ministry	Relevant subject ministries and institutions, INGOs, NGOs, private sector, academic/ research institutes (national/ international)	SDG-1 SDG-4 SDG-5 SDG-10 SDG-11 SDG-13 SDG-17

	4.9.2 Undertake periodic revision and updating of the NDMP 2023 - 2030 based on prevalent implementation and monitoring frameworks and key output indicators and achievement of goals/objectives	NDMP 2023-2030 remains updated and relevant to the prevalent and adopted international frameworks and best practices evolving with advanced disaster management techniques and resilient to climate change impacts within the country context		<i>(NOTE: as and when required and on a periodic basis)</i>			NCDM, DMC, relevant subject ministry	Relevant subject ministries and institutions, relevant technical agencies, INGOs, NGOs, private sector, academic/ research institutes (national/ international)	NOTE: Specific SDGs based on proposed revisions/ updates
--	--	---	--	---	--	--	--------------------------------------	---	--

6 Implementation and monitoring

The NDMP provides direction and a cohesive framework for the government organisations and technical agencies with regard to all phases of the disaster management cycle. The plan considered as a "dynamic document, can be implemented in a scalable manner in all stages of disaster management such as mitigation, preparedness, response and recovery.

Depending on the scale of disasters, development activities of the affected areas and at times beyond, tend to get affected and could unexpectedly reverse the amassed developmental advantages. Disaster setbacks can be reduced or minimised, if the relevant authorities and communities adopt necessary risk reduction measures which, will help to reduce economic losses. Based on the Action Plan of the NDMP 2023 - 2030 and the proposed inclusive institutional framework, the responsibility of implementing the actions lies with the relevant government and non-government organisations, at national and sub national level.

Efficiency and effectiveness in all stages of the implementation process of the NDMP 2023 - 2030 has to be ensured and accordingly, a well designed monitoring and evaluation procedure is a vital factor. Therefore, a comprehensive monitoring and evaluation system should be in place from the commencement of the implementation process of the plan.

Monitoring is a useful tool for the implementers to take effective decisions as it helps to assess the outputs (deliverables) and outcomes (results) on a regular basis. It also provides adequate and reliable information for the management of the NDMP at national, provincial, district, divisional and village levels in order to take appropriate and timely decisions and also to promptly tackle any implementation issues. The monitoring process of the plan would provide continuous feedback for different stakeholder agencies and institutions, on the efficiency and effectiveness of the implementation process as well as the impact of the respective work that is being carried out.

Success of the NDMP 2023-2030 will depend on the active involvement of all stakeholder agencies, information exchange on the effectiveness of implementation and corrective actions based on the lessons learned.

Success of the NDMP 2023-2030 will depend on the active involvement of all stakeholder institutions and agencies, exchange of information about the effectiveness of implementation and corrective actions considered based on the lessons learned. The NDMP 2023-2030 aims to use the lessons learned of the SLCDMP 2014-2018 and other programmes implemented in the country, to improve the tracking tools and monitoring mechanisms of the implementation of the action plans. Due to the multifaceted nature of the NDMP and the country's renewed interest on climate change, it is expected that several key government organisations (e.g. Ministry of Foreign Affairs, Central Bank of Sri Lanka, Department of Census and Statistics, National Planning Department etc.) which, are usually not actively involved in investing on DRR would need to be engaged in the of the implementation of the Action Plan of the NDMP 2023-2030. Further, these institutions could also

support the monitoring process to facilitate innovative approaches, especially in obtaining funding resources, sharing of benefits of the implemented projects/ activities and to develop international linkages.

The monitoring and evaluation of this multi-agency and multi-sector supported disaster management plan is adopted initially at the activity level and aggregated upwards to suit the indicators of the Sendai Framework, SDGs, and other global frameworks (if any), as identified against each activity. This information will allow further analysis of information at the outcome and impact levels. The monitoring and evaluation framework is supported by the work plan based Integrated Digital Dashboard System (IDDS) which, can be accessed on line by relevant stakeholders on real time basis, where targets of each activity is tracked for management effectiveness (Figure 39)

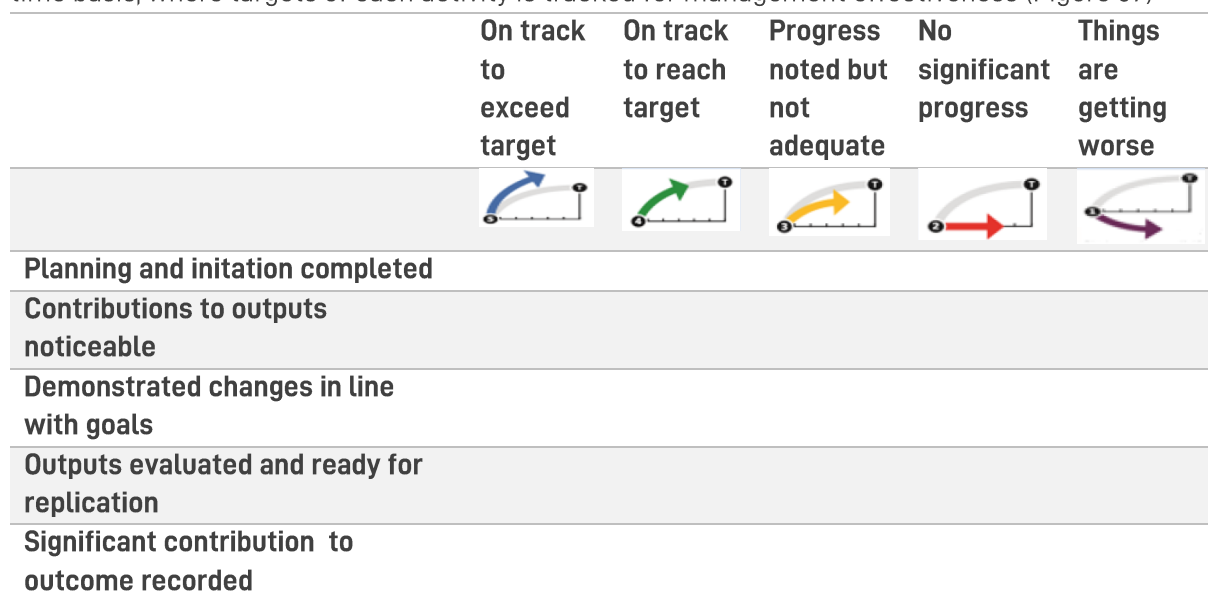


Figure 39. Integrated Digital Dashboard System (IDDS) to track the effectiveness of the implementation of NDMP 2023-2030

6.1 Multiphase Programmatic Approach (MPA)

NDMP 2023-2030 will use a Multiphase Programmatic Approach (MPA)⁶² in implementing the key activities identified in Chapter 5, through a systemic approach supported with a strong management effectiveness tracking system, in terms of monitoring and reporting. The implementation of the NDMP 2023-2030 will be overlooked by the National Disaster Management Coordinating Committee (NDMCC), chaired by the Secretary of the Ministry in charge of the subject of disaster management. DMC will serve as the secretariat for the NDMCC and the technical inputs will be provided through a number of thematic technical working groups. NDMP 2023-2030 envisages that, all key stakeholders will directly and indirectly be associated with the MPA approach.

⁶² World Bank, Climate Resilience Multi-Phase Programmatic Approach (P160005), Project Appraisal document, phase I of the Multiphase Programmatic Approach, May 31, 2019

6.2 Resource mobilisation

Given the current economic downturn experienced by the country, finding resources for operationalising of the NDMP 2023-2030 would be a challenge. On a more positive note, Sri Lanka could access much of the climate and green financing options and innovations in risk reduction activities. Further, the multi-sector and multi-stakeholder approach adopted through the NDMP 2023–2030 will allow leveraging of resources with technical agencies, local and international donors and through public and private partnerships, towards funding risk reduction activities on the premise that “disaster management is everyone's business.”

The External Resources Department of the Ministry of Finance would coordinate and manage international support needed for implementation of the activities of the NDMP 2023-2030, while the Ceylon Chamber of Commerce and other local institutions/agencies/organisations/societies could help to mobilise homegrown resources explicitly for DRR, given the multiple benefits of risk reduction as oppose to emergency response and rebuilding.

6.3 Coordination of monitoring and evaluation

At any given time, the level of progress and contribution by any activity towards the overall goals can be monitored against several parameters. The improvements could be supervised on the basis that, an activity can be progressing better than expectations; on target or may not be progressing at all. As part of the coordination mechanism, DMC would facilitate in collating necessary information with the support of relevant stakeholder entities to monitor the progress. The information collected will be processed and converted into knowledge products, to be shared among policy makers and stakeholder entities to maintain the interest, participation and gain necessary support. As mandated, the DMC with the assistance of the technical agencies would take the lead role in managing the implementation and progress monitoring process, as well as reviewing and acclimating the facets of the NDMP. The overall progress, level of implementation, gaps and limitations will be regularly reviewed and reported to the NDMCC and subsequently forwarded to the Cabinet of Ministers and other relevant officials as the need arises. The IDDS will be used to update and monitor the progress of the implemented actions as well as to keep a record on lessons learned.

As the NDMP is a national plan it entails the engagement and coordination of many government and non-governmental organisations. The effective enactment of the NDMP 2023-2030 will further facilitate in seeking additional resources, technologies and innovative knowledge, to ensure timely implementation of the proposed activities stated in the overall Action Plan.

7 References

- ADPC (2005). Brochure on "Mainstreaming Disaster Risk Reduction into Development Policy, Planning and Implementation in Asia". RCC Guidelines. Asian Disaster Preparedness Centre (ADPC), 2005.
- Chandradasa, UWL. (2011). Sri Lanka National progress report on the implementation of the Hyogo Framework for Action (2009-2011). Disaster Management Centre. 30 Apr 2011
- Department of Census & Statistics (2017). Status of Sustainable Development Goals in Sri Lanka: 2017. UNICEF. ISBN 978-955-8375-11-2. Department of Census and Statistics, Sri Lanka. Available online at <http://www.statistics.gov.lk>. 2017. Last Updated On: 25/07/2017. Downloaded on 16th October, 2022.
- Department of Census & Statistics, 2017. Status of Sustainable Development Goals in Sri Lanka: 2017. UNICEF. ISBN 978-955-8375-11-2. Department of Census and Statistics, Sri Lanka. available online at <http://www.statistics.gov.lk>. 2017.
- Desinventar (2007). Analysis Reports - Sri Lanka Disaster Information System, Disaster Management Centre (DMC), Ministry of Disaster Management and Human Rights in partnership with UNDP Sri Lanka and Regional Centre, Bangkok - June 2007.
- DMC & UNDP (2007). Draft Formats for Disaster Preparedness and Response Plans – Presently known as Disaster Preparedness Plans for Emergency Response (DPPERS) for Provincial Councils; District Administration; Division Administration; Local Authorities; and Grama Niladhari (Village) Administration. DMC / UNDP, January 2007. Colombo.
- DMC (2005). Report of Sri Lankan Parliament Select Committee on Natural Disasters, August 2005. Government of Sri Lanka.
- DMC (2009). Report on Priority Implementation Partnerships on Mainstreaming Disaster Risk Reduction (DRR) into Housing Sector in Sri Lanka. Disaster Management Centre (DMC) Supported by Asian Disaster Preparedness Centre (ADPC) with stakeholder agencies - May 2009. Colombo.
- FAO (2007). Ten Year Development Policy Framework, Ministry of Fisheries and Aquatic Resource. Fisheries Institutional Analysis and Capacity Assessment to the Ministry of Fisheries and Aquatic Resources, Sri Lanka. Coordination and Technical Support Unit to Tsunami Rehabilitation and Reconstruction in Fisheries and Aquaculture (CTSU) and Fisheries Department. Food and Agriculture Organization of the United Nations (FAO), Rome, October 2007. 109
- GFDRR, 2017. Sri Lanka: Global Facility for Disaster Reduction and Recovery (GFDRR). Available in <https://www.gfdr.org/sri-lanka>. Downloaded on 14th October, 2022.
- ICTAD (2006). Fire Regulations, 2006. Second Edition (Revised – December 2006), Publication No. ICTAD/Dev./14. Sri Lanka.
- IPCC (2015). Climate Change 2014: Synthesis Report. Intergovernmental Panel on Climate Change. ISBN 978-92-9169-143-2. World Meteorological Organization (WMO), Geneva, 2015.
- MDM (2017). Sri Lanka Drought Impact Assessment and Monitoring using Computer Assisted Telephone Interviewing (CATI) Services. Implemented by Ministry of Disaster Management with the Technical Lead: United Nations World Food Programme. August 2017, Colombo.
- Ministry of Disaster Management (2006). Draft National Disaster Management Policy. Ministry of Disaster Management and Human Rights. June 2006. Colombo.
- Ministry of Disaster Management (2006). Towards a Safer Sri Lanka, A Road Map for DRM – Volume 2 (2006-2016): Project Proposals. Ministry of Disaster Management and Human Rights, April 2006. Colombo.
- Ministry of Disaster Management (2013). National Policy on Disaster Management. Department of Government Printing, Sri Lanka.
- Ministry of Disaster Management (2016). Post-Disaster Needs Assessment: Floods and Landslides-May 2016. European Union & World Bank. Sri Lanka.
- MMDESL, 2015. Intended Nationally Determined Contributions. Ministry of Mahaweli Development and Environment Sri Lanka (MMDESL), October, 2015, Colombo.

- Oxley, M. (2015). Review of the Sendai Framework for Disaster Risk Reduction 2015-2030.
- Parliament of the Democratic Socialist Republic of Sri Lanka (2005). Sri Lanka Disaster Management Act, No. 13 of 2005. Department of Government Printing, Sri Lanka.
- Survey Department (2007). The National Atlas of Sri Lanka: Second Edition. Survey Department of Sri Lanka. Colombo, 2007.
- UN, 2015. Resolution No. 70/1: Transforming Our World: the 2030 Agenda for Sustainable Development. Seventieth Session Agenda Items 15 and 116, 15-16301 (E) *1516301*. UN Distr.: General 21 October 2015. NY.
- UNDP (2015). Human Development Report 2015, United Nations Development Programme, New York, NY, USA. Published in http://hdr.undp.org/sites/default/files/2015_human_development_report.pdf 6 H. Downloaded in 12th August, 2022
- UNDP, 2016. Human Development Report: Human Development for Every One. By the United Nations Development Programme 1 UN Plaza, New York, NY 10017 USA. Published in http://hdr.undp.org/sites/default/files/2016_human_development_report.pdf. Downloaded on 25th October, 2022.
- UNISDR (2005). 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.
- UNISDR, 2016. Asia Regional Plan for Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030. Final Document, United Nations Office for Disaster Risk Reduction (UNISDR). Published 5 November 2016.
- UNO, 2015. Resolution No. 70/1: Transforming Our World: the 2030 Agenda for Sustainable Development. Seventieth Session Agenda Items 15 and 116, 15-16301 (E) *1516301*. UN Distr.: General 21 October 2015. NY.
- UNOCHA (2006), UNDAC Field Hand Book, Geneva, Switzerland, 2006.
- UNU-(2016). World Risk Index. Calculated by the United Nations University Institute for Environment and Human Security (UNU-EHS), and featured in the 2016 World Risk Report (WRR 2016). Alliance Development Works/Bündnis Entwicklung Hilft (BEH). Published in the https://en.wikipedia.org/wiki/List_of_countries_by_natural_disaster_risk. Downloaded on 25th October, 2022.
- UNWFP (2017). Joint Assessment of Drought Impact on Food Security and Livelihoods -2017, Conducted by the Ministry of Disaster Management, National Disaster Relief Services Centre, Disaster Management Centre, Hector Kobbekaduwa Agrarian Research & Training Institute and United Nations World Food Programme
- World Bank, (2012). Disaster Risk Management in South Asia: A Regional Overview. The World Bank Group - South Asia Region Disaster Risk Management and Climate Change Unit, Sustainable Development Network December, 2012. Published in <https://reliefweb.int/sites/reliefweb.int/files/resources/Disaster%20Risk%20Management%20in%20South%20Asia%20-%20A%20Regional%20Overview.pdf>. Downloaded in October 1st, 2022.

8 Glossary

Affected

People who are affected, either directly or indirectly, by a hazardous event.

Build Back Better

The use of the recovery, rehabilitation and reconstruction phases after a disaster to increase the resilience of nations and communities through integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems, and into the revitalization of livelihoods, economies and the environment.

Building codes

A set of ordinances or regulations and associated standards intended to control aspects of the design, construction, materials, alteration, and occupancy of structures, which are necessary to ensure human safety and welfare, including resistance to collapse and damage.

Capacity

The combination of all the strengths, attributes, and resources available within a community, society, or organization to manage and reduce risks and strengthen resilience.

Contingency Planning

A management process that analyses disaster risks and establishes arrangements in advance to enable timely, effective, and appropriate responses.

Critical Infrastructure

The physical structures, facilities, networks and other assets that are essential to the social and economic functioning of a society or community

Disaster

A serious disruption of the functioning of a community or a society due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.

Disaster damage

Which occurs during and immediately after the disaster. This is usually measured in physical unites (e.g. square meters of housing, kilometres of roads, etc.), and describes the total or partial destruction of physical assets, disruption of basic services and damages to sources of livelihood in the affected area.

Disaster impact

The total effect, including negative (e.g. economic losses) effects and positive (e.g. economic gains) effects, of a hazardous event or a disaster. The term includes economic, human, and environmental impacts, and may include injuries, disease, and other negative effects on human physical, mental, and social well-being.

Disaster Loss database

A set of systematically collected records about disaster occurrence, damages, losses and impacts, ideally compliant with the Sendai Framework monitoring minimum requirements.

Disaster management

The organization, planning and application of measures preparing for responding to and recovering from disasters.

Disaster risk

The potential loss of life, injury, destroyed or damaged assets, which could occur to a system, society or a community in a specific period, determined probabilistically as a function of hazard, exposure, vulnerability and capacity.

Disaster risk governance

The system of institutions, mechanisms, policy, and legal frameworks and other arrangements to guide coordinate and oversee disaster risk reduction and related areas of policy.

Disaster risk management

Disaster risk management is the application of disaster risk reduction policies and strategies to prevent new risk reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses.

Animal incident

Human encounters with dangerous or exotic animals in both urban and rural environments.

Biological hazard

A hazard caused by the exposure to living organisms and their toxic substances (e.g. venom, mold) or vector-borne diseases that they may carry.

Climatological hazard

A hazard caused by long-lived, meso- to macro-scale atmospheric processes ranging from intra-seasonal to multi-decadal climate variability.

Coastal erosion

The temporary or permanent loss of sediments or landmass in coastal margins due to the action of waves, winds, tides, or anthropogenic activities.

Disease

Either an unusual, often sudden, increase in the number of incidents of an infectious disease that already existed in the region (e.g., flu, E. coli) or the appearance of an infectious disease previously absent from the region (e.g., plague, polio).

Drought

An extended period of unusually low precipitation that produces a shortage of water for people, animals and plants. Drought is different from most other hazards in that it develops slowly, sometimes even over years and its onset is generally difficult to detect.

Earthquake

Sudden movement of a block of the Earth's crust along a geological fault and associated ground shaking.

Flash flood

Heavy or excessive rainfall in a short period of time that produce immediate runoff, creating flooding conditions within minutes or a few hours during or after the rainfall.

Flood

A general term for the overflow of water from a stream channel onto normally dry land in the floodplain (riverine flooding), higher-than-normal levels along the coast and in lakes or reservoirs (coastal flooding) as well as ponding of water at or near the point where the rain fell (flash floods).

Forest fire

A type of wildfire in a wooded area.

Geophysical hazard

A hazard originating from solid earth. This term is used interchangeably with the term geological hazard.

Hydrological hazard

A hazard caused by the occurrence, movement, and distribution of surface and subsurface freshwater and saltwater.

Lightning

A high-voltage, visible electrical discharge produced by a thunderstorm and followed by the sound of thunder.

Meteorological hazard

A hazard caused by short-lived, micro- to meso-scale extreme weather and atmospheric conditions that last from minutes to days.

Rain

Water vapour condenses in the atmosphere to form water droplets that fall to the earth.

Riverine flood

A type of flooding resulting from the overflow of water from a stream or river channel onto normally dry land in the floodplain adjacent to the channel.

Storm surge

An abnormal rise in sea level generated by a tropical cyclone or other intense storms.

Tropical cyclone

A tropical cyclone originates over tropical or subtropical waters. It is characterised by a warm-core, non-frontal synoptic-scale cyclone with a low pressure centre, spiral rain bands and strong winds.

Tsunami

A series of waves (with long wavelengths when traveling across the deep ocean) that are generated by a displacement of massive amounts of water through underwater earthquakes, volcanic eruptions or landslides. Tsunami waves travel at very high speed across the ocean but as they begin to reach shallow water they slow down and the wave grows steeper.

9 Annexures

9.1 Annexure 1: Relevant Sustainable Development Goals and targets linked with DRR

Goal 1. End poverty in all its forms everywhere

- Target 1.5 By 2030 build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

Goal 2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture

- Target 2.4 By 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality

Goal 3. Ensure healthy lives and promote well-being for all at all ages

- Target 3.d Strengthen the capacity of all countries, particularly developing countries, for early warning, risk reduction, and management of national and global health risks

Goal 4. Ensure inclusive and equitable quality education and promote life-long learning opportunities for all

- Target 4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

Goal 6. Ensure availability and sustainable management of water and sanitation for all

- Target 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

- Target 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
- Target 9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

- Target 11.5 By 2030 significantly reduce the number of deaths and the number of affected people and decrease by% the economic losses relative to GDP caused by disasters, including water-related disasters, with the focus on protecting the poor and people in vulnerable situations
- Target 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality, municipal and other waste management

Goal 13. Take urgent action to combat climate change and its impacts

- Target 13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries
- Target 13.2 Integrate climate change measures into national policies, strategies and planning

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

- Target 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

- Target 15.3 By 2020, combat desertification, and restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation neutral world

Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development

- Target 17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism
- Target 17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation

9.2 Annexure 2: Colombo Declaration of Multi-Hazard Early Warning and Disaster Risk Reduction: 2020



*Colombo Declaration of Multi-Hazard
Early Warning and Disaster Risk Reduction: 2020*



We, the Disaster Management Centre of the State Ministry of National Security, Home Affairs and Disaster Management, with other disaster risk reduction related Ministries and Technical Agencies of the Government of Sri Lanka, together with other national and international key stakeholders and participating delegates responsible for disaster risk reduction, having met in Colombo, Sri Lanka from 14th – 16th December 2020, at the International Symposium on Multi-Hazard Early Warning and Disaster Risk Reduction:

1. Express deep concern at the growing frequency and intensity of extreme weather and climate-related challenges, and their continuing impact of disasters, resulting in an unacceptable loss of human lives and livelihoods, displacement of people, and environmental and economic damages;
2. Recognise the need to strengthen and mainstream the inclusion of research, science, and technology applications in disaster risk reduction and build a community of practice consisting of multiple disciplines;
3. Stress the need to focus on developing a holistic understanding of societal challenges, risks and drivers, including poverty, climate change, loss of protective eco-systems and biodiversity, rapid urbanisation and unplanned development in hazard prone areas, socio-economic inequalities, and population growth, along with their interactions;
4. Underline the need to build resilience against all hazards, including emerging and unforeseen hazards such as biological, human-animal transfers of diseases, hormones and microplastics, while paying attention to adopt nature based solutions combined with engineering applications;
5. Recognise the importance of ensuring coherence among the global frameworks such as the UN 2030 Agenda for Sustainable Development, the Paris Agreement on Climate Change, the Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR), and the New Urban Agenda, among others and their effective implementation at the national, subnational and local levels through evidence-based multi-stakeholder partnership approaches;
6. Renew our commitment to ensure continuity of the work in the field of disaster risk reduction;
7. Recognise the need for a 'whole society' approach, welcoming the vital role played by all stakeholder groups as enablers, partnering with governments and communities, and work towards research-informed and evidence-based implementation of the SFDRR.



*Colombo Declaration of Multi-Hazard
Early Warning and Disaster Risk Reduction: 2020*



In taking the SFDRR as an opportunity for resilient and sustainable countries, cities and communities, and building on the key outcomes of the International Symposium on Multi-Hazard Early Warning and Disaster Risk Reduction 2020, we call upon all relevant stakeholders and development partners to:

1. Commit to form and strengthen national science platforms and look through a scientific lens in contributing towards building a disaster-resilient nation and accelerate actions focusing on the four priority areas of SFDRR;
2. Commit to translate and adopt greater coherence of global frameworks into appropriate policy and practice, with strong links to UN Sustainable Development Goals, the Paris Agreement on Climate Change, and other relevant global conventions on land degradation and biodiversity;
3. Establish effective multi-stakeholder partnerships across science, technology, policy, and practice as mechanisms to accelerate the use of science and technology for disaster risk reduction, recognising the importance of scientific and technical inputs for disaster risk reduction policy formulation, investments and practice;
4. Promote disaster literacy and develop, curate, and disseminate knowledge and science provision in understanding disaster risk reduction and health-related emergency risks;
5. Extend disaster risk governance to manage disaster risk reduction and potential health-emergencies, as well as strengthen community-level preparedness and response;
6. Commit to greater accountability, protection, gender, and empowerment of the most vulnerable groups through the strengthening of governance arrangements and resource targeting, towards effective and efficient management of disaster risk;
7. Promote the use of data for policy formulation related to disaster risk reduction, including the use of large data sets to uncover hidden patterns, unknown correlations, trends, other aspects;
8. Promote an end-to-end multi-hazard approach to early warning through appropriate legal frameworks and focusing on at-risk communities during their design, implementation, post-implementation reviews and improvements;
9. Strengthen weather and climate related service delivery partnerships among national meteorological and hydrological services, disaster reduction and civil protection agencies, and other actors within local, municipal or national governments, to benefit from impact-based forecast and warning services;



*Colombo Declaration of Multi-Hazard
Early Warning and Disaster Risk Reduction: 2020*



10. Strengthen understanding and awareness of disaster risk reduction among city leaders and planners, and wider urban development and construction industry stakeholders;
11. Promote evidence-based, climate-smart, risk-sensitive public and private investments, including the development and retrofitting of disaster resilient buildings and infrastructure, while paying adequate attention to the costs and benefits of nature based solutions;
12. Mainstream disaster risk management into key development and service sectors such as education, health, infrastructure, and public works, agriculture, irrigation, among others, and integrate cross-cutting themes of capacity building and communication (of science) across sectors for greater impacts on development investment and to inculcate a culture of change;
13. Empower the most vulnerable groups of population, including men, women, girls, boys, differently abled people, elderly, migrants and refugees, to meaningfully participate in disaster risk reduction policies, strategies and practices by leveraging community-based organisations and adopting an inclusive approach to disaster risk reduction;
14. Recognise the value and contribution by national, sub-national, and local partners, and promote locally led disaster risk management actions and practices in accelerating implementation of the SFDRR.

Adopted on 16th December 2020, in Colombo, Sri Lanka.



MHEW 2020
DRR Symposium



9.3 Annexure 3: Disaster Management Act No. 13 of 2005

Interpretation.

25. In this Act, unless the context otherwise requires —

“disaster” means the actual or imminent occurrence of a natural or man-made event, which endangers or threatens to endanger the safety or health of any person or group of persons in Sri Lanka, or which destroys or damages or threatens to destroy or damage any property, and includes—

- (a) a landslide;
- (b) a cyclone;
- (c) a flood;
- (d) a drought,
- (e) an industrial hazard;
- (f) a tsunami (seismic wave);
- (g) an earthquake;
- (h) an air hazard;
- (i) a maritime hazard;
- (j) a fire;
- (k) an epidemic;
- (l) an explosion;
- (m) air raids ;
- (n) civil or internal strife ;
- (o) chemical accident;
- (p) radiological emergency;
- (q) oil spills including inland and marine oil spills;
- (r) nuclear disaster;
- (s) urban and forest fire;
- (t) coastal erosion; and
- (u) tornados, lightening strikes and severe thunder storms;

9.4 Annexure 4: Agencies responsible for hazard mapping / hazard information

Hazard and type of information / maps	Responsible Institution
Urban floods	- Sri Lanka Land Reclamation & Development Corporation (SLLRDC) - Respective Municipal, Urban Councils / Pradeshiya Sabhas
Landslide hazard zonation maps	- National Building Research Organization (NBRO) - Geological Survey and Mines Bureau (GSMB)
River flood level, flood prone areas, flood patterns in given river basins. Databases on flood inundation / historic floods, flood simulation / modeling of catchments areas	- Irrigation Department (ID) - Mahaweli Authority of Sri Lanka (MASL)
Reservoir levels, heavy spilling from reservoirs, breaching of reservoirs, sudden flood water releases, mapping flood prone areas downstream of selected reservoirs and dams within the purview of a given agency, dam breach modeling and flood patterns downstream of reservoirs and dams etc.	- Irrigation Department (ID) - Mahaweli Authority of Sri Lanka (MASL) - Ceylon Electricity Board (CEB) - National Water Supply & Drainage Board (NW&SDB) - Agrarian Services Department (ASD)/ Provincial Council - Engineering divisions
Adverse weather and rainfall, cyclones, high winds, storm surges, lightning, thunderstorms, database on high risk areas/events	Department of Meteorology (DoM)
Maps and other information regarding coastal areas prone to coastal erosion and flooding / Tsunamis / storm surges, sea level rise, waves, sea surface, temperature data and other relevant information in varying degrees	- Coast Conservation & Coastal Resource Management Department (CC&CRMD) - National Aquatic Resources Research and Development Agency (NARA) - Sri Lanka Navy - Sri Lanka Ports Authority (SLPA)
Drought hazard – Information / databases and mapping by different agencies of different nature Meteorological drought Agricultural drought Hydrological drought	- Water Resources Board - Department of Meteorology (DoM) - Department of Agriculture (DoA) - Irrigation Department (ID) - Mahaweli Authority of Sri Lanka (MASL) - Agrarian Services Department / Provincial Council – Engineering divisions (minor tanks) - Hector Kobbekaduwa Agrarian Research Institute (HARTI)
Elephant attacks and other animal attacks Forest / bush fires	- Forest Department (FD) - Department of Wildlife Conservation (DWC) - Wildlife and Nature Protection Society (WNPS) - Central Environment Authority (CEA) - Local authorities in affected areas
Epidemics, communicable diseases, Bird flu, AIDS, SARS, poisoning etc. and possible biological hazards, health hazards due to presence of fluorides in	- Ministry of Health (MoH) - Epidemiology Unit - Medical Research Institute (MRI)

drinking water, other health hazards; quarantine procedure in case of possible spread of communicable diseases through persons / animals arriving to the country from abroad	• Other institutions/ agencies as relevant
Past information regarding fire incidents	• Fire Departments of CMC and other MCs and UCs as relevant
Road / traffic/ rail road accidents and especially hazards related to large and heavy containers/browsers/vehicles transporting of petroleum products, gas, poisonous chemicals and other hazardous material	• Ministry of Railways and Transport • National Transport Commission (NTC) • Railways Department • Department of Motor Traffic • Ministry of Health (MoH)
Contamination of water sources, health hazards due to presence of fluorides in drinking water	• National Water Supply and Drainage Board (NW&SDB) • Water Resources Board
Tsunami causing seismic activity in the region; earth tremors/quakes in the country; areas of mining for extraction of various products such as sand, graphite, lime etc. (causing river bank erosion and land subsidence); data / maps related to seismic activities	• Geological Survey and Mines Bureau (GSMB)
Possible nuclear related hazards and location of atomic and nuclear plants/installations in neighbouring countries; possible radiological emergencies	• Atomic Energy Authority (AEA)
Hazards due to sand mining, gem mining and extraction of other minerals and areas of sand mining	• GSMB • National Gem and Jewellery Authority (NGJA) • Central Environment Authority (CEA) • National Steering Committee on Sand Mining - Ministry of Environment
Chemical hazards / threats, industrial hazards	• Ministry of Industries (MoInd) • Labour Department (LD) • National Authority for Implementation of Chemical Weapons Convention (NACWC)
Fire threats due to petroleum products / storage; oil spills on land	• Ministry of Petroleum Resources Development (MoPRD) • Ceylon Petroleum Corporation (CPC) • Sri Lanka Navy
Marine oil spills; other hazardous contaminations	• Marine Environment Protection Authority (MEPA)

9.5 Annexure 5: Required hazard map scales

Scale	Coverage	Indicative Application (s)
Highly localised: 1:200–1:2000 (possibly to be supplemented by more detailed images)	Project or construction sites	• Project or construction sites • Detailed engineering design of infrastructure
Local: 1:2000–1:25000	• Human settlements GN level or part of local government level / DS division level assessment	• Preliminary engineering or project design • Contingency/ preparedness plans Basis for quantitative risk assessments
Medium: 1:25000–1:100000	Local government level/ DS division level or small catchment area assessments	• Urban planning including transport, energy, water related services
Regional: 1:100,000–1:500,000	Large catchment areas, regions, provinces and district level assessments	Design of larger, geographically spread, infrastructure projects (e.g. rural roads, irrigation etc.)

Source: Adopted from Van Western - Hazard mapping scaling guideline

9.6 Annexure 6: Guideline of the preparation of Disaster Management Plans of Different National and Provincial Ministries / Departments / Institutes / Agencies

Overall structure and content of the DMPs in general would be as follows:

- Introduction - Legal framework for disaster management in Sri Lanka; the National Disaster Management Policy; activities identified for emergency response etc.
- Profile – of the given ministry / department / institution / agency as appropriate
- Hazard, vulnerability and risk assessment - Main disasters affecting the area, vulnerability of the buildings, premises, assets, goods, other possessions; vital installations or activities/ services with other service providers/ suppliers and an analysis of any hazards likely to be triggered due to these and any vulnerabilities thereof; any public utilities and infrastructure within the purview etc. should be included in the vulnerability analysis for protection from any impacts of natural/man-made disasters.
- Preparations for responding to an emergency are as follows:
 - Formation and functioning of a Disaster Management (DM) Committee of the institution/ agency
 - Disaster preparedness / emergency operations coordination within the institution/ agency
 - Emergency Operations room and its functions – This will vary depending on the nature of the organisation
 - In case of standard typical institution/ agencies without any vitally important installations or functions, the Emergency Operations room need not be a high-tech EOC with all facilities but a room with basic facilities such as telephone, fax, internet / e-mail etc. where the DM Committee can meet and hold discussions and where the plan, relevant contact information, correspondence, files etc. are kept. This could be the conference room of the organization but a separate DM cupboard can be kept to maintain DM related documents and items/ equipment with an officer in charge.
 - In case of vital locations or premises such as airports, harbours, ports, petroleum/ gas storages, power, drinking water, telecommunication etc. up-to-date EOCs as required should be provided.
- Arrangements for protection of assets / equipment / documents / information / data
 - Arrangements for protecting the staff, building and premises
 - Protecting / safe keeping / shifting assets, goods, equipment, documents for sustaining the duties and services that are provided by the establishment and other possessions as appropriate
 - Arrangements for keeping backups of the computerised information / data pertaining to the activities of the agency (as applicable)
- Any resource requirements as needed
- Fire response plan in case of high rise buildings – Ensure whether all requirements of the LA regarding fire safety has been met, fire alarms, evacuation exits / maps / signs, fire extinguishers, sprinklers etc. are installed and whether all occupants of the building have been made aware of the actions to be taken (e.g. use of exit stairway) in case of a fire emergency
- Response plan for any other emergency in case of high rise buildings – The possibility of some other emergency/ disaster cannot be ruled out, such as an earth tremor, building collapse due to a plane crash, an extremely large object striking the building etc. All occupants of the building have to be made aware (while not making them anxious or frightened) of actions to be taken in such a situation and necessary guidelines provided for adherence.

- All relevant information such as contact information, details of resources available for response, places identified as safety centres, for shifting in case of an emergency etc. could be given as annexures in the plan. DMC will provide further guidance as required for developing these plans.
- Other aspects to be considered in DM planning include, Business Continuity Planning (BCP); DVI; arrangements for equitable distribution of relief and recovery; special community recovery modules to enable them to return to normalcy within the shortest possible time; disaster ethics; standards to be followed in disaster relief including water, sanitation and hygiene, food security, nutrition and food, shelter, settlements and non-food items and health services and protection for communities due to displacement, protection during transfer / displacement, humanitarian assistance to IDPs, resettlement and reintegration; protection for migrant employees and reintegration for affected persons etc.

Source: Disaster Management Centre (2018)

Content guideline for the preparation of the IDM plans of different national ministries/ departments/ government institutions and agencies

The plans will include the below mentioned aspects allowing for variations depending on the type of organisation/ institutions. Where the institution is within a sector involving private sector collaboration (e.g. private hospitals or private schools), plans should be formulated to reflect such collaborations as where relevant:

1. Description of the given Ministry / Department / Institute / Agency as appropriate and its legal mandate
2. Relevance of the organisation/ institution's services to DRM activities in the country
 - Multi hazard risk assessment of the geographical location (s) of the institution and its assets;
 - Hazard analysis: Consider natural and/or man-made disasters affecting the area
 - Vulnerability analysis: Vulnerability of the buildings, premises, assets, goods, other possessions; any public utilities and infrastructure within the purview of any given institution/ agency should be included in the vulnerability analysis for protecting them from impact of natural/man-made disasters. In case of agencies with vital installations or activities, an analysis should be included of any hazards likely to be triggered due to these and any vulnerabilities thereof.
 - Risk assessment: This should be done based on the hazard analysis and the vulnerability analysis
3. A shared vision of the institution including its understanding of DRM
4. An institution DRM strategy, aligned with the national DRM strategy which in turn is aligned with the Sendai Framework for Disaster Risk Reduction 2015-2030. This strategy will include, amongst others:
 - Identified risk reduction measures to institutional assets based on the risk assessment.
 - Identified risk reduction projections due to prospective risk that may arise from future development activities of the institution.
 - Arrangements for protection of assets / equipment / documents / information / data
 - Arrangements for protecting the staff, building and premises

- Protecting/ safe keeping/ shifting assets, goods, equipment, documents for sustaining the duties and services that are provided by the establishment and other possessions as appropriate
 - Arrangements for keeping backups of the computerised information/ data pertaining to the activities of the agency (as applicable)
 - Emergency Preparedness Planning for the institution
 - Emergency Management Committee of the institution/ agency
 - Disaster Preparedness / Emergency Operations Coordination within the institution/ agency
 - Emergency Operations Room and its functions - This will vary depending on the nature of the organisation and the services it renders or operations carried out.
 - Wherever relevant, take into consideration the land to be used for planning and zoning with regard to future development of the institution.
5. A designated focal point and a core team, with the capacity to work with different actors, leading and coordinating the strategy-making process and ensuring its implementation;
 6. Resource requirements for different activities of the plan such as a budget i.e. in the form of a dedicated budget for core team activities, with other funds being allocated from different offices and departments but clearly earmarked as contributing to the strategy;
 7. A timeframe to fulfil the elaboration of the strategy and its implementation through an action plan, including (as applicable) :
 - Business Continuity Plan (BCP) - This should be prepared in order to continue the services provided by the organisation/ institution with minimal disruption in the post disaster period.
 - Fire response plan (special emphasis with regard to high-rise buildings)
 - Standard Operating Procedures (SOPs) for action in an emergency situation during and after a disaster encompassing above aspects as relevant. The need may vary depending on the functions and services of the institution.
 8. Relevant information such as contact information of stakeholders, resources available for emergency response, places identified as safe shelter for shifting in case of an emergency etc. could be given as Annexures in the plan.

(Note: DMC will provide further guidance as and when required in developing the IDMPS of the respective organisations/ institutions.)

Proposed process for the preparation of DRM plans by the relevant Ministries/Departments/ Government organisations/institutions and Agencies

DMC will facilitate the development of IDM plans by the different ministries/departments/ organisations/institutions/agencies by way of knowledge and information sharing, training, discussions, guidance notes etc. and will monitor adherence and progress of the process.

Accordingly, DMC will establish a methodology to promote local DRR plans nationwide effectively to avoid simple replication of the IDM plan. Since there are numerous differences across different institutions such as local characteristics between urban and rural, types of hazards frequently experienced, governance, finance etc. it is important to prepare tailor made (or distinct) IDM plans best suited for the type of services offered by the relevant organisation/ institution. The organisations/ institutions should have the necessary legal and institutional structures that enable them to undertake DRM and resilience building activities.

Methodology: Developing Institutional DRM Plans (IDMP)

Develop and agree on the institutional DRM strategy and action plans which can be seen as the culmination of the below detailed process, which will also inform and align national level existing policies, frameworks, plans, programmes, projects and processes.

1. Systematising for DRM
 - Organizational structures (national to local level/ specific DRM department within the local government – if any)
 - Other elements to consider;
 - Written laws, regulations and codes
 - Mainstreaming DRR across sectors and actors
 - Building capacities
 - Horizontal and vertical coordination
2. Knowing and understanding current and future risks
 - Risk appraisal
 - Risk communication
3. Organising financial resources to plan and act
 - Agree upon what should be financed
 - Identify existing and potential sources of funding
4. Monitoring and learning
 - Monitoring progress helps broaden and deepen the understanding of resilience and generates a valuable learning and discussion process between different actors.
 - The following vital aspects should also be established.
 - The organisation to form a DRM committee and to be chaired by the Head of the organisation. Similar committees should be established in provincial/ district level offices of the organisation.
 - An emergency warning system including a Fire Safety plan and an Evacuation plan. Should appoint a Fire and Safety officer for the organisation/ institution and the building as well. Fire safety checks / rehearsals should be carried out on a regular basis (e.g. bi annually or annually).
 - Standard Operation Procedures (SOPs) developed for emergencies and the staff / employees to be familiarised with same.
 - The staff/ employees educated on probable hazards and response measures including use of fire extinguishers.
 - Storage and handling of chemicals/ hazardous materials (if any) to be as per the required standards
 - Representatives from national, provincial and district level offices of the organisation/ institution/ agency providing the specific services will also be serving in the Disaster Risk Management Committees at respective administration levels. In addition to the IDMPs of the respective organisation/ institution there should be SOPs available at administrative level (district / divisional) detailing out activities and the mechanism to assist national, provincial and district level administrations, in an emergency/ disaster situation.
 - All these aspects should be detailed out in the DRM plan of the particular organization.

Source: Institutional Disaster Management Plan – Guidelines for Preparation – For All Ministries, Government Institutions, Departments and Agencies, Disaster Management Centre (2021)

9.7 Annexure 7: IFC's Environmental and Social (E&S) Performance Indicators for Capital Markets (Corporates)

Level of Impact on Performance: • High | • Medium | • Low

Performance Indicator	• Performance Metric
BASED ON PERFORMANCE STANDARD 1: Assessment and Management of Environmental and Social Risks and Impacts	
1. Emergency preparedness	• There is an Emergency Response Plan or Procedure.
2. E&S capacity commensurate with sector risk	• There is E&S in-house/external capacity (E&S unit/department, in-house qualified E&S staff to identify and monitor E&S risk associated with development of new assets and operations, formal process for outsourcing E&S due diligence to qualified external consultants).
3. Identification of E&S risks and impacts	• There are policies and procedures to identify E&S risks and impacts of Company operations, especially expansion of operations.
4. Statement of intention regarding E&S	• There is an Environmental & Social Policy approved by senior management.
5. Affected Community knowledge of impacts and opportunities	• Information is disclosed to Affected Communities.
6. Affected Community feedback and recourse	• There is an Affected Community grievance mechanism.
BASED ON PERFORMANCE STANDARD 2: Labor and Working Conditions	
7. Protection of contract workers	• There are public controversies, including legal actions involving third party or contract workers.
8. Worker health and safety	• There are public controversies, including legal actions indicating poor worker health and safety practices.
9. Injury and fatality	• There is information on work related fatalities of direct and/or contract workers.
10. Gender equality	• Workforce composition is available by gender.
11. Non-discrimination & equal opportunity	• There is a formal policy to avoid discrimination on hiring, wages, promotions.
12. Compliance with national labor and employment law	• There are public controversies, including legal actions involving working conditions (associations, collective agreements, labor laws, discrimination, equal remuneration, lack of equal opportunity, harassment).
13. Workers' organisations	• The Company's practices do not restrict or obstruct workers' rights to join workers' organisations and mechanisms to express their grievances on working conditions and terms of employment.

Performance Indicator	• Performance Metric
14. Formal provisions to avoid sexual harassment at work	There are formal arrangements to avoid sexual harassment at work, including a sexual harassment policy with, at a minimum, a mechanism to file complaints anonymously and confidentially and trained HR staff to review sexual harassment cases.
15. Worker feedback and recourse	There is a worker grievance mechanism.
SECTOR SPECIFIC RISKS: Operations or supply chains in countries or sectors with a risk of forced or child labor (e.g. agri, textiles, construction, agribusiness).	
16. Forced and child labor in the Company	There are public controversies, including legal actions involving forced and child labor in the Company's operations. *
17. Forced and child labor in the primary supply chain	There are public controversies, including legal actions involving forced and child labor in the Company's primary supply chain. **
18. Safe worker accommodation	There are public controversies, including legal actions involving accommodation (camps, dorms, etc.) such as health and safety (e.g. fire, water, sanitation, overcrowding).
BASED ON PERFORMANCE STANDARD 3: Resource Efficiency and Pollution Prevention	
19. Impacts to water used by others	There are public controversies, including legal actions involving past or on-going impacts to water used by others.
20. Pollution prevention and risks	There are public controversies, including legal actions involving past or on-going pollution risks (e.g. air or water emissions, soil or groundwater contamination, waste disposal) from the Company/project.
21. GHG emissions	There is information on GHG emissions: Scope 1 and 2 (t), Scope 3 if relevant to business activity, intensity (GHGs released in energy consumption for production / normalization factor [usually production or sales]).
22. Resource efficiency	There is an energy management system, cleaner production initiatives, resource efficiency (i.e. energy, water, other resources and material inputs) metrics in place.
BASED ON PERFORMANCE STANDARD 4: Community Health, Safety and Security	
23. Security force impacts to a community	There are public controversies, including legal actions associated with major security incidents involving the local community, including but not limited to gender based violence and a statement, policy or code on security forces and interaction with local community, including but not limited to gender based violence.
24. Contribution to health impacts upon a community	There are public controversies, including legal actions involving contribution to an increase of disease (HIV/Aids, malaria, etc.) to a community.
25. Worker impacts on a community	There is a statement, policy or code on worker conduct and interaction with local community, including but not limited to gender based violence.
SECTOR SPECIFIC RISKS: Companies/projects that construct or operate buildings and structures that are accessed by the public, or can threaten the safety of communities (bridges, dams, etc.).	

Performance Indicator		Performance Metric
26. Infrastructure failures that have resulted in harm to the public	•	If the Company constructs or operates infrastructure (bridges, dams, tailing dams, or ash ponds), there are public controversies, including legal actions indicating harm to the public.
27. Fires or structural damage that have harmed the public	•	If the Company constructs or operates publicly accessed buildings or structures, there are public controversies, including legal actions indicating harm to the public.
BASED ON PERFORMANCE STANDARD 5: Land Acquisition and Involuntary Resettlement (applicable to companies involved in land acquisition to develop new or extend existing assets)		
28. Policy and process for social impact assessment and land acquisition	•	There is an environment & social management system and/ or land acquisition policy & process.
29. People/communities affected by land acquisition	•	There are public controversies, including legal actions involving relocation and loss of shelter or livelihoods for communities or individual households as a result of land acquisition.
30. Impacts involving economic displacement	•	There are public controversies, including legal actions that the Company/project has resulted in peoples' livelihoods being negatively affected from economic displacement
BASED ON PERFORMANCE STANDARD 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources (applicable to companies with impacts on natural and modified habitats and wildlife and ecosystem services)		
31. Impact on ecosystem services	•	There are public controversies, including legal actions involving people not having enough water, food or suffering from the effects of larger storm events (flooding, loss of land, salinization of soil/water, etc.) because of the Company/project.
32. Impacts to legally protected/internationally recognized areas	•	The Company/project is located in legally protected/ internationally recognized areas.
33. Impacts to International Union for the Conservation of Nature (IUCN) Vulnerable, Endangered and Critically Endangered species and habitats	•	The Company/project is located in an area known to contain International Union for the Conservation of Nature (IUCN) Vulnerable, Endangered and Critically Endangered species and habitats.
34. Impacts on natural habitats	•	The Company operations affect natural habitats.
35. Protection of habitats and biodiversity management	•	There is a statement, code or policy on biodiversity management; The Company has integrated biodiversity

		conservation into its environmental and social management system.
36. Proactive policy to avoid locating projects in legally protected/ internationally recognized areas	•	There is a statement, code or policy to avoid locating projects in Natural or Mixed World Heritage Sites (WHS) and Alliance for Zero Extinction (AZE) Sites; stating that the Company will work in alignment with management plans for protected areas and internationally recognized areas for biodiversity; and avoid locating projects in Key Biodiversity Areas and Protected Area Management Categories I–III.

Performance Indicator	•	Performance Metric
37. Proactively avoiding impacts to International Union for the Conservation of Nature (IUCN) Vulnerable, Endangered and Critically Endangered habitats	•	There is a statement, code or policy to avoid impacts to International Union for the Conservation of Nature (IUCN) Vulnerable, Endangered and Critically Endangered habitats.
38. Proactively managing impacts on natural habitats	•	There is a statement, code or policy to manage impacts to natural habitats.
SECTOR SPECIFIC RISKS: Agribusiness companies and companies that purchase agro-commodities as part of their primary business.		
39. Agro-commodity certification	•	Agro-commodity is certified (e.g. FSC, RSPO, MSC, RTRS, BCI, GRSE, Bonsucro certification, etc.).
40. Proactive management of supply chains to protect critical habitats	•	There is a statement, policy or code on the management of supply chains where there is the risk of significant conversion of critical habitat.
BASED ON PERFORMANCE STANDARD 7: Indigenous Peoples (applicable to companies with impacts to Indigenous Peoples only)		
41. Impacts on Indigenous Peoples	•	There are public controversies, including legal actions involving harm to Indigenous Peoples.
42. Proactive engagement with Indigenous Peoples	•	There is a statement, code or policy on Indigenous Peoples with evidence of Free, Prior and Informed Consent (FPIC), where applicable.
BASED ON PERFORMANCE STANDARD 8: Cultural Heritage (applicable to companies with impacts to cultural heritage only)		
43. Impact upon critical cultural heritage	•	There are public controversies, including legal actions related to the Company's/project's impact on or use of cultural heritage.

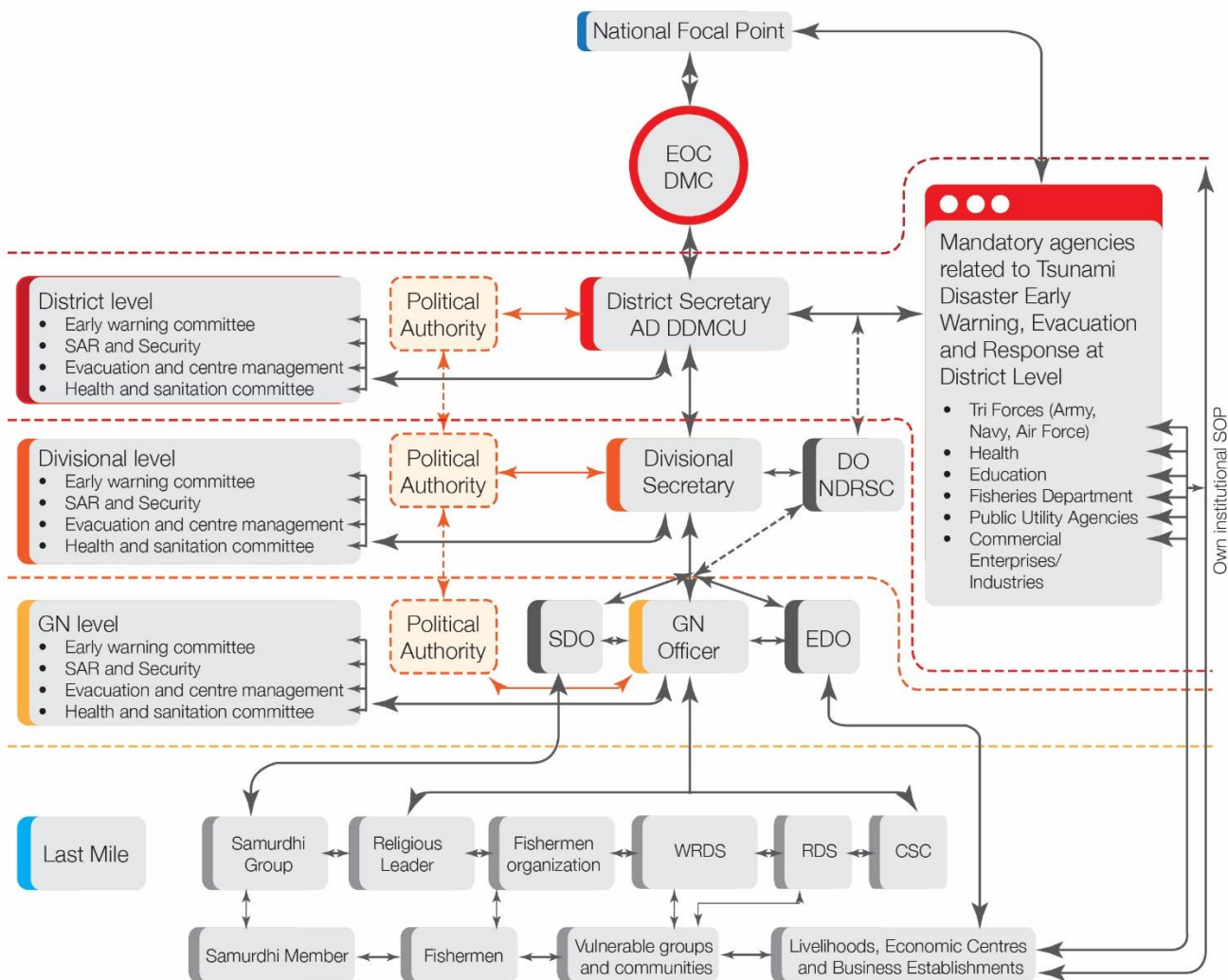
* See IFC Good Practice Note on Addressing Child Labor in the Workplace and Supply Chain.

** See IFC Good Practice Note on Addressing Child Labor in the Workplace and Supply Chain.

9.8 Annexure 8: Ministries / Agencies responsible for various types of technological hazards / accidents

Type of Incident	Responsible Ministries / Agencies
Radiological and nuclear accidents or disaster	Atomic Energy Regulatory Council
Chemical hazards / threats Industrial Hazards	Ministry of Industries, Labour Department, National Authority for Implementing Chemical Weapons Convention
Fire threats due to petroleum products / storage, pipelines, oil spills on land during transportation	Ministry of Petroleum and Petroleum Resources Development, Ceylon Petroleum Corporation
Road / Traffic Accidents, Ministry of Railways and Transport, National Transport Commission, Railways/ Plan crashes	Department, Dept. of Motor Traffic, Sri Lanka Air Force, Airport and Aviation Authority
Oil spills	Marine Environment Protection Authority, Sri Lanka Navy
Animal attacks	Department of Forests, Department of Wildlife Conservation, Wildlife Trust, Central Environment Authority (CEA), Respective Local Authorities / Divisional Secretariats in prone areas
Health hazards - epidemics, communicable diseases, bird flu, AIDS, SARS, Covid-19, poisoning etc., and possible biological hazards, other health hazards	Health Ministry, Epidemiology Unit, and Department of Health Services, Medical Research Institute and others as relevant

9.9 Annexure 9: Tsunami Early Warning and Evacuation Process : “Last mile - Last man”



SDO - Samurdhi Development Officer, EDO - Economic Development Officer, SAR - Search and Rescue, DDMCU - District Disaster Management Coordinating Unit, NDRSC - National Disaster Relief Service, DO - Development Officer, AD - Assistant Director, WRDS - Women Rural Development Society, RDS - Rural Development Society, CSC - Civil Security Committee, SOP - Standard Operational Procedure

9.10 Annexure 10: Stakeholder participation

The acknowledgments extend to include a wide range of stakeholders, beyond those explicitly mentioned, all of whom were instrumental in preparing, drafting and developing Sri Lanka's National Disaster Management Plan for 2023-2030.

Members of the Technical Working Committee

- Advisors
 1. Major General (Rtd) Sudantha Ranasinghe – Director General (DMC)
 2. Mr. Sunil Jayaweera – Director – Preparedness (DMC)
 3. Ms. Anoja Seneviratne – Director – Mitigation, Research & Development (DMC)
- Contributors
 - Deputy Directors, Assistant Directors and the staff of DMC and its districts units (i.e. DDMCUs)
 - Officials of stakeholder ministries, technical agencies, government organisations, academia, NGOs, INGOs and private sector organisations
 - Members and representatives of local government authorities (provincial, district, divisional, village level etc.)
- Expert contribution
 1. Emeritus Prof. Krishan Deheragoda
 2. Prof. Dilanthi Amaratunga
 3. Dr. Ananda Mallawatantri
 4. Dr. Buddhi Weerasinghe
 5. Dr. Buddhika Hapuarachchi
 6. Mr. U.W.L. Chandradasa
 7. Mr. Bandula Wickremarachchi
 8. Mr. Suranga Kahandawa
 9. Mr. Indu Abeyratne
 10. Mr. Janath Hettiarachchi
 11. Ms. Wathsala Jayamanna
 12. Dr. Lahiru Kodituwakku
 13. Ms. Wagisha Perera
 14. Mr. Vajira Hettige
- **Facilitation of the preparation process**- Mr. Sunil Jayaweera - Director - Preparedness (DMC)
- **Comprehensive consultative guidance** - Dr. Ananda Mallawatantri
- **Process and related activity coordination, editing and overall content refinement with basic formatting** - Ms. Dushyanthi Wijesuriya

List of stakeholder participation

1.	Airport and Aviation Services (Sri Lanka) (Private) Limited
2.	Asia Pacific Alliance for Disaster Management
3.	Asian Development Bank
4.	Asian Disaster Preparedness Centre
5.	Association of Disaster Risk Management Professionals
6.	Auditor General's Department
7.	Central Environmental Authority

8.	Ceylon Electricity Board
9.	Ceylon Petroleum Corporation
10.	Child Fund Sri Lanka
11.	Climate Change Secretariat
12.	Department of Agrarian Development
13.	Department of Agriculture
14.	Department of Census and Statistics
15.	Department of Probation and Child Care Services
16.	Department of Coast Conservation & Coastal Resource Management
17.	Department of Forest Conservation
18.	Department of Meteorology
19.	Department of Motor Traffic
20.	Department of National Budget
21.	Department of National Planning
22.	Department of Social Services
23.	Department of Wildlife Conservation
24.	Disability Organization Joint Front
25.	Disaster Management Division – Ministry of Defence
26.	Family Planning Association Sri Lanka
27.	Forest Department
28.	Geological Survey and Mines Bureau
29.	International Labour Organization
30.	International Organization for Migration
31.	International Union for Conservation of Nature - Sri Lanka office
32.	Irrigation Department
33.	Janathakshan GTE Limited
34.	Japan International Cooperation Agency
35.	Mahaweli Authority of Sri Lanka
36.	Marine Environment Protection Authority
37.	Ministry of Defence
38.	Ministry of Education
39.	Ministry of Energy
40.	Ministry of Finance - Treasury
41.	Ministry of Finance, Economic Stabilisation & National Policies
42.	Ministry of Fisheries and Aquatic Resources Development
43.	Ministry of Health
44.	Ministry of Health - National Dengue Control Unit
45.	Ministry of Industries
46.	Ministry of Public Administration, Home Affairs, Provincial Councils & Local Government
47.	Ministry of Transport and Highways
48.	Ministry of Wildlife and Forest Resources Conservation
49.	Ministry of Women, Child Affairs and Social Empowerment
50.	National Aquatic Resources Research and Development Agency
51.	National Building Research Organization
52.	National Child Protection Authority
53.	National Housing Development Authority

54.	National Physical Planning Department - Ministry of Finance
55.	National Science Foundation
56.	National Water Supply & Drainage Board
57.	Oxford Committee for Famine Relief (OXFAM) International
58.	Road Development Authority
59.	Sarvodaya Shramadana Movement
60.	Save the Children - Sri Lanka Country Office
61.	SLYCAN Trust
62.	Sri Lanka Air Force
63.	Sri Lanka Army
64.	Sri Lanka Atomic Energy Board
65.	Sri Lanka Coast Guard
66.	Sri Lanka Climate Fund
67.	Sri Lanka Land Development Corporation
68.	Sri Lanka Navy
69.	Sri Lanka Police
70.	Sri Lanka Ports Authority
71.	Sri Lanka Railways
72.	Sri Lanka Red Cross Society
73.	Sri Lanka Sustainable Energy Authority
74.	Sri Lanka Tourism Development Authority
75.	Sri Lanka Jathika Sarvodaya Shramadana Sangamaya
76.	State Ministry of Provincial Councils and Local Government Affairs
77.	Sustainable Development Council of Sri Lanka
78.	Telecommunications Regulatory Commission of Sri Lanka
79.	UN Human Rights Office
80.	UN office – Country office (Sri Lanka)
81.	UN Women
82.	United Nations Children's Fund
83.	United Nations Development Programme
84.	United Nations Educational, Scientific and Cultural Organization
85.	United Nations High Commissioner for Refugees
86.	United Nations Human Settlements Programme
87.	Urban Development Authority
88.	University of Kelaniya
89.	University of Moratuwa
90.	World Bank
91.	World Food Programme
92.	World Health Organization - Sri Lanka office
93.	World Vision Lanka



National Disaster Management Plan 2023-2030

Disaster Management Centre
120/2, Vidya Mawatha, Colombo 7, Sri Lanka

 <https://www.facebook.com/dmc.gov.lk>

 https://twitter.com/dmc_lk

 <http://www.dmc.gov.lk/>

 <https://www.youtube.com/channel/UCEYdr4EBFyl8jDGOirQESqQ>