DISASTER RISK REDUCTION STRATEGY

MALDIVES
2024 - 2030

NDMA
NATIONAL DISASTER MANAGEMENT AUTHORITY

UNDRR
UN Office for Disaster Risk Reduction

Disaster Risk Reduction Strategy, Maldives 2024 -2030

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Foreword by the His Excellency the President

Dr. Mohamed Muizzu

Disasters continue to significantly hinder our progress in development, leaving destructive impacts on our homes, lives, and livelihoods. The drastic shifts in weather patterns and rising temperatures caused by climate change pose increasingly severe threats to our low-lying nation. At the same time, vulnerabilities in our built environment and human-induced hazards expand our disaster risk profile. Without substantial effort towards disaster risk reduction, the threats we face will continue to escalate.

Addressing these challenges to meet our goals of sustainable development and disaster risk reduction is a key priority for this administration. I am committed to work tirelessly towards a more sustainable and resilient future for the Maldives, leading us to prosperity despite our vulnerabilities.

The choices we make today are critical in safeguarding our future. It is imperative that we gain a deeper understanding of the unique risks facing our nation and adopting stronger measures to avert and mitigate their impacts. The introduction of the Disaster Risk Reduction Strategy 2024–2030 marks a significant step toward this goal. However, the tasks ahead are substantial.

We must strengthen our legal frameworks and institutional capacities and adopt innovative approaches to identify hazards and vulnerabilities. Enhancing early warning systems and communication channels is essential to enable our communities to prepare effectively and take necessary actions to ensure their safety.

Disaster risk reduction measures must be incorporated into development planning and construction of more resilient infrastructure is crucial to withstand the impacts of climate change and human-driven hazards. Additionally, effective resource mobilization and improved response and recovery capabilities are needed to ensure efficient and coordinated efforts during crises and recovery periods.

This strategy underscores our approach to bridging the existing gaps to meet our targets and fulfil our national priorities. It serves as a stepping stone towards a safer, more sustainable, and disaster-resilient Maldives.

Every institution - government, public, and private – along with every individual share a collective responsibility in this effort. I am confident that the guidance outlined in this strategy will be implemented to protect our beloved country and steer us towards a sustained and resilient future.

Foreword by the Chief Executive of NDMA

Hisan Hassan

Since the establishment of the National Disaster Management Authority 20 years ago, our organization has been at the forefront of responding to and coordinating crises that leave our nation with devastating impacts. The expanding threats posed by climate change, hydrometeorological hazards, increasing population and urbanization continue to raise serious national concerns. At the same time, considerable challenges in disaster risk reduction have persisted due to our geographical vulnerabilities and resource constraints.

As disasters stemming from these hazards and vulnerabilities become more frequent and severe, the need to strengthen our preparedness, risk reduction, and response mechanisms has become increasingly urgent.

The National Disaster Risk Reduction Strategy 2024 - 2030 reflects our growing ambition to adopt forward-thinking approaches to address these challenges and build national resilience. This Strategy is guided by the vision of His Excellency, the President Dr. Mohamed Muizzu to strengthen our nation's safety and resilience. It is built on lessons from the past and the anticipated threats of the future. The strategy is aligned with our global commitments and outlines pathways to meet the targets of the Sendai Framework for Disaster Risk Reduction, while contributing to the achievement of the objectives set forth in the Paris Agreement on Climate Change, and the Sustainable Development Goals.

I extend my deepest gratitude to the United Nations Office for Disaster Risk Reduction for supporting the development of this Strategy. Through the implementation of the strategies outlined in this document, the NDMA will lead efforts to adapt to evolving challenges by employing stronger disaster risk reduction and management strategies to protect our nation and its people.

Realizing the vision of this Strategy requires collective action and commitment. I look forward to closely collaborating with our key partners, stakeholders, and island communities to translate the objectives set forth in this Strategy into action and realize the collective goal of safeguarding our nation from disasters.

Executive Summary

The Maldives faces a growing threat from natural hazards due to climate change and anthropogenic hazards. This Disaster Risk Reduction (DRR) Strategy outlines a comprehensive and collaborative approach, aligned with the Sendai Framework for Disaster Risk Reduction (SFDRR), to build a more resilient nation.

Seven Key Priorities:

Strengthen Governance and Legal Frameworks:

Establish clear roles and responsibilities for DRR efforts, ensuring effective coordination and empowering stakeholders

Enhanced Multi-Hazard Risk Assessment:

Conduct comprehensive risk assessments that consider climate change projections and cascading effects of multiple hazards.

Building Resilience Through Infrastructure and Nature:

Integrate DRR principles into infrastructure development and maintenance practices, promote disaster-resilient construction techniques, and utilize ecosystem-based approaches.

Empowering Communities for Effective Response:

Build the capacity of communities to prepare for and respond to disasters through training, public awareness campaigns, and participation in DRR planning.

Strengthening Early Warning Systems and Preparedness:

Upgrade and expand early warning systems, ensure effective communication, and support community preparedness plans.

Promoting Comprehensive Recovery and Livelihood Resilience:

Ensure a swift and comprehensive recovery process, focusing on repairs, livelihood restoration, and establishing a social support system for vulnerable populations.

Cultivating a Culture of Safety and Climate Resilience:

Integrate DRR and climate change education into the national curriculum, foster disaster preparedness, and promote public awareness and knowledge sharing.

The successful implementation of this DRR Strategy relies heavily on a collaborative effort from all stakeholders, including government agencies, NGOs, private sector entities, and local communities. Through strong partnerships, resource mobilization, and unwavering commitment, this Strategy serves as a roadmap to build a more resilient and prosperous Maldives in the face of ever-changing environmental and anthropogenic challenges.

1 Introduction

Maldives, the world's lowest-lying country averaging 1.5 metres above sea level, faces diverse natural and human-made hazards. This low elevation, combined with the small size of its islands and the concentration of 44% of its settlements living within 100 metres of the coastline (Ministry of Environment, 2020a), exposes the country to significant threats from rising sea levels and intensifying hydrometeorological hazards. The capital city Male' also has one of the highest population densities in the world, housing 41% of the country's population (Maldives Bureau of Statistics, 2022). The inherent physical characteristics of Maldives, including the low elevation and small island size, coupled with past inadequacies in urban planning that have concentrated the population in Malé, make the nation highly vulnerable to disasters. Therefore, prioritizing and implementing appropriate risk reduction and adaptation strategies is crucial to ensure the safety of the Maldivian people.

This Disaster Risk Reduction (DRR) Strategy prioritizes actions to safeguard Maldives from the multifaceted threats of natural hazards and human-made disasters. Building upon consultations with stakeholders, assessments of the existing legal framework, and international commitments, this strategy establishes a comprehensive framework for a more resilient Maldives.

1.1 Scope

The overall scope of this National DRR Strategy focuses on strategic priorities that the National Disaster Management Authority (NDMA) can implement or partner-up effectively within its legal mandate of implementing efforts on DRR at a national level. It acknowledges the crucial role of collaboration with other government institutions that are key stakeholders in the DRR landscape. While areas like health, counter-terrorism, and major environmental hazards are undeniably crucial for building national resilience, this DRR Strategy entrusts the formulation of strategic actions for these areas to the mandated government agencies with leading expertise. This ensures a focused and efficient approach within the scope of NDMA's authority, while acknowledging the importance of a holistic national response. The distinction on which areas fall under which agencies' responsibility is clearly defined by existing laws and regulations. Future iterations of efforts into the area, such as the formulation of the National Disaster Management Plan, could explore the possibility of expanding the scope to encompass a broader range, based on the need.

1.2 Background

Despite contributing a miniscule 0.003% to global greenhouse gas emissions(Ministry of Environment, 2020b), Maldives exemplifies the disproportionate vulnerability faced by Small Island Developing States (SIDS) in the face of climate change. This vulnerability manifests in various forms, from accelerated coastal erosion and land loss, to bleaching of coral reefs; a vital ecosystem component critical for tourism and biodiversity. In response to these escalating challenges, the Government of Maldives spends a significant proportion of its GDP in building resilience of its islands. With public debt at 113% of the country's GDP as of 2023 (The World Bank, 2023), the Government has expressed its challenging position in financing Climate Change Adaptation (CCA) and building resilience. Furthermore, Maldives also faces various man-made hazards arising from past development decisions. Poor urban planning, for example, has resulted in the capital city, Malé, becoming one of the most congested in the world. This dense urban environment creates a confluence of hazards for residents, including increased risk of urban fires, pollution exposure, and difficulty managing solid waste.

Addressing these man-made hazards, alongside natural ones, is crucial for ensuring the long-term safety and well-being of the Maldivian people. While Chapter 2 focuses on creating a comprehensive understanding of the hazards faced by Maldives, it is crucial to acknowledge the critical role of the NDMA in mitigating the risk of these hazards. The following section of this introduction will delve deeper into the NDMA's mandate and functionalities as the lead agency responsible for coordinating and implementing DRR strategies in Maldives.


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1.3 Charting the Course: The National DRR Strategy Development

The formulation of this National DRR Strategy leverages the valuable framework provided by the United Nations Office for Disaster Risk Reduction (UNDRR) (2019) guidance. Recognizing the specific needs and context of Maldives, this strategy has been carefully adapted to prioritize and implement the most relevant elements at the current stage of development. This ensures the strategy's real-world application and effectiveness for the Maldivian context.

The introduction chapter of this strategy sets out the existing context of DRR in Maldives through giving a background and shedding light on the institutional arrangements and interlinkages between them. It also highlights the area of disaster financing in Maldives.

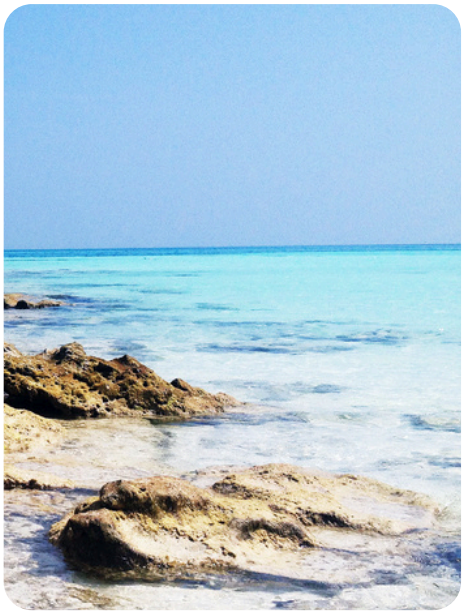
To ensure a thorough understanding in the local context, the strategy prioritizes a comprehensive hazard assessment. This assessment combines a desk review of potential threats with a rigorous qualitative evaluation of exposure, sensitivity, and overall significance for Maldives. Stakeholder consultations further strengthen the assessment, guaranteeing its accuracy and relevance for effective risk reduction efforts. Chapter 2 delves deeper into the methodology and results of this vital assessment.

Following the hazard assessment, Chapter 3 establishes the core principles and direction for DRR in Maldives, commencing with the statutory requirements of DRR, which focuses on key legislation. This is then further expanded to delve into international frameworks Maldives is part of and how these international commitments are significant locally.

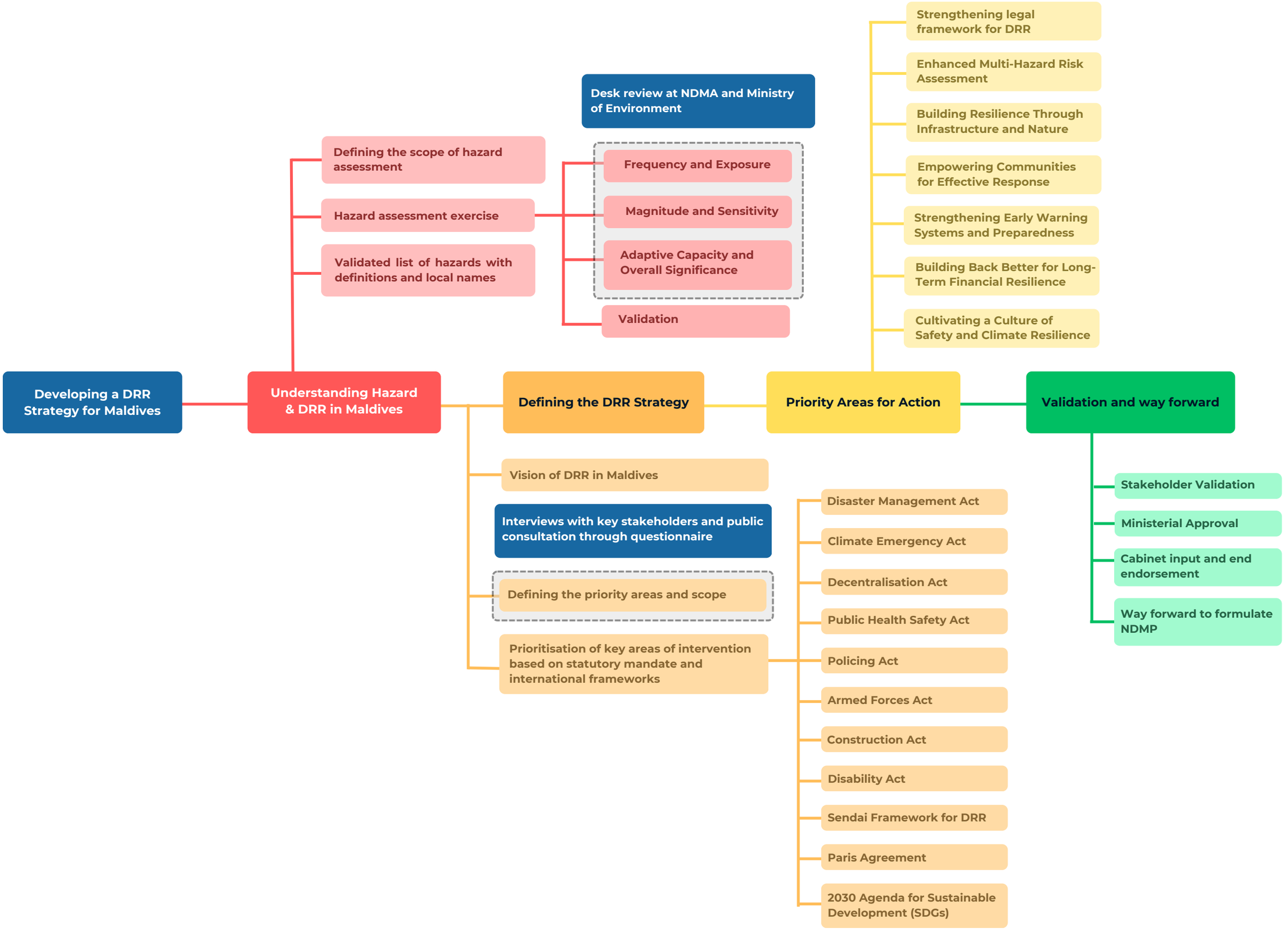
Chapter 4 is dedicated to the invaluable insights from stakeholder consultations carried out in this DRR Strategy development. While chapter 2 includes some aspects of how stakeholders were consulted, chapter 4 gives more insight into the methods of consultation and a summary of key thematic areas which were highlighted as concerns and gaps by the stakeholders.

Chapter 5 eventually defines the priority areas of the strategy based on the elements analysed within the chapters ahead of it, giving a short synthesis of priorities. These priorities were arrived from synthesising the previous chapters' recognition of needs for DRR.

The concluding chapter, Chapter 6, summarizes the National DRR Strategy, revisiting the strategy's key highlights. It highlights the importance of collaborative implementation and continuous evaluation to drive ongoing improvement. This strategy enables the Maldives to prioritize both disaster prevention and effective preparedness. within the chapters ahead of it, giving a short synthesis of priorities. These priorities were arrived from synthesising the previous chapters' recognition of needs for DRR.



1.4 Conceptual Framework



1.5 NDMA - Function and role as lead DRR agency

NDMA's Vision

"Building a disaster resilient Maldives"

The National Disaster Management Authority (NDMA) serves as the central body governing DRR in Maldives. Established by the National Disaster Management Act, NDMA recognizes the nation's vulnerability to both natural and man-made hazards covering all phases and aspects of the disaster management cycle in its interventions. NDMA's mission is to safeguard the lives of the Maldivian people through a comprehensive and proactive approach, building a culture of disaster prevention and preparedness that focuses on DRR. This is achieved through various awareness programs and through the formulation of localised DRR frameworks which empower island communities to not just respond to hazards but also avoid them by taking proactive action. Additionally, NDMA collaborates with other government agencies and NGOs to amplify awareness about disaster risk and the importance of preparedness. This ensures island communities, individuals, families, and businesses are prepared for all types of disasters that may impact the country.

The Authority's work goes beyond preparedness by prioritizing several crucial initiatives. Strengthening early warning systems is a key focus, allowing for timely alerts to reach communities during emergencies. NDMA also promotes integrating DRR principles into development projects. This ensures the creation of resilient infrastructure and communities that can better withstand future disasters.

1.6 Inter-Agency Coordination and linkages

Effective inter-agency coordination is paramount for building a resilient nation capable of mitigating, preparing for, responding to, and recovering from disasters. In Maldives, the Disaster Management Act established the National Disaster Management Council as the central authority for disaster management. This council, composed of key government ministries and agencies, is mandated to formulate national policies, make decisions, and provide strategic direction for DRR efforts. Its composition, comprising key government ministers and the head of the National Disaster Management Authority, underscores the high-level commitment to addressing disaster risks.

The National Disaster Management Council is composed of the following members:

A ——— President

B ——— Minister in charge of the Military

C ——— Minister in charge of Home Affairs

D ——— Minister in charge of Foreign Affairs

E ——— Minister in charge of Finance

F ——— Minister in charge of Health

G ——— Minister in charge of Housing and Land-use

H ——— Minister in charge of Environment

I ——— Chief Executive of National Disaster Management Authority

To operationalize the National Disaster Management Council's decisions and ensure effective coordination, the Disaster Management Steering Committee was also established under the Disaster Management Act. This committee brings together representatives from various government agencies, the private sector, and civil society to facilitate collaboration and information sharing. It is one of the key responsibilities of the Disaster Management Steering Committee to oversee the implementation of the policies formulated by the National Disaster Management Council and to provide recommendations and technical advice to the National Disaster Management Authority. The Steering Committee plays a crucial role in the implementation of DRR policies by playing fostering a coordinated approach involving technical personnel from the field that could provide input on how the policy decisions of the National Disaster Management Council could be implemented.

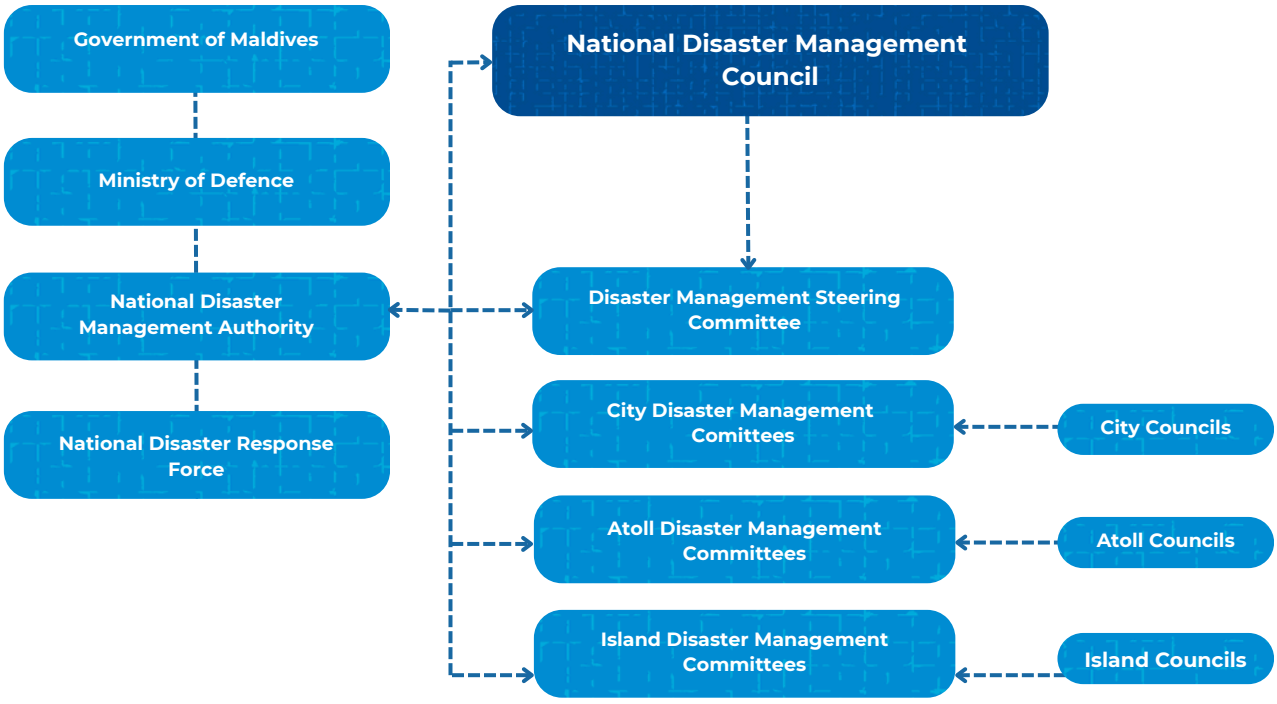


Figure 1 Interlinkages and institutional mechanisms for DRR coordination

While the Disaster Management Act provides a solid framework for inter-agency coordination in DRR, there is a recognized need to further strengthen collaborative efforts among stakeholders at all levels of government. To this end, the Act mandates the establishment of a National Platform to bring together government agencies, the private sector, and other key stakeholders. Although a single National Platform was convened in 2017, the ongoing efforts to establish another platform in 2025 underscore the importance of maintaining a robust mechanism for fostering collaboration and information sharing in DRR.

1.6.1 Institutional reponsibilities and coordination in DRR

National Disaster Management Authority

Leads the coordination of disaster management in Maldives for prevention, preparedness, response and recovery.

Maldives National Defence Force

Leads response efforts in disaster management. Has the mandate of promoting prevention and preparedness for hazards such as marine accidents, fire etc.

Maldives Police Service

Supports coordination in response and promotes awareness of prevention and preparedness for hazards. Also has secondary role of ensuring public law and order during disasters.

Maldivian Red Crescent

Supports response and recovery efforts at all scales for hazards. Has programmes on enhancing prevention, preparedness and recovery from disasters.

Maldives Meteorological Service

Maldives Meteorological Service the mandate of creation and dissemination of early warnings for hazards. Plays a key role in identifying the scale of hazard, focusing mainly on hydrometeorological and geological hazards.

Ministry of Climate Change, Environment and Energy

Main agency responsible for building climate resilience and adaptation, alongside NDMA. Has the mandate of hazard prevention through efforts of enhancing adaptation measures; mainly for environmental hazards and for those exacerbated through climate change.

Local Government Authority

As the regulatory body overseeing local governance, the LGA plays a crucial role in coordinating disaster preparedness, response, and recovery efforts within island communities. LGA works closely with local councils and ensures the implementation of DRR measures at the local level, including community-based disaster management plans, early warning systems, and resource mobilization.

Local Governments

Local governments in the form of City Councils, Atoll Councils, and Island Councils play a crucial role in prevention, preparedness, response and recovery. Based on the scale of hazard and disaster, the local councils could take a leadership role in ensuring hazards are dealt in a timely manner

Health Protection Agency

The Health Protection Agency (HPA) plays a crucial role in disaster risk reduction by safeguarding public health and providing essential medical services during and after disasters. HPA's responsibilities encompass disease surveillance, outbreak prevention, emergency medical response, and mental health support, contributing significantly to overall disaster resilience.

Ministry of Health Ministry

The Ministry of Health plays a pivotal role in disaster risk reduction by overseeing the overall health sector's response to emergencies. Its responsibilities encompass the provision of healthcare services, disease prevention and control, as well as the coordination of health-related activities within the broader disaster management framework.

Ministry of Social and Family Development

The Ministry of Social and Family Development plays a crucial role in disaster recovery and building resilience. By addressing the social and psychological needs of affected populations, this ministry contributes significantly to long-term recovery efforts.

National Emergency Medical Services

The National Emergency Medical Services (NEMS) provides essential medical care and emergency treatment during and after disasters. NEMS plays a vital role in evacuations, triage, and providing life-saving interventions, working closely with other emergency responders to ensure the well-being of affected populations.

1.7 DRR Financing

The Disaster Management Act of Maldives provides the legal framework for establishing the Disaster Management Fund, a dedicated financial resource for disaster management. The fund is primarily sourced through government allocations but also benefits from contributions from citizens, associations, and international donors. NDMA is responsible for the fund's management, ensuring its judicious use.

To optimize the fund's utilization and enhance financial resilience, exploring additional financing mechanisms is crucial. Public-private partnerships, risk transfer instruments, and innovative financing options are examples of financing mechanisms that need further exploration in the DRR context of Maldives. In this regard, it is important to note that the government of Maldives has proposed the establishment of a Maldives Climate Finance Hub (MCFH). The proposed mandate of MCFH will be to serve as a central coordinating body, enhancing the country's capacity to access and utilize climate finance, including resources dedicated to disaster risk reduction. Through consolidating climate finance knowledge and expertise, the Ministry of Finance proposes MCFH as the primary agency to optimize resource allocation, identify innovative financing mechanisms, and foster collaboration among key stakeholders in the area. This centralized approach could be instrumental in building a more resilient financial ecosystem, enabling the country to effectively manage financial resources in relation to DRR and Climate Change Adaptation in a more streamlined approach (Ministry of Finance, 2023).

To further enhance disaster financing, exploring public-private partnerships, risk transfer mechanisms, and innovative financial instruments such as catastrophe bonds or contingent liabilities is essential. These mechanisms can help diversify funding sources, reduce financial vulnerabilities, and improve the country's capacity to absorb disaster and climate related shocks. This approach to disaster financing will contribute significantly to building a more resilient Maldives, capable of effectively managing the financial challenges posed by disasters.

This comprehensive approach to disaster financing will contribute significantly to building a more resilient Maldives, capable of effectively managing the financial challenges posed by disasters.

2 Hazard Assessment: A Qualitative Approach

A critical step in developing a comprehensive DRR Strategy for Maldives is creating a thorough understanding of the country's risk and hazard profile. It is a requirement for the NDMA under the Disaster Management Act to keep up to date information on hazards. On Article 28 under the powers and responsibilities of the NDMA it is stated as follows:

“O) Gather information on hazards during peace time and create public awareness through dissemination.”

While commendable efforts have been undertaken in the past to identify relevant hazards through assessments, there is a need for a more recent and inclusive disaster risk profile.

The risk profile developed for Maldives by UNDP Maldives (2006) remains a valuable and frequently referenced study, highlighting some of the major hazards impacting Maldives. This study focused primarily on hydrometeorological and geographical threats. However, the evolving discourse surrounding climate change and DRR emphasizes the importance of incorporating environmental and anthropogenic hazards into disaster risk profiles. Since 2006, the understanding of how these various hazards interlock has become increasingly recognized.

Therefore, a new, more comprehensive disaster risk profile is required to effectively guide DRR strategy formulation in Maldives, reflecting the current understanding of interconnected hazards. The purpose of this desk review, does not aim to replace a full risk profile update. Instead, it serves as a foundational step, creating a comprehensive list of hazards faced by Maldives. This qualitative assessment, which establishes hazard definitions, local names, and significance based on expert judgment, will utilize a standard methodology in DRR (UNDRR, 2022). This approach will inform the development of a more comprehensive future risk profile for Maldives.

2.1 Methodology

To populate a list of locally recognized hazards, this assessment utilized a qualitative approach informed by expert judgment. This approach involved consultations with technical leads with expertise in hazard assessment at the NDMA. A combination of expert consultations and NGO consultations was utilised to leverage their knowledge and experience.

The starting point for hazard identification was the Hazard Information Profiles (HIPs) document developed by UNDRR & International Science Council (2021).The full list of 302 globally applicable hazards was meticulously evaluated for their relevance to Maldives. This evaluation focused on hazards with a history of occurrence in the region or those with a potential for future impact due to climate change. Any hazard deemed applicable to Maldives were listed down along with its definition and their local Dhivehi names most appropriate for them, where applicable.

Once a list of locally applicable hazards was obtained from the global list, a wider evaluation of these hazards took place. In this evaluation, each identified hazard was judged for:

01 **Frequency and Exposure:**

This criterion assessed how often a hazard occurs and the level of population exposure to the hazard event.

02 **Magnitude and Sensitivity:**

This criterion evaluated the potential intensity of the hazard (magnitude) and the vulnerability of affected elements (sensitivity) within Maldives.

03 **Overall Significance with Adaptive Capacity:**

This criterion considered the combined impact of frequency, exposure, magnitude, and sensitivity in light of Maldives' ability to adapt to and recover from hazards (adaptive capacity)

Each hazard received a score on a 5-point scale (1 = very low, 5 = very high) for these three criteria.

The assessment further included consultations with 17 core stakeholders, largely representing all relevant government institutions, and a total of 8 NGOs and Community-Based Organizations (CBOs). A full list of participants is provided in **Appendix B**.

The insights and perspectives gathered from these consultations have been integrated with the technical evaluation scores to present the final list of significant hazards facing Maldives. This final list has been presented in a table format, including hazard names, scores for each evaluation criterion, and their local names. In cases where locally significant hazards were found to be absent in the global hazard document, they have been added along with a local definition from relevant institutions. For all others, the definitions stated in the HIPs document have been included.

2.2 Result

2.2.1 Table 1: Qualitative Hazard Assessment for Maldives based on hazard type

Table 1 List of hazards facing Maldives adopted from Hazard Information profiles (UNDRR, 2021) and institutional feedback

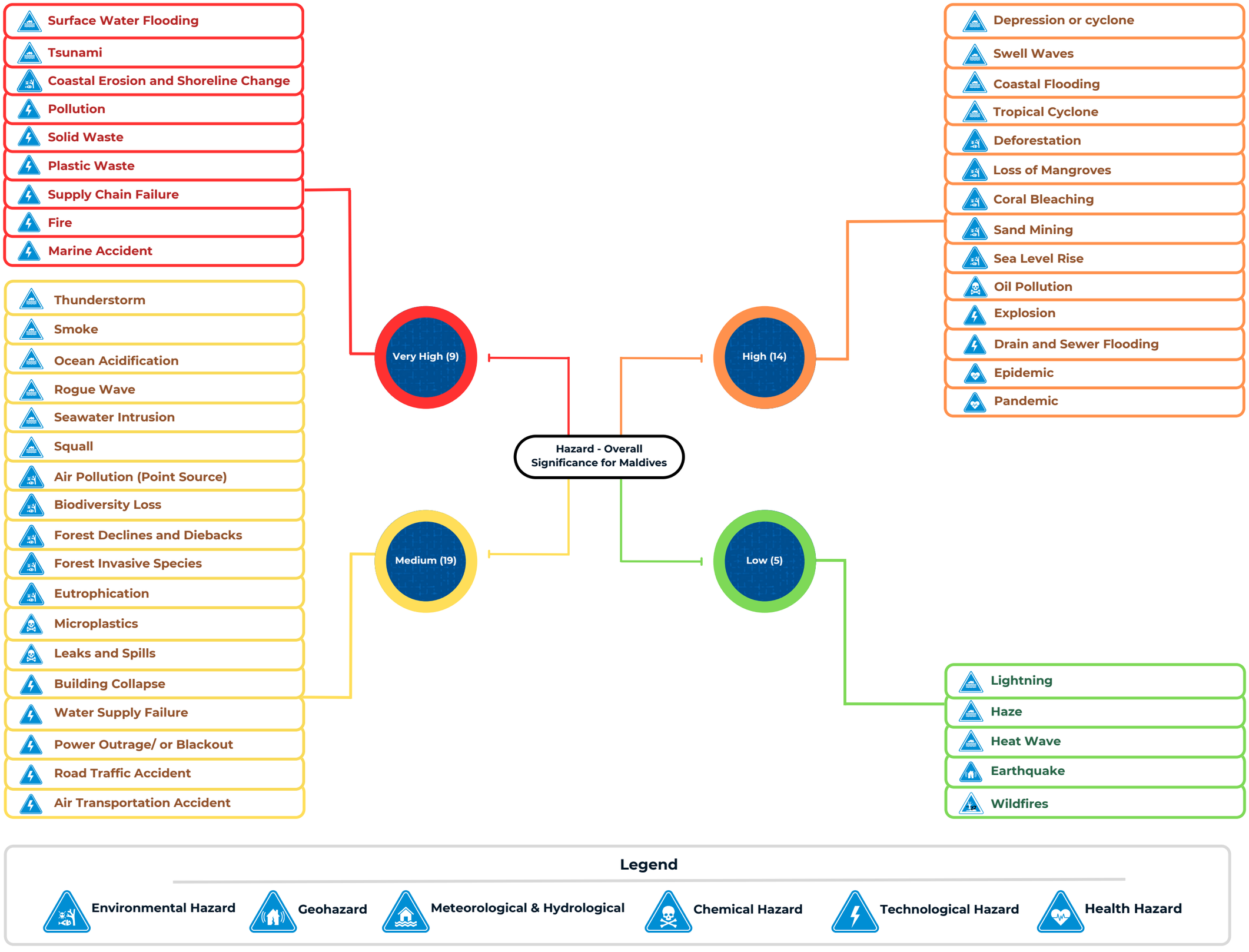
Hazard type	Hazard	Hazard overall Significance	Synonyms included in HIPs by UNDRR & ISC	Dhivehi name
Meteorological and hydrological	Lightning	Low	Bolt, Thunderbolt	ލާނ ތުނ / ވިލާނ
	Heatwave	Low	None identified	ތާރާވާ ހާދަ ގަތުން
	Thunderstorm	Medium	None identified	ލާވާ / ވިލާ ގުޑުގަދަ
	Coastal flooding	High	Storm surge, coastal inundation	ކަނަރަށް ގޮށްޗަށް ދަތުރު
	Surface Water Flooding	Very high	Surface detention, Depression storage	ގޮށްޗަށް ދަތުރު (ގޯނާ ގޮތުގައި)
	Haze	Low	Not available	ދުން ފޮށި
	Smoke	Medium	Not relevant	ދުން
	Ocean Acidification	Medium	Not available	ކަނޑުގެ ތެދުވުން ބަދަލުވުން
	Rogue Wave	Medium	Freak wave, Extreme storm wave.	ދެއް ތާރު
	Sea Water Intrusion	Medium	Saltwater intrusion, saltwater encroachment	ގޮށް ދާންދަތުރު
	Storm Surge	Medium	None found	ގަދަ ގޮތަކަށް ލާވާ ހުއްދަ ކަނޑުގެ ދަރި / ކަނޑުގެ ދަރި
	Swell waves	High	Not available	ކަނޑުގެ ދަރި
	Tsunami	Very high	Not Identified	ސުނާމީ
	Squall	Medium	Gust wind	ގަދަ ވައި

Meteorological and hydrological	Depression or Cyclone (Low Pressure Area)	High	Not identified	ބާރުގަނޑަ ކާލިގަނޑު / ތޫފާން
	Tropical Cyclone (Low Pressure Area, depression)	High	Typhoon	ތޫފާން
Geohazards	Earthquake	Low	Earth tremor	ބިން ހެލުން
Environmental	Air Pollution (Point Source)	Medium	Point source emissions, fugitive emissions	ވައި ތަޣައްޔަރުކުރުވުން (ވަކި އެއްތަނަކުން ނުވަތަ ތަންތަނުގެ ސަބަބުން)
	Ambient (Outdoor) Air Pollution	Medium	Poor Air Quality, Smog	ވައި ތަޣައްޔަރުކުރުވުން (ދުމްފަރާތަށް)
	Biodiversity Loss	Medium	None identified	ދިރޭތަކެތީގެ ސިންފަތަފާތުކަން ގެއްލުން
	Forest Declines and Diebacks	Medium	Stand level dieback, Canopy level dieback	ގަސްގަހަ ނެތިދިއުން
	Deforestation	High	None	ގަސްކަނޑުން (ބޮޑެތި ސަރަހައްދުތަކުން)
	Forest Invasive Species	Medium	Forest pests	އިންވޭސިވް ސްޕީޝީޒް އުނދަގޫތައް
	Wildfires	Low	Bush fires, landscape fire, forest fire	ވަލުގޮވާތަކަށް ހިނގާ އަލިފާންގެ ހާދިސާތައް
	Loss of Mangroves	High	Mangrove deforestation	ކުޅި، ރޯ، ކަނޑޫފިން ނެތިދިއުން
	Coral Bleaching	High	Not identified	ގާ ހުދުވުން
	Coastal Erosion and Shoreline Change	Very high	Shoreline process	ގޮނޑު ދިޔުން
	Sand Mining	High	Not identified	ވެލިނެގުން
	Sea Level Rise	High	Not identified	ފެންގަނޑު އުފުލުން
	Eutrophication	Medium	None identified	ފެން ކިލަނބު
Chemical	Microplastics	Medium	Nano particles	ޕްލާސްޓިކު ކުނި
	Leaks and Spills	Medium	Not applicable	ނުރައްކާތެރި އެއްޗެހި ލީކުވުން
	Oil Pollution	High	Oil spill	މުދަރު ތެޔޮ އޮހޭރުން

Technological	Pollution	Very high	Contamination, Poisoning	ތަބަށްތަކުލަންވުން
	Fire	Very high	Not Applicable	ތަކިފާތުން ކުރުވުމުގެ ފާދިސް
	Building Collapse	Medium	Catastrophic Building failure	ތިމާގެތެރެ ކުލައަ ތިމާގެތަކުން ބަދަލު ވެވުން
	Explosion	High	Not applicable	ފެލުން
	Solid Waste	Very high	Not available	ކުނިފެ ހައްސަތަކަށް
	Plastic Waste	Very high	Plastic pollution, plastic debris, plastic trash	ޕްލާސްޓިކް ކުނިފެ ހައްސަތަކަށް
	Drain and Sewer Flooding	Medium	Drainage flood	ސަރުދަމާ ގަދިވެ ދޭތެރެ ދެރުވުން
	Marine Accident	Very high	Not available	ކަނޑުމަތީ ފާދިސް
	Water Supply Failure	Medium	Water scarcity	ފެން ކަނޑުން
	Supply Chain Failure	Very high	SMC Failure	ދަށް ސަޕްލައިސްކުރުމުގެ ހައްސަތަކަށް
	Power Outage/ or Blackout	Medium	Electricity failure, Electricity disruption, Power cut	ކަރަންޓް ކަނޑުން
	Road Traffic Accident	Medium	Road Traffic Incident, Accident	ބަންދަށް ތަދުވުމުގެ ފާދިސް
	Air Transportation Accident	Medium	Not available	ވަދިގެ ތަދުވުމުގެ ފާދިސް
Health	Epidemic (outbreak)	High	Not applicable	ބުރާލިހުން / ބަލިވެދިއުން
	Pandemics	High	Not applicable	ދުނިޔެ ވ્યાપી

For a comprehensive look at all identified hazards, including their significance evaluations, refer to Appendix A. These evaluations consider factors like how often and intensely hazards occur (frequency and exposure), their potential impact on communities (sensitivity), and the overall threat they pose considering Maldives' ability to adapt (overall significance). Appendix A also provides definitions and local names for each hazard, ensuring consistency with internationally recognized descriptions and promoting clear communication across stakeholders.

2.2.2 Figure 2: Qualitative Hazard Assessment results listed based on hazard significance Result



2.2.3 Key Findings and Observations from the Hazard Assessment

The qualitative hazard assessment conducted identified 48 distinct threats impacting Maldives. These hazards were found to fall within six primary categories aligned with the Hazard Information Profiles (HIPs) classification system.

Meteorological and hydrological hazards (16 hazards):

This category was found to be the most prominent in terms of total number of hazards, encompassing a wide range of threats like coastal flooding, storm surge, and swell waves. Notably, tsunami and surface water flooding were classified as "very high" significant hazards within this group, posing a critical threat and requiring prioritized mitigation and preparedness measures. An additional 4 hazards from this category were classified as "high significance," demanding significant attention in prevention, preparedness, response, and recovery.

Climate change projections indicate a worsening impact for many of these meteorological and hydrological hazards. This necessitates prioritizing this category for the development of climate change adaptation measures. Past disaster risk profiles included many of these hazards; however, the evolving climate necessitates a renewed focus on mitigation strategies.

Environmental Hazards (13 hazards):

Environmental concerns pose significant threats to Maldives' ecosystems, infrastructure, economic well-being, and long-term sustainability. These threats encompass a broad range of issues, including rising sea levels, coastal erosion and shoreline change, increased coral bleaching, and saltwater intrusion into freshwater resources. While coastal erosion (and shoreline change) is classified as "very high" significance, five additional environmental hazards are categorized as "high," demanding significant attention in hazard mitigation, preparedness, response, and recovery efforts. Many of the environmental hazards highlighted here are slow-onset hazards.

One among these; coastal erosion and shoreline change that often eventually lead to large scale land loss in islands, can be attributed to have been exacerbated due to climate change as rapid erosion is being observed more frequently than ever in the recent past (Ministry of Environment, 2020a).

In the past, disaster risk profiles often overlooked environmental hazards due to less holistic approaches. However, the current integrated focus on climate change adaptation and disaster risk reduction necessitates a more comprehensive approach. By including environmental hazards in risk assessments, proactive measures can be developed to address these critical challenges.

The Ministry of Climate Change, Environment and Energy (MoCCEE) plays a leading role in environmental policy considerations for Maldives. However, effectively managing these hazards necessitates a collaborative approach. Strategic interventions for environmental protection and ecosystem restoration require cooperation with agencies like NDMA to ensure a unified and effective response.

Technological Hazards (13 hazards):

This category highlights the potential risks associated with Maldives' infrastructure and technological systems, encompassing a broad range of threats. 6 out of the 9 “very significant” hazards belonged to this hazard type. These included fire, marine accident, supply chain failure, pollution, solid waste and plastic waste. While fire outbreaks were addressed in past risk profiles, emerging threats like solid waste management, pollution, and plastic waste management challenges have often been neglected. This can be attributed to two factors: a past focus on traditional hazards and separate mandates for different government agencies. MoCCEE has jurisdiction over waste management, pollution and in building adaptation of the islands, while the NDMA focuses on disaster risk reduction. The inclusion of supply chain failure in this assessment underscores the potential vulnerability of Maldives to disruptions in the international flow of essential goods, including food supplies. This highlights the importance of building resilience in the face of such disruptions which can impact the country’s food security.

While the specific nature of collaboration between government entities requires further discussion, a more holistic approach is crucial moving forward. This may involve improved information sharing and coordination to ensure these environmental threats are effectively integrated into hazard assessments and disaster risk reduction workflow in Maldives.

Chemical (3 hazards):

The chemical hazards category identifies potential threats associated with the use, storage, and transportation of chemicals in Maldives. This category encompasses three main concerns: microplastics pollution, leaks and spills, and oil pollution. While microplastics pollution and leaks and spills are classified as "medium significance" hazards, oil pollution is categorized as "high significance," reflecting the potential for severe environmental and economic damage, especially for the tourism industry, in the event of a spill.

Collaboration between relevant government agencies is crucial for effective chemical hazard management. The Ministry of Defence (MOD) has a primary role in overseeing the broader chemical landscape in Maldives. While their focus is on ensuring proper management of chemicals that pose a risk; including a potential oil spill, to effectively implement such policies, collaboration with MoCCEE is essential. MoCCEE and the Environmental Protection Agency (EPA) also play a key role in addressing single use plastic and reducing the impact of microplastics in general.

Geohazards (1 hazard):

The geohazards category focuses on natural threats arising from geological processes. Earthquakes are the sole hazard identified in this category and are classified as "low significance." Maldives, due to its location on the Indo-Australian Plate far from tectonic plate boundaries, experiences minimal seismic activity. Although historical records mention rare, low-magnitude tremors, particularly in the southern atolls, the overall risk associated with earthquakes is considered minimal.

However, it is important to acknowledge that geological events can be unpredictable. While the likelihood of a major earthquake impacting Maldives is considered low, even a minor tremor could pose a threat to infrastructure, particularly in densely populated areas. Therefore, incorporating earthquake preparedness measures into disaster risk reduction strategies remains important. This may involve raising public awareness, conducting vulnerability assessments of critical infrastructure, and developing building codes which can enhance the resilience of infrastructure in an earthquake scenario.

Health (2 hazards):

The health hazards category focuses on large-scale public health threats. While the Hazard Information Profile (HIP) document by UNDRR emphasizes specific diseases, consultations with the Health Protection Agency (HPA) led to the inclusion of "epidemics" and "pandemics" in the NDMA's hazard assessment. This broader categorization allows the NDMA to identify potential areas for collaboration with the HPA and other stakeholders when disease outbreaks reach epidemic or pandemic proportions, triggering a coordinated response.

The HPA remains the primary agency responsible for health policy and managing specific diseases. The NDMA, with its focus on DRR, plays a secondary but crucial role in supporting health emergency strategies developed by the HPA and the Ministry of Health.

Evolving Significance:

This assessment reveals an increased significance for certain hazards, particularly those linked to climate change. Sea level rise, coastal erosion, and extreme weather events are now considered more threatening compared to past risk profiles. While this could be partially attributed to heightened global focus on DRR, climate change adaptation, and environmental conservation, it likely also reflects the true escalation of these threats. Additionally, this assessment identified new hazards requiring attention, such as microplastics pollution and drain and sewer flooding, which pose significant environmental and public health risks.

Integration of Stakeholder Expertise:

While the Hazard Information Profiles (HIPs) document by UNDRR served as the primary resource for identifying applicable hazards in Maldives, this assessment went beyond a strict reliance on the document. Through consultations with core stakeholders, particularly government representatives, additional hazards were included that were deemed crucially important but not explicitly listed in the HIPs document. This approach ensured a more comprehensive understanding of the hazard profile by incorporating the valuable insights and experience of local experts.

For the definitions included in the broader table within Appendix A, all hazards except “rogue wave," "epidemic," and "pandemic" utilized the definitions provided in the HIPs document. The rationale behind using broader terms like "epidemic" and "pandemic" for health hazards lies in the fact that the HIPs document, while comprehensive, delves into a vast number of diseases. In the context of Maldives, a more concise categorization encompassing health hazards that become problematic in the country was deemed more effective. Definition for "rogue wave" was provided by Maldives Meteorological Service, and definitions for "epidemic" and "pandemic" were provided by the Health Protection Agency (HPA) to ensure accuracy and local context.

Way forward:

These findings necessitate a strong foundation for future initiatives. Collaborative efforts involving relevant government agencies, NGOs, and communities are crucial for developing and implementing effective DRR measures. Prioritizing mitigation efforts for the most critical hazards, while acknowledging the evolving nature of threats and spatial variations, will be essential for building resilience. This study, therefore, could lay the groundwork for a more in-depth updating of Maldives' DRR profile.

This DRR Hazard Assessment underscores the critical need for a comprehensive disaster risk reduction approach in Maldives. The identified hazards, particularly those classified as "very high significance" and "high significance," pose a substantial threat to the nation's well-being. This assessment should ideally serve as a living document, continuously evolving through stakeholder engagement and workshops.

These workshops offer a valuable opportunity for two-way knowledge transfer gauging public and stakeholder understanding and building consistency. The findings of the DRR Hazard Assessment lay a strong foundation for future DRR initiatives. Effective disaster risk reduction requires collaboration among relevant government agencies, NGOs, and communities. Through collaboration, these stakeholders can develop and implement effective DRR measures that address the specific needs and vulnerabilities of Maldives.

Prioritizing adaptation efforts for the most critical hazards is essential, but it is equally important to acknowledge the evolving nature of threats and spatial variations. By recognizing the dynamic nature of disaster risks, long-term resilience can be attained in Maldives. This comprehensive assessment serves as a springboard for a more in-depth update of Maldives' DRR profile, ensuring the nation is well-prepared to face future challenges.

3 Formulating DRR Priorities

Maldives, with the low-lying geography and dispersed island communities, faces a unique set of disaster risks. Effectively mitigating these threats necessitates a well-defined DRR strategy. This chapter outlines the strategic priority areas for the strategy starting with a comprehensive review of key statutory requirements established by national laws. This review further ensures alignment with global best practices through international commitments and treaties. Additionally, the targets and priorities of the Sendai Framework for Disaster Risk Reduction (SFDRR) will serve as a foundation for identifying these priorities.

Recognizing the critical link between DRR and climate change adaptation (CCA), this strategy also integrates with the upcoming National Adaptation Plan (NAP) being developed by MoCCEE in line with the Paris Agreement's main adaptation objective. A dedicated section of this chapter will explore the potential linkages between the NAP and the DRR strategy, fostering a holistic approach to building resilience.

Stakeholder consultations, encompassing government core stakeholders, relevant NGOs and CBOs, and community voices, included will provide crucial insights into the specific needs and vulnerabilities across the islands. Additionally, the findings from the hazard mapping exercise, detailed in the previous chapter, will inform the understanding of the nature and significance of potential disasters.

By synthesizing these diverse sources of data – legal mandates, international obligations, stakeholder perspectives, and scientific hazard assessments – this chapter will prioritize and formulate a set of strategic priority areas for DRR that are representative of Maldives' unique context. This ensures the resulting strategy is not only comprehensive but also directly addresses the most pressing disaster risks faced by the nation.

3.1 Foundational Legal Framework for DRR

A comprehensive review of key statutory requirements established by nine key national laws has been conducted. Although not entirely exhaustive, these laws cover key elements of DRR which need to be considered in formulating the strategy priorities.

The laws covered in this chapter include:

- The Disaster Management Act
- The Climate Emergency Act
- The Decentralization Act
- Public Health Protection Act
- The Disability Act
- The Construction Act
- Armed Forces Act Maldives
- Maldives Police Service Act
- The Maldivian Red Crescent Act

While their primary focus areas may lie outside the realm of DRR, all nine of these laws contain aspects that contribute to building national resilience and mitigating disaster risks and improving response which all enhances DRR. The review will examine these relevant provisions to create an understanding of the national framework governing DRR in Maldives.

3.1.1 Disaster Management Act (Law: 29/2015)

The Disaster Management Act (DM Act) serves as the primary legal framework for DRR in Maldives. The Act establishes a set of key objectives enshrined in Article 2 (and other relevant articles) that address all stages of disaster management: mitigation, preparedness, response, and recovery.

Disaster Mitigation:

The DM Act prioritizes proactive measures to reduce disaster risks through several provisions.

- National Disaster Management Plan (NDMP): The Act mandates the development of a comprehensive NDMP that outlines mitigation strategies at national and local levels (Article 32). This plan should encompass strategies for land-use planning, infrastructure development, and resource management to minimize disaster risks.

- Land Use Planning and Building Codes: The Act promotes integrating DRR principles into national and local development plans (Article 34), ensuring new developments are built in safer locations and can withstand potential hazards. This includes enforcing building codes that consider disaster risks (Article 34(k)).

- Environmental Management: The DM Act lays the groundwork for incorporating environmental considerations and climate change adaptation strategies into the overall DRR framework for long-term resilience (potentially under Article 28(e) which empowers the NDMA to conduct research relevant to mitigation). By addressing environmental degradation, which can exacerbate disaster impacts, communities can build long-term resilience.

Preparedness:

The Act prioritizes preparedness by mandating policies and guidelines (Article 2(b)) and requiring activities such as:

- Hazard Mapping: Supported by NDMA under Article 28(e) and 28(o), hazard mapping identifies areas at risk from various hazards that can potentially lead or contribute to a disaster. This information is crucial for informing mitigation strategies and preparedness plans.

- Early Warning Systems: The Act mandates a multi-hazard early warning system by the Meteorological Service (Article 34(u)) to ensure communities receive timely information regarding impending hazards.

- Public Awareness Campaigns: The NDMA (Article 28(e)) and local councils (Article 35(e)) play a crucial role in developing and implementing comprehensive public education campaigns. These campaigns raise awareness of disaster risks, preparedness measures, and evacuation procedures.

- School Safety Programs: The DM Act mandates integrating disaster risk reduction education into school curriculums (Article 34(l)) to ensure future generations are prepared to face potential disasters.

Response:

Established under Article 9, the National Disaster Management Council assumes a central role in disaster response. They hold the authority to make critical decisions and coordinate national response efforts (Article 10).

- National Disaster Management Authority (NDMA): Serving as the central coordinating body for disaster management activities (Article 27(c)), the NDMA takes on a vital role in response.

- Resource Mobilization: The NDMA can utilize the National Disaster Management Fund established under Article 47(a) to secure immediate resources for response activities.

- Coordination: The NDMA facilitates collaboration between various government agencies, NGOs, and international organizations to ensure a unified response effort.

- Information Dissemination: The NDMA plays a role in disseminating accurate and timely information to the public during disasters. (While early warning dissemination is primarily a local council responsibility under Art. 35(e), the NDMA contributes to this through broader public messaging.)

Recovery:

Local councils play a crucial role in recovery efforts, as outlined in Article 35 of the DM act, which is also supported by the Decentralisation Act.

- Damage Assessment: Councils can assist in damage assessments as recommended by the NDMA (Art. 35(k)). This information is vital for planning and allocating resources for reconstruction efforts.

- Rights Protection: Article 35(l) ensures the protection of the rights of disaster victims and those in temporary shelters, adhering to standards set by the NDMA.

- Reconstruction and Rehabilitation: While the DM Act establishes a National Disaster Management Fund (Article 47(a)) for immediate needs, exploring additional funding mechanisms for long-term recovery is crucial. This could involve public-private partnerships or international aid mechanisms.

By establishing a comprehensive framework for all stages of disaster management, the DM Act is a cornerstone of building resilience in Maldives. It highlights the importance of proactive mitigation strategies, coupled with preparedness measures to minimize the impact of disasters. The Act also ensures a coordinated response and effective recovery efforts, safeguarding the lives and livelihoods of Maldivians in the face of potential disasters.

3.1.2 Climate Emergency Act (Law: 9/2021)

The Maldives' Climate Emergency Act (Law: 9/2021) serves as a crucial legal framework for addressing climate change and its associated disaster risks. The Act establishes a comprehensive approach that aligns with DRR principles by focusing on:

Resilience Building:

- Objectives: The Act prioritizes building resilience as a core objective (Article 2(a), Article 2(d), Article 2(l)).

- National Plan on Climate Action: The Act mandates the development of a National Action Plan on Climate Change (Article 18(M)) that outlines strategies for building resilience at national and local levels (potentially incorporating provisions from Article 20(C)4 which encourages local development plans to include adaptation measures).

- Climate Change Directorate: The Act establishes a Climate Change Directorate (Article 18) tasked with supporting resilience-building efforts at various levels (Article 18(b)) and reviewing progress (Article 18(j)).

- Collaboration: The Act emphasizes collaboration between government agencies, local councils, NGOs, and communities in building resilience (Article 3(a), Article 3(c), Article 18(T)).

Risk Assessment and Monitoring:

- Loss and Damage Calculations (Article 18(V)): The Act mandates annual assessments of climate-induced losses and damages across various sectors, including erosion, flooding, and impacts on livelihoods (tourism, fisheries, agriculture). This data is crucial for understanding disaster risks and informing mitigation and adaptation strategies.

- National Adaptation Plans: The Act emphasizes enforcing and reviewing national adaptation plans (Article 18(Q)), ensuring these plans address evolving risks.

Adaptation Strategies:

- National Plan on Climate Action: The National Action Plan (Article 18(M), Article 20) should identify specific adaptation strategies across key sectors like health, water security, coastal management, food security, and infrastructure (Article 20(15)).

- Early Warning Systems: The Act acknowledges the importance of establishing and maintaining early warning systems (Article 20(C)14) as a critical tool for disaster preparedness.

The Climate Emergency Act demonstrates Maldives' commitment to building resilience in the face of climate change. By focusing on risk assessment, collaborative planning, and sectoral adaptation strategies, the Act complements existing DRR frameworks and strengthens the country's preparedness for climate-related disasters.

3.1.3 Maldives Decentralization Act (Law: 7/2010)

Maldives Decentralization Act serves as a keystone for local governance and plays a crucial role in DRR efforts. Below are some key responsibilities of local governments stated in the Act which are relevant to DRR.

Disaster Preparedness:

- Councils are mandated to collaborate with relevant government agencies and authorities in disaster risk reduction (Article 23(A)(20)). This could involve participating in training programs, risk assessments, and preparedness planning.

- Local budgets must include an estimated allocation for potential losses from natural hazards (Article 94(k)), demonstrating a proactive approach to disaster preparedness.

Mitigation Measures:

- The Act empowers councils to take action to prevent environmental degradation that could exacerbate disaster risks (Article 23(A)(4)). This includes measures to address land erosion and maintain coastal defences, such as groynes, breakwaters, and sheet piling.

- By promoting sustainable waste management practices (Article 23(A)(2)), councils can help minimize environmental damage and potentially reduce disaster risks from anthropogenic solid waste.

Response and Recovery:

- While the President of Maldives holds ultimate authority for disaster response under Article 139, local councils likely play a critical role in supporting initial response efforts. This involves coordinating with national agencies, assisting with evacuations, or providing emergency shelters.

- The Act acknowledges the need for financial, technical, or other forms of assistance from the government to councils during disasters or emergencies (Article 67). This ensures local authorities have the resources they need for immediate response and recovery activities.

The Decentralization Act empowers local councils to play a vital role in disaster risk reduction through preparedness, mitigation measures, and supporting response efforts. By fostering collaboration between local and national authorities, the Act can contribute to building resilient communities across Maldives.

3.1.4 Public Health Protection Act (Law: 7/2012)

The Public Health Protection Act (Law No. 7/2012) plays a critical role in DRR by safeguarding public health during emergencies, particularly those related to infectious diseases. The Act outlines several key provisions.

Public Health Emergency Response

- The Act establishes a framework for responding to public health emergencies (Article 2(e)).
- This empowers authorities to take swift and decisive action to contain outbreaks and minimize health risks during disasters.

Identifying and Addressing Health Risks

- The Act empowers the Health Protection Agency (HPA) to proactively design and implement public health safety programs (Article 7(B)).
- This includes identifying potential health hazards (Article 2(f)) and developing response strategies for epidemics (Article 7(D)).

Controlling Disease Outbreaks

- The HPA is mandated to assess the spread of epidemics and implement appropriate responses (Article 7(D)).
- This may involve measures like contact tracing, quarantine protocols, and vaccination campaigns.

Global Pandemic Preparedness

- The Act recognizes the threat of global pandemics and empowers the HPA to control the spread of such diseases within Maldives (Article 7(E)).
- This includes measures at border points and collaboration with international health organizations.

Local Collaboration

- The Act emphasizes collaboration between the HPA and local councils during public health emergencies (Article 7(F) & 7(I)).

- This ensures a coordinated response effort at the national and local levels.

The Public Health Protection Act plays a vital role in mitigating the health impacts of disasters and protecting public health in Maldives by outlining a framework for identifying, preparing for, and responding to public health emergencies.

3.1.5 The Disability Act (Law: 8/2010)

The Maldives Disability Act plays a crucial role in promoting DRR by ensuring the inclusion and protection of Persons with Disabilities (PWDs) during emergencies and disasters.

Promoting Inclusion

- Equal Rights and Opportunities (Article 2(D) & 2(E)): The Act emphasizes the importance of ensuring equal rights and opportunities for PWDs, including their participation in all sectors of society. This fosters a more inclusive environment where PWDs can contribute to and benefit from DRR efforts.

- Accessibility (Article 18(A)): The Act mandates accessibility in crucial areas like roads, buildings, transportation, information, and communication. This ensures PWDs have equal access to essential services and can participate in disaster preparedness and response activities.

Enhancing Safeguards in Disasters

- Disaster Planning (Article 28): The Act requires that disaster preparedness plans incorporate the input of disability councils. This ensures the specific needs and considerations of PWDs are addressed in planning for emergencies.

- Prioritized Protection (Article 29(A)): The Act prioritizes the safety and protection of women and children with disabilities during disasters, recognizing their increased vulnerability. This ensures they receive the necessary assistance during emergencies.

The Disability Act strengthens the country's DRR framework by promoting inclusion and ensuring specific safeguards for PWDs in Maldives. This contributes to a more equitable and effective approach to disaster preparedness, response, and recovery leaving no one behind.

3.1.6 Construction Act (Law: 4/2017)

The Construction Act contributes to DRR in several ways, playing a vital role in building a safer and more resilient built environment.

Safer Buildings

The Act mandates a building code (Article 39) that prioritizes resident safety during disasters such as thunderstorms, earthquakes, and building collapse. This code focuses on:

- Safe construction practices and materials to minimize damage, injuries, and loss of life (Article 39(A)).
- Fire safety measures, particularly important in densely populated areas like Malé (Article 39(A)).
- Safe evacuation procedures to ensure occupants can escape buildings quickly and safely in an emergency (Article 39(C)).

Faster Reconstruction

- The Act facilitates swift reconstruction after disasters through emergency construction permits (Article 30(B)(3)).
- This allows for quicker repairs and helps get essential structures back in operation rapidly following a disaster.

Identifying Unsafe Structures

- Articles 48 and 49, along with their corresponding regulations, provide criteria for identifying buildings that pose safety hazards. While not solely focused on natural hazards, these provisions are essential for assessing structures damaged by such events.

- By outlining specific situations where a building is considered dangerous, the Act helps authorities prioritize repairs or demolition of unsafe structures after disasters (Articles 48 & 49), promoting public safety during reconstruction efforts.

Sustainable Building Practices

- The building code's emphasis on sustainable development principles (Article 39(D)) can contribute to long-term DRR.

- Sustainable construction practices consider factors like climate change and resource efficiency, potentially leading to buildings that are more resilient to future disasters.

In conclusion, the Construction Act plays a significant role in DRR by promoting safer buildings, facilitating faster reconstruction where necessary, identifying unsafe structures, and encouraging sustainable building practices. It potentially incorporates more disaster-specific regulations and aims to address limitations in the current code. The Act can be further strengthened as a tool by prioritizing the formulation of the supplementary documents which enhance building regulations and enforcement.

3.1.7 Armed Forces Act Maldives (Law: 1/2008)

The Maldives Armed Forces Act plays a vital role in DRR by outlining the Maldives National Defence Force's (MNDF) responsibilities during emergencies. While national security remains the primary focus, the Act contributes to DRR in multiple key ways. It is also important to note that the MNDF is the primary responders in hazard incidents in Maldives in most cases.

Emergency Response and Relief

- The Act mandates MNDF to provide immediate relief to the public during emergencies (Article 2(D)).

- It further assigns a leading role in coordinating responses to hazard events (Article 7(D)), encompassing critical tasks like search and rescue, evacuation support (including maritime rescue - Article 7(F)), and collaborating with other agencies in such situations.

Critical Response Capabilities

- The MNDF is responsible for essential firefighting services (Article 7(E)), crucial during emergencies.

- The Act empowers them to mobilize for essential operations at sea during maritime emergencies (Article 7(F)), highlighting their vital role in protecting lives and property in coastal communities. This includes search and rescue but can encompass a broader range of emergency response functions at sea.

Enhancing National Resilience

The Armed Forces Act establishes a foundation for the MNDF's critical role in disaster response. Further integration with national DRR strategies could optimize their contribution. This could involve:

- Clearly Defined Protocols: Developing clear protocols for MNDF deployment and resource allocation during emergencies (e.g., hazard type, severity) can ensure a swift and effective response.

- Joint Training and Planning: Regular joint training exercises with civilian DRR agencies can foster better communication and coordination during emergencies.

By fulfilling its emergency response mandate and possessing crucial capabilities for essential operations at sea, the Maldives Armed Forces Act plays a significant role in the country's DRR framework. Further integration and collaboration can strengthen the MNDF's contributions to building a safer and more resilient Maldives.

3.1.8 Maldives Police Service Act (Law: 34/2020)

The Maldives Police Service Act contributes to DRR by outlining the responsibilities of the Maldives Police Service during emergencies and in occurrences of natural hazards.

Supporting Public Safety

Several provisions within the Act highlight the police's role in safeguarding public safety during disasters (Article 22). These include:

- Protecting lives and property: The core responsibility of the police service is to safeguard the lives, independence, rights, and property of people (Article 22(b)). This extends to protecting citizens during natural hazards and other emergencies.

- Providing support in emergencies: The Act mandates the police to provide maximum support to the public during natural hazards and similar situations (Article 22(l)). This could involve assisting with evacuations, maintaining order, or securing affected areas.

- Responding to threats: The police are obligated to offer assistance and support to anyone who feels their lives and property are at high risk (Article 22(m)). This includes situations where a natural hazard poses an imminent threat.

Ensuring safety during emergencies

- The Act emphasizes the police's role in ensuring public safety during sudden dangerous incidents (Article 22(n)).

- Natural hazards that could potentially turn into a disaster would fall under this category, requiring the police to take necessary measures to protect the public.

Enforcing Evacuations

- The Maldives Police Service Act empowers the police to play a vital role in evacuations during natural hazards (Article 98(A)). This authority allows them to assess situations where lives or property are at risk and, if no other agencies are directing the evacuation, order people to move to safer locations.

- The Act further authorizes the use of force (Article 98(B)), if necessary, to ensure compliance with these evacuation orders, promoting a more coordinated and effective evacuation process during emergencies.

The Maldives Police Service Act plays a crucial role in DRR by emphasizing the police's responsibility to safeguard public safety during emergencies. The Act empowers the police to take necessary actions, including supporting evacuations with the use of appropriate force, to protect lives and property of the Maldivian people during natural hazards.

3.1.9 Maldivian Red Crescent Act (Law: 7/2009)

The Maldivian Red Crescent Act establishes a legal framework for the humanitarian organization to alleviating suffering in various situations, including disasters. Within this framework, the Act's provisions demonstrate a strong alignment with key principles of DRR.

Broad Focus on Alleviating Suffering

The Act prioritizes mitigating the negative impacts of emergencies, which aligns with the goals of DRR. Article 3a emphasizes providing humanitarian aid, which can encompass a wide range of activities during disasters, such as distributing food, water, and shelter, as well as providing medical assistance. This broad focus ensures the Maldivian Red Crescent can adapt its response to the specific needs of each disaster situation.

Response and Recovery Focus

Providing humanitarian aid, protecting victims, and supporting vulnerable populations during disasters are essential pillars of disaster response and recovery efforts (Articles 3b 1-4). The Act specifically empowers the Red Crescent to assist victims during war, conflict, and peacetime emergencies, highlighting its commitment to comprehensive response capabilities.

Vulnerability Reduction

By specifically focusing on the weak and vulnerable during emergencies, the Maldivian Red Crescent helps to reduce the long-term impacts of disasters on these at-risk groups, a key aspect of DRR (Article 3b-3). This focus can include providing targeted assistance to the elderly, children, PWDs, or those living in geographically challenging areas.

Government Collaboration

Supporting government disaster response strengthens the overall capacity to manage emergencies effectively, leading to a more comprehensive DRR approach (Article 3b-4). Collaboration avoids duplication of efforts and ensures a coordinated response that meets the diverse needs of the affected population. The Maldivian Red Crescent's ability to work alongside government agencies strengthens the overall effectiveness of disaster response in Maldives.

3.2 International Framework for DRR

Maldives actively participates in international frameworks that provide a strong foundation for its national DRR efforts. These frameworks not only offer valuable guidance but also position the country as a responsible player on the global stage, committed to building a safer and more resilient future. In this section, the 3 key international frameworks with the highest relevance to DRR will be focussed. These include:

- The Sendai Framework for Disaster Risk Reduction
- The 2030 Agenda for Sustainable Development
- Paris Agreement (National Adaptation Plan - NAP) Alignment

3.2.1 What Sendai Framework for Disaster Risk Reduction means to Maldives

The Sendai Framework for Disaster Risk Reduction (SFDRR), adopted in 2015, serves as the main international DRR commitment which Maldives is signatory to currently. This 15-year plan outlines a global strategy for DRR, setting out the direction for progress in DRR. While developing a national DRR strategy fulfils a key target of the Sendai Framework (Target E), the framework offers even greater value by providing a comprehensive approach with consistent metrics to measure progress worldwide. Maldives to demonstrate its commitment to international best practices aligns its national DRR strategy with the Sendai Framework. Below is a synthesis of the SFDRR targets and how it relates to the context of Maldives.

Prioritizing Lives and Livelihoods

The Sendai Framework prioritizes saving lives and minimizing the impact of disasters on communities. Targets A and B set clear and measurable goals to achieve this.

- Target A focuses on significantly reducing disaster-related deaths, aiming for a lower average global mortality rate per 100,000 people by 2030 compared to the decade 2005-2015 baseline period.
- Similarly, Target B aims to substantially decrease the number of people affected by disasters globally compared to the same baseline period. Indicators like "number of deaths per 100,000 population" and "number of people whose dwellings were damaged" provide a clear picture of progress towards these goals.

By tracking these metrics, countries can identify areas for improvement and implement targeted strategies to save lives, prevent injuries, and minimize displacement caused by disasters. Given its vulnerability to fires, marine accidents and surface water flooding, Maldives can leverage Sendai Framework metrics to prioritize investments in early warning systems, climate-resistant infrastructure, and public education campaigns, along with enhancing response mechanisms through improved equipment. While both target A and B of SFDRR use a baseline metric from 2005 to 2015 to compare with in setting the targets, it is important to note that the lack of data within Maldives is a limitation. Nonetheless, working towards the overall direction of the target, to reduce disaster mortality and impact, remains key. By prioritizing both preparedness and response, Maldives can significantly reduce disaster risk and contribute to achieving these Sendai Framework targets.

Building Resilience across Sectors

Targets C and D of the Sendai Framework emphasize the importance of building resilience across various sectors to withstand disasters and minimise losses.

- Target C goes beyond just saving lives by focusing on reducing the economic burden of disasters. Indicators like direct economic loss attributed to disasters and damage to the tourism sector, fisheries and agriculture highlight the financial impact of disasters. By tracking these metrics, countries can identify vulnerable sectors to specific hazards and invest in strengthening infrastructure, diversifying economies, and promoting risk-informed development practices.

- Similarly, Target D focuses on the preparedness of essential services like healthcare and education. Indicators like the number of destroyed or damaged health facilities track a community's ability to respond to emergencies and maintain basic services even during disasters.

With regard to Target C, the Maldivian context on DRR requires a strong focus on protecting its economic lifeblood; tourism and fisheries. Indicators like "direct economic loss" attributed to disasters can be heavily influenced by damage to these sectors. Disrupted tourism infrastructure, extreme hydrometeorological hazards such as cyclonic conditions and the impacts of coastal erosion can significantly impact visitor arrivals and revenue generation. Similarly disruptive wind patterns and extended periods of rough seas can cripple the fisheries industry, a vital source of income and food security for Maldivians.

Considering target D in Maldives, as stated earlier, indicators like "number of destroyed or damaged health facilities" are crucial. With critical infrastructure concentrated near the coast (over 70%) (Ministry of Environment, 2020a), coastal hazards at the scale of disasters can have a devastating impact on essential services. Upgrading these facilities to withstand coastal floods, wave surges, and tidal waves (see Chapter 2: hazard assessment) is essential. However, moving forward, innovative and potentially lower-cost construction techniques may be necessary due to limited resources. Additionally, prioritizing the relocation of critical facilities, especially healthcare centres, to safer inland areas can significantly improve preparedness.

National Strategies and International Support

The Sendai Framework acknowledges that achieving disaster risk reduction requires a global effort. Targets E and F highlight the importance of both national and international collaboration.

- Target E recognizes the need for national ownership by encouraging countries to develop and implement national and local DRR strategies.

- Target F complements target E by highlighting the importance of international cooperation. Under target F, developed countries are encouraged to provide financial aid (Official Development Assistance - ODA), technology transfer, and capacity building programs to support developing nations in implementing the Sendai Framework.

This National DRR Strategy aligns with Target E of the Sendai Framework, reflecting Maldives' commitment to developing and implementing a comprehensive DRR strategy. This strategy has been formulated in close collaboration with NDMA to ensure its practical application within the Maldivian context. This focus on practicality will strengthen the strategy's effectiveness in reducing disaster risk across the country.

Given the unique vulnerabilities of Maldives as a Small Island Developing State (SIDS), international cooperation is even more critical for the country's success in implementing the Sendai Framework. There are several ways in which Target F can be beneficial for Maldives.

Financial Aid (ODA): ODA from developed countries can support Maldives in critical areas like:

- Building and maintaining seawalls and other coastal protection infrastructure to address rising sea levels.
- Investing in early warning systems for tsunamis, wave surges, and surface water floods.
- Funding climate change adaptation programs to improve resilience to extreme weather events.
- Funding research for more nature-based solutions that build coastal resilience.

Technology Transfer: Collaboration can provide Maldives with access to advanced technologies for:

- Disaster preparedness, such as improved weather forecasting and monitoring systems.
- Disaster risk reduction, such as fire-resistant building guidelines and flood-resistant housing designs.
- Disaster response, such as deployment of new search and rescue technologies and equipment.

Capacity Building: International cooperation can help build the capacity of Maldivian institutions and communities for:

- Strengthening the NDMA to effectively coordinate disaster response efforts through enhancing the staff capacity at the Authority.
- Training local communities in disaster preparedness and risk reduction measures.
- Educating the public on disaster safety and evacuation procedures.

Early Warnings and Public Awareness

The Sendai Framework's Target G plays a critical role in fortifying Maldives' DRR strategy. This target emphasizes "substantially increasing the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030." By achieving this target, Maldives can significantly improve its preparedness for disasters.

While international collaboration is key in achieving all targets of the SFDRR, for target G, partnering with international organizations can facilitate the development of a robust multi-hazard early warning system (MHEWS) for Maldives. Further, resources gained through Target F, be it financial aid or technology transfer, can be utilised to acquire advanced equipment and expertise. This can include:

- Improved weather monitoring systems
- More accurate tsunami detection capabilities
- Advanced flood forecasting technologies

With these advancements, timely and accurate warnings can be issued to at-risk communities, enabling early evacuation and life-saving measures.

Improving Access to Disaster Risk Information is another crucial aspect of Target G. Collaboration with international partners can significantly support Maldives in this areas as partners can assist in developing comprehensive disaster risk assessments that identify vulnerabilities and potential hazards across the islands.

Critically, these disaster risk information materials and early warnings must be accessible to people with disabilities (PWDs). This requires using multiple formats, such as sign language, braille, and audio descriptions, to ensure everyone receives lifesaving information in a timely manner.

Additionally, creating accessible and user-friendly information materials in different languages spoken in Maldives, by locals and expats alike, is essential for effective communication of risks to diverse communities. Utilizing various communication channels, such as traditional mainstream media, mobile applications, and community outreach programs, is crucial for ensuring widespread dissemination of this critical information.

Through achieving Target G, Maldives can significantly improve its preparedness for disasters. Early warnings and readily available disaster risk information empower communities to take preventative measures, respond effectively during disasters, and ultimately reduce the impact of disasters on lives and livelihoods.

3.2.2 The 2030 Agenda for Sustainable Development

The 2030 Agenda for Sustainable Development, outlined in the Sustainable Development Goals (SDGs), recognizes that disaster risk reduction is an essential element for achieving a more sustainable future. Disasters can significantly hinder progress on various development goals. However, by integrating DRR principles, communities can build resilience and safeguard development gains. This section explores the specific DRR aspects embedded within different SDGs, highlighting how these goals contribute to a more disaster-resilient future both directly and less directly.

Core SDG Targets for DRR

Table 2 Summarised Core targets of DRR and their relevance to Maldives

Summarised SDG Target	Relevance to DRR in Maldives
5: Build resilience of poor and vulnerable populations to disasters	Supports building resilience of communities most affected by disasters (e.g., improving infrastructure of those living closest to the coastline/erosion line, providing disaster preparedness training focusing on hazards they are most likely to experience such as coastal flooding).
2.4: Ensure sustainable food production systems and resilient agriculture practices	Helps ensure food security in the face of disasters through climate-resilient agriculture trainings, early warning systems, and food source diversification including diversifying import source countries.
3.d: Strengthen capacity for early warning, risk reduction, and health risk management	Supports early warning systems for extreme weather events (aligned with SDG 13.3) and strengthens healthcare infrastructure to manage disaster health risks.
11.3: Enhance sustainable urbanization and disaster risk management planning	Encourages disaster-resilient urban planning practices and risk reduction measures in urban areas and in land-use planning of islands across Maldives.

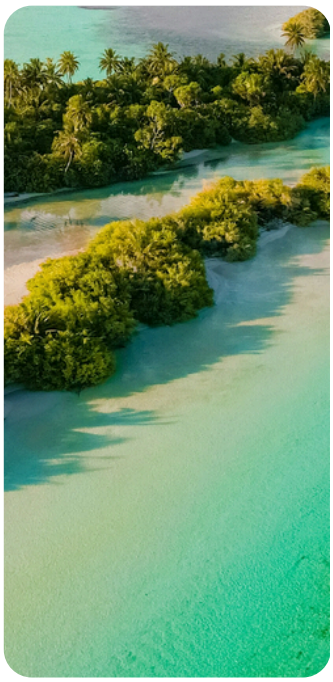
Summarised SDG Target	Relevance to DRR in Maldives
11.5: Significantly reduce disaster deaths, impacts, and economic losses	Directly addresses DRR by aiming to reduce deaths, injuries, and economic losses caused by disasters (e.g., disaster-resistant infrastructure, building code enforcement, community-based DRR plans). Directly reflects targets A, B and C of SFDRR.
11.b: Increase number of cities adopting disaster risk management plans	Strengthens disaster preparedness and risk reduction at the city level. Directly related to the SFDRR target E.
13.1: Strengthen resilience and adaptive capacity to climate-related hazards and disasters	Addresses a major driver of extreme weather events; integrates climate change adaptation measures into national policies. This links directly with the National Adaptation Plan which Maldives is currently formulating as encouraged through the Paris Agreement (see next section).
13.2: Integrate climate change measures into national policies and planning	Strengthens national preparedness for climate-related disasters (e.g., coastal flooding, sea level rise and surface water flooding) by integrating climate change adaptation into policies and planning.
13.3: Improve education, awareness-raising, and capacity on climate change	Supports public awareness campaigns on disaster preparedness and risk reduction with a focus on climate induced hazards based on hazard profiles prepared.
13.b: Promote mechanisms for capacity building in climate change planning and management	Strengthens the capacity of institutions and communities to manage climate change risks and hazards, including disaster risks.

Complementary SDG Targets for DRR

Table 3 Summarised complementary targets of DRR and their relevance to Maldives

Summarised SDG Target	Relevance to DRR in Maldives
3.9: Reduce deaths from hazardous chemicals and pollution	Reduces health risks associated with disasters by addressing existing pollution issues including air pollution related deaths and managing hazardous materials.
9.1: Develop sustainable and resilient infrastructure	Strengthens the resilience of infrastructure to disasters (e.g., building codes, flood-resistant construction).
9.4: Upgrade infrastructure and retrofit industries for sustainability	Improves the sustainability of infrastructure and industries such as tourism, fisheries and agriculture, potentially reducing their vulnerability to disasters.
9.a: Facilitate sustainable and resilient infrastructure development	Supports the development of infrastructure that is more resilient to disasters, particularly in Maldives as a Small Island Developing State.
11.6: Reduce adverse environmental impact of cities with attention to air quality and waste management	Reduces the risk of pollution and disease outbreaks after disasters by improving waste management practices while also reducing health impacts from bad air quality.
12.4: Achieve environmentally sound management of chemicals and wastes	Reduces environmental contamination risks by implementing proper chemical management practices including how flammable chemical is managed to prevent fires.
14.1: Prevent and reduce marine pollution	Reduces pollution that can harm coastal ecosystems (e.g., coral reefs) which act as natural buffers against waves and storms minimising hazard impact.
14.2: Sustainably manage and protect marine and coastal ecosystems	Protects coastal ecosystems like coral reefs and mangroves, which act as natural buffers against waves and storms, particularly relevant for Maldives.
14.3: Minimize impacts of ocean acidification	Coral reefs are vulnerable to ocean acidification, which can weaken their ability to protect coastlines. Addressing this threat can indirectly support DRR efforts.

While the targets listed above are key for directly addressing DRR in Maldives and indirectly contributing through environmental sustainability efforts, it's important to recognize the interconnectedness of the SDGs. Almost all SDG targets can be seen as relevant to enhancing DRR. For example, efforts to improve income (SDG 1: No Poverty) and reduce inequality (SDG 10: Reduced Inequalities) can indirectly improve the adaptive capacity of communities. Strengthening social and economic resilience can better equip communities towards withstanding and recovering from disasters. This highlights the importance of a holistic approach to sustainable development, where progress on all SDGs can contribute to a more disaster-resilient Maldives.



3.2.3 Paris Agreement - National Adaptation Plan Alignment

The Paris Agreement, a landmark international treaty on climate change, takes a comprehensive approach by addressing climate change through both mitigation and adaptation strategies. While mitigating climate change by reducing greenhouse gas emissions remains a crucial goal, the Agreement also recognizes the urgency of adaptation in light of the inevitable consequences of a warming planet.

Building Resilience Through Adaptation

The Paris Agreement elevates adaptation to climate change as a global priority, promoting the integration of DRR into adaptation strategies. This encourages countries to develop National Adaptation Plans (NAPs) that outline strategies for managing climate risks. These plans often include actions that directly address DRR, such as building seawalls, improving early warning systems, and investing in climate-resilient infrastructure. Through focusing on proactive vulnerability reduction and resilience building, communities can better withstand the impacts of climate change and recover more quickly from disasters.

Financial Support

The Paris Agreement establishes a framework for developed countries to provide financial support to developing countries for climate change mitigation and adaptation efforts. These funds can be used to implement DRR initiatives in developing countries, which are often more vulnerable to climate-related disasters. Maldives receives financial support through bilateral and multilateral climate financing which is reflected through the Paris Agreement. However, it is important to note that this support is far from enough to fulfil the adaptation needs of the country.

Technological Advancement

The Paris Agreement encourages international cooperation on research and development of climate-resilient technologies. These technologies can be instrumental in strengthening disaster preparedness and response capabilities. For example, advancements in weather forecasting models can provide more accurate early warnings for extreme weather events.

Long-Term Planning

The Paris Agreement sets a long-term vision for addressing climate change. This long-term perspective encourages countries to invest in sustainable development practices that reduce vulnerability to climate risks over the long haul. This connects the Agreement to the SDGs as it is the primary framework that provides the guidance for a country to develop more sustainably.

National Adaptation Plan for Maldives

Maldives' National Adaptation Plan is currently under development.The government prioritizes ensuring alignment between the NAP, the DRR Strategy, the National Disaster Management Plan, and any other relevant policies that address disaster risk reduction. This comprehensive approach guarantees that these documents complement each other, avoiding duplication of effort, given their shared focus. To maximize this synergy, a separate document titled “Roadmap and workplan for the DRR/CCA processes that links to the National Adaptation Plan processes” (Appendix C) has been prepared. It details how each step of the NAP development process outlined by UNFCCC (2012) can be aligned with the DRR Strategy/plan development process. This ensures a more coordinated strategy for climate change adaptation and disaster risk reduction in Maldives.

4 Stakeholder Consultation

Developing a robust DRR strategy requires a multi-faceted approach. While hazard assessments, national mandates, and international commitments provide crucial frameworks, stakeholder consultations are equally essential for formulating effective DRR priorities that reflect the ground realities of the national context and the perspectives of those who are at the forefront of implementing policy that relates to DRR.

4.1 Meetings with State and Government Institutions

A comprehensive consultation process was undertaken, involving 42 representatives of 17 core government stakeholders from various ministries and agencies directly or indirectly involved in DRR across its different stages (as detailed in Chapter 2). These consultations, conducted in-person, went beyond simply informing stakeholders of the hazard assessment results. Stakeholders were actively engaged in refining the hazard scoring based on their expertise, clarifying their roles and responsibilities in hazard impact scenarios, and identifying potential areas for improvement within the overall approach to DRR in Maldives. The discussions were designed with open ended questions on how strategic changes could improve the efficiency of DRR in Maldives. A detailed list of participants and their contact details is included in Appendix B, providing a record of the valuable contributions made by these stakeholders.

4.2 NGO Consultation Workshop

Beyond government agencies, a collaborative effort was undertaken to incorporate the perspectives of civil society organizations. Eight NGOs and Community-Based Organizations (CBOs) were actively engaged through a dedicated workshop held at NDMA. This workshop served two primary purposes.

Firstly, it facilitated discussions aimed at identifying areas for improvement within the overall DRR strategy. By bringing together diverse stakeholders, the workshop adopted a collaborative environment where participants could share their unique experiences, insights and importantly, their constructive criticism. This collective knowledge exchange proved invaluable in pinpointing potential gaps and areas for strengthening the DRR approach.

Secondly, the workshop provided a platform for these organizations to contribute to the qualitative hazard assessment through scoring. Printed sheets to include their scoring were provided to the NGOs and CBOs after randomly dividing them into 3 groups. This was then presented at the end by each group.

The NGO and CBO participation ensured a more comprehensive understanding of the risks by incorporating the perspectives of those who are often directly affected by disasters on the ground. A detailed list of NGO/CBO participants and their contact details are included in Appendix B.

4.3 Thematic Summary of Stakeholder Consultations

This thematic summary analyses key messages from stakeholder consultations regarding the development of a national DRR strategy for Maldives. The consultations aimed to gather diverse perspectives and identify priorities for building resilience against common hazards faced in Maldives and how the response could be improved. Here's a breakdown of the key themes that emerged.

Collaborative Approach for Effective DRR:

A consistent message from stakeholders was the importance of collaboration and partnership in implementing DRR related efforts. Stakeholders representing government agencies, NGOs, and communities all emphasized the need for a unified approach that leverages the strengths of each sector. This collaborative spirit extends to working with regional and international partners for knowledge sharing and resource mobilization.

Strengthening Roles and Responsibilities in Disaster Management:

Several stakeholders across various institutions highlighted the need for clear and well-defined roles and responsibilities during disaster situations. This includes establishing a comprehensive coordination framework that outlines the roles of government agencies, NGOs, and communities at all levels. Having a clear structure ensures a more efficient and coordinated response in the aftermath of a disaster. This highlighted that although there may be a structure in place, it was not clear for the stakeholders as it has not been communicated well among them.

Building Capacity for Inclusive Disaster Risk Reduction:

Stakeholders emphasized the importance of building capacity for DRR across all levels of society. This includes:

- Community Engagement: Equipping communities with the knowledge, skills, and resources they need to prepare for and respond to disasters is essential for building overall resilience. Stakeholders highlighted the importance of engaging vulnerable groups, including persons with disabilities (PWDs), in preparedness efforts.
- Capacity Building for Institutions: Stakeholders representing various government agencies identified the need for capacity building within their own institutions. This includes training personnel on emergency response procedures, data collection, and risk communication strategies.

Integrating Traditional Knowledge and Local Solutions:

Stakeholders recognized the value of incorporating traditional knowledge and practices into DRR strategies. Indigenous communities and historical knowledge into DRR even in Maldives contains valuable insights into local hazards, effective coping mechanisms, and sustainable resource management practices which are being lost over time. For example, in the past, it was highlighted that communities were more aware of the wind patterns and the 'Nakaiyy system' which they considered in docking their vessels around the island throughout the year. Integrating these traditional practices can strengthen the overall DRR approach and ensure its cultural sensitivity.

Utilizing Existing Mechanisms and Addressing Resource Constraints:

Several stakeholders highlighted the importance of leveraging existing mechanisms for disaster preparedness and response. This includes strengthening existing early warning systems, communication channels, and evacuation plans. Stakeholders also acknowledged resource constraints as a potential challenge for implementing the DRR strategy. Exploring innovative financing mechanisms and resource mobilization strategies will be crucial for long-term sustainability,

Addressing Data Gaps and Strengthening Risk Assessment:

Stakeholders emphasized the need for continuous data collection and risk assessment to inform DRR strategies. This includes improving data collection on local hazards, vulnerabilities, and historical disaster events. Strengthening risk assessment methodologies will ensure that DRR efforts are targeted towards the most critical areas and potential threats.

Communication, Education, and Public Awareness:

Stakeholders across various sectors highlighted the importance of effective communication, education, and public awareness campaigns. This includes raising public awareness about disaster risks, promoting preparedness measures at the household level, and ensuring clear communication channels during emergencies. Further, stakeholders emphasised on the need for impact based forecasting and the need for how people should react to early warning messages.

Conclusion

The stakeholder consultations provided valuable insights for developing a comprehensive and effective DRR strategy for Maldives. The thematic areas identified above highlight the importance of collaboration, clear roles, capacity building, and a multi-faceted approach that integrates local knowledge, existing mechanisms, and ongoing risk assessment. By taking these messages into account, the DRR strategy can be designed to effectively address the needs and priorities of stakeholders.

5 Priority Areas for DRR

This DRR Strategy prioritizes seven key areas. They are in alignment with the SFDRR priorities and targets. These priorities address various aspects of disaster risk management, from understanding and preventing risks to development of a culture of preparedness and ensuring effective recovery. While grounded in the SFDRR framework, these priorities also incorporate the specific needs and vulnerabilities identified through comprehensive discussions outlined in the previous sections.

Priority 1: Leveraging Existing Governance Structure and Strengthening Legal Framework

- Build upon the existing governance framework established by the Disaster Management Act. This ensures a well-defined structure with clear roles and responsibilities for national and local government agencies, NGOs, and communities.

- Strengthen the legal and regulatory framework for disaster risk management by:

    o Reviewing and updating existing laws and regulations related to building codes, land-use planning, and the overall governance of disaster management.

    o Developing new legislation to address emerging threats and ensure all stakeholders have clear roles and responsibilities with this being thoroughly communicated among them.

    o Ensuring alignment of existing efforts on DRR, streamlining the direction of the NAP, DRR Strategy, short term and long term development plans.

- Promote mechanisms for enforcing existing laws and regulations related to disaster risk reduction.

- Strengthen regional and international cooperation for knowledge sharing, local capacity building and resource mobilization in support of DRR efforts.

Priority 2: Enhanced Multi-Hazard Risk Assessment with Vulnerable Populations in Focus

- Conduct comprehensive multi-hazard risk assessments that incorporate not only historical data and risk modelling but also climate change projections and cascading effects of multiple hazards. Utilize advanced technology for data collection and analysis, such as remote sensing for mapping vulnerabilities and high-performance computing for simulating disaster scenarios.

- Focus risk assessments on vulnerable populations like women, children, and PWDs. This includes identifying and mapping vulnerabilities in geographically dispersed communities and specifically building an understanding of the challenges vulnerable communities face due to hazard impacts.

- Regularly update and publish risk assessments and disseminate information in accessible formats for informed decision-making at different levels of government.

- Enhance capacity of NDMA and relevant institutions in producing and maintaining hazard risk data and vulnerability assessment data.

Priority 3: Building Resilience Through Infrastructure and Nature

- Integrate disaster risk reduction into infrastructure development and maintenance practices, enforcing the building code.

- Promote disaster-resilient construction techniques and ecosystem-based approaches utilising principles of green infrastructure in as early as the project planning and conceptualisation phase.

- Implement and integrate sustainable coastal zone management practices to minimize land loss and erosion. This could include coastal belt restoration, green infrastructure projects, and responsible coastal development practices.

- Ensure principles of resilience are integrated into land-use planning of islands by providing local governments with guidance on technical aspects of how spatial planning should consider DRR and future Climate Change Adaptation.

Priority 4: Empowering Communities for Effective Response

- Develop capacity building programs tailored to the needs of women, children, PWDs, and other vulnerable groups, equipping them with disaster preparedness skills.

- Launch public awareness campaigns, or expand through existing platforms, to educate the population about disaster risks, mitigation, and response strategies through different forms of media and platforms.

- Facilitate community participation in DRR planning and implementation processes, ensuring their voices are heard and needs are addressed.

- Strengthen the capacity of local governments for disaster preparedness by providing them with the resources and training material necessary to develop and implement effective IDMPs tailored to specific island needs.

Priority 5: Strengthening Early Warning Systems and Preparedness

- Upgrade and expand early warning systems to cover multiple hazards (surface water flooding, wave surges, tsunamis) and effectively reach all communities by utilizing advanced technologies for wider coverage and faster alerts.

- Develop localized communication strategies for effective early warning dissemination in multiple languages ensuring these messages are covered in multiple languages spoken by locals and expat communities alike.

- Strengthen risk transfer mechanisms by encouraging disaster insurance uptake and exploring public-private partnerships for post-disaster financing solutions.

- Support to formulate or enhance community preparedness plans with evacuation procedures, search and rescue trainings and execute drills to test preparedness capacity.

- Ensure alignment with roadmap and pillar actions specified on the Early Warnings for All (EW4ALL) campaign for Maldives, in implementing activities strengthening early warning capacity.

Priority 6: Strengthening Recovery and Livelihood Resilience

- Develop programs to support communities in repairing damaged homes and infrastructure, building back better, ensuring safe and habitable dwellings.

- Implement initiatives to support affected businesses and individuals in restoring and diversifying livelihoods.

- Establish a social support system to address the basic and emotional needs of vulnerable populations during the recovery phase.

- Enhance assessing criteria of needs for those recovering from a disaster, ensuring implementation of potential risk-transfer mechanisms.

Priority 7: Cultivating a Culture of Safety and Climate Resilience

- Integrate DRR and climate change education into the national curriculum at all levels, fostering disaster preparedness, risk and hazard awareness, and understanding of climate change impacts.

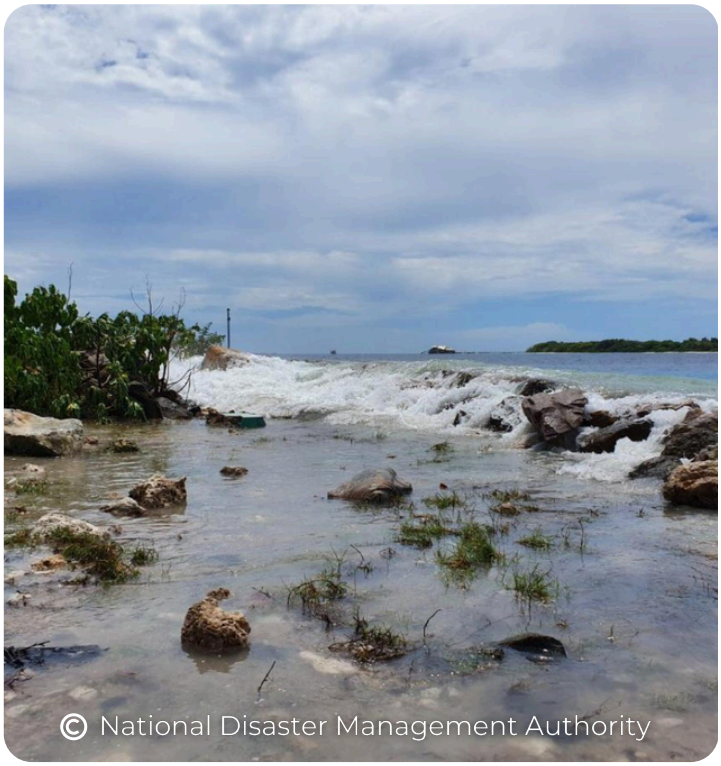
- Launch public awareness campaigns to educate the broader population on various hazards, mitigation measures, responsible behaviours to reduce disaster risk, and the importance of climate change adaptation strategies, emphasising on gender-sensitive and inclusive DRR culture.

- Promote knowledge sharing and best practices on climate-resilient DRR approaches through workshops, training programs, and information exchange platforms for stakeholders at all levels.

- Establish a national DRR and climate resilience monitoring and evaluation framework to track progress, identify areas for improvement, and ensure the continuous effectiveness of DRR strategies in a changing climate.

- Enhance risk and resilience research, policy-research collaboration along with thorough private sector engagement in resilience and risk reduction.

The seven priorities outlined in this chapter provide a comprehensive framework for building a more resilient Maldives. In addressing various aspects of disaster risk reduction, from strengthening governance structures and legal frameworks to promoting a culture of safety and climate resilience, these priorities are designed to create a nation better equipped to withstand future disasters. This multi-faceted approach goes beyond simply preparing for immediate response; it emphasizes proactive measures to mitigate risks, build community resilience, and ensure a swift and comprehensive recovery process. By integrating disaster risk reduction considerations into infrastructure development, land-use planning, and livelihood diversification initiatives, Maldives can not only minimize the potential impact of disasters but also create a more sustainable and prosperous future for its citizens.



6 Conclusion

Disaster risk reduction is of paramount importance for Maldives, a nation acutely vulnerable due to its geography, densely populated capital city, and scattered island distribution. This DRR Strategy serves as a critical foundation for safeguarding Maldives and its people from the ever-present threats of natural and human-made hazards. It marks a significant shift from a reactive to a proactive approach, prioritizing strategic actions to prevent and minimize disaster impact.

Through the implementation of the priorities outlined in this strategy, significant improvements in disaster preparedness and response could be achieved. Early warning systems will provide communities with critical lead time to prepare and evacuate during emergencies, minimizing casualties and property damage. Investments in infrastructure development, focusing on extreme-weather resistant buildings and seawalls, and through enhancing nature's own coastal defences such as coral reefs and coastal vegetation, will lessen the overall impact of disasters on communities. Empowering communities through training and awareness campaigns will equip them to respond effectively during disasters and take ownership of their safety. Strengthened emergency response protocols, evacuation plans, and resource mobilization will ensure a more efficient and coordinated response in the face of disasters. This strategy also promotes post-disaster reconstruction, livelihood restoration, and improved building codes for faster and more sustainable recovery. These collective actions will significantly reduce disaster risk and enhance the Maldives' overall resilience.

The successful implementation of this DRR Strategy hinges on sustained government commitment and collaboration across all sectors of society. Consistent budgetary allocation, coupled with strong political will and leadership, will be crucial in driving the strategy forward. While NDMA plays a critical role in leading and coordinating disaster risk reduction efforts in Maldives, continued commitment and strong leadership from the Authority will be crucial in driving the strategy forward. Fostering partnerships with NGOs, private sector entities, and local communities will ensure a comprehensive and multi-stakeholder approach to achieving disaster resilience. NGOs can contribute by providing support in training and awareness programs, while the private sector can invest in resilient infrastructure projects.

Communities play a vital role in implementing local-level solutions and ensuring preparedness at the grassroots level.

DRR efforts of Maldives already boasts several commendable initiatives, including community-based preparedness programs and national level adaptation plans. This DRR Strategy builds in line these existing efforts, ensuring continuity and maximizing impact. For instance, existing community preparedness programs can be strengthened through the training and resources outlined in this strategy. Additionally, integrating disaster risk considerations and guidance into existing coastal development plans will ensure new infrastructure is built to withstand future hazards. This strategy also seeks synergies with other national development plans, such as the upcoming National Adaptation Plan, creating a holistic approach to sustainable development and building resilience for DRR.

Building a more resilient Maldives requires a collective effort from all stakeholders. To achieve these ambitious goals, the Government implores all stakeholders – government agencies, NGOs, private sector entities, and communities – to actively participate in the implementation of this strategy. Through collaboration, action, and unwavering commitment, Maldives can emerge stronger and more resilient in the face of ever-changing environmental challenges. This strategy serves as a critical foundation, but success depends on the collaborative efforts of all Maldivians.

7 Acknowledgement

The development of this Disaster Risk Reduction Strategy is a cornerstone for building a more resilient Maldives. This achievement would not have been possible without the dedication of numerous individuals and organizations. We extend our deepest appreciation to the exceptional team at the National Disaster Management Authority (NDMA) for their invaluable support. Their expertise provided crucial background knowledge on the current state of DRR efforts in the Maldives. The NDMA team also played a vital role in facilitating stakeholder consultations and workshops, ensuring a comprehensive and inclusive strategy development process.

Furthermore, we acknowledge the significant input received from various national stakeholders, NGOs, and CBOs who actively participated in consultations. Their diverse perspectives enriched the strategy with valuable insights and considerations for a more holistic approach.

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9 Appendix A

Annex A Hazard Desk Review

Hazard Type	Hazard	Hazard Definition from the Hazard Information Profiles (HIPs) by UNDRR (2021) and by Government Agencies.*	Hazard Frequency and exposure	Hazard magnitude and sensitivity	Hazard overall Significance	Synonyms included in HIPs	Dhivehi name
Meteorological and hydrological	**Lightning**	Lightning is the luminous manifestation accompanying a sudden electrical discharge which takes place from or inside a cloud or, less often, from high structures on the ground or from mountains .	**Medium**	**Low**	**Low**	Bolt, Thunderbolt	honu elhun, vidhun
	Heatwave	A heatwave is a marked warming of the air, or the invasion of very warm air, over a large area; it usually lasts from a few days to a few weeks.	**Low**	**Medium**	**Low**	None identified	Aadhayaa hilaafah hoonu gadhavun
	Thunderstorm	A thunderstorm is defined as one or more sudden electrical discharges, manifested by a flash of light (lightning) and a sharp or rumbling sound (thunder). Thunderstorms can cause tornadoes, strong winds, and flash flooding.	**High**	**High**	**Medium**	None identified	Kolhigandu / Vidhaa Gugurun
	Coastal flooding	Coastal flooding is most frequently the result of storm surges and high winds coinciding with high tides. The surge itself is the result of the raising of sea levels due to low atmospheric pressure. In particular configurations, such as major estuaries or confined sea areas, the piling up of water is amplified by a combination of the shallowing of the seabed and retarding of return flow.	**High**	**High**	**High**	None identified	Udha araa fenn boduvun
	Surface Water Flooding	Surface water flooding is that part of the rain which remains on the ground surface during rain and either runs off or infiltrates after the rain ends, not including depression storage. Surface water flooding is caused when the volume of rainwater falling does not drain away through the existing drainage systems or soak into the ground but lies on or flows over the ground instead. This type of flooding is usually short-lived and associated with heavy downpours of rain, thunderstorms etc.	**Very High**	**High**	**Very High**	Storm surge, coastal inundation	fenn boduvun
	Haze	Haze is a suspension in the air of extremely small, dry particles invisible to the naked eye and sufficiently numerous to give the air an opalescent appearance.	**Medium**	**Medium**	**Low**	Surface detention, Depression storage	dhun fuss
	Smoke	Smoke is a suspension in the air of small particles produced by combustion.	**Low**	**Medium**	**Medium**	Not available	dhun
	Ocean Acidification	Ocean acidification refers to a reduction in the pH of the ocean over an extended period, which is caused primarily by uptake of carbon dioxide from the atmosphere and can also be caused by other chemical additions or subtractions from the ocean.	**Low**	**Very High**	**Medium**	Not relevant	kanduge acidity ithuruvun

Hazard Type	Hazard	Hazard Definition from the Hazard Information Profiles (HIPs) by UNDRR (2021) and by Government Agencies.*	Hazard Frequency and exposure	Hazard magnitude and sensitivity	Hazard overall Significance	Synonyms included in HIPs	Dhivehi name
Meteorological and hydrological	**Rogue Wave**	Rogue waves are extreme waves with overall or crest heights that are abnormally high relative to the background significant wave height. Rogue waves, called 'extreme storm waves' by scientists, are those waves which are greater than twice the size of surrounding waves. They are very unpredictable, and often come unexpectedly from directions other than those of the prevailing wind and waves. Since these waves are uncommon, measurements and analysis of this phenomenon are extremely rare.	**Low**	**Medium**	**Medium**	Not available	Bodu raalhu
	Sea Water Intrusion	Seawater intrusion is the process by which saltwater infiltrates a coastal aquifer, leading to contamination of fresh groundwater. With rising sea levels, saline water intrusion into coastal aquifers, surface waters and soils is expected to become more frequent and advance further inland. Salinisation of groundwater, surface water and soil resources also increases with landbased drought events, and decreasing river discharge in combination with water extraction and sea-level rise.	**high**	**high**	**Medium**	Saltwater intrusion, saltwater encroachment	fenn lonuvun
	Storm Surge	A storm surge reflects the difference between the actual water level under the influence of a meteorological disturbance (storm tide) and the level which would have occurred in the absence of the meteorological disturbance (i.e., astronomical tide). A storm surge is the rise in seawater level caused solely by a storm. It is the abnormal rise in seawater level during a storm, measured as the height of the water above the normal predicted astronomical tide. The surge is caused primarily by a storm's winds pushing water onshore. The amplitude of the storm surge at any given location depends on the orientation of the coastline with the storm track, the intensity, size, and speed of the storm, and the local bathymetry.	**Low**	**Low**	**Medium**	Not found	Thoofaanu nuvatha kolhigandehge sababun araa udha / Udha Baani
	Swell waves	Relatively larger waves (Wave Period greater than 15 seconds) generated by a distant weather disturbance (strong sustained winds / depression/cyclones), propagated as gravity waves, and travel across a long distance.*(Definition by MMS Maldives)	**Medium**	**Medium**	**High**	Not Available	Udha-Baani
	Squall	A squall is an atmospheric phenomenon characterised by a very large variation of wind speed: it begins suddenly, has a duration of the order of minutes and decreases suddenly in speed. It is often accompanied by a shower or thunderstorm .	**Low**	**Medium**	**Medium**	Gust wind	gadha vai
	Depression or Cyclone (Low Pressure Area)	A tropical cyclone is a cyclone of tropical origin of small diameter (some hundreds of kilometres) with a minimum surface pressure in some cases of less than 900 hPa, very violent winds and torrential rain; sometimes accompanied by thunderstorms. It usually contains a central region, known as the 'eye' of the storm, with a diameter of the order of some tens of kilometres, and with light winds and a more or less lightly clouded sky.	**Low**	**High**	**High**	Not Available	Baarugadha kolhigandu / Thoofaanu

Hazard Type	Hazard	Hazard Definition from the Hazard Information Profiles (HIPs) by UNDRR (2021) and by Government Agencies.*	Hazard Frequency and exposure	Hazard magnitude and sensitivity	Hazard overall Significance	Synonyms included in HIPs	Dhivehi name
Meteorological and hydrological	**Tropical Cyclone (Low Pressure Area, depression)**	A tropical cyclone is a cyclone of tropical origin of small diameter (some hundreds of kilometres) with a minimum surface pressure in some cases of less than 900 hPa, very violent winds and torrential rain; sometimes accompanied by thunderstorms. It usually contains a central region, known as the 'eye' of the storm, with a diameter of the order of some tens of kilometres, and with light winds and a more or less lightly clouded sky.	**Low**	**High**	**High**	Typhoon	thoofaan
Geohazards	**Earthquake**	Earthquake is a term used to describe both sudden slip on a fault, and the resulting ground shaking and radiated seismic energy caused by the slip, or by volcanic or magmatic activity, or other sudden stress changes in the Earth.	**Low**	**Very Low**	**Low**	Earth Tremor	binn helun
Environmental	**Air Pollution (Point Source)**	A point source of air pollution is an identifiable stationary location or fixed facility from which air pollutants are released, which may be manmade or natural in origin . Point source air pollution can be natural or man-made. A human generated point source of air pollution is one that emits a significant amount of an air pollutant from a fixed location such as an explosion, pollutants from a chimney stack or a tyre fire. Examples of point sources include power stations, steel works, foundries, incinerators, wood and pulp processors, paper mills, refineries and chemical production.	**Medium**	**Medium**	**Medium**	Point source emissions, fugitive emissions	vai thaqayyaruvun (vaki ecchakun nuvatha thanakun)
	Ambient (Outdoor) Air Pollution	Ambient (outdoor) air pollution is a leading environmental risk factor affecting urban and rural populations around the world, resulting in an estimated 4.2 million premature deaths in 2016. Ambient air pollution contains a range of pollutants (particles and gases) from a variety of sources, both natural and man-made (e.g., transport, industry, agriculture). Pollutants with the strongest evidence for public health concern, include particulate matter (PM), ozone (O3), nitrogen dioxide (NO2) and sulphur dioxide (SO2).	**Medium**	**Medium**	**Medium**	Poor air quality, Smog	Vai thaqayyaruvun
	Biodiversity Loss	Biodiversity loss refers to the reduction of any aspect of biological diversity (i.e., diversity at the genetic, species and ecosystem levels) in a particular area through death (including extinction), destruction or manual removal; it can refer to many scales, from global extinctions to population extinctions, resulting in decreased total diversity at the same scale.	**Medium**	**Medium**	**Medium**	Not found	Dhirey thaketheege sindhafaathukan dhahvun
	Forest Declines and Diebacks	Forest declines and diebacks are episodic events characterised by premature, progressive loss of tree and stand vigour and health over a given period without obvious evidence of a single clearly identifiable causal factor such as physical disturbance or attack by primary disease or insect.	**Low**	**Low**	**Medium**	Stand level dieback, canopy level dieback	gaskara nethi dhiyun

Hazard Type	Hazard	Hazard Definition from the Hazard Information Profiles (HIPs) by UNDRR (2021) and by Government Agencies.*	Hazard Frequency and exposure	Hazard magnitude and sensitivity	Hazard overall Significance	Synonyms included in HIPs	Dhivehi name
Environmental	**Deforestation**	Deforestation is the conversion of forest to other land use independently of whether human-induced or not.	**High**	**High**	**High**	None identified	Gas kendun (bodethi sarahaddhutha h)
	Forest Invasive Species	Forest invasive species are any species that are non-native to a particular forest ecosystem and whose introduction and spread causes, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.	**Medium**	**High**	**Medium**	Forest Pests	Invasive soofaa soofeenge undhagoothah
	Wildfires	Wildfires are any unplanned or uncontrolled fire affecting natural, cultural, industrial and residential landscapes	**Medium**	**Medium**	**Low**	Bush fires	Valuthereygai hingaa alifaanuge haadhisaa
	Loss of Mangroves	Mangroves and the destruction of mangrove habitat is caused by both human and natural causes. Human activities in the form of farming, aquaculture, urban development and natural stressors such as erosion and extreme weather have driven mangrove habitat loss. The hazard of loss of mangroves and their ecosystem services has devastating socioeconomic and environmental consequences for coastal communities, especially in those areas with low mangrove diversity and low mangrove area.	**High**	**High**	**High**	Mangrove deforestation	Kulhi, faa, chasbin nethi dhiyun
	Coral Bleaching	Corals are subject to 'bleaching' when the seawater temperature is too high: they lose the symbiotic algae that give coral its colour and part of its nutrients. Severe, prolonged or repeated bleaching can lead to the death of coral colonies.	**Medium**	**High**	**High**	Not identified	Gaa hudhuvun
	Coastal Erosion and Shoreline Change	Coastal erosion is the physical reduction of land mass at the coast that results from the interfacing of marine, fluvial and landsliding (driven by the interactions between groundwater and the soil or rock) processes with the coast.	**Very High**	**Very High**	**Very High**	Shoreline process	rah girun
	Sand Mining	Sand mining (extraction) is defined as the removal of primary (virgin) natural sand and sand resources (mineral sands and aggregates) from the natural environment (terrestrial, riverine, coastal, or marine) for extracting valuable minerals, metals, crushed stone, sand and gravel for subsequent processing.	**Very High**	**Medium**	**High**	Not identified	Veli negun

Hazard Type	Hazard	Hazard Definition from the Hazard Information Profiles (HIPs) by UNDRR (2021) and by Government Agencies.*	Hazard Frequency and exposure	Hazard magnitude and sensitivity	Hazard overall Significance	Synonyms included in HIPs	Dhivehi name
Environmental	**Sea Level Rise**	Sea-level change (sea-level rise / sea-level fall) is a change to the height of sea level, both globally and locally (relative sea-level change) at seasonal, annual, or longer time scales due to: a change in ocean volume as a result of a change in the mass of water in the ocean (e.g., due to melt of glaciers and ice sheets); to changes in ocean volume as a result of changes in ocean water density (e.g., expansion under warmer conditions), and to changes in the shape of the ocean basins and changes in the Earth's gravitational and rotational fields, and local subsidence or uplift of the land.	**Low**	**Low**	**High**	Not identified	Lonugandu ufulun
	Eutrophication	Eutrophication is the overabundance of nutrients in a body of water that results in harmful algal blooms, fish kills, and in some cases ecosystem collapse. It is a process driven by enrichment of water by nutrients, particularly compounds of nitrogen and/or phosphorus, leading to increased growth, primary production and biomass of algae; changes in the balance of nutrients causing changes to the balance of organisms; and water quality degradation.	**Low**	**Low**	**Medium**	Not identified	Fehi kilanbu
Chemical	**Microplastics**	Microplastics are small plastic pieces less than five millimetres in length which can be harmful to the environment especially marine life. They originate from a variety of sources, including larger plastic debris that degrades into progressively smaller pieces.	**High**	**High**	**Medium**	Nano particles	Plastic kundi
	Leaks and Spills	A leak or a spill is an incident involving the uncontrolled release of a toxic substance, potentially resulting in harm to public health and the environment. Chemical incidents can occur as a result of natural events, or as a result of accidental or intentional events. These incidents can be sudden and acute or have a slow onset when there is a 'silent' release of a chemical. Chemical leaks and spills can range from small releases to full-scale major emergencies.	**Medium**	**High**	**Medium**	Not applicable	Nurakkatheri ecchehi leak vun
	Oil Pollution	Oil pollution includes the accidental or deliberate, operational spills of oil from ships, especially tankers, offshore platforms and pipelines.	**Medium**	**High**	**High**	Oil spill	Moodhah theyo elhun
Technological	**Pollution**	Pollution is defined as the presence of substances and/or heat in environmental media (air, water, land) whose nature, location, or quantity produces undesirable environmental effects.	**Very High**	**Very High**	**Very High**	Contaminatio n, Poisoning	Thaqayyaruvun

Hazard Type	Hazard	Hazard Definition from the Hazard Information Profiles (HIPs) by UNDRR (2021) and by Government Agencies.*	Hazard Frequency and exposure	Hazard magnitude and sensitivity	Hazard overall Significance	Synonyms included in HIPs	Dhivehi name
Technological	**Fire**	Fire related technological incidents can be defined as accidental or intentional events that result in the actual or potential exposure of responders and/or members of the public to a chemical hazard.	**Very High**	**Very High**	**Very High**	Not applicable	alifaanuge haadhisaa
	Building Collapse	Building collapse is the failure of load-bearing structural elements, causing a building to fall or fail catastrophically / catastrophic failure.	**Low**	**Medium**	**Medium**	Catastrophic Building failure	imaaraaiyy vettun / imaaraathun baeh vettun
	Explosion	Explosion-related technological incidents can be defined as accidental or intentional events that result in the actual or potential exposure of responders and/or members of the public to a chemical hazard.	**Medium**	**High**	**High**	Not applicable	govun
	Solid Waste	Solid waste covers discarded materials that are no longer required by the owner or user. Solid waste includes materials that are in a solid or liquid state but excludes wastewater and small particulate matter released into the atmosphere. Solid waste may include such materials as: general domestic garbage such as food waste, ash and packaging materials; human faeces disposed of in garbage; hazardous waste; healthcare waste; and disaster waste. Examples of disaster waste include plastic water bottles, packaging from other emergency supplies and other waste from relief operations, rubble resulting from the disaster, mud and slurry deposited by the disaster, fallen trees and rocks obstructing transport and communications.	**Very High**	**Very High**	**Very High**	Not available	Kuneege massalathah
	Plastic Waste	Plastic is a generic term used in the case of polymeric material that may contain other substances to improve performance and/or reduce costs, with plastic waste almost exclusively comprising one non-halogenated polymer and waste substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law.	**Very High**	**Very High**	**Very High**	Plastic pollution, Plastic debris, plastic trash	Plastic kuni
	Drain and Sewer Flooding	Drain and sewer flooding is said to occur when sewage or foul water leaks from the sewerage system (through pipes, drains or manholes) or floods up through toilets, sinks or showers inside a building	**High**	**High**	**High**	Drainage flood	narudhamaa inn najis beyruvun

Hazard Type	Hazard	Hazard Definition from the Hazard Information Profiles (HIPs) by UNDRR (2021) and by Government Agencies.*	Hazard Frequency and exposure	Hazard magnitude and sensitivity	Hazard overall Significance	Synonyms included in HIPs	Dhivehi name
Technological	**Marine Accident**	A marine accident is an event, or a sequence of events, that has resulted in any of the following occurring directly in connection with the normal operation of a marine vessel: the death of, or serious injury to, a person; the loss of a person from a ship; the loss, presumed loss or abandonment of a marine vessel; material damage to a marine vessel; the stranding or disabling of a marine vessel, or the involvement of a marine vessel in a collision; material damage to the marine infrastructures external to a vessel, that could seriously endanger the safety of the vessel or another vessel or an individual; and severe damage to the environment, or the potential for severe damage to the environment, brought about by the damage of a marine vessel.	**High**	**Very High**	**Very High**	Not available	kandumathee ge haadhisaa
	Water Supply Failure	Water supply failure is the physical shortage or scarcity in access of water supply due to the failure of institutions to ensure a regular supply or due to a lack of adequate infrastructure.	**Low**	**High**	**Medium**	Water scarcity	Fenn kendun
	Supply Chain Failure	Supply chain failure refers to an event in the supply chain that disrupts the flow of materials on their journey from initial suppliers through to final customers.	**High**	**Very High**	**Very High**	SMC Failure	mudhaa supply kurumuge massalathah
	Power Outage/ or Blackout	In the electric power domain, especially in power transmission and distribution, a power outage usually refers to a partial or total loss of power supply to some end user (e.g., population, enterprises, critical systems). Triggering factors may include accidents, equipment breakdowns, failure of control mechanisms, targeted attacks (physical or cyber), organisational errors, and natural hazards.	**Low**	**High**	**Medium**	Electricity failure, Electricity disruption, Power cut	Karantu kendun
	Road Traffic Accident	A road traffic accident, as defined by the World Health Organization (WHO), refers to any collision involving at least one moving vehicle on a public road that results in injury or death of at least one person. This definition encompasses a wide range of incidents, including collisions between vehicles, vehicles and pedestrians, cyclists, or other road users.	**Medium**	**High**	**Medium**	Road Traffic Incident, Accident	ehgamu ulhandhuge haadhisaa
	Air Transport Accident	An air transportation accident is defined as an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, in which one of the following applies: a person is fatally or seriously injured, the aircraft sustains damage or structural failure, and the aircraft is missing or is completely inaccessible.	**Low**	**High**	**Medium**	Not Available	vaige udhuhumuge haadhisaa

Hazard Type	Hazard	Hazard Definition from the Hazard Information Profiles (HIPs) by UNDRR (2021) and by Government Agencies.*	Hazard Frequency and exposure	Hazard magnitude and sensitivity	Hazard overall Significance	Synonyms included in HIPs	Dhivehi name
Health	**Epidemic (outbreak)**	The occurrence of cases of disease in excess of what would normally be expected in a defined community, geographical area or season.	**High**	**High**	**High**	Not applicable	Epidemic/ outbreak
	Pandemics	According to the World Health Organization (WHO), a pandemic is "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people."	**Low**	**High**	**High**	Not applicable	Aalamee Vabaa

10 Appendix B

Meetings with Key Stakeholders in developing the DRR Strategy

Name of Representative	Name of Representative	Designation	Email	Date
Maldivian Red Crescent	Ibrahim Shameel	Manager, Programmes & Services	ibrahim.shameel@redcrescent.org.mv	12/27/2023
Maldives Meteorological Service	Ahmed Rasheed	Director Meteorology, Public Weather Service	ahmed.rasheed@met.gov.mv	12/28/2023
Male' City Council	Ahmed Zameer	Councilor	xamyr33@gmail.com	1/7/2024
	Shamheeza Ahmed	Director	Shammu.ahmed101@hotmail.com	
Ministry of Climate Change, Environment and Energy	Mohamed Azan	Environment Analyst	Mohamed.azan@environment.gov.mv	1/7/2024
Environmental Protection Agency	Hashim Nabeel	Senior Environment Analyst	Hashim.nabeel@epa.gov.mv	1/7/2024
Ministry of Tourism	Fathimath Shifa	Director	shifa@tourism.gov.mv	1/7/2023
	Fathimath Rifga	Program Officer	Fathimath.rifga@tourism.gov.mv	
Maldives Marine Research Institute	Ahmed Riyaz Jauharee	Deputy Director General	Khadeeja.ali@mmri.gov.mv	1/8/2024
	Khadeeja Ali	Senior Research Officer	Riyaz.jauharee@mmri.gov.mv	
Ministry of Agriculture and Animal Welfare	Ali Amir	Director	ali.amir@agriculture.gov.mv	1/8/2024
	Hussain Faisal	Director	hussain.faisal@agriculture.gov.mv	
Ministry of Housing and Urban Development	Mohamed Imad	Chief Project Executive	mohamed.imad@housing.gov.mv	1/9/2024
	Mohamed Shafee	Director General - Maldives Land and Survey Authority	mohamed.shafee@mlsa.gov.mv	
	Aman Khaleel	Senior Planning Analyst	aman.khaleel@housing.gov.mv	
	Samaha Ali Mohamed	Senior Planning Analyst	samaha.ali@housing.gov.mv	
	Ahna Abdullah Shujau	Planning Analyst	ahna.abdulla@housing.gov.mv	
	Fathimath Nazeera	Planning Analyst	fathimath.nazeera@housing.gov.mv	
	Aishath Saadh	Deputy Director General	aishath.saadh@housing.gov.mv	
	Ahmed Shaniu	Assistant Director- Maldives Land and Survey Authority	ahmed.shaniu@mlsa.gov.mv	

Name of Representative	Name of Representative	Designation	Email	Date
Ministry of Finance	Ahmed Zayan Mohamed	Economist	ahmed.zayan@finance.gov.mv	1/9/2024
	Azyan Hameed	Fiscal Analyst	azyan.hameed@finance.gov.mv	
Ministry of Economic Development	Ahmed Ifthikhar	Director	ahmed.ifthikhar@trade.gov.mv	1/9/2024
	Farisha Fath'hulla	Assistant Director	farisha.fathuhulla@trade.gov.mv	
HPA Maldives	Ibrahim Ashraf	ADHS	i.ashraf@health.gov.mv	1/10/2024
	Fathimath Ana	Public Health Coordinator	ana@health.gov.mv	
Local Government Authority	Khadeeja Abbas	Assistant Director	khadeeja.abbas@lga.gov.mv	1/10/2024
	Ibrahim Sharaf Thaufeeq	Snr. Planning Officer	Ibrahim.sharaf@lga.gov.mv	
Ministry of Social and Family Development	Ashfa Hamdi	Snr. Social Protection Officer	ashfa.hamdi@gmail.com	1/10/2024
	Aminath Rifga	Social Services Coordinator	aminath.rifga@msfd.gov.mv	
	Fathimath Zahira	Complains Officer	fathimath.zahira@msfd.gov.mv	
	Barra Ibrahim	Child Protection Coordinator	barra@msfd@gov.mv	
	Fazza Fuad	Child Protection Coordinator	fazza@msfd@gov.mv	
	Mohamed Rasheed	Child Protection Coordinator	rasheed@msfd.gov.mv	
Communications Authority of Maldives	Mohamed Thaufeeq	Deputy Director General	thaufeeq@cam.gov.mv	1/24/2024
	Ali Misbah	S.T	misbah@cam.gov.mv	
Maldives National Defence Force	Colonel Mohamed Nadheem Ibrahim	MNDF FRS	nadheem4348@gmail.com	1/31/2024
	Lt. Ahmed Firushan	MNDF FRS	firhash22@gmail.com	
	Lt Col Zaeem	MNDF CG	ahmed.zaeem@mndf.gov.mv	
	Major Abdul Latheef Ali	MNDF CG	abdullatheef.ali@mndf.gov.mv	
Special Envoy for Climate Change office	Ali Shareef	Special Envoy for Climate Change	ulfath.ibrahim@po.gov.mv	2/19/2024
	Ulfath Ibrahim	Assistant Director	ulfath.ibrahim@po.gov.mv	2/19/2024

NGO / CBO

Date of workshop	NGO/CBO	Representative	Email Address
2/5/2024	**Zero Waste Maldives**	Ahmed Afrah Ismail	ahmed.afrah.ismail@gmail.com
	Save Maldives Campaign	Humay Abdulghafoor	savemaldives@gmail.com
	Maldives Space Research Organisation	Ahmed Niyaz	ahmedniyaz92@gmail.com
	Maldives Resilient Reefs	Aminath Shaha Hashim	a.shaha.hashim@gmail.com
	Small Island Geographic Society	Zara Athif	ra@sigsmaldives.org
	Giraavaru Male' Citizens Association	Ibrahim Shujad	giraavaruassociation@gmail.com
		Aishath Hassan	
		Ahmed Nazeer	
	Transparency Maldives	Hassan Mohamed	hassan@transparency.mv
	Ecocare Maldives	Maeed Mohamed Zahir	maeed.zahir@ecocare.mv

11 Appendix C: Roadmap and workplan for the DRR/CCA processes that links to the National Adaptation Plan processes

1.Introduction

Maldives demonstrates a commendable commitment to building a comprehensive resilience strategy by acknowledging the inherent linkages between disaster risk reduction (DRR) and climate change adaptation (CCA). This document presents a strategic overview of the crucial integration between the National Adaptation Plan (NAP), currently in its initial conceptualization phase, and the DRR Strategy and Plan, highlighting the critical alignment of priorities and the optimization of resource utilization.

This strategic juncture provides a unique opportunity to seamlessly incorporate DRR considerations into the NAP from its very inception. Although the Ministry of Climate Change, Environment and Energy of Maldives has yet to finalize specific implementation activities for the NAP, indicative technical guidance drawn fromUNFCCC (2012) offer valuable insights into potential areas where DRR and NAP processes can synergistically collaborate.

To ensure focused integration efforts, a thorough understanding of the specific risks and vulnerabilities faced by the Maldives is paramount. This broader context would further strengthen the document and underscore the significance of this forward-thinking initiative in bolstering the nation's long-term resilience.

Framework of DRR/CCA processes that links to the National Adaptation Plan processes

Elements of NAP Processes focussing on DRR and CCA	Indicative Activities	Linkage with DRR Strategy processes
Element A. Lay the Groundwork and Address Gaps		
1) Initiating and launching of the national adaptation plan (NAP) process	• Conduct briefings to policymakers about climate change adaptation challenges and opportunities, and the NAP process in particular. • Designate the spearheading or coordinating mechanism. • Create or enhance a national vision and mandate for the NAP process • Operationalize the NAP process through access to support • Define a framework and strategy, as well as a road map, including sequencing of various NAPs and a monitoring and evaluation plan, for the NAP process	• Introduction to UNDRR consultant formulating DRR Strategy and team at NDMA set to formulate the National DRR Plan. • Aligning vision of DRR Strategy and the national vision and mandate of NAP. • Ensure NAP roadmap aligns with objectives on the DRR Strategy and the Strategic Action Plan of the government (Long term and short term).
2) Stock-taking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process	• Conduct a stocktaking of on-going and past adaptation activities • Synthesize available analyses of current and future climate at the broad national/regional level • Coordinate compilation and development of a (distributed/shared) database for the NAP process • Conduct a gap analysis to assess strengths and weaknesses regarding the capacity, data and information, and resources required to effectively engage in the NAP process • Assess potential barriers to the design and implementation of adaptation activities	• Input from NDMA on both soft and hard components of building resilience implemented by the Authority. • Comments from NDMA being integrated into the synthesis of national and regional level climate.
3) Addressing capacity gaps and weaknesses in undertaking the NAP process	• Develop and enhance enabling institutional and technical capacity for undertaking the NAP process. • Identify and enhance awareness of potential opportunities for the integration of climate change adaptation in development planning at different levels. • Design and implement climate change programmes on communication, public awareness-raising and education.	• Involve NDMA policy teams in capacity development activity to formulate NAP for a thorough understanding of the process. • Share with NDMA the material being prepared for public awareness and education on climate change and align with DRR Strategy objectives and priority actions in implementing activities.
4) Comprehensively and iteratively assessing development needs and climate vulnerabilities	• Compile information on main development objectives, policies, plans and programmes. • Identify synergies between development and adaptation objectives, policies, plans and programmes	• Ensure alignment of NAP with National Development Plan and the government's Strategic Action Plan, focusing on the main areas on adaptation and disaster risk reduction. • Synergize activities ensuring elimination of any potential duplication of action between NDMA's work and other implementing agencies.

Element B. Preparatory Elements		
1) Analysing current climate and future climate change scenarios	• Analyse current climate to identify trends in variables and indices that could be used to support planning and decision-making. • Characterize broad future climate risks and levels of uncertainty using scenario analysis at the national level or as part of a regional analysis. • Communicate projected climate change information to all stakeholders and the public.	• DRR Strategy's Hazard desk review to be shared to compliment analysis of current climate trends, hazard exposure, sensitivity and overall significance of hazard risk. • Consultative meetings with policy team at NDMA.
2) Assessing climate vulnerabilities and identifying adaptation options at sector, subnational, national and other appropriate levels.	• Assess vulnerability to climate change at sector, subnational, national or appropriate levels (by applying applicable frameworks). • Rank climate change risks and vulnerabilities. • Identify and categorize adaptation options at multiple scales to address priority vulnerabilities	• Identify hazards with the highest significance from the hazard desk review based on stakeholder feedback, statistics and judgement. • Propose actions of improving resilience and adaptation for prioritised vulnerabilities based on significance.
3) Reviewing and apprising adaptation options	• Appraise individual adaptation options, including economic, ecosystem and social costs and benefits, and possibilities for unintended (positive and negative) impacts of adaptation measures.	• Align activity with strategic priorities on the DRR Strategy.
4) Compiling and communicating national adaptation plansompiling and communicating national adaptation plans	• Compile draft national adaptation plans and make them available for review. • Integrate review comments into the national adaptation plans and process endorsement at the national level as defined in the mandate for the NAP process. • Communicate and disseminate the national adaptation plans widely to all stakeholders in the country.	• Integrate comments on NAP from NDMA policy department to ensure coherence with DRR Strategy and DRR Plan.
5) Integrating climate change adaptation into national and subnational development and sectoral planning	• Identify opportunities and constraints for integration of climate change into planning. • Build and enhance capacity for integrating climate change into planning. • Facilitate the integration of climate change adaptation into existing national and subnational planning processes.	• Involve policy department of NDMA in integrating climate change into planning ensuring alignment with DRR Strategy and plan. • Involvement of NDMA policy department in existing national and subnational planning processes of climate change adaptation.

Element C. Implementation Strategies		
1) Prioritizing climate change adaptation	• Define national criteria for prioritizing implementation based, inter alia, on: development needs, climate vulnerability and risk and existing plans. • Identify opportunities for building on and complementing existing adaptation activities.	• Input from NDMA on disaster loss data to help prioritisation of adaptation needs. • Hazard risk review to inform significance of climate hazards in helping prioritise adaptation activities.
2) Developing a (long-term) national adaptation implementation strategy	• Define a strategy for the implementation of adaptation actions including target areas/beneficiaries, responsible authorities, timing, sequencing of activities and the mobilization of resources. • Implement concrete adaptation measures based on the national adaptation plans through policies, projects and programmes	• Align with the DRR Strategy's priority actions and the activities of the DRR Plan. • Ensure alignment of DRR objectives with the National Strategic Action Plan for the next 5 years and the long-term plan for 20 years. • Integrate input from the Policy Department of NDMA for the implementation stage.
3) Enhancing capacity for planning and implementation of adaptation	• Strengthen institutional and regulatory frameworks for addressing adaptation in the long-term at national and sectoral levels. • Design and implement training, on an on-going basis, on the NAP process at sectoral and subnational levels to facilitate adaptation planning at those levels. • Implement outreach on NAP process outputs at the national level and promote international cooperation	• Integrate trainings on adaptation carried out by NDMA such as the Community Based Disaster Risk Management training with activities that are to be implemented through the NAP processes.
4) Promoting coordination and synergy at the regional level and with other multilateral environmental agreements	• Promote coordination of adaptation planning across sectors. • Identify and promote synergy in assessment, planning and implementation of adaptation at the regional level, as appropriate. • Identify and promote opportunities for synergy with other multilateral environmental agreements in the formulation of respective plans, capacity-building and during implementation	• Ensure regional level adaptation planning and implementation is carried out through discussion between NDMA and implementing agencies via regular meetings that discuss activities planned. • Ministry of Environment keeping an up-to-date log of projects and programmes carried out on adaptation and resilience building, identifying gaps which could be supported through multilateral and bilateral aid.

Element D. Reporting Monitoring and Review		
1) Monitoring the NAP process	• Identify (few) areas of the NAP process that would be evaluated through qualitative and quantitative performance measures as part of an assessment of progress, effectiveness and gap analysis. • For the areas identified above, define specific metrics for documenting progress, measuring and communicating levels of effectiveness and assessing gaps under the NAP process, and a data collection plan.	• Ensure activities completed through the NAP implementation are reflected on the DRR Strategy and Plan's implementation framework. • Align data collection plans between agencies to complement each other preventing any duplication of work. • Establish and implement data sharing mechanisms between agencies including parameters and areas of focus.
2) Reviewing the NAP process to assess progress, effectiveness and gaps	• Review, on a regular basis, activities undertaken as part of the NAP process by evaluating the information and metrics collected as part of the monitoring of the NAP process. • Compile and synthesize information from new assessments and emerging science, as well as the results and outcomes and lessons learned from adaptation activities being implemented, to support the review and update of the NAP and related outputs. • Integrate efforts to address inefficiencies and gaps identified during the review into relevant steps and activities of the NAP process	• Establish a review committee of NAP involving NDMA and key stakeholders. • Ministry of Climate Change and Environment to lead and organise meetings which look into effectiveness of NAP outputs. • With input from the review committee, address inefficiencies and gaps in the NAP implementation processes
3) Iteratively updating the national adaptation plansty for planning and implementation of adaptation	• Update the national adaptation plans, and related documentation, at a frequency specified in the national mandate, framework or strategy for the NAP process, by repeating selected steps as appropriate. • Work towards aligning the production of updates to the NAP outputs with relevant national development plans.	• Ensure NAP outputs are reflected on monitoring framework of DRR Strategy and Plan. • Share data through review committee workshops aligning priorities and activities.
4) Outreach on the NAP process and reporting on progress and effectiveness	• Disseminate the NAP documents and related outputs to the UNFCCC secretariat and to other relevant stakeholders, as these become available. • Provide information in national communications on progress in and effectiveness of the NAP process	• Ensure NAP outputs are also reflected in the Sendai Framework reporting for areas of common reporting. • Share and integrate comments from NDMA's policy department regarding NAP progress. • Update DRR strategy and plan's monitoring frameworks based on the output completion of the NAP process.

3. Reference

UNFCCC. (2012). NATIONAL ADAPTATION PLANS - Technical guidelines for the national adaptation plan process. https://unfccc.int/files/adaptation/cancun_adaptation_framework/application/pdf/naptechguidelines_eng_high__res.pdf