



Ministry of Tourism and Environment

Maldives' Third Nationally Determined Contribution

**National Climate Action Plan Towards Resilience
and Low-Carbon Development**

February 2025

Country Overview

The Maldives is highly vulnerable to the impacts of climate change due to its low-lying nature, geography, and socio-economic characteristics including its narrow economic base. It is particularly vulnerable to rising sea levels, coastal erosion, extreme weather events, and changes in marine ecosystems, all of which threaten the livelihoods, critical infrastructure, and cultural heritage of its people. Recognised as one of the most at-risk countries globally, the Maldives ranks second in the Multidimensional Vulnerability Index (MVI), underscoring its severe structural fragility and limited resilience to external shocks.

Climate-induced events, such as increased frequency and intensity of storms and extreme weather events are causing significant economic and non-economic loss and damage to the country. Climate change impacts key economic sectors such as tourism, fisheries, and agriculture. The tourism industry, which is the backbone of the Maldives' economy, and is dependent on the natural environment including coral reefs, white sandy beaches, marine and coastal ecosystems, is expected to suffer from climate change and associated impacts. This further threatens the value of these nature-dependent services, reducing the country's tourism revenues. The fisheries sector, a primary source of livelihood for many island communities, and the main source of protein of the population, is also affected due to shifting fish stocks caused by changing ocean temperatures and acidification.

Similarly, agriculture and food security face challenges due to limited arable land and scarcity of water resources, making it heavily dependent on food imports to meet the country's demand and needs. Hence, the Maldives is acutely vulnerable to supply shocks and disruptions, as the country imports over 90 per cent of its food.

Public health is also impacted by climate change and vulnerability, including changes in rainfall patterns, increased prevalence of water- and vector- borne diseases, and extreme heat events, which cause significant health impacts. Furthermore, critical infrastructure such as public utilities, healthcare facilities, telecommunication and transport systems are exposed to coastal hazards and extreme events, requiring additional investments to climate-proof such infrastructure and facilities. Additionally, changing rainfall patterns, characterised by prolonged dry periods, fewer rainy days, and more intense storms, further exacerbate the country's water security, demanding alternative options for the provision of safe and reliable water throughout the year.

As a small island developing state, the Maldives' vulnerability is magnified by limited financial, human resource, technological, and technical capacity constraints. To address the challenges caused by climate change, the Maldives spends a significant portion of its domestic resources, often exceeding its capacity, which could otherwise be utilised towards providing basic services to its citizens. Despite these challenges, the Maldives

has made notable progress in its climate action. These efforts have been driven by multisectoral participation and collaboration, strengthened by political commitments.

While significant strides have been made in building resilience, the Maldives' ability to continue strengthening its adaptive capacity is constrained by its limited fiscal space. The country continues to rely heavily on international support to effectively implement climate action. This is further hindered by constraints in accessing international climate finance, which is necessary for the country's resilience-building efforts and for addressing existing and evolving climate challenges. International support, including finance, technology transfer, and capacity building remains critical to meeting the national sustainable development agenda.

Education, training, public advocacy, and awareness initiatives are central components of the Maldives' climate agenda. Significant investments have been made in education, focusing on developing human resources equipped to address climate and environmental challenges. While significant advancements have been made, further capacity enhancements remain necessary in these areas, especially in skills development, innovation, technology, and research.

Although the Maldives' contribution to global greenhouse gas emissions stands at only 0.004%, the country has committed to advancing its emission reduction and mitigation efforts aimed at reducing greenhouse gas emissions and transitioning to a sustainable, low-carbon economy. These efforts primarily target key emission sectors such as electricity generation, transport, and waste management.

A key priority of the Maldives' mitigation strategy is to reduce reliance on imported fossil fuels by harnessing locally available renewable energy resources such as solar energy. However, this remains a challenging task due to limited space, geography and the availability of renewable energy sources. Increasing the share of renewables lowers dependence on fossil fuel imports and enhances national energy security. It also cuts down government expenditure on energy, including the provision of electricity services, and reduces emissions.

Significant progress has been achieved in this area through various initiatives, including deployment of solar installations, upgrading of electricity grids and power production facilities, strengthening of legal frameworks to promote renewables, enhancement of governance mechanisms, and efforts to encourage investments. The Maldives is actively promoting community and private sector participation in energy conservation and renewable energy initiatives, ensuring the country's transition towards a sustainable energy future.

The Maldives has outlined strategic pathways for transforming the energy sector while supporting economic growth. Efforts are underway to diversify the energy mix, improve energy efficiency, and expand access to affordable, reliable, and modern energy services.

However, additional support is necessary to achieve these targets and address ongoing challenges faced by the sector, including the need for climate-proofing of utility infrastructure against the impacts of climate change.

The geographic uniqueness of the Maldives poses challenges for reducing emissions from the transport sector. The country's geographic dispersion and highly scattered population make transport of people, goods, and services fuel-intensive and costly. Efforts to reduce emissions from the transport sector are underway through a number of initiatives such as the introduction and promotion of sustainable transport systems, replacement of inefficient transport fleets through different approaches, and the introduction of appropriate policies and guidelines to promote fuel and energy efficiency.

Considering the limited land space and the fragility of island ecosystems, waste management has been a growing concern in the Maldives. Efforts are in place to mitigate emissions in this sector, through the establishment of waste and resource management centres throughout the country and regional waste management facilities in selected locations with feasible emission reduction options. The Maldives also promotes a circular economy by encouraging waste reduction, reuse, and recycling while integrating Extended Producer Responsibility mechanisms.

To foster behavioural change, efforts are in place to promote education and awareness campaigns to engage all community actors. Investments in waste management infrastructure and advanced technologies are also being prioritised to support sustainability goals, along with promoting public-private partnerships to enhance collaboration. While the Maldives continues to advance its mitigation efforts, successful implementation of these initiatives requires extensive international support, including financial assistance, technology transfer, and capacity-building.

The submission of the Maldives Third Nationally Determined Contribution represents a crucial step in the country's ongoing commitment to global climate action and sets out the country's vision for 2035. This NDC serves as the National Climate Action Plan, outlining goals towards increasing resilience and a low-emission development pathway in achieving the country's sustainable development agenda. The NDC was prepared in close consultation with all relevant stakeholders, aligning its targets, goals, and strategies with national development needs and sectoral priorities, while maintaining the country's continuous climate advocacy efforts.

Given the urgency to address climate challenges and the short window to minimise loss and damage, the Maldives is compelled to allocate scarce domestic resources to fund 44.07% of climate finance expenses, despite being one of the most vulnerable countries to the adverse impacts of climate change and contributing negligible global emissions. The provision of adequate and effective international support is critical for the Maldives to deliver climate action and offset the significant climate risks faced by the country.

Mitigation

The Maldives' mitigation actions and targets demonstrate a strong commitment to transitioning toward low-carbon development. The country is focused on enhancing energy security, improving the transport sector, and strengthening waste management systems to reduce emissions from these key sectors. However, as a small island developing state with limited resources, the successful implementation of the mitigation actions outlined in the NDC depends on receiving adequate support, including financial resources, access to technology, capacity-building, and other essential means of implementation.

The Maldives' 2035 Target

The Maldives is committed to **reduce 1.52 million tonnes of CO₂eq in 2035, conditional on receiving adequate support and financial resources, technology, capacity building, and other means of implementation in the context of sustainable development.** Achieving this target will require significant international support to provide the necessary financing required to implement the mitigation actions required to achieve the target.

Information to facilitate clarity, transparency and understanding (ICTU) of nationally determined contributions, referred to in decision 1/CP.21, paragraph 28

The Maldives submitted its first Nationally Determined Contribution (NDC) in 2015, followed by its second NDC in 2020. The Maldives' third NDC follows the decision 6/CMA.3 which states; *"Encourages Parties to communicate in 2025 a nationally determined contribution with an end date of 2035, in 2030 a nationally determined contribution with an end date of 2040, and so forth every five years thereafter"*.

The Maldives is actively working towards achieving the goals outlined in its NDCs. The third NDC follows the ICTU guidance similar to the previous NDCs.

1. Quantified information on the reference point (including, as appropriate, a base year)

(a) Reference year(s), base year(s), reference period(s) or other starting point(s)

Target is set relative to the projected emissions upto 2035 under the BAU scenario which is 6.03 million tonnes of CO₂eq.

(b) Quantifiable information on the reference indicators, their values in the reference year(s), base year(s), reference period(s) or other starting point(s), and, as applicable, in the target year

This information will be reported in the Biennial Transparency Reports.

(c) For strategies, plans and actions referred to in Article 4, paragraph 6, of the Paris Agreement, or policies and measures as components of nationally determined contributions where paragraph 1(b) above is not applicable, Parties to provide other relevant information

In addition to ongoing efforts, further actions will be taken to achieve NDC targets. A brief description is provided below:

- **Scaling Up Renewable Energy (RE):**
 - Meet 33% of electricity needs from renewable energy sources.
- **Enhancing Energy Efficiency:**
 - Expand standard labelling program as it goes into mandatory implementation.
 - Enhance and upgrade electricity grids to reduce energy loss in power generation facilities nationwide.
- **Waste Management:**
 - Develop and operationalise three regional waste management systems in the Maldives.
 - Expand composting programmes across the Maldives to promote waste-to-resource recovery.
 - Remediation of the two largest dumpsites and establish island waste and resource management centres throughout the country.
- **Transitioning to More Efficient Transport:**
 - Introduce national vehicle emissions standards.
 - Expand public transport networks throughout the entire country.
 - Introduce incentives to promote electric (EV) and hybrid vehicles.

(d) Target relative to the reference indicator, expressed numerically, for example in percentage or amount of reduction

A reduction of 1.52 million tonnes of CO₂eq in 2035, conditional on receiving adequate support and financial resources, technology, capacity building, and other means of implementation in the context of sustainable development.

(e) Information on sources of data used in quantifying the reference point(s)

- The base year information is as per the Maldives Energy Supply and Demand Survey 2010-2012.
- The two main macro socioeconomic indicators for emission projections are GDP and population.
 - Till 2022, Actual GDP published by Bureau of Statistics is used.

- Beyond 2022, GDP projections issued by the Ministry of Finance in the Macroeconomic Update June 2024 is used.
- Population growth projections from 2014-2054 from the MBS.

Detailed description of the LEAP based baseline projection methodology is included in the Annex of the Maldives' Biennial Transparency Report.

(f) Information on the circumstances under which the Party may update the values of the reference indicators

The values of reference indicators may change if:

- Actual data for economic indicators used in the model for reporting years become available (e.g., GDP and population); and
- Underlying assumptions (e.g., technological changes) may have to be reflected.

2. Time frames and/or periods for implementation

(a) Time frame and/or period for implementation, including start and end date, consistent with any further relevant decision adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA)

Already under implementation and will continue till the end of 2035.

(b) Whether it is a single-year or multi-year target, as applicable

Single – year target.

3. Scope and coverage

(a) General description of the target

The target for 2035 is to reduce emissions under a BAU scenario, where the emissions reduction comes mainly from the energy and waste sectors.

(b) Sectors, gases, categories and pools covered by the nationally determined contribution, including, as applicable, consistent with Intergovernmental Panel on Climate Change (IPCC) guidelines

As per the IPCC guidelines, key sectors covered are

- Energy
- Waste

Gases covered:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous oxide (N₂O)

(c) How the Party has taken into consideration paragraph 31(c) and (d) of decision 1/CP.21

All key categories and gases identified as relevant have been included in the NDC. The IPPU and AFOLU sectors are not included in this NDC, as they were not identified as key categories. The Maldives will consider the inclusion of these categories in the future.

(d) Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans, including description of specific projects, measures and initiatives of Parties' adaptation actions and/or economic diversification plans

The Maldives will account for any mitigation co-benefits from adaptation and/or economic diversification in accordance with the assumption and methodological approaches as stated in Section 5.

4. Planning Process

(a) Information on the planning processes that the Party undertook to prepare its nationally determined contribution and, if available, on the Party's implementation plans, including, as appropriate

(i) Domestic institutional arrangements, public participation and engagement with local communities and indigenous peoples, in a gender-responsive manner

As the Ministry legally mandated with the climate change portfolio and empowered by the Climate Emergency Act (Act No. 9/2021), the Ministry of Tourism and Environment has prepared this NDC in consultation with all relevant stakeholders, including those in the public and private sectors. During the preparatory process, development plans and ongoing programmes and projects of different sectors were considered. The NDC was shared with the public for their feedback.

(ii) Contextual matters, including, inter alia, as appropriate:

a. National circumstances, such as geography, climate, economy, sustainable development and poverty eradication

Refer to the Maldives' National Communication and the Biennial Transparency Report.

b. Best practices and experience related to the preparation of the nationally determined contribution

During the NDC preparation process, the following best practices were considered:

- The country's financial and technical capacity
- Socio-economic analysis of mitigation measures
- A participatory approach in setting targets and defining stakeholder roles and responsibilities in achieving these targets
- Engaging with and informing policymakers on the technical and financial implications in setting and achieving the targets

c. Other contextual aspirations and priorities acknowledged when joining the Paris Agreement

Not Applicable.

(b) Specific information applicable to Parties, including regional economic integration organizations and their member States, that have reached an agreement to act jointly under Article 4, paragraph 2, of the Paris Agreement, including the Parties that agreed to act jointly and the terms of the agreement, in accordance with Article 4, paragraphs 16–18, of the Paris Agreement

Not Applicable.

(c) How the Party's preparation of its nationally determined contribution has been informed by the outcomes of the global stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement

The outcome of the first global stocktake outlines that global mitigation ambitions are insufficient to meet mitigation goals.

Despite challenging national circumstances, the mitigation targets and actions considered by the Maldives will contribute to the global mitigation goals.

(d) Each Party with a nationally determined contribution under Article 4 of the Paris Agreement that consists of adaptation action and/or economic diversification plans resulting in mitigation co-benefits consistent with Article 4, paragraph 7, of the Paris Agreement to submit information on:

(i) How the economic and social consequences of response measures have been considered in developing the nationally determined contribution

A case study titled *“Impacts of the Implementation of Domestic and International Response Measures – A Case Study on Maldives”* assessed the impacts of response measures.

Domestic measures, such as increasing renewable energy in the electricity mix, and subsidy reform were found to have positive emission reductions with minimal economic impact. These findings reinforced ongoing efforts to increase the renewable energy mix.

The study also indicated that international measures, such as increased carbon taxes on aviation and maritime transportation have significant economic impacts, primarily stemming from the aviation tax. Further consideration is needed to address these impacts.

(ii) Specific projects, measures and activities to be implemented to contribute to mitigation co-benefits, including information on adaptation plans that also yield mitigation co-benefits, which may cover, but are not limited to, key sectors, such as energy, resources, water resources, coastal resources, human settlements and urban planning, agriculture and forestry; and economic diversification actions, which may cover, but are not limited to, sectors such as manufacturing and industry, energy and mining, transport and communication, construction, tourism, real estate, agriculture and fisheries

Enhancement of the existing economic diversification plans.

5. Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals

(a) Assumptions and methodological approaches used for accounting for anthropogenic greenhouse gas emissions and removals corresponding to the Party's nationally determined contribution, consistent with decision 1/CP.21, paragraph 31, and accounting guidance adopted by the CMA;

The Maldives will account for its anthropogenic GHG emissions and removals using the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories, IPCC Good Practice Guidance and the Uncertainty Management in National Greenhouse Gas Inventories.

The applied models project the amount of energy used for every national sector based on population and economic growth. Default emission values from the IPCC 2006 Guidelines are used to derive the emissions.

(b) Assumptions and methodological approaches used for accounting for the implementation of policies and measures or strategies in the nationally determined contribution;

See 5(a) above. The Maldives will also apply specific assumptions and methodologies, where relevant, when accounting for progress made under the various policies and measures related to the implementation of its NDC in its Biennial Transparency Reports.

(c) If applicable, information on how the Party will take into account existing methods and guidance under the Convention to account for anthropogenic emissions and removals, in accordance with Article 4, paragraph 14, of the Paris Agreement, as appropriate

See 5(a) above.

(d) IPCC methodologies and metrics used for estimating anthropogenic greenhouse gas emissions and removals;

The Maldives' emissions for CO₂, CH₄, and N₂O are derived using the 2006 IPCC Guidelines, via the Reference and Sectoral approach. The Tier 1 methodology is used for emission estimates across all sectors, with a combination of Tier 1 and Tier 2 methods is applied in the transport and waste sectors for more detailed estimates.

The aggregation of GHG emissions is estimated using the 100-year time-horizon global warming potential (GWP) values from the IPCC Fifth Assessment Report.

(e) Sector-, category- or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, as appropriate, including, as applicable

(i) Approach to addressing emissions and subsequent removals from natural disturbances on managed lands;

Not applicable.

(ii) Approach used to account for emissions and removals from harvested wood products;

Not applicable.

(iii) Approach used to address the effects of age-class structure in forests;

Not applicable.

(f) Other assumptions and methodological approaches used for understanding the nationally determined contribution and, if applicable, estimating corresponding emissions and removals, including

(i) How the reference indicators, baseline(s) and/or reference level(s), including, where applicable, sector-, category- or activity-specific reference levels, are constructed, including, for example, key parameters, assumptions, definitions, methodologies, data sources and models used;

For the purpose of projections:

- Electricity consumption and waste generated per capita are used to assess energy and waste generation in the residential sector
- Energy consumption and waste generated per tourist bed night are utilised for the tourism sector
- For other industrial and commercial activities, energy consumption is normalised to GDP dollar

(ii) For Parties with nationally determined contributions that contain non-greenhouse-gas components, information on assumptions and methodological approaches used in relation to those components, as applicable

Not applicable.

(iii) For climate forcers included in nationally determined contributions not covered by IPCC guidelines, information on how the climate forcers are estimated;

Not applicable.

(iv) Further technical information, as necessary;

Not applicable.

(g) The intention to use voluntary cooperation under Article 6 of the Paris

The Maldives is currently developing the necessary frameworks and mechanisms to facilitate its participation in Article 6 activities, and exploring opportunities for voluntary cooperation by leveraging bilateral arrangements and assessing the benefits of engaging with the international carbon market.

6. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances

(a) How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances;

The Maldives considers its NDC to be both fair and ambitious given its national circumstances. The Maldives' contribution to greenhouse gas emissions stands at only 0.004% in the global share, yet the country is disproportionately affected by the adverse impacts of climate change. However, the Maldives continues to take measures and advance efforts to reduce emissions.

Due to the Maldives' heavy reliance on fossil fuels for energy, and the high cost of transitioning to renewable energy sources, such as solar and ocean energy, there are significant challenges to scaling up its climate ambitions. As per the Maldives' Biennial Transparency Report, the Maldives has installed 68 MWp of solar PV.

Moreover, the Maldives' high debt-to-GDP ratio further complicates large-scale investments in renewable energy and climate adaptation, making international support for finance, technology transfer, and capacity building critical for achieving its NDC targets.

Despite these challenges, the Maldives has set a conditional target, which is contingent on international support to achieve and could increase in ambition as additional support becomes available.

(b) Fairness considerations, including reflecting on equity;

The Maldives' NDC is grounded in the principle of equity and common but differentiated responsibilities and respective capabilities (CBDR-RC), recognising that while the country's contribution to global emissions is negligible, it is disproportionately impacted by climate change. However, the Maldives intends to be part of the global solution to achieving the goals of the Paris Agreement.

(c) How the Party has addressed Article 4, paragraph 3, of the Paris Agreement:

The target set is higher than the target submitted in 2020, and includes additional information regarding the actions to be taken.

(d) How the Party has addressed Article 4, paragraph 4, of the Paris Agreement:

Not applicable.

(e) How the Party has addressed Article 4, paragraph 6, of the Paris Agreement:

The target takes into account the national circumstances.

7. How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2

(a) How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2;

The target set and the actions identified are intended to contribute to the overall objective of the Convention: to limit dangerous anthropogenic interference with the climate system. The NDC takes into consideration that any mitigation action taken does not adversely impact ecosystems' ability to adapt naturally to climate change, ensures that food production is not threatened, and enables economic development to proceed in a sustainable manner.

(b) How the nationally determined contribution contributes towards Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement

The NDC target set will contribute to achieving the goal of limiting warming to below 1.5°C, while considering that it contributes to sustainable development and poverty eradication by reducing dependency on imported energy, and switching to more cost-effective, reliable, and sustainable energy sources.

DRAFT

Enhancing Adaptive Capacity, Strengthening Resilience and Reducing Vulnerability

The Maldives, as one of the most vulnerable countries to climate change and its impacts, considers adaptation and enhancing resilience as a high national priority. Hence, further to the outlined mitigation efforts, and in line with its first and second NDC, the Maldives' third NDC presents economy wide strategies towards increasing its adaptive capacity, strengthening resilience and reducing vulnerability to climate change.

Agriculture and Food Security

Despite its historical importance to Maldivian life, agriculture currently makes up a small fraction of the Maldivian economy at 1.2 percent of the GDP. An estimated 8000 farmers are registered across the country, with women comprising 54% of this group. However, coupled with limited arable land and high household expenditure on food, the sector faces an ageing workforce and low youth participation, with only 6.9% of farmers being young people.

Climate-related risks such as strong winds, heavy rains, floods, storm surges, rising temperatures, and prolonged dry periods threaten agricultural productivity, with sea swells causing soil salinisation and degradation. Farmers face frequent pest outbreaks during extended dry periods with increased temperatures altering behavior of recurring pests. Favourable conditions due to increased temperature and longer dry periods accelerate the development of pest resistance, leading to an increased reliance on chemical pesticides that affect food safety. Additionally, water shortages, inadequate delivery infrastructure, and lack of awareness hinder effective irrigation. Disruptions caused by unpredictable and extreme weather combined with logistical challenges in sea transport pose difficulties in ensuring a reliable food supply and the continuity of local production.

Beyond geographical constraints, the sector faces issues from water shortages and reduced economies of scale. Costly transportation for both agricultural inputs and outputs between central areas and islands are sometimes borne disproportionately by rural islands. These factors have challenged local agriculture in being cost-competitive against imports. With the Maldives now heavily dependent on imported food, this has long-term ramifications for food security due to shocks in global supply, commodity prices, supply chain disruptions, natural disasters and climate change. Additionally, reduced local food production and distribution, further challenge food security from macroeconomic shocks such as shortages in dollar supply, fiscal policy, rising interest rates and inflation.

The vulnerability of food security under such import dependence was highlighted during the COVID-19 crisis, demonstrating the need for comprehensive programmes that

integrate key areas of agriculture and food security. To sustainably address these challenges, the government proposes a set of policy interventions to ensure food affordability by bolstering local agriculture and cultivating a steady supply of locally grown crops.

Programmes for competitive agricultural development include the establishment of a scalable agricultural production zones near major population centres, and the allocation of dedicated agricultural land in all inhabited islands. Additional programmes include integrating climate-smart technological advances from vertical farming and hydroponics to modern irrigation technologies, and cultivating traditional nutrient-sensitive crops. Measures such as integrating core agricultural education in schools and promoting home-based hydroponics broaden the base of food production, creating a buffer for households against food insecurity.

Interventions to boost agricultural incomes and participation in the sector include support for women and young entrepreneurs in marketing products to both locals and tourists, developing context-specific financing products, and diversifying educational opportunities in the sector. Measures to develop high-standard animal husbandry and veterinary care, safeguarding against the entry of plant or animal diseases, and improving stewardship of forests and palm groves are key to sustainable development of the sector.

To ensure food security and promote sustainable agricultural development in the face of climate change, the following strategies have been identified:

- Strengthen agribusiness through prioritising infrastructure development in regional markets, agri-input shops, specialised transport vessels, value-added processing facilities and the establishment of cold and dry storage facilities in major regional centers to reduce post-harvest losses and stabilise market prices.
- Bolster food security by promoting self-sufficiency in key crops through increasing the local cultivation potential of local crops such as coconuts, diversifying the existing crop-base, incentivising agrotourism interventions, initiating local crop development programmes and developing mechanisms for export opportunities.
- Build the human resource capacity of the sector by enhancing agricultural training and extension systems, operationalising private agriculture extension and advisory services, improving the local higher education system, incentivising the labor market for local professionals (including youth and women) and introducing professional grading systems.
- Accelerate and mainstream the adoption of innovative and climate-smart agricultural practices including vertical farming, hydroponics, efficient irrigation systems,

greenhouse technologies, novel product certifications and agroecological production systems.

- Establish agricultural centers in strategic locations and enhancing the existing Agriculture Center as a premier national agriculture extension and research facility. This includes an operational multipurpose national agricultural laboratory, facilities for conducting accredited training programmes, provisions for participatory adaptive research, and facilities for training and demonstrations.
- Improve governance within the agriculture, food security, veterinary, and animal welfare sectors by enacting and enforcing current and planned legislation, developing institutional mechanisms to enhance the national plant protection system and integrating ICT systems for real-time data collection and management.

Enhancing Water Security

The Maldives is one of the most water-scarce countries in the world due to its coral island geology and geographical nature, further compounded by the impacts of climate change. These challenges, coupled with the country's low-lying nature, make it highly vulnerable to climate change and its associated impacts, particularly on its limited freshwater resources. Additionally, the Maldives' scattered geography and uneven population distribution pose many challenges to the provision of basic services such as water and sanitation.

The Maldives' islands lack surface water resources such as rivers, lakes, and streams, except for a few small water bodies such as wetlands containing brackish water. Groundwater and rainwater are the country's primary freshwater sources, both of which are increasingly under threat from climatic and non-climatic stressors such as climate variability, population growth, urbanisation, and pollution.

Rainfall in the Maldives varies between monsoon seasons. The southwest monsoon experiences more precipitation, during which annual average rainfall ranges from 1,779 mm in the northern atolls, 1,966 mm in the central and 2,218 mm in the southern atolls. Rainwater harvesting from rooftops is a key source of potable water, particularly among island communities, where it serves as the main supply for drinking and cooking. However, limited space, changes in rainfall pattern, extended dry periods, and safe harvesting remain major challenges for the communities dependent on rainwater for potable use. The Maldives has sought alternative solutions to provide reliable water sources for the communities, through the establishment of infrastructure to enhance water security.

Groundwater occurs as a thin freshwater lens in the islands, which is prone to stress and contamination. In many instances, over-extraction has led to groundwater depletion and saline intrusion. Hence, groundwater consumption is currently limited to non-potable use in the islands due to its high salinity and contamination.

Potable water needs are mainly met by desalinated seawater, which is widely used across the country. However, this places an additional burden on the public due to the costs associated with its production, distribution, and maintenance. To reduce this burden, the government has subsidised the provision of safe drinking water and promoted integrated water resource management through safe rainwater harvesting, groundwater use, and desalination. Additionally, the integration of renewable energy into the water and sanitation sector has been initiated to reduce fossil fuel use in water production and to reduce emissions. Various measures are also in place to establish and provide safe, reliable access to water and sanitation facilities across the country.

Climate change is placing additional stress on the limited water resources of the country because of saltwater intrusion into aquifers due to sea-level rise and sea swells.

Furthermore, changing rainfall patterns remain a major challenge, due to fewer rainy days, more intense storms, and extended dry periods leading to water shortages.

Additionally, the increased frequency of extreme events and flooding further contaminates freshwater sources, while higher temperatures deplete limited freshwater resources, particularly during extended dry periods. In recent years, precipitation-related floods and water scarcity have increased across the Maldives, potentially increasing the burden of water- and vector-borne diseases.

Furthermore, transboundary air pollution is a growing concern with the country being affected by pollution, primarily from South Asia. This impacts the air quality, particularly during the northeast monsoon, potentially affecting the quality of rainwater, which is critical to the island communities.

The combination of risks associated with climate change may place significant pressure on water security, emphasising the need for support and urgent adaptation measures towards building more reliable and sustainable water provision options.

To strengthen and enhance water security, the following strategies have been outlined:

- Increase access to safe and reliable potable water to the island communities, enhancing resilience and alleviating water stress by mobilising more resources, and increasing investments to fulfil national water and climate targets.
- Promotion of integrated water resource management through investment in community and household rainwater harvesting, alongside possible treatment methods such as filtration, incorporating sustainable groundwater use, and desalination by using renewable energy and waste heat recovery.
- Enhance water governance by strengthening the capacity of national institutions, and developing the required human resources to address emerging challenges posed by climate change.
- Develop and implement water security plans that account for the increasing frequency of extreme weather events and their adverse impacts. These plans could include building community water storage facilities, among others, to secure adequate supplies throughout the year.
- Build the capacity of water and sanitation service providers, including SOEs, local councils, community service providers, private parties, with the aim of maintaining service quality and reliability while ensuring the adoption of green and clean technologies.

- Promote water research through national institutions by facilitating collaborative opportunities with international partners, to increase readiness for building research capacities on water and climate.
- Promote the sustainable management and protection of water bodies and flood barriers through appropriate policies, and the establishment of cost-effective island and atoll-wide management systems.
- Enhance the promotion of water, sanitation and hygiene education in schools to build greater resilience in addressing emerging water- and vector-borne diseases caused by climate change.
- Develop appropriate policies, standards and other tools in line with the existing legislation, including the Construction Act (Act No. 4/2017) and the Water and Sewerage Act (Act No. 8/2020), to climate-proof water and sanitation infrastructure, encourage rainwater harvesting in buildings, promote sustainable stormwater management and groundwater recharge, and incorporate flood management options in road development programmes.
- Develop emergency water supply plans and infrastructure to address water shortages faced by the islands during prolonged dry periods and extreme events. These could include customised sea vessels and land-based water supply carriers, such as water bowlers.
- Address the skill-development needs of the sector, with a particular focus on youth, in close collaboration with national skills development agencies and the private sector. Specific attention could be given to integrating emerging water technologies and innovative climate solutions.

Infrastructure Resilience

The small size and natural layout of coral islands mean that critical infrastructure and facilities are often built near the shoreline, increasing their exposure to impacts such as sea swells, storm surges, and flooding. Critical infrastructure susceptible to climate risks include airports, utility facilities, health facilities, ports and harbors, communication infrastructure, and residential properties.

The adverse effects of climate change, including rising temperatures, exert further stress on critical infrastructure by increasing energy demands and impacting water supply systems and other essential services. These compounded risks heighten the vulnerability of critical infrastructure, and any disruption to utility systems could significantly impact living standards and the quality of life.

Long-term infrastructure resilience also requires a holistic regulatory framework, improved human capacity at both technical and policy levels, and enhanced community participation to address these challenges effectively.

To protect the Maldives' critical infrastructure from climate impacts and ensure long-term resilience, the following strategies have been outlined:

- Enhance the resilience and climate-proofing of critical infrastructure such as airports, ports, powerhouses, and utilities to withstand the impacts of climate change including rising sea levels, extreme weather events, and temperature increases.
- Strengthen the national legislative framework to advance the development and adoption of national plans, with integration of climate resilience into development activities.
- Expand energy infrastructure to meet the rising energy demand while mainstreaming energy-efficient technologies, particularly in the cooling sector, to enhance energy security and provide affordable and sustainable solutions.

Public Health

Delivering quality healthcare services to a geographically dispersed population has unique challenges which are exacerbated by climate impacts. The small size of most Maldivian islands coupled with the low land elevation exposes critical infrastructure, including health facilities, to hazards such as storm surges, sea swells, and flooding. Forecasted increases in extreme weather events have the potential to disrupt access to emergency services, unless anticipatory action plans are put in place to ensure health facilities can remain operational during and after exposure to climate hazards. Beyond the risks to health infrastructure, shifting weather patterns can result in the spread of more diseases which will expose significant portions of the population, including vulnerable groups, to adverse health risks and impose a greater burden on healthcare services nationwide.

Changes to the climate, including variability in rainfall patterns, can overwhelm healthcare services in a variety of ways, such as higher temperatures causing health complications due to heatstroke and dehydration, greater rainfall resulting in the transmission of more water-borne infections, and particulate matter contributing to more respiratory diseases among other chronic illnesses. Vulnerable subgroups within the population, including children, the elderly, and immuno-compromised individuals, will face greater difficulties in managing the symptoms of these conditions without professional medical intervention, further showing how climate change can increase the burden on public health services. Climate change can also hinder food supply chains, reduce access to potable water, and increase the risk of mental health disorders across the nation. Further research is necessary to provide a comprehensive analysis of the localized impacts of climate change on public health.

Climate change is also disrupting healthcare services by influencing vector activity. Current projections show that climate variability and change is expected to increase disease-spreading vectors in the country, ultimately resulting in greater vector borne disease transmission risk. Dengue Fever and Chikungunya are already endemic within the country, with more than 3,300 Dengue Fever cases reported in the first 11 months of 2024, which results in significant economic burdens and economic losses. While the island nation was declared Malaria-free by the WHO in 2015, there are concerns that this disease could be reintroduced locally, as was the case with Lymphatic Filariasis which reemerged in 2023 and required targeted screening efforts to prevent a nationwide epidemic. Climate change is expected to increase prevalence of these diseases and cause the reemergence of previously eradicated diseases.

The recent vector-borne disease resurgence and COVID-19 pandemic, while raising concerns on the potential reemergence of zoonotic diseases, exposed gaps, including insufficient financial and technical resources, improvement possibilities in vector surveillance methods, and the need for further investments to eliminate vector borne

diseases and control. A comprehensive Integrated Vector Management framework and its implementation arrangements are necessary to conduct vector breeding site removal activities alongside building the capacity of national health institutions to undertake scientific research on local vectors and subsequent vector control efforts. Community vector control measures such as COMBI-based models could be enhanced to increase participation of communities in vector control efforts.

Climate proofing of health infrastructure, integrating renewable energy into health facilities, and addressing health emergencies during extreme events remains a significant gap which needs to be addressed through support and capacity building.

For the Maldives to continue with its ambition towards building the resilience of the health sector, reduce climate-related morbidity and mortality, and secure good health and well-being for all, then urgent support is required to implement policies which mitigate climate risks and integrate adaptation planning.

To safeguard the Maldives from climate-induced health impacts, the following strategies have been identified:

- Enhance the resilience of health infrastructure and health services to withstand the impacts of climate change and ensure that healthcare facilities remain operational during and after natural disasters.
- Promote low-carbon, climate resilient design for future health infrastructure, placing special emphasis on energy efficiency, lower water usage and waste, and the safe disposal of toxic healthcare waste.
- Improve the national disease surveillance network by integrating climate data.
- Raise the institutional and human capacity of healthcare personnel to implement the adaptation objectives of the health sector.
- Support the strengthening of existing and planned legal frameworks across different sectors to ensure that climatic impacts on health are meaningfully considered in national legislation.
- Promote scientific research to further investigate the impact of climate change on human health and enable evidence-based decision-making in future policymaking.
- Improve awareness on public health issues, especially as it pertains to climate change, with a special emphasis on providing targeted messaging for highly vulnerable groups such as children, the elderly, and persons with disabilities.
- Strengthen mental health support services, with special emphasis given to psychological distress and trauma caused by extreme events.

Coastal Protection

The Maldives, as one of the lowest-lying countries in the world, is extremely vulnerable to climate change and its associated impacts, particularly sea level rise. With critical infrastructure such as airports, utility and health facilities, ports, harbours and communication systems situated close to shorelines, the country is highly susceptible to coastal hazards. As extreme weather events become more intense and frequent, coastal protection becomes vital. Protecting coastlines is crucial, not only for preserving critical infrastructure but also to safeguard local communities. Any damage to critical infrastructure can negatively impact the lives and livelihoods of island communities and the economy. Therefore, the development and implementation of viable coastal protection measures is essential for a resilient future for the country.

Protection of coastlines is closely linked with the country's economy, especially key sectors such as tourism and fisheries. The Maldives relies on its beaches and marine ecosystems as tourist attractions, while fishing is one of the key economic activities. Any coastline degradation therefore, will be detrimental to the main economic drivers of the Maldives.

Due to limited physical space and the lack of high ground, only some international best practices for coastal protection are viable in the Maldives. While soft adaptation measures are adopted where applicable, in addition to hard measures, the increased frequency and intensity of extreme weather events force the government to adopt and invest in hard adaptation measures such as seawalls, revetments, breakwaters and groynes. These measures often become a financial burden over time, both in terms of implementation and maintenance. In terms of soft adaptation measures, nature-based solutions such as beach replenishment and the preservation of coastal vegetation are implemented across the country. Another strategy utilised is the establishment of greenbelts, which enhances the resilience of islands by acting as a buffer.

To enhance the ongoing efforts towards coastal protection, the following strategies have been outlined:

- Enhance the use of evidence-based approaches for coastal adaptation planning and coastal zones management.
- Support the development of a national coastal management policy to ensure sustainable development and safeguard ecosystems, infrastructure, and livelihoods.
- Support the mobilisation of adequate resources to reduce communities' exposure to coastal hazards, to ensure that the islands have sufficient coastal defences.
- Promote viable technologies that will provide technical solutions to enhance coastal protection.

- Continue to facilitate coastal protection investments to ensure long-term resilience of vital coastal zones around the islands and protect communities and areas of economic activity.

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Safeguarding Coral Reefs and Biodiversity

The Maldives' rich coastal and marine biodiversity is a cornerstone of its economy, contributing to 71% of employment and 89% of the GDP. The country is home to the seventh-largest reef system and 15 species of mangroves, which provide vital ecosystem services, including nutrition, livelihoods, coastal protection and other regulatory services. Currently, there are 93 designated protected areas, including 3 UNESCO Biosphere Reserves.

However, the worsening impacts of climate change, which manifest through both slow- and rapid-onset events, including the severity and frequency of extreme events, threaten the biodiversity of the Maldives. Slow-onset events such as beach erosion are impacting coastal biodiversity including mangrove ecosystems. Rising sea surface temperatures, ocean acidification, and an increasing frequency of extreme weather events have caused widespread ecological damage, undermining livelihoods and community resilience. Coastal development and human activities also compromise natural ecosystems and their ability to recover.

Improper waste management presents a substantial threat to not only human health but also to both the marine and terrestrial biodiversity of the Maldives. In particular, among other waste streams, single-use plastic pollution has become a challenging issue in many islands, increasingly contributing to coastal pollution, highlighting the importance of an integrated waste management system in the country to address the growing concern. Furthermore, open burning is still a common practice in majority of islands due to the absence of proper waste management facilities, causing environmental health issues.

In terms of capacity, technological, financial, and institutional constraints hinder large-scale conservation efforts, protected area management, and the development of effective management plans, while limited expertise restricts research, biodiversity monitoring, and enforcement. Additionally, low public awareness of ecosystem value often drives actions that prioritise short-term gains over long-term environmental protection.

The Maldives is committed to biodiversity conservation through a range of targeted initiatives. Key efforts include the 5 million Tree Planting Programme to safeguard the fragile ecosystems and mitigate the impacts of climate change, the implementation of methods to value natural capital, coral reef monitoring, and restoration programmes, and the enhancement and expansion of the protected area network. The Maldives has also launched the "Magey Saafu Raajje" programme, *My Clean Maldives*, an initiative to address waste management challenges by streamlining efforts nationwide. These initiatives collectively represent significant strides in protecting the country's biodiversity and ecosystems.

To address the challenges in conserving coral reefs and biodiversity, the following strategies have been outlined:

- Expand the protected and conserved areas network through the establishment of ecologically representative, well-connected and effectively managed protected areas and other effective area-based management measures.
- Strengthen efforts on prevention of extinction of locally known threatened species under the Maldives red list, through species action plans and management strategies.
- Deploy advanced technologies and techniques to enhance reef monitoring and conservation.
- Strengthen institutional capacity and enhance the legal framework for biodiversity conservation to support the effective implementation of monitoring systems, access and benefit-sharing legislation, invasive species management, and alignment with global biodiversity targets.
- Mainstream natural asset valuation through the expansion of natural capital accounting for informed decision-making.
- Minimise the impacts of climate change on biodiversity and build resilience through nature-based solutions and ecosystem-based approaches.
- Strengthen existing financing mechanisms to maximise synergies between nature and climate financing, and facilitate context-specific financing instruments to conservation, protection and management of ecosystem with climate co-benefits.

Tourism

Tourism is the major economic sector in the Maldives. Since the introduction of international tourism in the Maldives, the sector has grown significantly, driven by the development of uninhabited islands into resorts, utilising the country's natural beauty, white sandy beaches, crystal-clear lagoons, rich marine life and vibrant coral reef ecosystems. These unique natural resources have shaped the development of the country's tourism product. Over the decades, the importance of diversifying tourism has been recognised, resulting in the introduction of local tourism as a strategy to create jobs and involve local communities in the industry. Due to this, the guesthouse subsector on local islands has seen remarkable growth. Sustainability principles have been considered and incorporated into product development, earning the Maldives global recognition as a sustainable island tourism destination.

Tourism plays a critical role in the Maldivian economy, contributing over 22% to the GDP. The economy is heavily reliant on tourism which supports and drives several interconnected sectors. Tourism is also an important source of foreign exchange and has been a key driver of foreign direct investment. Due to the close link between the Maldivian economy and the tourism sector, any adverse impacts of climate change will have detrimental effects on the sector and, consequently, on the economy of the country.

The tourism sector is already experiencing the negative effects of climate change. Extreme weather events have become more frequent and intense, posing significant risks to the islands and their infrastructure. Additionally, coral bleaching events due to increased Sea Surface Temperature have been occurring across the country, compromising the natural resources on which the tourism sector depends. Beach erosion is also a growing concern with nearly 45% of the tourist resorts reporting varying levels of erosion. As the Maldives' tourism product relies heavily on the natural environment, these adverse effects directly impact the long-term sustainability of the sector. Hence, building the tourism sector's resilience is crucial.

To enhance ongoing efforts to build the resilience of the tourism sector, the following strategies have been identified:

- Mainstream climate change into tourism policies and planning processes to strengthen resilience and promote sustainability.
- Enhance tourism diversification efforts to empower local island communities and improve tourism resilience through ecotourism and nature-based activities.
- Strengthen regulations and standards to climate-proof tourism infrastructure and products.

- Enhance energy security and energy efficiency in the sector by diversifying the energy mix and implementing energy-efficiency measures.
- Improve access to adaptation finance in the tourism sector including for climate-proofing tourism infrastructure, and increase investments in climate resilience through appropriate financial instruments.
- Facilitate access to affordable, high-quality climate insurance schemes tailored for small- and large-scale tourism operators.
- Expand capacity-building initiatives on climate resilience for the sector, involving all the relevant stakeholders across different subsectors of tourism.
- Strengthen public-private partnerships to effectively implement climate policies throughout the sector.

Fisheries

Fisheries constitute the second-largest economic sector in the Maldives, accounting for 90% of Maldivian exports and serving as the primary source of livelihood for Maldivians across the country. The sector generates a significant amount of foreign currency and contributes up to about 6% of the national GDP. Skipjack tuna and yellowfin tuna represent 98% of the total catch. Renowned for sustainability, the Maldives employs eco-friendly pole-and-line and handline fishing methods, which minimize bycatch and reduce ecosystem impacts. These sustainable practices have enabled the Maldives to preserve its marine biodiversity while supporting the livelihoods of its population. The country's tuna fisheries, particularly the pole-and-line skipjack fishery, have earned global recognition, including Marine Stewardship Council and Fair-Trade certifications, solidifying the Maldives' reputation as a responsible steward of marine resources.

The fish harvesting and fish processing sectors operate distinctly. The fish harvesting sector comprises small-scale and artisanal fishers who rely on traditional methods for bait fishery and other fisheries, making it a predominantly community-based activity. In smaller islands, fish processing and value addition provide an opportunity for income generation, especially for women. Women play a crucial role in value addition to the fishery product using traditional methods to produce smoked fish (valho mas), rihaakuru and other fish products. In contrast, the fish processed for export operates at a larger scale, focusing on processing and value-adding to fish products for international markets.

Beyond its socioeconomic benefits, tuna also provides essential nutritional value, as it is the primary source of protein in local diets. Consequently, the impacts of climate change on fisheries are directly tied to the food security and nutritional needs of the Maldives.

In recent years, reef-based fisheries have gained popularity in the Maldives, with tourism establishments and locals serving as the primary markets. While management strategies have focused on protecting specific reef fish species from the rising demand from the tourism industry and expansion into international markets. To ensure sustainability within the reef fishery sector, the Maldives has implemented measures such as closing critical fish habitats, including grouper spawning sites, and introducing mobile applications to enable fishers to access fishery services, submit logbook data, and apply for licenses. These efforts aim to improve data collection, compliance, and enforcement in advancing sustainable fishery practices.

As a nation heavily reliant on marine ecosystems for food and livelihoods, the Maldives faces serious concerns from both slow-onset and extreme events driven by worsening climate change. For instance, globally, Sea Surface Temperature (SST) changes have caused significant shifts in fish distribution as species migrate to cooler or deeper waters in search of optimal conditions. In the Maldives, seasonal monsoons and oceanographic factors, such as El Niño and La Niña events, heavily influence tuna fisheries, resulting in

noticeable fluctuations in skipjack and yellowfin tuna catch rates. Over recent decades, the intensification of coral bleaching events, driven by rising SSTs, has impacted the bait fishery industry. Further research is needed to identify direct impacts of climate change on the Maldivian fisheries sector.

Beyond climate change impacts, socio-economic barriers also hinder the sector's growth and necessitate targeted interventions. For example, the lack of a stable value chain to support mariculture and aquaculture, coupled with limited financial and technical capacity, has constrained sector diversification. Moreover, despite the fisheries industry's sustainable practices, challenges such as increased tariffs and restricted market access for seafood products impede its expansion. Limited financial and human resource capacity further hampers the enforcement of fisheries management policies and regulations, including efforts to combat and control illegal, unreported, and unregulated (IUU) fishing by foreign vessels within the Maldivian Exclusive Economic Zone (EEZ).

While the Maldives has on-going efforts to conduct vital scientific research to support fisheries management and promote economic diversification, additional financial and technical support is essential to enhance the research capacity.

To safeguard the fisheries sector and ensure sustainable management of marine resources, the following strategies have been outlined:

- Enhance the resilience of the fisheries sector by strengthening institutional and human capacity and targeted financial and technological interventions to support the development of the fish harvesting and processing sector.
- Facilitate innovative financing mechanisms and training programs to improve value addition among small-scale processors, with a focus on women.
- Enhance efficiency and improve quality of fish caught through innovative technologies for onboard fish handling and live-bait stocking.
- Pursue climate-friendly technologies to ensure adaptive management in the fisheries sector.
- Diversify the fisheries product portfolio to enhance resilience of the fisheries industry through exploratory fisheries, and strengthening of mariculture sector and value addition capabilities.
- Strengthen fisheries research and education to support innovation, and promote higher education and skill development in the fisheries sector.

- Strengthen monitoring, control and surveillance capacity of fisheries and ocean resources.

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Early Warning and Systematic Observation

Extreme weather events and slow-onset events, including sea-level rise, have intensified hydrometeorological hazards, posing significant threats to livelihoods, infrastructure, and ecosystems. These challenges underscore the critical need for robust multi-hazard early warning systems, climate information services for risk reduction, and effective systematic observation mechanisms to mitigate risks and enhance resilience.

To strengthen national coordination and response regarding early warning systems, the Maldives has published the Scaling Up Early Warning Systems Implementation Roadmap (2023–2027). This framework emphasises advancing risk assessments, promoting impact-based forecasting, integrating risk-detection with community-level responses, and ensuring the delivery of timely and actionable alerts. Activities under this framework include expanding the existing radar network, establishing a marine buoy network, and strengthening systematic observation capabilities to support improved climate-related data, information, and services. Real-time monitoring systems for extreme weather events such as storms and tsunamis are also being upgraded, with alerts disseminated via short message service (SMS), radio, and social media platforms.

Despite some progress, critical gaps remain in both early warning systems and systematic observation. The availability and accessibility of information and data on climatology, hydrology, and geophysics are still limited, and often require subscriptions. The geographic dispersion of islands, combined with limited resources to expand and maintain monitoring networks, further complicates the integration of observation data into actionable early warning systems. Additionally, gaps in local capacity and technical expertise hinder the effectiveness of these systems.

Research into climate trends and impacts remains a key priority, supported by initiatives including wave forecasting modelling, expansion of meteorological observation and monitoring networks, and tracking transboundary air quality. Furthermore, initiatives to integrate localised early warning systems for island communities and improve community access to climate data are underway.

To strengthen systematic observation mechanisms and early warning systems, the following strategies have been outlined:

- Enhance multi-hazard early warning systems to provide a structured approach to deliver tailored climate information for risk reduction and resilience enhancement.
- Provide customised, sector-specific climate-related data, ensuring actionable information for key industries including tourism, fisheries, and agriculture.

- Continue expanding and strengthening systematic observation networks to detect local hazards, improve disaster preparedness and response, and enhance the generation of climate-related data, information and services.
- Implement impact-based forecasting to move beyond traditional hazard prediction, to ensure communities and disaster response organisations make informed decisions.
- Promote and enhance research to understand climate trends and their associated impacts.
- Strengthen multi-hazard risk assessment processes to incorporate historical data, advanced modelling, and climate change projections.

Disaster Risk Reduction and Management

The Maldives is exceptionally vulnerable to extreme events and climate-related hazards. It faces frequent exposure to a wide range of hydrometeorological threats, including flooding, sea-level rise, storms, torrential rains, storm swells, and cyclones. These hazards pose significant challenges, with over 90% of islands experiencing flooding, and more than 60% reporting severe shoreline erosion in recent years, amid a rising frequency of extreme events. Climate change has intensified the frequency and severity of these events with projections suggesting that these trends will continue, posing escalating threats to the nation's resilience and sustainable development agenda.

The geographically dispersed nature of the Maldives presents a distinct challenge for disaster management. Each island operates as a self-contained unit, with its own critical infrastructure and key services. Additionally, variations in island geomorphology, geographic positioning, and reef and biological characteristics result in hydrometeorological hazards affecting each island uniquely.

The country is on a trajectory of economic growth alongside rapid urbanisation, which is reshaping the built environment across the islands. This shift has led to a higher concentration of population and resources in urban centres, increased vulnerability within urbanised areas, and mounting pressure on risk reduction systems that are ill-equipped to accommodate such rapid change. These challenges are further exacerbated by climate change and intensifying natural hazards, straining essential services and deepening exposure to climate risks.

The Maldives has taken a proactive approach to disaster management by developing a comprehensive risk reduction strategy, and enhancing multi-hazard early warning systems.

To enhance management and implementation of effective disaster risk reduction measures and to reduce climate vulnerability, the following strategies have been outlined:

- Strengthen the national disaster management planning and policy framework.
- Develop a comprehensive disaster risk and knowledge database to ensure hazard information and disaster management knowledge are easily accessible to communities and stakeholders.
- Integrate and streamline National Adaptation Plans and climate information with national and local disaster risk reduction strategies and management plans.

- Strengthen and expand the decentralised Community-Based Disaster Risk Management approach to promote locally led efforts and enhance community capacity to respond rapidly and effectively to emerging disasters and hazards.
- Enhance disaster preparedness by constructing and maintaining essential disaster infrastructure, including regional emergency centers, temporary shelters, and stockpiles in strategic locations.
- Improve access to essential emergency response equipment and provide training on their use.
- Continue enhancing the engagement of children, women, and vulnerable groups in the disaster management cycle, provide opportunities for them to develop disaster preparedness skills and ensure access to sufficient psychosocial support.
- Strengthen and promote a whole-of-society approach to emergency response and disaster preparedness by building capacity, awareness and disaster response skills.
- Bolster multi-hazard risk assessments by developing island and sector-specific risk assessments, hazard maps, and disaster management plans.

Loss and Damage

Loss and damage associated with the adverse effects of climate change is a lived reality for the Maldives, as the Maldivian way of life, the identity of its people, and their socioeconomic well-being are deeply interlinked with its climate-vulnerable environment. Due to being surrounded by the ocean and the dispersed nature of atoll ecosystems, island communities have long been heavily reliant on their natural environment. For generations, this setting, including the vast ocean and abundant marine life, has played a crucial role in the socioeconomic sphere contributing to livelihoods, export revenues, and food security.

The geographic isolation, small size and population, and narrow economic base that is reliant on its climate-vulnerable natural resources make the Maldives highly susceptible to external shocks and climate change. The Maldives has long been recognized as one of the most vulnerable countries globally, including in the Multidimensional Vulnerability Index, which ranked the country as the second most vulnerable in the world, highlighting its extreme structural vulnerability and lack of structural resilience.

These inherent vulnerabilities have been evident in various events, both climatic and non-climatic in nature, throughout the country's history. Several events, such as severe tidal and storm surges have caused disruptions to daily life and widespread damage to infrastructure and livelihoods. Although not climatic in nature, the 2004 Indian Ocean tsunami resulted in unprecedented losses of human life and severe devastation, resulting in damages amounting to 62% of the country's GDP. Due to climate challenges and environmental degradation, some communities have been relocated from their ancestral islands to other islands, resulting in disruptions of livelihoods, and non-economic losses, such as psychosocial impacts and loss of identity.

As a result of the worsening impacts of climate change, the Maldives experiences both slow-onset and extreme events that result in economic and non-economic loss and damage. Under current conditions, the country is experiencing a higher frequency and increased intensity of extreme events, particularly hydrometeorological hazards such as heavy rainfall, flooding, and storm surges. In August 2024, prolonged rainfall across the country led to the declaration of a state of emergency, with around 200 properties affected and several households requiring temporary shelter. This was followed by a record amount of heavy rainfall within a 24-hour period, which flooded many areas of the capital city, Male' on 3rd January 2025, resulting in significant damage, including to residential areas, requiring the provision of temporary shelters for affected people.

Island communities are also facing saltwater intrusion into aquifers affecting their water security, land loss to coastal erosion, and significant damage to livelihoods, critical infrastructure, and sites of cultural significance, among others. The loss of natural assets, including biodiversity loss, is also being observed at an unprecedented speed and scale. Frequent and intensified mass bleaching events are deteriorating marine ecosystems,

which form the resource base for the fisheries and tourism industries and are crucial to food security.

Both slow-onset and extreme events and their associated losses, are only expected to increase as climate impacts worsen. Projections indicate that, among other impacts, the Maldives will face increasingly severe dry periods, increased precipitation during the wet season, and rising sea-levels in all regions.

As a SIDS, the Maldives faces significant financial, human resource, technological, and technical capacity constraints that limit its ability to avert, minimise and address loss and damage associated with climate impacts. The recurrent nature of these events, and the limited capacity to address the compounding losses are debilitating, affecting not only the afflicted island communities' livelihoods, but also their psychosocial well-being and ability to cope. Addressing recurring loss and damage compels the country to divert limited domestic resources from sustainable development in crucial areas such as social services and education. The country also faces challenges in attracting investments, as recurrent extreme events increase risk perception and leads to increased insurance premiums.

While it is beyond the Maldives' capacity to fully address these challenges, the country continues to invest in adapting to worsening climate impacts, with a variety of measures to minimise the loss and damage. To complement these measures, there are ongoing efforts to address the inevitable challenges that communities face, including the provision of emergency water supplies during extended dry periods, and the provision of temporary shelter, and financial aid for recovery following extreme events.

To enhance ongoing efforts to address loss and damage, the following strategies have been outlined:

- Reduce the financial protection gap by expanding insurance schemes, including introducing parametric insurance for smallholders, strengthening national insurers, and improving climate data systems to facilitate swift payouts and rapid recovery for island communities.
- Strengthen national capacities and financial mechanisms to effectively access international finance for responding to loss and damage through a variety of instruments and risk management approaches and ensuring efficient and rapid disbursement of contingency funds to enhance financial response and recovery of affected island communities.

- Promote research on climate change-related economic and non-economic loss and damage to enhance the understanding of the scale and nature of the loss and damage experienced.
- Enhance the delivery of psychosocial support to affected communities in the wake of climate impacts and associated loss and damage.
- Assess tangible and intangible cultural and heritage loss due to climate change.
- Enhance the capacity of national and local institutions to address climate-related loss and damage.

Driving, Enabling and Implementing Climate Action

Finance

The Maldives' ability to undertake climate action, including in the context of sustainable development, is heavily contingent on the adequacy and effectiveness of the support receives. Achieving the targets set out in the Maldives' NDC will require substantial financial resources. Financing climate action and development will bring about the transformative shifts needed to ensure food, water, and energy security, safeguard infrastructure and key sectors, and build the resilience of island communities in a changing climate.

The Maldives is steadfast in its efforts to access grant-based and concessional climate finance, navigating the evolving landscape of financial needs and resources. To explore diverse opportunities for collaboration on climate priorities, the Maldives continues to facilitate public and private investment in climate action. This ongoing dedication will foster partnerships across a broad spectrum of stakeholders, driving forward a collective effort to address climate challenges with resilience and determination.

Given the urgency in addressing climate impacts and the economic value of natural resources, the government is compelled to allocate increasing amounts of domestic resources for resilience-building and climate action, including through the Public Sector Investment Programme and co-financing for donor supported projects. Additionally, the Maldives remains at the forefront of driving innovative financing mechanisms to incentivise private sector investments, while ensuring their alignment with national climate and development goals. Moving forward, the Maldives will enhance its enabling environment to further mobilise and attract the climate finance needed to address climate challenges.

To increase access to adequate and effective climate finance, the following strategies have been outlined:

- Periodically review and update the Maldives' Country Programme to identify climate and development priorities for seeking donor support in the urgent and immediate term.
- Facilitate direct access of national entities to international climate finance, including from multilateral climate funds and multilateral development banks.
- Sensitise stakeholders on climate finance and build technical capacity of national agencies to better access international climate finance.
- Integrate climate considerations into planning and budgetary processes, and improve existing domestic climate finance tracking capabilities.

- Operationalise a dedicated climate fund to mobilise international climate finance, streamline domestic resources, and manage efficient deployment for climate resilience building, livelihood protection and low emission development initiatives.
- Encourage public-private partnerships to facilitate climate action through a variety of measures including risk sharing mechanisms and leveraging private capital.
- Create a conducive policy and regulatory environment for attracting private sector finance in line with national climate goals.
- Explore options to foster regional partnerships and attain regional access to international climate finance through the Indian Ocean region, the Atlantic, Indian Ocean and South China Sea small island developing states, and other groupings.
- Enhance climate finance capacity to establish the Maldives as a regional climate and development centre with the function of a climate finance hub.
- Integrate climate risks into financial risk management by expanding the coverage of national insurance schemes, and diversify financial instruments used for climate action including through the issuance of sustainable bonds.

Technology

The integration of clean climate technologies is crucial to achieving the Maldives' climate targets and policies across all sectors. The unique geography, characterised by scattered low-lying islands, adds significant complexity to deploying and sustaining innovative solutions, often resulting in higher costs. These constraints necessitate the application of climate-resilient and low-carbon technologies tailored to the local context.

Notable progress in the sector includes adopting renewable energy technologies, piloting smart technologies, improving energy efficiency, implementing early warning systems, and establishing infrastructure for public transport networks, including the introduction of electric buses. However, achieving long-term ambitious climate goals necessitate scaling up efforts, enhancing local capacities, fostering innovation, and incorporating sustainable traditional knowledge.

To enhance the role of technology in addressing climate change, the following strategies have been outlined:

- Advance the adoption of low-carbon technologies by supporting the deployment of renewable energy systems and energy storage solutions to reduce greenhouse gas emissions and enhance energy security.
- Promote energy-efficient technologies across residential, commercial, and industrial sectors to reduce energy consumption.
- Promote smart and climate-resilient Internet of Things (IoT) based solutions.
- Promote technologies for electric vehicle deployment by expanding charging infrastructure, introducing battery-swapping solutions, and supporting other innovative technologies to accelerate the transition to electric mobility.
- Scale-up energy-efficient and low-emission public transport systems by enhancing infrastructure and integrating clean energy solutions.
- Integrate artificial intelligence-driven technologies and applications for efficient climate action.
- Strengthen technology transfer and innovation to advance solutions for climate action by fostering international partnerships, leveraging financial instruments, and mobilising technical support.
- Promote research, peer learning, and the development of endogenous technologies through pilot projects and local demonstrations to support sustainable solutions

tailored to the Maldives' unique context, by building on local and traditional knowledge.

- Enhance climate observation and monitoring systems by adopting advanced meteorological and oceanographic technologies and improving risk forecasting and resilience planning.
- Enhance water resource management technologies by advancing desalination systems, integrating innovative rainwater harvesting and storage technologies, deploying infiltration and drainage systems for groundwater replenishment, and modernizing distribution networks.
- Improve climate-resilient agriculture technologies by promoting innovative and traditional farming practices, salt-tolerant crops, and controlled environment agriculture whilst facilitating adequate access to technologies to address food security challenges.
- Foster gender-responsive technology adoption by ensuring equitable processes that consider stakeholder needs and promote awareness to enable a just transition.
- Implement the Climate Technology Action Plan by enhancing stakeholder coordination and establishing support mechanisms to drive sustainable technology adoption for climate adaptation and mitigation.

Gender, Children, and Youth

Vulnerable groups, particularly women, children, the elderly, persons with disabilities (PWDs), and migrant workers, are disproportionately affected by climate change. These groups have limited adaptive capacity and are more exposed to climate risks due to inherent vulnerabilities such as age, health, and access to resources.

Climate change affects men and women differently, as women face higher risks and greater burdens from its impacts. This is primarily due to gender-differentiated power dynamics, roles and responsibilities at the household and community levels, as well as disparities in economic opportunities and access to resources. Climate change exacerbates existing social, political and economic inequalities, and systemic challenges related to health, food security, access to clean water and equitable healthcare. As a result, women face the compounding impacts of climate change alongside existing challenges.

The Maldives is among the countries most vulnerable to climate change, with impacts worsening over time, while women in the Maldives face greater burdens due to these impacts. For example, as climate change impacts food security and access to adequate nutrition, this impact is felt disproportionately by women, who already face high rates of micronutrient deficiencies, such as anaemia, which affects 63% of women in the Maldives. Extreme weather events also affect women disproportionately, such as access to maternal health services being hindered due to disruptions in sea transport between outer islands as tertiary healthcare facilities are unavailable on all islands.

To ensure that the gendered impacts of climate change are addressed, women's participation at all levels of decision-making is crucial. However, unequal participation in these processes and labour markets compound existing inequalities and prevent women from fully contributing to climate-related planning, policymaking, and implementation. The continued facilitation of meaningful participation by women will enhance the effectiveness and sustainability of climate action while helping to address existing inequalities.

Children and youth are also particularly vulnerable to the impacts of climate change. From a public health perspective, climate change can cause malnutrition in children due to disruptions in access to nutritious food. Children are also more prone to dehydration and heat stress due to extreme heat and limited access to safe drinking water. Furthermore, they are among the most susceptible to complications from vector-borne diseases such as dengue fever, with dengue fever, which was listed among the five leading causes of child mortality in 2020. In addition to health impacts, climate change also negatively affects children's development by disrupting education. For example, extreme weather events such as storms and flooding can prevent children from being able to attend school.

Youth are among the most vulnerable to the impacts of climate change, facing a range of challenges that threaten their health and physical well-being, such as heatwaves, diseases, and malnutrition. Beyond physical health impacts, climate change also affects young people's mental well-being and can cause psychological distress, such as stress and anxiety, particularly following extreme weather events. Engaging youth in climate action is essential to addressing these challenges. According to the 2022 census, children and youth make up more than 40 percent of the Maldives' population, highlighting the need to prioritise their involvement in climate action.

To overcome the challenges faced by vulnerable groups in the face of climate change, the following priorities have been identified:

- Strengthen policies and institutional frameworks to address the impacts of climate change on vulnerable groups.
- Empower women's participation in key economic sectors through opportunities such as entrepreneurship, and educational and training programmes.
- Enhance women's meaningful engagement in climate action and participation in decision-making, and promote the understanding of women's roles in climate action through targeted communication strategies.
- Strengthen organisations that promote women's empowerment, including by facilitating access to financial and technical resources for gender-related programmes and climate change advocacy.
- Safeguard women's livelihoods, particularly natural resource-driven activities within the informal economic sector, from the impacts of climate change.
- Enhance the capacity of social services to address the gendered impacts of climate change.
- Promote research towards an enhanced understanding of the disproportionate impacts of climate change on vulnerable groups.
- Increase financial and technical resources for gender-related programmes and advocacy initiatives focused on climate change.
- Mainstream gender into disaster risk reduction and climate actions.
- Provide and facilitate access to relevant higher education opportunities and skill-development programmes.
- Provide career guidance in schools, with special emphasis on employment opportunities to facilitate climate action.

- Promote partnerships with local, regional, and international organisations to enable capacity building and knowledge sharing, including opportunities for intergenerational dialogue.
- Improve data accessibility and facilitate the participation of youth in climate research.
- Enhance outreach and communication on climate change, including through targeted awareness activities, to facilitate the participation of vulnerable groups in climate action.
- Facilitate meaningful engagement with vulnerable groups as key stakeholders in decision-making processes.
- Provide targeted capacity building, including through trainings and skills development for vulnerable groups to effectively participate in climate action.
- Strengthen mental health support services for vulnerable groups to address climate-induced psychological impacts.

Climate Advocacy, Education and Empowerment

The Maldives is one of the countries most vulnerable to climate change, with the increasing severity and frequency of climate impacts amplifying the need for sustained climate advocacy, education, and empowerment. Given the scale of the issue, a whole-of-society approach is essential: one that equips people with the knowledge to understand climate risks, empowers them to take action, and ensures that climate change remains a priority at all levels of governance. These factors play a critical role in building an informed and resilient society, capable of responding effectively to the climate crisis.

The Maldives has long been a leading voice in international climate advocacy, consistently highlighting its unique vulnerabilities to secure the attention and support needed to address climate change. Since the historic Small States Conference held in Male' in 1989, the Maldives has been recognised as a champion of the interests and voice of small island developing states. The resulting Malé Declaration on Sea Level Rise marked the first unified call for climate action by island nations. The Maldives then became one of the founding members of the Alliance of Small Island States (AOSIS), which advocates for small island developing states in global discussions.

While international advocacy remains critical, it must be matched with strong local engagement to drive meaningful climate action on the ground. However, limited human and technical capacity in implementing climate action continues to hinder progress. Targeted capacity-building initiatives, including specialised training, research, and educational opportunities are essential for developing the skills needed across all sectors. Raising awareness and fostering interest in climate-related career opportunities is essential for building a skilled workforce and driving sustainable growth in critical fields. Private sector involvement is equally crucial for advancing climate action. Strategic engagement with businesses, particularly in areas like renewable energy and climate-resilient infrastructure, is essential to meet climate targets.

Education plays a fundamental role in fostering climate literacy, enabling local stakeholders to understand the impacts of climate change, while equipping them with the skills to make informed decisions. Integrating climate change into both formal and informal education systems helps develop critical thinking, problem-solving skills, and adaptive behaviours that empower communities to respond to these challenges. For the Maldives, equipping future generations with the knowledge to take proactive steps is a critical priority in addressing climate action.

Public education and awareness programmes are also vital to encouraging broader societal participation in climate action. Effective climate governance requires active engagement from citizens, local councils, and community-based organisations. By increasing public awareness of the causes and impacts of climate change, individuals

can make informed choices, contribute to climate solutions, and advocate for stronger policies. Local councils and community-based organisations are play a key role in engaging communities, and integrating local knowledge into adaptation and resilience-building interventions on the ground. At the same time, the private sector is becoming increasingly involved in climate action through collaborations such as public-private partnerships, that play a crucial role in advancing renewable energy initiatives. Additionally, many businesses are also taking proactive steps through corporate social responsibility programmes that focus on climate action.

While the Maldives continues to advocate for international support, securing climate finance and investment opportunities is instrumental in implementing its ambitious climate commitments. Prioritising climate education, research, and innovation will help build the capacity and expertise needed to navigate these challenges effectively.

To advance climate governance, education, and advocacy, the following strategies have been outlined:

- Maintain recognition of the Maldives as one of the most vulnerable countries globally through international advocacy, ensuring that its unique challenges remain a focal point in global climate discussions.
- Strengthen international and local advocacy to secure investment and the financial support needed for climate action.
- Empower Local Councils and community-based organizations by building their capacities to effectively contribute to and implement climate action initiatives at the community level.
- Increase the participation of local communities and organisations in climate action by enhancing support, resources, and decision-making opportunities at the local level.
- Expand the role of the private sector in climate action by facilitating access to resources.
- Mainstream climate education to ensure the effective delivery of climate-related content across all levels of education, including enhancement of educators' skills through specialised training and professional development programmes.
- Strengthen academic and training institutions to integrate climate change into research and education.

- Expand climate change research and innovation through technical capacity building, facilitating resources for research, and developing national climate research centres.
- Promote awareness and increase access to educational opportunities in sustainability sectors and green jobs, targeting youth and young professionals pursuing higher education.
- Conduct locally tailored awareness campaigns focusing on the disproportionate impacts of climate change on vulnerable groups, including women, children, and youth.
- Formulate and implement the required legislative framework to ensure compliance with data collection, reporting, and verification of progress on climate action.
- Develop and implement a centralised data-sharing and collection platform to improve efficiency, enhance coordination, and foster data integration.
- Promote social and environmental safeguards within the public and private sector.