

Toward Risk-Aware and Climate-resilient communities (TRACT)

**Strengthening climate services and impact-based
multi-hazard early warning in Maldives**

**Annex 2a
Logical Framework**

LOGICAL FRAMEWORK

1. GCF Impact level: Paradigm shift potential (max. 300 words)

Assessment Dimension	Current state (Baseline)		Potential target scenario (Description)	How the project/programme will contribute (Description)
	Description	Rating		
Scale	Maldives has basic capacity to undertake hazard monitoring and forecasting. Data is lacking and almost half of the country's weather stations are not functioning. There is almost no capacity for impact-based forecasting. Warning and alert communication lack actionable information and there is no mechanism to determine if information is reaching the most at-risk and vulnerable population groups. Early warning systems are insufficient in scale and scope to ensure adequate risk knowledge, disaster preparedness and response capabilities.	<u>Low</u>	Paradigm shift would move away from the current reliance on limited data, risk knowledge and capacities, towards a new paradigm whereby Maldives can deliver user-driven climate information services and an end-to-end people-centred, impact-based multi-hazard early warning system (MHEWS) that contribute to enhancing resilience, reducing vulnerability, and averting and minimising both economic and non-economic loss and damage associated with the adverse impacts of climate change.	The project's outputs will enhance data, knowledge and capacities with respect to climate change adaptation and loss and damage in several areas identified under Articles 7 and 8 of the Paris Agreement, including systematic observations, early warning systems, comprehensive risk assessment and management, and resilience of communities, livelihoods, and ecosystems. Emphasis on integrating Protection, Gender and Inclusion (PGI) into disaster preparedness and risk management has the potential to support a large-scale shift in access to and use of climate information services and impact-based MHEWS by the most vulnerable population groups.
Replicability	At present, there is no capacity in Maldives to deliver sector-specific climate information services and no impact-based MHEWS exists, so replication is not yet possible.	<u>Low</u>	Supporting the delivery of high-quality, user-driven climate services and a people-centred, impact-based MHEWS in line with international good practices and standards has high potential for replication across the region and in other SIDS.	Output 2 will strengthen capacity for observations, monitoring, modelling and impact-based forecasting. Output 3 focuses on the establishment of a people-centred and impact-based MHEWS. Output 4 will contribute to enhancing public awareness and risk management capabilities and includes a dedicated activity to establish capacity for Forecast-based Action (FbA) and Anticipatory

				Action (AA). Replication potential of the project is enhanced by its alignment with and incorporation of international good practices and industry standards – including World Meteorological Organization (WMO) technical guidelines, Common Alerting Protocol (CAP) for warning content, and the IFRC Operational Framework for AA – and coordination with the global Early Warnings for All initiative.
Sustainability	The Government of Maldives' commitment to strengthening climate information services and impact-based MHEWS is evidenced by the identification of early warning as one of the priority actions in its Disaster Risk Reduction Strategy (2024-2030) ¹ Updated Nationally Determined Contribution (2020) ² and Strategic Action Plan (2019-2023) ³ . Maldives is also the first country in the world to develop and endorse a national Roadmap for Early Warnings for All (EW4All). While the institutional baseline is promising, Maldives lacks capacity for a coordinated and integrated approach to strengthening climate services and impact-based MHEWS across the entire value chain.	<u>Medium</u>	Paradigm shift would see the establishment of a sustainable business delivery model for climate services and impact-based MHEWS that fulfils public sector responsibility to provide climate services (including EWS) as a public good, whilst also developing a profitable commercial market for specialised climate analytics that meet private sector needs for the management of climate-related risks. Behavioural and attitudinal change from national to local level will support this, whereby the population of Maldives utilises climate services and impact-based MHEWS to inform actions that enhance their resilience and reduce their vulnerability to climate change and climate-related hazards.	Climate services and MHEWS play a key role in supporting climate-resilient development by enabling timely, evidence-based decision making in response to climate change and related risks. More accurate, reliable, and localised information on climate-related risks is critical to underpin resilience planning across government, sectors, and at the community level. Output 1 aims at strengthening the institutional and legislative framework to deliver sustainable and coordinated climate services and disaster risk management. Output 2 will support Maldives Meteorological Service (MMS) to enhance the generation of high-quality, high-resolution data and deliver both public good climate services and specialised climate analytics, which will create opportunities for cost recovery and private investment in the future. Meaningful engagement and participation

¹ Government of Maldives, 2024. Disaster Risk Reduction Strategy, Maldives 2024-2030

² Maldives Ministry of Environment, 2020. Update of Nationally Determined Contribution of Maldives

³ Government of Maldives, 2019. Strategic Action Plan 2019-2023

	The country lacks a “culture of preparedness” and there is limited uptake or even awareness of the value of climate services and early warning systems at the sectoral and community level.			of key stakeholders at all levels as a cross-cutting priority for the project implementation will help to promote behavioural and attitudinal shifts towards risk-informed actions for climate resilience.
--	---	--	--	--

2.1. GCF Outcome level: Reduced emissions and increased resilience (IRMF core indicators 1-4, quantitative indicators)						
GCF Result Area	IRMF Core Indicators (1-4) ⁴	Means of Verification (MoV)	Baseline	Target		Assumptions / Note
				Mid-term	Final ⁵	
<u>ARA1 Most vulnerable people and communities</u>	<u>Core 2: Direct and indirect beneficiaries reached</u>	Reports compiled by the PMU at key points of the project implementation (<i>i.e.</i> , baseline, annual performance reports, mid-point and end of project) based on data gathered from relevant national service providers and technical partners, validated by UNEP and submitted to the GCF	0	Direct beneficiaries: approx. 90,441 inhabitants (M: 51,837, F: 38,604) Indirect: approx. 64,098 inhabitants (M: 41,761, F: 22,337)	Direct beneficiaries: approx. 301,471 inhabitants (M: 172,790, F: 128,681) Indirect: approx. 213,661 inhabitants (M: 139,204, F: 74,457)	The entire population of Maldives is expected to benefit from the project (directly or indirectly). Final direct beneficiaries are calculated to be approximately 58% of the total population. This represents 90% of the individuals receiving targeted support and adaptation benefits for Sub-Activities 1.2.3, 1.2.5, 2.1.4, 3.1.4 and/or 4.1.6, assuming that the remaining 10% is unable or unwilling to gain benefits. The above interventions have been selected to be representative of the four key elements of a MHEWS while also having the specificity in targeting to avoid double counting of

⁴ The IRMF Indicators are set out in the [Integrated Results Management Framework](#)

⁵ The final target means the target at the end of project/programme implementation period. However, for core indicator 1 (GHG emission reduction), please also provide the target value at the end of the total lifespan period which is defined as the maximum number of years over which the impacts of the investment are expected to be effective.

						<p>beneficiaries. The selection and calculation of beneficiaries is further detailed in Annex 14.</p> <p>Assume that approximately 30 percent of total beneficiaries (direct and indirect) will be reached by the mid-term of the project.</p> <p>Guidance will be provided to relevant stakeholders for reporting on this indicator at the project level. It will include at least one external source of verification, e.g. survey data.</p>
<p><u>ARA1 Most vulnerable people and communities</u></p>	<p><u>Supplementary 2.4: Beneficiaries (female/male) covered by new or improved early warning systems</u></p>	<p>Reports compiled by the PMU at key points of the project implementation (<i>i.e.</i>, baseline, annual performance reports, mid-point and end of project) based on data gathered from relevant national service providers and technical partners, validated by UNEP and submitted to the GCF</p>	<p>0</p>	<p>Direct beneficiaries: approx. 90,441 inhabitants (M: 51,837, F: 38,604)</p> <p>Indirect: approx. 64,098 inhabitants (M: 41,761, F: 22,337)</p>	<p>Direct beneficiaries: approx. 301,471 inhabitants (M: 172,790, F: 128,681)</p> <p>Indirect: approx. 213,661 inhabitants (M: 139,204, F: 74,457)</p>	<p>The entire population of Maldives is expected to benefit from the project (directly or indirectly).</p> <p>Final direct beneficiaries are calculated to be approximately 58% of the total population. This represents 90% of the individuals receiving targeted support and adaptation benefits for Sub-Activities 1.2.3, 1.2.5, 2.1.4, 3.1.4 and/or 4.1.6, assuming that the remaining 10% is unable or unwilling to gain benefits. The above interventions have been selected to be representative of the four key elements of a MHEWS while also having the specificity in targeting to avoid double counting of beneficiaries. The selection and calculation of beneficiaries is further detailed in Annex 14.</p> <p>Assume that approximately 30</p>

						percent of total beneficiaries (direct and indirect) will be reached by the mid-term of the project. Guidance will be provided to relevant stakeholders for reporting on this indicator at the project level. It will include at least one external source of verification, e.g. survey data.
<u>ARA1 Most vulnerable people and communities</u>	<u>Supplementary 2.7: Change in expected losses of lives due to the impact of extreme climate-related disasters in the geographic area of the GCF intervention</u>	Reports compiled by the PMU at key points of the project implementation (<i>i.e.</i> , baseline, annual performance reports, mid-point and end of project) including analysis of data on loss of lives from national disaster loss database ⁶ (when available) and international disaster databases (e.g., DesInventar ⁷ and Sendai Monitor)	4.2 disaster-related deaths per year (averaged)	Max. 3.78 disaster-related deaths per year (averaged)	Max. 2.94 disaster-related deaths per year (averaged)	<p>According to the WMO, damage caused by a disaster can be reduced by 30% if an early warning is issued within 24 hours.⁸</p> <p>Assume that since early warning systems will be fully established only by the end of the project, a 10 percent reduction (0.42 disaster-related deaths) can be achieved by mid-term and 30 percent (1.26 disaster-related deaths) by end of project.</p> <p>According to available disaster-related data,⁹ between 1983 and 2023 (30 years), there have been 128 disasters-related loss of lives, which represents an average of about 4.2 deaths per year related to disaster in Maldives. This can be used as a baseline, averaged for the period of project</p>

⁶ To be developed under Sub-Activity 1.2.7

⁷ <https://www.desinventar.net/DesInventar/profiletab.jsp?countrycode=mdv&continue=y>

⁸ WMO, 2024. Early Warning System. Available at: <https://wmo.int/topics/early-warning-system> (Accessed: 21 November 2024)

⁹ <https://www.desinventar.net/DesInventar/profiletab.jsp?countrycode=mdv&continue=y>

						implementation.
<u>ARA1 Most vulnerable people and communities</u>	<u>Supplementary 3.1: Change in expected losses of economic assets due to the impact of extreme climate-related disasters in the geographic area of the GCF intervention</u>	Reports compiled by the PMU at key points of the project implementation (i.e., baseline, annual performance reports, mid-point and end of project) including analysis of economic data from national disaster loss database ¹⁰ (when available) and international disaster databases (e.g., DesInventar and Sendai Monitor), validated by UNEP and submitted to the GCF	\$0.5 million in annual average losses (AAL)	\$50,000 decrease in AAL	\$150,000 decrease in AAL	<p>According to the WMO, damage caused by a disaster can be reduced by 30% if an early warning is issued within 24 hours.¹¹</p> <p>Assume that since early warning systems will be fully established only by the end of the project, there will be 10 percent reduction in climate-related AAL by mid-term and 30 percent reduction in climate-related AAL by the end of the project.</p> <p>According to available disaster-related data,¹² between 1983 and 2023 (30 years), there have been losses of about USD 14.5 million, which represents an average of about USD 0.5 million per year related to disaster in Maldives.¹³ This can be used as a baseline, averaged for the period of project implementation.</p>
<u>ARA2 Health, well-being, food and water security</u>	<u>Core 2: Direct and indirect beneficiaries reached</u>	Reports compiled by the PMU at key points of the project implementation (i.e.,	0	Direct beneficiaries: approx. 90,441	Direct beneficiaries: approx. 301,471	The entire population of Maldives is expected to benefit in terms of health, well-being,

¹⁰ To be developed under Sub-Activity 1.2.7

¹¹ WMO, 2024. Early Warning System. Available at: <https://wmo.int/topics/early-warning-system> (Accessed: 21 November 2024)

¹² <https://www.desinventar.net/DesInventar/profiletab.jsp?countrycode=mdv&continue=y>

¹³ "Much of the loss data does not account for the smaller, frequent disasters associated with extensive risk. These losses are absorbed by the people affected, thereby driving further poverty. [...] A full consideration of all direct, indirect, and intangible losses would produce much higher loss estimates than the more easily quantified and commonly seen records of direct loss." (<https://www.preventionweb.net/understanding-disaster-risk/key-concepts/direct-indirect-losses>)

		baseline, annual performance reports, mid-point and end of project) based on data on health, well-being, food and water security gathered from relevant national service providers and technical partners, validated by UNEP and submitted to the GCF		inhabitants (M: 51,837, F: 38,604) Indirect: approx. 64,098 inhabitants (M: 41,761, F: 22,337)	inhabitants (M: 172,790, F: 128,681) Indirect: approx. 213,661 inhabitants (M: 139,204, F: 74,457)	food and water security from the project (directly or indirectly). Final direct beneficiaries are calculated to be approximately 58% of the total population. This represents 90% of the individuals receiving targeted support and adaptation benefits for Sub-Activities 1.2.3, 1.2.5, 2.1.4, 3.1.4 and/or 4.1.6, assuming that the remaining 10% is unable or unwilling to gain benefits. The above interventions have been selected to be representative of the four key elements of a MHEWS while also having the specificity in targeting to avoid double counting of beneficiaries. The selection and calculation of beneficiaries is further detailed in Annex 14. Assume that approximately 30 percent of total beneficiaries (direct and indirect) will be reached by the mid-term of the project. Guidance will be provided to relevant stakeholders for reporting on this indicator at the project level. It will include at least one external source of verification, e.g. survey data.
ARA2 Health, well-being, food and water security	<u>Supplementary 3.1: Change in expected losses of economic assets due to the impact of extreme climate-related disasters in the geographic area of the</u>					

	<u>GCF intervention</u>					
--	-------------------------	--	--	--	--	--

2.2. GCF Outcome level: Enabling environment (IRMF core indicators 5-8 as applicable)					
IRMF Core Indicators (5-8) ¹⁴	Baseline context (Description)	Rating for current state (Baseline)	Target scenario (Description)	How the project will contribute	Coverage
<u>Core Indicator 5: Degree to which GCF investments contribute to strengthening institutional and regulatory frameworks for low emission climate-resilient development pathways in a country-driven manner</u>	The Government of Maldives' commitment to low emission climate-resilient development is evidenced through several national policies and strategies, including the Climate Emergency Act, the updated Nationally Determined Contribution, and the Strategic Action Plan (2019-2023). However, there is a lack of institutional framework or operational mechanism for the delivery of coordinated and integrated climate services and a multi-hazard early warning system (MHEWS).	<u>medium</u>	An institutional framework and coordination mechanism are in place that mainstream the use of climate services and MHEWS into policies, decision-making and planning at all levels.	Output 1 aims at strengthening the institutional and legislative framework and the country's capacity to deliver integrated climate services and MHEWS. This includes the development of a National Framework for Climate Services to strengthen institutional collaboration for the generation and uptake of user-driven climate services across Maldives, establishment of an inter-ministerial, multi-stakeholder coordination mechanism for climate services and disaster risk management, and development of a National Climate and Disaster Risk Information Strategy and Action Plan aimed at enhancing data sharing and assessment in relation to climate change and disaster risks.	<u>National level (one country)</u>
<u>Core Indicator 6: Degree to which GCF investments contribute to technology deployment, dissemination,</u>	Coverage at a national scale of <i>in-situ</i> weather and marine observational technologies is insufficient to enable localised modelling and impact-based forecasting that translates	<u>low</u>	State-of-the-art climate services and an end-to-end, people-centred, impact-based MHEWS are operational and	Output 2 will strengthen technical and technological capabilities of MMS to deliver reliable, user-centred climate services and data-driven analytics based on international	<u>National level (one country)</u>

¹⁴ The IRMF Indicators are set out in the [Integrated Results Management Framework](#)

<u>development or transfer and innovation</u>	weather, climate and ocean data into understandable and actionable information for end-users. Limited access to real-time data impedes timely monitoring of rapidly evolving hazards. Limited redundancy and inclusiveness of communication technologies mean that warnings do not reach everyone at risk.		effective, and make use of modernised hydromet services, digital technologies and e-infrastructure.	good practices and utilising innovative technologies where relevant. Output 3 will strengthen capacity to establish an end-to-end, people-centred, impact-based MHEWS, deploying leading-edge communication technologies where suitable.	
<u>Core indicator 8: Degree to which GCF investments contribute to effective knowledge generation and learning processes, and use of good practices, methodologies and standards</u>	There is no integrated knowledge platform or standardised process for collecting and sharing climate and disaster risk information, and gaps in dissemination of risk information to the general population, particularly the most vulnerable groups. Hence, risk knowledge in Maldives is limited and a “culture of preparedness” is lacking. There is also limited capacity and/or resources to implement good practices, methodologies and standards related to climate services and MHEWS.	<u>low</u>	National disaster risk knowledge platform and associated knowledge-sharing processes are linked to the delivery of effective, user-driven climate services and MHEWS in line with international good practices, as well as provide an enabling environment for continuous feedback, learning and impact evaluation.	Robust knowledge management is a cross-cutting priority throughout the project, with targeted training and capacity building designed to enhance local skills, knowledge and expertise. Additionally, at the institutional level, Output 1 will establish a national disaster risk knowledge platform as a ‘one-stop shop’ for all relevant data and information on climate-related hazards and disaster risks, which will link to impact-based forecasting systems established under Output 2. Output 4 will enhance public awareness and education on climate-related hazards, vulnerabilities, exposure and risks.	<u>National level (one country)</u>

3. Project/programme specific indicators (project outcomes and outputs)						
Project/programme results (outcomes/ outputs)	Project/programme specific Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions / Note
				Mid-term	Final	
Outcome 1 – Reliable climate and disaster risk information is available to support risk-informed, evidence-based decision-making	Availability and accessibility of climate and disaster risk information	National disaster risk knowledge platform hosted within the National Disaster Management Authority (NDMA)	Reliable climate and disaster risk information is not readily available	Beta-version of a platform on disaster risk information	Climate and disaster risk information is available and accessible by all key stakeholders through platform hosted within NDMA	<p>Government of Maldives is committed to the development of climate services and MHEWS</p> <p>Government, sectors and communities are committed to mainstreaming climate and disaster risk information into decision-making and planning</p> <p>No major climate-related hazards or extreme weather events impacts the target islands during the project implementation period</p>
Output 1 – Strengthened delivery model and risk knowledge for climate services and a Multi-Hazard Early Warning System	Establishment of institutional framework, legislation and delivery model for climate services and disaster risk management	Reports compiled by the PMU at key points of the project implementation (i.e., baseline, annual performance reports, mid-point and end of project) based	Maldives has limited institutional framework, legislation and delivery model for climate services and disaster risk management	<p>Draft of National Framework for Climate Services (NFCS)</p> <p>Biennial national summit on CIEWS and DRM/DRR</p>	An institutional framework, legislation and delivery model for climate services and disaster risk management has been established in Maldives	<p>Government of Maldives is committed to the development of climate services and MHEWS</p> <p>Government, sectors and communities are committed to mainstreaming climate and disaster risk information into decision-making and planning</p>

		on data gathered from relevant national service providers and technical partners, especially with input from the Government of Maldives, validated by UNEP and submitted to the GCF				
	Strengthened climate and disaster risk data management, analysis and hazard mapping	Reports compiled by the PMU at key points of the project implementation (<i>i.e.</i> , baseline, annual performance reports, mid-point and end of project) based on data gathered from relevant national service providers and technical partners, especially with input from RIMES and	Maldives has limited capacity for climate and disaster risk data management, analysis and hazard mapping	An institutional framework for climate and disaster risk data management, analysis and hazard mapping is in place, including the development of a National Climate and Disaster Risk Information Strategy and the arrangements for data governance and sharing	A national disaster risk knowledge platform providing data, risk assessments, and maps ¹⁵ and a disaster loss database are available and accessible	Government of Maldives is committed to the development of climate services and MHEWS

¹⁵ The scope and type of information to be integrated into the platform will be defined during Year 1 of the project.

		UNDRR, validated by UNEP and submitted to the GCF				
Outcome 2 – User-driven climate services and an end-to-end, people-centred impact-based MHEWS are operational and sustained	Use of climate information services in decision making for all GFCS sectors	Reports compiled by the PMU regarding the National Climate Outlook/Monsoon Forums, including input from relevant representatives of GFCS	Climate information services are not available for use in decision making in any of the GFCS priority sectors	Two GFCS sectors report use of climate information services in their decision-making processes	All five GFCS sectors report use of climate information services in their decision-making processes	Sectors are willing to utilise climate information and early warnings to make their operations more efficient and resilient to climate change No major climate-related hazards or extreme weather events impacts the target islands during the project implementation period
Output 2 – Strengthened observations, monitoring, modelling, and impact-based forecasting	Level of enhancement of the equipment and technical capacity for observations and monitoring	Review of data repository for hydrometeorological stations Country inputs to the WMO Integrated Global Observing System (WIGOS)	Maldives is at level 1 on a scale ¹⁶ for enhanced observation and monitoring equipment network	Maldives is at level 3 on a scale for enhanced observation and monitoring equipment network	Maldives is at level 4 on a scale for enhanced observation and monitoring equipment network	Sectors are willing to utilise climate information and early warnings to make their operations more efficient and resilient to climate change MMS staff are willing and able to undertake capacity development on observations, monitoring, modelling and impact-based forecasting
	Strengthened	Reports	MMS does not have	MMS is	MMS has a	MMS staff are willing and able

¹⁶ Scale for enhanced observation and monitoring equipment network: Level 1 – Country has significant gaps in the weather, water and climate observation network; Level 2 – Country has upgraded and expanded observation network to fill most critical gaps in coverage; Level 3 – Country has upgraded and expanded observation network to fill most critical gaps in coverage and meet Global Basic Observing Network (GBON) “should” provisions for surface-land stations; Level 4 – Country has upgraded and expanded observation network to fill most critical gaps in coverage and meet GBON “should” provisions for surface-land and upper-air stations; Level 5 – Country has upgraded and expanded observation network to fill most critical gaps in coverage and meet GBON “should” and “shall” provisions for surface-land and upper-air stations.

	weather, climate and ocean modelling and impact-based forecasting	compiled by the PMU at key points of the project implementation (<i>i.e.</i> , baseline, annual performance reports, mid-point and end of project) based on data gathered from relevant national service providers and technical partners, validated by UNEP and submitted to the GCF	the capacity to undertake impact-based forecasting	generating and making available impact-based forecasts for two hazards	solidified weather, climate and ocean modelling and impact-based forecasting system for all relevant hazards	to undertake capacity development on observations, monitoring, modelling and impact-based forecasting
Output 3 – Improved dissemination and communication of risk information and early warnings to the last mile	Establishment of a people-centred, impact-based multi-hazard early warning system	Reports compiled by the PMU at key points of the project implementation (<i>i.e.</i> , baseline, annual performance reports, mid-point and end of project) based on data gathered from relevant national service providers and	Maldives has no national multi-hazard alert system	Maldives has basic elements of a national multi-hazard early warning system established	Maldives has a people-centred, impact-based multi-hazard early warning system in place and operational that reaches communities at the last mile	Target users and at-risk people have adequate technology (including internet connectivity) to access relevant information and receive timely warnings

		technical partners, validated by UNEP and submitted to the GCF				
Outcome 3 – Sectors and communities implement timely and effective preparedness and anticipatory actions that increase resilience and reduce disaster risks	Use of climate services and MHEWS to inform preparedness and disaster risk reduction (DRR) approaches	Reports compiled by the PMU at key points of the project implementation (<i>i.e.</i> , baseline, annual performance reports, mid-point and end of project) based on data gathered from relevant national service providers and technical partners, validated by UNEP and submitted to the GCF	Limited availability of climate services and lack of MHEWS to inform preparedness and DRR Climate services and MHEWS are never or rarely used to inform preparedness and DRR	Climate services and MHEWS are used to inform preparedness and DRR approaches in Maldives by at least 40% of key stakeholders ¹⁷ as indicated by results of surveys conducted at key points of the project implementation	Climate services and MHEWS are used to inform preparedness and DRR approaches in Maldives by at least 80% of key stakeholders as indicated by results of surveys conducted at key points of the project implementation	Communities are willing to change behaviours and adopt more climate-resilient livelihood practices by using climate information and MHEWS Women and other groups with varying levels of vulnerability and/or marginalisation are empowered to meaningfully participate and engage in project activities, recognising the diverse experiences and contexts of these groups No major climate-related hazards or extreme weather events impacts the target islands during the project implementation period
Output 4 – Enhanced climate risk management capacity using	Enhanced awareness and capacity to prepare for and respond to	Reports compiled by the PMU at key	Low awareness and low capacity to prepare for and respond to climate-	At least 40% of target communities self-report	At least 80% of target communities self-report	Communities are willing to change behaviours and adopt more climate-resilient livelihood practices by using

¹⁷ The selection of key stakeholders relevant for this indicator will be made during during Year 1 of the project.

climate information and early warnings	climate-related hazards and risks	points of the project implementation (i.e., baseline, annual performance reports, mid-point and end of project) based on data gathered through survey administered to target communities, validated by UNEP and submitted to the GCF	related hazards and risks; level to be determined in Year 1 of the project	improved climate risk management capacity	improved climate risk management capacity	climate information and MHEWS Women and other groups with varying levels of vulnerability and/or marginalisation are empowered to meaningfully participate and engage in project activities, recognising the diverse experiences and contexts of these groups
	Established capacity for Forecast-based Action (FbA) and Anticipatory Action (AA)	Reports compiled by relevant partners, especially RCCC and MRC, on training of personnel on FbA/ AA validated by UNEP Integration of FbA/AA into disaster response mechanism and	No capacity for FbA/AA in Maldives Disaster response mechanisms and policies do not include FbA/AA protocols	Roadmap for the development and scaling-up of FbA/AA is developed Key national stakeholders, including staff from MRC, NDMA, and MMS, have an understanding of FbA/AA and knowledge of the roadmap	Maldives has a defined set of triggers for FbA and clear protocols on AA integrated into disaster response mechanisms and policies	Communities are willing to change behaviours and adopt more climate-resilient livelihood practices by using climate information and MHEWS

		policies ¹⁸				
Project/programme co-benefit indicators						
Environmental co-benefits	Strengthened environmental management and risk reduction strategies based on climate information	Impact-based forecast and advisories for environmental hazards	Limited integration of climate risk information into environmental management strategies	Strengthen capacities of MMS staff to access, understand and use climate risk information	MMS has the capacity to generate impact-based forecasts and advisories for environmental hazards	Government, sectors and communities are committed to mainstreaming climate and disaster risk information into decision-making and planning
Social co-benefits, including health impacts	Improved understanding of the health impacts of climate change Improved health and wellbeing outcomes due to climate-informed decision-making	Surveys conducted among project beneficiaries Reports compiled by the PMU regarding the NCOF and including input from the relevant GCFS representatives, validated by UNEP and submitted to the GCF	Limited awareness of climate-related health risks Weak integration of health considerations in early warning and disaster preparedness strategies	At least 60% of surveyed stakeholders report increased awareness of climate-related health risks Two GFCS sectors report integration of health considerations into their preparedness plans	At least 80% of surveyed stakeholders report increased awareness of climate-related health risks All five GFCS sectors report integration of health considerations into their preparedness plans	Sectors are committed to mainstreaming climate and disaster risk information into decision-making and planning Sectors are willing to utilise climate information and early warnings to make their operations more efficient and resilient to climate change
Economic co-benefits	Reduced economic losses of climate-sensitive sectors due to improved early warning and	Surveys conducted amongst stakeholders in climate-sensitive sectors	Limited access to actionable climate information for economic planning and disaster risk reduction in key	At least 60% of surveyed stakeholders in climate-sensitive sectors report	At least 80% of surveyed stakeholders in climate-sensitive sectors report	Sectors are committed to mainstreaming climate and disaster risk information into decision-making and planning Sectors are willing to utilise

¹⁸ The specific mechanisms and policies will be defined during during Year 1 of the project.

	preparedness		climate-sensitive sectors (e.g., fisheries, agriculture, tourism)	improved access to and use of climate information for decision-making	improved access to and use of climate information, leading to tangible economic benefits/avoidance of economic losses	climate information and early warnings to make their operations more efficient and resilient to climate change
Increased gender equality and social inclusion	Understanding of the gendered impacts of climate change Perceived equality of inputs to MHEWS and disaster preparedness planning	Surveys conducted among project beneficiaries	The population of Maldives has limited understanding of the gendered impacts of climate change	At least 60% of surveyed stakeholders report understanding of the gendered impacts of climate change At least 30% of participants surveyed believe that they have equal input into MHEWS and disaster preparedness planning	At least 80% of surveyed stakeholders report understanding of the gendered impacts of climate change At least 70% of participants surveyed believe that they have equal input into MHEWS and disaster preparedness planning	Key stakeholders are willing to make their approach to MHEWS operations and disaster preparedness planning more socially inclusive

4. Project/programme activities and deliverables

Output	Activities	Description	Deliverables
Output 1 - Strengthened	Activity 1.1: Establish an institutional framework,	1.1.1 Develop a National Framework for Climate	<ul style="list-style-type: none"> National Framework for Climate Services for Maldives developed and

delivery model and risk knowledge for climate services and a multi-hazard early warning systems (MHEWS)	legislation and delivery model for climate services and disaster risk management	<p>Services (NFCS)</p> <p>1.1.2 Enhance inter-ministerial and multi-stakeholder coordination for climate services and disaster risk management</p> <p>1.1.3 Enhance the National Climate Outlook / Monsoon Forum</p> <p>1.1.4 Strengthen strategic partnerships and knowledge brokering through regional and international fora</p> <p>1.1.5 Establish a legal framework for enabling private sector investment in weather and climate services</p> <p>1.1.6 Develop a financial framework and business delivery model for weather and climate services</p> <p>1.1.7 Establish National Guidelines for Integrating Protection, Gender and Inclusion (PGI) into Disaster Management</p>	<p>launched (1.1.1)</p> <ul style="list-style-type: none"> • Inter-ministerial and multi-stakeholder coordination mechanisms for climate services and disaster risk management enhanced (1.1.2) • National Platform for Disaster Risk Reduction organised and delivered (1.1.2) • National Climate Outlook / Monsoon Forum delivered on a twice annual basis (1.1.3) • Strengthened engagement of MMS in regional and international fora (1.1.4) • Legal framework for enabling private sector investment in weather and climate services established (1.1.5) • Financial framework and business delivery model for weather and climate services based on analysis of the socio-economic benefits of climate services and MHEWS developed (1.1.6) • National Guidelines for Integrating PGI into Disaster Management developed and validated (1.1.7)
	Activity 1.2: Strengthen climate and disaster risk data management, analysis and hazard mapping	<p>1.2.1 Develop and implement a National Climate and Disaster Risk Information Strategy</p> <p>1.2.2 Establish institutional arrangements for data governance and sharing</p> <p>1.2.3 Establish standardised multi-hazard risk assessments and mapping</p> <p>1.2.4 Strengthen local capacities to undertake</p>	<ul style="list-style-type: none"> • National Climate and Disaster Risk Information Strategy and Action Plan for Maldives developed and implemented (1.2.1) • Institutional arrangements for data governance and sharing established and integrated into National Climate and Disaster Risk Information Strategy

		<p>climate-related risk assessments</p> <p>1.2.5 Conduct Enhanced Vulnerability and Capacity Assessments (EVCAs)</p> <p>1.2.6 Establish a national disaster risk knowledge platform</p> <p>1.2.7 Establish a tracking system for hazardous events and losses and damages</p>	<p>(1.2.2)</p> <ul style="list-style-type: none"> • Standardised process for multi-hazard risk assessments and mapping established (1.2.3) • Local capacity to undertake multi-hazard risk assessment and mapping enhanced through training and technical assistance (1.2.4) • Competency of facilitators for conducting EVCAs enhanced through training (1.2.5) • Enhanced Vulnerability and Capacity Assessments (EVCAs) conducted (1.2.5) • National disaster risk knowledge platform established under MMS (1.2.6) • Relevant stakeholders have the capacity to effectively use the platform (1.2.6) • National capacities to collect, manage and utilise data on past and current losses and damages from hazardous events strengthened (1.2.7) • Tracking system for hazardous events and losses and damages established (1.2.7)
Output 2 – Strengthened observations, monitoring, modelling and impact-based	Activity 2.1: Enhance equipment and technical capacity for observations and monitoring	<p>2.1.1 Strengthen the hydrometeorological observation network</p> <p>2.1.2 Enhance the ocean observation and monitoring system</p> <p>2.1.3 Establish a Training Institute to build and</p>	<ul style="list-style-type: none"> • Hydrometeorological observation network in Maldives strengthened (2.1.1) • 5-year National Strategic Plan for MMS developed, incorporating National Strategic Plan for Observations,

forecasting		<p>sustain meteorological capabilities</p> <p>2.1.4 Build capacity for Internet of Things (IoT) and wireless technologies</p>	<p>National WIGOS Implementation Plan, and Operation and Maintenance (O&M) plan (2.1.1)</p> <ul style="list-style-type: none"> • Capacity to implement WIGOS enhanced through training (2.1.1) • Ocean observations and monitoring enhanced (2.1.2) • MMS Training Institute established (2.1.3) • IoT and wireless technologies deployed (2.1.4) • MMS staff is trained on utilisation of IoT (2.1.4)
	Activity 2.2: Strengthen weather, climate and ocean modelling and impact-based forecasting	<p>2.2.1 Establish e-infrastructure for integrated observing and high-resolution forecasting</p> <p>2.2.2 Undertake climate data rescue and digitisation</p> <p>2.2.3 Enhance downscaled weather, climate and ocean modelling and high-resolution forecasting</p> <p>2.2.4 Develop and sustain core competencies for user-centred climate services</p> <p>2.2.5 Co-produce sector-specific impact-based forecasts and decision support for public and private sectors</p> <p>2.2.6 Develop sector-specific advisories for climate- and risk-informed decision making</p> <p>2.2.7 Introduce climate analytics to support the development of Green Finance products</p> <p>2.2.8 Enhance knowledge retention through</p>	<ul style="list-style-type: none"> • E-infrastructure for MMS Data Centre established (2.2.1) • Recovery, preservation, and digitisation of weather and climate records undertaken (2.2.2) • GIS-based forecasting systems for meteorology, aerometeorology, climatology, and ocean/marine services using an agile and user-driven approach co-developed / strengthened (2.2.3) • MMS staff has the capacity of accessing, interpreting and applying downscaled model outputs delivered (2.2.3) • Relevant staff from MMS and key stakeholder have the qualification and competencies to provide and/or use climate information for climate action (2.2.4)

		hands-on learning and refresher training	<ul style="list-style-type: none"> • Capacity to generate impact-based forecasting strengthened (2.2.5) • Sector-specific decision support systems (DSSs) for five key sectors – agriculture and food security, disaster risk reduction, health, marine and fisheries, and tourism – developed (2.2.5) • Sector-specific advisories co-developed and disseminated through the sectoral DSSs (2.2.6) • Mobile applications for three sectoral DSSs developed (2.2.6) • Climate analytics to support the development of Green Finance products co-developed (2.2.7) • Web-based portal integrating MMS data and climate prediction with SDFC products and information co-developed (2.2.7) • Knowledge and skills of MMS staff on data transmission, storage, management and processing, forecasting systems, and DSSs enhanced through online and in-person trainings (2.2.8)
Output 3 – Improved dissemination and communication of risk information and multi-hazard early warnings to the last mile	Activity 3.1: Establish a people-centred, impact-based multi-hazard early warning system	<p>3.1.1 Develop and implement Standard Operating Procedures (SOPs) for multi-hazard early warning advisories</p> <p>3.1.2 Co-develop a socially inclusive and gender-responsive risk communication strategy</p> <p>3.1.3 Establish a national Multi-Hazard Alert</p>	<ul style="list-style-type: none"> • SOPs for multi-hazard early warnings developed and implemented (3.1.1) • Relevant stakeholders have enhanced capacity to use the Common Alerting Protocol (CAP) (3.1.1) • Socially inclusive and gender-responsive risk communication strategy

		<p>System</p> <p>3.1.4 Deploy innovative technologies to enhance warning communication</p> <p>3.1.5 Strengthen two-way feedback and evaluation mechanisms</p> <p>3.1.6 Strengthen communication systems to reach the last mile</p> <p>3.1.7 Develop a multilingual glossary on climate change, early warning systems, and disaster risk reduction</p> <p>3.1.8 Establish partnerships with the private sector to expand information dissemination and feedback mechanisms</p>	<p>co-developed (3.1.2)</p> <ul style="list-style-type: none"> • National Multi-Hazard Alert System established and incorporated in the National Emergency Operations Center (NEOC) (3.1.3) • Innovative technologies for early warning communications deployed (3.1.4) • Coverage and dissemination scope of warning communications enhanced (3.1.4) • Two-way communication mechanisms between disseminators and receivers of warning messages strengthened (3.1.5) • Inter-agency task team established to receive, review and recommend actions to strengthen warning communications (3.1.5) • Inclusiveness and accessibility of MHEWS enhanced through scaling up the use of multiple communication channels, reaching also most vulnerable groups (3.1.6) • Multilingual glossary on climate change, early warning systems, and disaster risk reduction developed (3.1.7) • Information sharing protocols between public and private agencies developed (3.1.8) • Media personnel's capacity to report and disseminate information on early warning mechanisms enhanced (3.1.8)
--	--	---	---

<p>Output 4 – Enhanced climate risk management capacity using climate information and early warnings</p>	<p>Activity 4.1: Enhance awareness and capacity to prepare for and respond to climate-related hazards and risks</p>	<p>4.1.1 Increase public awareness and education on climate-related hazards, vulnerabilities, exposure, and risks</p> <p>4.1.2 Mainstream Protection, Gender and Inclusion (PGI) into disaster preparedness</p> <p>4.1.3 Scale up the Y-Adapt youth engagement curriculum</p> <p>4.1.4 Strengthen national, sub-national and local capacity to use climate and disaster risk information and impact-based early warnings</p> <p>4.1.5 Enhance capacity of the private sector to manage climate-related risks</p> <p>4.1.6 Scale up Community-Based Disaster Risk Management (CBDRM)</p> <p>4.1.7 Develop Standard Operating Procedures (SOPs) for integrating Protection, Gender and Inclusion (PGI) into disaster response</p>	<ul style="list-style-type: none"> • Climate change and EW4All knowledge products and resources co-developed (4.1.1) • Radio programme to communicate climate change and EW4All resources and information developed and broadcasted (4.1.1) • Nationwide awareness-raising and education campaign conducted (4.1.1) • PGI mainstreamed into disaster preparedness (4.1.2) • Consultation workshop on PGI mainstreaming with key stakeholders hosted (4.1.2) • Checklist of indicators to measure integration and engagement of vulnerable groups and accessibility for all developed (4.1.2) • Young people targeted through the Y-Adapt programme have an increased knowledge of and are empowered to act in their communities to adapt to climate change (4.1.3) • Targeted atolls / communities are able to access and use climate and disaster risk information and early warnings (4.1.4) • State-owned enterprises that support development of the micro, small- to medium-enterprise (MSME) sector have enhanced awareness of climate risks, impacts, and disaster preparedness (4.1.5)
--	---	---	---

			<ul style="list-style-type: none"> • MSMEs are directly engaged in building climate risk management capacities through annual MSME Pop-Up Events (4.1.5) • The private sector has enhanced knowledge on climate change and EW4All (4.1.5) • Targeted Community Emergency Response Teams (CERTs) have enhanced preparedness capacity (4.1.6) • Equipment and resources for CERTs to effectively manage disaster risks deployed (4.1.6) • SOPs for integrating PGI into disaster response developed (4.1.7)
	Activity 4.2: Establish capacity for Forecast-based Action (FbA) and Anticipatory Action (AA)	4.2.1 Develop a Roadmap for FbA/AA 4.2.2 Build capacity for FbA/AA 4.2.3 Co-develop impact-based forecast triggers for FbA/AA 4.2.4 Initiate Early Action Protocol (EAP) development	<ul style="list-style-type: none"> • Roadmap for FbA/AA developed (4.2.1) • MRC, NDMA, and other key national stakeholders have the requisite knowledge and skills to understand the concept of FbA/AA and develop and implement associated EAP (4.2.2) • Impact-based forecasts (IBF) to serve as trigger models for FbA/AA co-developed (4.2.3) • IBF products integrated and visualised within the NDMA-administered disaster information system (4.2.3) • Institutional EAP co-developed (4.2.4) • National EAP co-developed (4.2.4)
5. Monitoring, reporting and evaluation arrangements (max. 300 words)			

A Monitoring and Evaluation (M&E) Officer will be engaged by the Ministry of Tourism and Environment (MTE) – which serves as the national EE – and will be located in Male', Republic of Maldives. UNEP will engage a M&E International Specialist who will be based in Bangkok, Thailand, at the UNEP Regional Office for Asia and the Pacific. The M&E Officer with support from the M&E International Specialist will design and implement a performance monitoring and evaluation framework to track the project's progress towards achieving its targets, including in relation to social inclusion and child- and gender-responsiveness of project implementation. They will work closely with the Project Manager in the Project Management Unit (PMU). The M&E Officer and the M&E International Specialist will be responsible for continuously monitoring progress during project implementation to ensure the quality of project execution and compliance with all GCF reporting requirements. This will be achieved by:

- i) Measuring the indicators to assess the progress of the project in coordination with the national Executing Entity (EE)
- ii) Reporting the project's performance to the Project Steering Committee (PSC) and PMU.

At key points (*i.e.*, baseline, annual performance reports, mid-point and end of project) the PMU will coordinate evidence-gathering exercises to verify this progress. Project targets and results will be triangulated with baseline surveys that will be initiated in Year 1 and completed in Year 2 of the project implementation. All data collected for monitoring, reporting and evaluation processes will be sex- and age-disaggregated, where possible and/or relevant. Specific attention will be paid to ensuring child and gender responsiveness, uptake of climate and early warning information, and environmental and social safeguards (ESS). The PMU will prepare semi-annual progress reports and quarterly financial statements and will submit a consolidated report to UNEP Early Warning and Assessment Division in its role as AE. In turn, UNEP will submit annual performance reports and semi-annual financial reports to GCF.

The M&E Officer with the support of the M&E International Specialist will organise training for staff members of the national EE and Technical Partners in data collection and analysis, and on the project cycle, particularly relating to the effective monitoring and reporting of activities. All training will take a strengths-based approach, both in the training process and in the principles and practices taught. These skills will be reinforced by follow-up training at least annually, to ensure that monitoring activities are collecting meaningful information, and that the information is able to be used both for adaptive management in the implementation phase and for continuous evaluation of progress. During the Mid-Term Evaluation and Terminal Evaluation (see below), an independent evaluation consultant will validate a sample of the data collected through these monitoring tools.

Monitoring will also be undertaken by the AE through supervision visits and field missions to track implementation progress and challenges and strategically plan the way forward. UNEP will be responsible for managing the Mid-Term Evaluation and the Terminal Evaluation. UNEP as AE will oversee the process of hiring an external consultant to carry out the Mid-Term Evaluation, which will provide an assessment of project performance at the project's mid-point. This will be a formative exercise and will cover whether the project is on track, what problems and challenges the project is encountering, and what corrective actions are required so that the project can achieve its intended outcomes by project completion in the most efficient and sustainable way. The Mid-Term Evaluation will also embed an assessment of the project's contributions to a paradigm shift and enabling environment using a three-point scale rating (low, medium, and high) as per GCF guidelines. The PSC and the national EE will participate in the Mid-Term Evaluation process and contribute to a management response to the Mid-Term Evaluation's recommendations with an implementation plan. The PMU will monitor the implementation of agreed recommendations during the remainder of the project implementation period. It is the responsibility of UNEP as AE to monitor whether the agreed recommendations are being implemented during the remainder of project implementation.

UNEP's Evaluation Office (EO) will be responsible for undertaking the independent Terminal Evaluation at the end of project implementation, which is a summative evaluation, and will liaise with the UNEP's Europe Office throughout the process. An independent assessment of project performance against GCF evaluation criteria (e.g., strategic relevance, effectiveness, efficiency, likelihood of impact and sustainability) will be made based on documentary evidence, stakeholder interviews and, if possible, a field mission. Each evaluation criterion will be rated using a six-point rating scheme. and a weighted average will be determined to provide an overall performance rating for the project as a whole. Where there are any differences in ratings between the independent evaluation consultant and the EO a final determination will be made by the Evaluation Office when the Terminal Evaluation report is finalised. As with the Mid-Term Evaluation, the Terminal Evaluation will include an assessment of the project's contribution to a paradigm shift and enabling environment as per GCF guidelines. The draft Terminal Evaluation report will be sent to project stakeholders during a commenting process managed by the EO. Formal comments on the report will be shared by the EO in an open and transparent manner. This evaluation report will be publicly disclosed and will be followed by a recommendation compliance process.

Interim and final evaluation will be covered by the AE fee. The costs for generation and collection of evaluative data are included in the project budget.