

Simplified Approval Process

Annex 2a: Logical framework



GREEN
CLIMATE
FUND

LOGICAL FRAMEWORK TEMPLATE

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	Oman's climate information services and early warning systems have limited capacity, coverage, and effectiveness, leaving critical gaps in disaster preparedness and response. Current systems lack advanced tools for accurate monitoring, data analysis, and timely dissemination of warnings, particularly in remote and vulnerable regions. These gaps hinder proactive measures, delay preparedness, and limit the integration of climate risk information into decision-making processes.	<u>Low</u>	The project will strengthen Oman's climate resilience by expanding the coverage and capacity of climate information services, improving the accuracy and timeliness of early warnings, and integrating climate risk data into national planning and decision-making. This will enable proactive disaster preparedness, enhance response capabilities, and support climate-resilient investments to protect vulnerable communities, critical infrastructure, and economic stability.	<p>The project will address key gaps in Oman's climate resilience and disaster preparedness through a series of targeted outputs that aim to strengthen institutional frameworks, enhance technical capacity, improve disaster risk knowledge, and establish proactive response mechanisms:</p> <p>Output 1.1: Policy and legislative frameworks for climate information services strengthened This output focuses on creating robust policies and legislative structures to institutionalize climate information services. By operationalizing the National Framework for Climate Services (NFCS) and aligning disaster risk management frameworks with the Sendai Framework, the project will enable coordinated and effective delivery of climate data for decision-making.</p> <p>Output 1.2: Capacity of NMHS enhanced through training and equipment upgrades To improve the accuracy and reliability of early warnings, this output will modernize weather monitoring infrastructure, enhance software systems, and build the technical expertise of human resources within the National Meteorological and Hydrological Services (NMHS). International collaboration and capacity-building initiatives will further strengthen operational efficiency.</p> <p>Output 1.3: Capacity of National Center for Emergency Management / Civil Defence and Ambulance Authority to support disaster risk management strengthened</p>

				<p>This output will enhance the capacity of the National Center for Emergency Management / Civil Defence and Ambulance Authority to effectively support disaster risk management. It includes developing skills in risk modeling, risk transfer, and contingency planning through targeted capacity-building programs. Additionally, coordination between the National Meteorological and Hydrological Services (NMHS), the National Center for Emergency Management, and private stakeholders will be improved through the establishment of Memorandums of Understanding (MOUs), fostering collaboration and ensuring efficient disaster response and management</p> <p>Output 2.1: Improved disaster risk knowledge</p> <p>This output aims to generate comprehensive risk knowledge by conducting multi-hazard assessments, developing dynamic hazard maps, and consolidating risk databases. Engaging local communities in risk assessments will ensure that disaster preparedness strategies are inclusive and responsive to on-the-ground realities.</p> <p>Output 3.1: Forecast-based actions established</p> <p>This output will develop forecast-based action protocols with measurable early warning triggers, enabling timely and proactive interventions. Training stakeholders, including communities and relevant agencies, will ensure that early actions are effectively implemented to minimize the impact of disasters.</p>
Replicability	Existing systems lack standardized frameworks and seamless integration, which hinders their scalability and adaptability for replication across other regions or sectors.	<u>Low</u>	The project will establish scalable and replicable frameworks for multi-hazard early warning systems through standardized processes, enhanced technical infrastructure, and strengthened institutional capacity. Clear governance structures will be developed, advanced climate information systems integrated, and robust coordination ensured among national agencies and stakeholders. Institutional capacity will be strengthened alongside active engagement with communities, private	<p>The replicability of the project lies in its ability to establish standardized, scalable, and effective frameworks for multi-hazard early warning systems. Addressing key institutional, technical, and operational gaps ensures successful models can be adapted and applied across regions and sectors facing similar climate risks:</p> <p>Output 1.4: Develop a business delivery model and financial strategies for sustainable climate services</p> <p>This output focuses on ensuring long-term sustainability through increased budget allocations, public-private partnerships, and fiscal incentives to</p>

			sector actors, and government entities. This approach creates a sustainable model adaptable to other regions and sectors, ensuring consistency, efficiency, and effectiveness in disaster risk management and climate resilience efforts.	<p>attract private sector investments, securing the operational resilience of climate services.</p> <p>Output 2.3: Improved and diversified systems for disseminating and communicating warnings for broader coverage and reach. This output enhances warning dissemination through multi-channel communication, including mobile apps, SMS, radio, and social media, while establishing community-based networks and public awareness campaigns for broader and timely coverage.</p> <p>Output 2.4: Enhanced community and institutional readiness for disaster response This output strengthens disaster preparedness by equipping response agencies, developing community action plans, conducting simulation exercises, and raising public awareness, ensuring effective and timely responses to hazards.</p>
Sustainability	The current system faces challenges related to limited institutional capacity, insufficient funding mechanisms, and lack of private sector engagement.	<u>Low</u>	The project will establish long-term financial sustainability through the development of robust business delivery models and financial strategies, ensuring that climate services are well-funded and operational beyond the project's duration. It will strengthen institutional capacity by enhancing technical expertise, modernizing systems, and fostering coordination among key agencies, enabling them to effectively manage and deliver climate information and early warning services. Additionally, the project will encourage private sector investments through incentives such as tax exemptions and public-private partnerships, promoting innovative solutions and ensuring a steady flow of resources to sustain and scale early warning systems and climate services.	<p>The project will promote sustainability through the following outputs and outcomes:</p> <p>Output 1.4: Develop financial strategies, including public-private partnerships, for climate services – This output focuses on creating sustainable financial mechanisms to ensure long-term climate service delivery, fostering collaboration with the private sector and exploring innovative funding options.</p> <p>Output 3.2: Emergency funding mechanism created and operational – This output aims to establish a reliable emergency fund to mobilize financial resources quickly, enabling timely and effective responses to climate hazards and disasters.</p> <p>Output 2.2: Strengthened detection, monitoring, analysis, and forecasting capabilities – This output enhances Oman's ability to detect and monitor hazards through advanced equipment and tools, improving the accuracy and timeliness of forecasting to inform proactive interventions.</p>

				Output 2.4: Enhanced community and institutional readiness for effective disaster response – This output strengthens the preparedness of institutions and communities through targeted training, development of action plans, simulation exercises, and improved emergency response systems.
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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) ¹	Means of Verification (MoV)	Baseline	Target		Assumptions / Note
				Mid-term	Final ²	
<u>ARA1 Most vulnerable people and communities</u>	<u>Core 2: Direct and indirect beneficiaries reached</u>	<p>National Multi-Hazard Early Warning System (NMHEWS) performance reports.</p> <p>User feedback surveys will be conducted annually to assess the effectiveness of early warning dissemination and community awareness. Data from early warning dissemination platforms will be monitored quarterly to track system performance and user engagement.</p> <p>Reports on community engagement and awareness programs will be generated semi-annually (every 6 months) to evaluate outreach efforts and impact.</p>	500,000	0	<p>5,100,000 <input type="checkbox"/></p> <p>(Direct beneficiaries: 3.06 million (approx. 2 million male, 1.06 million female))</p> <p><input type="checkbox"/> Indirect beneficiaries: 2.04 million (approx. 1.33 million male, 0.71 million female)</p>	Assumes full operationalization of NMHEWS and effective communication of warnings to communities, supported by capacity-building activities and infrastructure upgrades.

¹ The IRMF Indicators are set out in the [Integrated Results Management Framework](#)

² 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><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>Survey reports, project monitoring data, and government records on early warning system coverage.</p>	<p>500,000</p>	<p>0</p>	<p>5,100,000 (Direct beneficiaries: 3.06 million (approx. 2 million male, 1.06 million female) □ Indirect beneficiaries: 2.04 million (approx. 1.33 million male, 0.71 million female)</p>	<ul style="list-style-type: none"> • Externalities and Factors Outside Project Management's Control That May Impact the Outcomes: <ul style="list-style-type: none"> ○ Political Instability: Changes in government policies, political unrest, or instability could disrupt project activities, delay implementation, or lead to shifts in priorities that detract from early warning system enhancements. ○ Economic Downturns: Financial crises or economic slowdowns could affect funding availability, reduce community investments in resilience measures, and impede progress. ○ Extreme Natural Disasters: Severe climate events beyond the anticipated scenarios could overwhelm the system, reducing its effectiveness and leading to higher-than-expected losses. ○ Public Resistance: Lack of community engagement or resistance to adopting new technologies and practices could hinder the widespread utilization of early warning systems. • Data Sources and Methodologies Applied for Estimating Baseline and Targets: • Data Sources: <ul style="list-style-type: none"> ○ National Census Data: Provides demographic information and population distribution, aiding in estimating the number of potential beneficiaries. ○ Community Surveys: Gather information on community awareness, engagement, and current early warning system utilization. ○ Registration Records from Early Warning Systems: Track the number of individuals enrolled and actively using the systems. ○ Administrative Records: Include data from local governments and institutions managing early warning systems. • Methodologies: <ul style="list-style-type: none"> ○ Statistical Sampling: Used to collect representative data from a subset of the population, which is
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						<p>then extrapolated to estimate the total number of beneficiaries.</p> <ul style="list-style-type: none">○ Household Surveys: Direct surveys conducted in households to gather detailed information on early warning system usage and coverage.○ GIS Mapping: Geographic Information System (GIS) mapping helps in identifying the spatial distribution of the population covered by early warning systems.○ Adoption Rate Analysis: Analyzes trends in early warning system adoption over time to project future coverage based on current growth rates.
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2.2. GCF Outcome level: Enabling environment (IRMF core indicators 5-8 as applicable)

IRMF Core Indicators (5-8) ³	Baseline context (Description)	Rating for current state (Baseline)	Target scenario (Description)	How the project will contribute	Coverage
<u>Core Indicator 6: Degree to which GCF investments contribute to technology deployment, dissemination, development or transfer and innovation</u>	The Multi-Hazard Early Warning Center in Oman has limited deployment of advanced climate technologies. The existing systems are outdated, and there is minimal dissemination and transfer of innovative solutions to address climate risks.	<u>low</u>	Advanced climate technologies are widely deployed and disseminated. Significant development and transfer of innovative solutions addressing climate risks.	The project will modernize climate risk monitoring and early warning infrastructure. Key activities include upgrading operational systems, enhancing hydro-meteorological monitoring capacity, and introducing AI analysis for climate risks to improve advanced modeling and impact-based forecasting. Partnerships with international experts and institutions will facilitate technology transfer and development.	<u>National level (one country)</u>
<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>	The project will establish a knowledge management system to support continuous improvement. Activities include developing a knowledge management strategy, organizing training and workshops, and facilitating knowledge-sharing through platforms and events. This ensures adoption of good practices and standardized methodologies for early warning systems.	<u>low</u>	Robust knowledge generation and dissemination systems are established, with widespread use of good practices, methodologies, and standards for enhancing climate resilience.	The project will establish a knowledge management system to support continuous improvement. Activities include developing a knowledge management strategy, organizing training and workshops, and facilitating knowledge-sharing through platforms and events. This ensures adoption of good practices and standardized methodologies for early warning systems.	<u>National level (one country)</u>

3. Project/programme specific indicators (project outcomes and outputs)

³ The IRMF Indicators are set out in the [Integrated Results Management Framework](#)

This section should list out project/programme-specific performance indicators (outcomes and outputs) that are not covered in sections above (1-2). List down tailored indicators to monitor /track progress against relevant project/programme results (outcomes/outputs). AEs have the freedom to decide against which outcomes they would like to set project/programme specific indicators. If any co-benefits are identified in sections B.2.2, and D.3, AEs are encouraged to add and monitor co-benefit indicators under the “**Project/programme co-benefit indicators**” section in table below. Add rows as needed.

Please number each outcome and output as shown below to indicate association of outputs to the contributing outcome. The numbering for outputs under this section should correspond to the output numbering in annex 3 (budget plan that provides breakdown by type of expense).

Project/programme results (outcomes/ outputs)	Project/programme specific Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions / Note
				Mid-term	Final	
Output 1.1: Policy and legislative frameworks for climate information services strengthened.	National Framework for Climate Services (NFCS) developed and operationalized.	- NFCS Guideline Document - Implementation Report	Not developed	Draft	Operationalized	Institutional and technical support is available.
	National Disaster Risk Management Framework aligned with Sendai Framework.	- Disaster Risk Management Guideline Document - Approval Records	Not aligned	Draft	Aligned	Effective coordination among stakeholders.
Output 1.2: Capacity of NMHS enhanced through training and equipment upgrades.	Weather monitoring systems modernized and maintained.	- Installation Records -Maintenance Protocol	0% System	70% of planned equipment deployed and operational.	Final: 100% of planned equipment deployed and operational.	Timely procurement and installation processes without significant delays
Output 1.3: Capacity of National Center for Emergency Management / Civil Defence and Ambulance Authority to support disaster risk management strengthened.	Disaster response capacity enhanced through training and equipment provision.	- Training Completion Reports - Equipment Procurement Records	Limited capacity	50% of planned capacity-building activities completed (Mid-term)	100% of planned activities completed (Final)	Availability of trainers, resources, and institutional commitment.
	Emergency response protocols improved and institutionalized.	- Approved Protocols - Implementation Review Reports	Outdated or incomplete protocols	Draft protocols developed	Updated protocols institutionalized	Effective coordination between agencies and stakeholders.
Output 1.4: Developing a business delivery model and financial strategy for	Climate service business model and financial strategy developed.	- Business Model Document - Financial Strategy Report	Not developed	Draft	Finalized and adopted	Engagement of stakeholders and funding sources.

sustainable climate services.	Public-private partnership mechanisms identified for sustainable financing.	- MoUs with Private Sector - Financial Commitments	No formal partnerships	2 potential partnerships identified	At least 3 formalized partnerships	Willingness of the private sector to invest in climate services.
Output 2.1: Improved disaster risk knowledge.	Multi-hazard and vulnerability assessments conducted.	- Multi-Hazard Assessment Reports	No. of reports related to multi-hazard and vulnerability assessments conducted"	3 Reports	5 Reports	Technical expertise and data availability remain sufficient.
	Dynamic multi-hazard maps developed and operational.	- GIS Platform Records - Hazard Maps	No GIS Data base	Partially developed	Fully operationalized	Access to hazard data is consistent and reliable.
Output 2.2: Strengthened monitoring, analysis, and forecasting capabilities.	Automated monitoring systems installed and operationalized.	- Installation Reports - Maintenance Protocol	0% System	70% of planned equipment deployed and operational.	Final: 100% of planned equipment deployed and operational.	Timely procurement and installation processes without significant delays
	System testing and capacity-building workshops conducted	- System Testing Reports - Training Workshop Reports	0 Workshops/Tests	2 Workshops	3 Workshops and Tests	Availability of technical teams and participants for capacity building.
Output 2.3: Improved early warning communication and dissemination.	Multi-channel early warning systems implemented.	- Communication Strategy Document - Testing Reports	0	50% of target	100% of target	Institutional support and resources are available
	Communication equipment installed for dissemination.	- Procurement Records - Installation Reports	No equipment	50% installed	100% installed	Procurement and deployment processes remain on schedule.
	Number of MOUs signed with telecommunication companies.	- Signed MOUs - Partnership Reports	No agreements	2 Agreement	3 Agreements	Private sector readiness to collaborate.
	Communication and dissemination systems tailored to different needs of specific groups for all priority hazards (urban and rural populations, women and men, elderly and youth, persons with disabilities, etc.).	- Accessibility Assessments - Community Feedback Surveys - System Testing Reports	Not tailored	50% of targeted adaptations implemented	100% of targeted adaptations implemented	Inclusive design approaches are integrated.

	Warning communication and dissemination systems reach the entire population, including people in vulnerable conditions, seasonal populations, and remote locations through multiple communication channels (e.g. social media, flags, sirens, bells, public address systems, door-to-door visits, community meetings).	<ul style="list-style-type: none"> - Multi-Channel Communication Reports - Outreach Reports - Surveys 	Limited coverage	50% of targeted areas covered	100% of targeted areas covered	Adequate funding and engagement with local communities.
Output 2.4: Enhanced community readiness for disaster response.	Tools and equipment for disaster response procured and deployed.	<ul style="list-style-type: none"> - Procurement Records - Deployment Reports 	No tools/equipment	70% of planned equipment deployed and operational.	Final: 100% of planned equipment deployed and operational.	Procurement processes are streamlined and efficient.
	<ul style="list-style-type: none"> • Number of communication plans developed. • 	Communication plan documents, samples of communication materials, training attendance lists	0	1	2	Effective communication strategies and materials are developed and utilized
	<ul style="list-style-type: none"> • Number of inclusive communication materials created 	<ul style="list-style-type: none"> - Inventory of Communication Materials - Accessibility Assessment Reports 	0	5	10	Communication materials are accessible and cater to diverse community needs.
	<ul style="list-style-type: none"> • Training workshops conducted. 	<ul style="list-style-type: none"> - Training Reports - Attendance Records - Pre- and Post-Training Assessments 	0	3	6	Adequate participation and engagement from relevant stakeholders.
	Time taken to disseminate warnings	System logs (Real time), community feedback (Quarterly reports, annual review)	6 hours	3 hours	1 hour	Efficient use of upgraded systems

Output 3.1: Forecast-based actions established.	Forecast-based action protocols developed and adopted.	- Approved Protocol Documents - Stakeholder Consultation Reports	No protocols exist	Draft protocols developed	Protocols operationalized	Institutional support and stakeholder engagement.
	Early warning triggers with measurable thresholds established.	- Technical Reports - Trigger Activation Records	No standardized threshold	Triggers identified and piloted	Triggers fully implemented	Availability of data and technical expertise.
	Training programs conducted for relevant agencies, communities, and volunteers.	- Training Completion Reports - Attendance Records	Limited awareness and capacity	50% of targeted stakeholders trained	100% trained	Availability of training resources and participation.
Output 3.2: Emergency funding mechanism created and operational.	Legal, institutional, and operational framework for the emergency fund established.	- Approved Legal Framework - Institutional Agreements	No formal framework	Draft framework developed	Framework legally adopted and operational	Government and institutional support for implementation
	Financial resources mobilized and secured to operationalize the emergency fund.	- Financial Commitment Reports - Fund Utilization Records	No dedicated funding mechanism	Initial funding secured	Fund fully operational and replenishment mechanisms in place	Willingness of stakeholders to contribute funding
Project/programme co-benefit indicators						
Social	Number of urban planning initiatives incorporating community resilience measures (SDG 11).	Urban development plans, municipal reports on resilience projects	0	10	30	Commitment from urban authorities to integrate NMHEWS data and resilience strategies into planning processes.
Economic	Reduction in disaster-related economic losses (USD) (SDG 8, SDG 9).	National disaster loss and damage reports	0%	20%	50%	Timely NMHEWS implementation minimizes economic disruption.
Environmental	Area of ecosystems protected through climate-informed land use planning (hectares) (SDG 15).	Land use maps, biodiversity protection reports	0 hectares	5000 hectares	15,000 hectares	Strong enforcement of ecological planning policies.
4. Project/programme activities and deliverables						

Output	Activities	Description	Deliverables
Output 1.1: Policy and legislative frameworks for climate information services strengthened.	Activity 1.1.1: Establishing and operationalizing a National Framework for Climate Services (NFCS).	1.1.1: Develop and implement a comprehensive framework to enhance the provision, accessibility, and use of climate services.	Deliverable 1.1.1: National Framework for Climate Services (NFCS) Guideline developed and operationalized.
	Activity 1.1.2: Establishing and operationalizing a National Disaster Risk Management Framework aligned with the Sendai Framework.	1.1.2: Develop a national framework for disaster risk management to align with the Sendai Framework, enhancing preparedness.	Deliverable 1.1.2: National Disaster Risk Management Framework Guideline aligned with the Sendai Framework.
	Activity 1.1.3: Building capacity for legislative and policy support for climate information services.	1.1.3: Strengthen institutional and human capacities through: a-Conducting 3 workshops with gender-balanced participation. b-Preparing workshop reports with gender-disaggregated data. c-Developing gender-sensitive training guidelines.	Deliverable 1.1.3: a-3 Workshops conducted with at least 40% women participants. b-Workshop Reports prepared, including gender-disaggregated data. c-Training Guideline developed with integrated gender considerations.
Output 1.2: Capacity of the NMHS enhanced through training and equipment upgrades.	Activity 1.2.1: Conducting capacity building for NMHS human resources.	1.2.1: Conduct training programs and workshops to build the technical capacity of NMHS personnel, ensuring gender inclusion and equal opportunities for women and men to participate.	Deliverable 1.2.1: - a- 4 Training Workshops conducted, with 40% women participation. b-Training Reports developed, including gender-disaggregated data and analysis of women's participation and roles.
	Activity 1.2.2: Modernizing and maintaining weather monitoring equipment.	1.2.2: Upgrade, modernize, and ensure regular maintenance of weather monitoring systems for improved data accuracy.	Deliverable 1.2.2: - a-Modernized Weather Monitoring Equipment installed. b-Maintenance Protocol developed and implemented.
	Activity 1.2.3: Strengthening software infrastructure and data management.	1.2.3: Upgrade software systems, tools, and data management infrastructure to improve data analysis and forecasting.	Deliverable 1.2.3: - a-Upgraded Software Infrastructure deployed. b-Data Management Guidelines developed. c-Data Management Guidelines developed.

	Activity 1.2.4: Conducting international collaboration and partnerships with organizations such as UNOCHA, WFP, IFRC, and ITU.	1.2.4: Foster collaboration with international organizations to exchange knowledge, resources, and best practices.	Deliverable 1.2.4: - a- Signed Collaboration Agreements. b- Workshops conducted with international partners. c- Reports on international partnerships and outcomes.
Output 1.3: Capacity of National Center for Emergency Management / Civil Defence and Ambulance Authority to support disaster risk management strengthened.	Activity 1.3.1: Conducting capacity building for National Center for Emergency Management / Civil Defence and Ambulance Authority, including risk modeling, risk transfer, and contingency planning.	1.3.1: Build the capacity of emergency management authorities through specialized training on risk modeling, risk transfer mechanisms, and contingency planning.	Deliverable 1.3.1: a-4 Specialized Workshops conducted, ensuring 40% of women participation. b-Training Reports developed, including gender-disaggregated data. c-Guideline Document on risk modeling and contingency planning with gender considerations prepared.
	Activity 1.3.2: Improving coordination between NMHS and National Center for Emergency Management / Civil Defence and Ambulance Authority, and private stakeholders through MOUs.	1.3.2: Establish formal coordination mechanisms and partnerships through signed MOUs to ensure alignment between NMHS, emergency management authorities, and private sector stakeholders.	Deliverable 1.3.2: - a-MOUs signed with relevant stakeholders. b-Report on improved coordination and collaboration outcomes.
Output 1.4: Developing a business delivery model and financial strategy for sustainable climate services.	Activity 1.4.1: Advocate for increased budget allocation at the national level for NMHS and National Disaster Management Authorities (DMA).	1.4.1: Promote policy dialogues and advocacy efforts to secure increased financial allocations for NMHS and DMA.	Deliverable 1.4.1: a-Advocacy Report documenting the justification for budget increases, cost-benefit analysis, and evidence-based recommendations for NMHS and DMA funding. b-Policy Briefs summarizing key messages for decision-makers to influence budget decisions.
	Activity 1.4.2: Explore public-private partnerships or additional resources, such as specific digital forecasting modules.	1.4.2: Identify and foster partnerships with the private sector to provide funding or resources for enhanced climate services, including digital tools.	Deliverable 1.4.2: a-Public-Private Partnership (PPP) Proposals developed. b-Feasibility Report on digital forecasting modules.
	Activity 1.4.3: Create incentives for private companies to invest in climate services, including attractive taxation and tax exemptions.	1.4.3: Develop incentive structures such as tax exemptions or reductions to encourage private sector investments in climate services.	Deliverable 1.4.3: a-Incentive Framework Report developed. b-Taxation and Exemption

			Guidelines prepared.
Output 2.1: Improved disaster risk knowledge.	Activity 2.1.1: Conducting comprehensive multi-hazard and vulnerability assessments.	2.1.1: Perform detailed assessments to identify vulnerabilities and risks from multiple hazards, informing decision-making processes.	Deliverable 2.1.1: a-Comprehensive Multi-Hazard and Vulnerability Assessment Report. b-Detailed analysis of hazards (floods, droughts, storms, etc.). c-Vulnerability mapping for communities and critical infrastructure. d-Priority risk areas and recommendations for mitigation measures.
	Activity 2.1.2: Developing dynamic multi-hazard maps.	2.1.2: Create interactive and dynamic multi-hazard maps to visualize and analyze hazards, supporting early warning and planning.	Deliverable 2.1.2: Dynamic Multi-Hazard Maps developed and made accessible for stakeholders.
	Activity 2.1.3: Developing a consolidated risk and hazard database for early warning systems.	2.1.3: Develop a centralized and integrated database consolidating risk, hazard, and vulnerability information to support early warning systems.	Deliverable 2.1.3: Consolidated Risk and Hazard Database established and operationalized.
	Activity 2.1.4: Engaging communities in local risk assessments.	2.1.4: Facilitate participatory risk assessments at the community level, integrating gender perspectives to ensure equal representation and inclusion of women and marginalized groups in identifying risks and vulnerabilities.	Deliverable 2.1.4: a-Community Risk Assessment Reports developed, incorporating gender-specific vulnerabilities and roles. b-Workshops conducted with at least 40% women participation to engage and build capacity within local communities. d-Gender-disaggregated data included in workshop outcomes and risk assessment findings.
Output 2.2: Strengthened detection, monitoring, analysis, and forecasting capabilities.	Activity 2.2.1: Installation and maintenance of automated warning monitoring systems and enhanced monitoring networks.	2.2.1: Install and maintain automated warning systems and expand monitoring networks to improve hazard detection and response.	Deliverable 2.2.1: - a-Automated Monitoring Systems installed and operational. b-Maintenance Protocol developed and implemented.

	Activity 2.2.2: Implementing advanced data analysis, forecasting, and predictive tools.	2.2.2: Deploy state-of-the-art tools for data analysis, forecasting, and predictive modelling to enhance early warning capabilities.	Deliverable 2.2.2: - a-Advanced Forecasting Tools deployed. b-Operational Guidelines for data analysis and predictive modelling developed.
	Activity 2.2.3: Conducting regular system testing and capacity building.	2.2.3: Conduct system testing and capacity-building workshops, ensuring gender inclusion to promote equal participation of men and women in technical training and operations.	Deliverable 2.2.3: a-System Testing Reports prepared. b-4 Training Workshops conducted with at least 40% women participants. c-Training Manuals developed, integrating gender considerations and promoting women's inclusion in technical roles.
	Activity 2.2.4: Establishing institutional mechanisms and fostering partnerships between hydromet and national institutions.	2.2.4: Create formal collaboration frameworks between hydromet agencies and national institutions to enhance coordination and data sharing.	Deliverable 2.2.4: a-Institutional Partnership Frameworks established. b-MOUs signed with national institutions. c-Collaboration Reports developed.
Output 2.3: Improved and diversified systems for disseminating and communicating warnings for broader coverage and reach.	Activity 2.3.1: Developing and implementing multi-channel early warning communication and dissemination strategies.	2.3.1: Design and operationalize multi-channel communication systems (radio, SMS, apps, sirens, and social media) to ensure timely and accessible warnings.	Deliverable 2.3.1: a-Multi-Channel Communication Strategy developed and operationalized. b-Guideline Document for early warning dissemination.
	Activity 2.3.2: Building community-based warning networks and conducting public awareness campaigns.	2.3.2: Establish community-based warning networks and conduct public awareness campaigns, ensuring gender inclusion to address the specific needs, roles, and participation of women in early warning and preparedness.	Deliverable 2.3.2: a-Community-Based Warning Networks established with active participation of women in leadership and operational roles. b-Awareness Campaign Reports documenting outreach activities, including gender-disaggregated data and specific outreach to women and vulnerable groups.

	Activity 2.3.3: Establishing feedback and verification mechanisms.	2.3.3: Create mechanisms to collect feedback from communities and stakeholders and verify the effectiveness of early warnings.	Deliverable 2.3.3: a-Feedback Mechanism Framework developed. b-Verification Reports assessing early warning effectiveness.
	Activity 2.3.4: Strengthening coordination with private sector telecommunication networks and media.	2.3.4: Partner with telecommunication providers and media outlets to enhance the reach and reliability of early warning messages.	Deliverable 2.3.4: a- Signed Partnership Agreements with at least 3 major telecommunication and media providers. b- Telecom and Media Coordination Protocol developed. c- Report on Partnership Outcomes, including improved coverage metrics and case studies.
Output 2.4: Enhanced community and institutional readiness for effective disaster response.	Activity 2.4.1: Equipping National Center for Emergency Management / Civil Defence and Ambulance Authority with tools and equipment for disaster preparedness and response.	2.4.1: Procure and deploy essential tools, equipment, and resources to enhance national disaster preparedness and emergency response capacity.	Deliverable 2.4.1: a- List of Procured Equipment and Tools with specifications. b- Deployment Report detailing installation, functionality, and training provided for usage.
	Activity 2.4.2: Developing community action plans and emergency protocols with regular reviews and updates.	2.4.2: Create and regularly update localized action plans and emergency protocols to enhance community-level preparedness.	Deliverable 2.4.2: a- Community Action Plans developed for at least 3 vulnerable regions. b- Emergency Protocol Guidelines with periodic review mechanisms.

	Activity 2.4.3: Conducting regular community-based training and simulation exercises.	2.4.3: Organize community-based training and simulation exercises to enhance disaster preparedness, ensuring gender inclusion and equal participation of women and men in preparedness and response activities.	Deliverable 2.4.3: a- 4 Training Workshops conducted in targeted communities, ensuring 40% women participation. b- Simulation Exercise Reports documenting scenarios, responses, and outcomes, including gender-disaggregated data and analysis of women's roles and needs in disaster preparedness.
	Activity 2.4.4: Establishing public awareness and education programs.	2.4.4: Implement programs to educate the public on disaster preparedness, early warning systems, and response actions.	Deliverable 2.4.4: a- Public Awareness Materials (brochures, posters, videos) developed and disseminated. b- Public Awareness Campaign Impact Report measuring outreach effectiveness.
	Activity 2.4.5: Conducting regular evaluation and lessons-learned exercises.	2.4.5: Evaluate disaster response activities through post-event assessments, capturing lessons learned for continuous improvement.	Deliverable 2.4.5: a-Lessons-Learned Reports developed after training and disaster response exercises. b- Evaluation Framework for periodic review and updates.
Output 3.1: Forecast-based actions established.	Activity 3.1.1: Developing forecast-based action protocols.	3.1.1: Design protocols that define specific early actions to be taken based on forecasted hazards and risk levels.	Deliverable 3.1.1: a- Forecast-Based Action Protocol Document developed. b- Action Matrix with predefined actions for various hazards.
	Activity 3.1.2: Setting up early warning triggers with measurable thresholds to trigger predefined early actions.	3.1.2: Define measurable thresholds for hazards (e.g., rainfall, flood levels) that will activate early action protocols.	Deliverable 3.1.2: a- Threshold and Trigger Guidelines developed. b- Early Warning Trigger System operationalized.

			<p>Deliverable 3.1.3: a-4 Training Workshops conducted, ensuring 40% women participation.</p> <p>b- Training Reports documenting participant engagement, gender-disaggregated data, and outcomes.</p> <p>c-. Simulation Exercise Reports to validate forecast-based actions, highlighting women's roles and contributions in disaster preparedness and response.</p>
	<p>Activity 3.1.3: Training stakeholders, including relevant agencies, communities, and volunteers, on implementing forecast-based actions.</p>	<p>3.1.3: Conduct training workshops and simulation exercises to equip stakeholders with the knowledge and skills to implement forecast-based actions, ensuring gender balance and equal opportunities for women's participation.</p>	
<p>Output 3.2: Emergency funding mechanism created and operational.</p>	<p>Activity 3.2.1: Establishing the legal, institutional, and operational framework for the emergency fund.</p>	<p>3.2.1: Develop a structured framework outlining governance, legal, and operational processes for managing an emergency fund.</p>	<p>Deliverable 3.2.1: a- Emergency Fund Framework Document developed.</p> <p>b- Legal and Institutional Guidelines approved by relevant authorities.</p>
	<p>Activity 3.2.2: Mobilizing and securing financial resources to operationalize and replenish the fund.</p>	<p>3.2.2: Identify and secure funding sources, including government contributions, donor funding, and private sector support.</p>	<p>Deliverable 3.2.2: a- Resource Mobilization Strategy developed.</p> <p>b- Commitments Secured from at least 2-3 funding sources.</p> <p>c-Emergency Fund Operationalization Report tracking fund status.</p> <p>D-Technical Assistance for EWS Replication in other countries through:</p> <ol style="list-style-type: none"> 1. Capacity Building – Training modules, workshops, and technical sessions for stakeholders.

			<ol style="list-style-type: none"> 2. Financial Resource Mobilization – Funding proposals and donor engagement for sustainable financing. 3. Policy & Institutional Strengthening – Guidelines and frameworks for policy integration and governance. 4. Technology Customization & Deployment – Country-specific assessments and deployment strategies.
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Monitoring, reporting and evaluation arrangements (max. 300 words)

5.1. Monitoring, Reporting, and Evaluation System

In addition to the arrangements outlined in the Accreditation Master Agreement (AMA), the proposed project will implement specific monitoring, reporting, and evaluation (MRE) mechanisms designed to ensure the effective assessment of climate results and overall project performance. These arrangements include a detailed description of the MRE system, the types of evaluations to be conducted, and the reporting relationships among the Accredited Entity (AE), Executing Entity (EE), and the National Designated Authority (NDA).

5.2. Key Roles and Responsibilities

- **Accredited Entity (AE):** United Nations Industrial Development Organization (UNIDO)
 - As the AE, UNIDO is responsible for overall project oversight, including resource management, coordination, monitoring and evaluation, and reporting to both the Green Climate Fund and the Government of Oman.
- **Executing Entity (EE):** Environment Authority
 - The Environment Authority will act as the primary EE, overseeing the operational implementation of the project in Oman, including adapting strategies to local contexts, managing meteorological activities, and leading on-the-ground execution. The implementation will be supported by the following entities, formalized through Memorandums of Understanding (MoUs):
 - a) Directorate General of Meteorology: Responsible for delivering climate information services as part of Component 1.
 - b) National Center for Emergency Management and Civil Defence and Ambulance Authority: Jointly responsible for managing multi-hazard early warning systems and facilitating early action under Component 2.
 - c) Ministry of Finance: Facilitates improvements in climate information systems to support investment decisions, contributing to Component 3.
- **National Designated Authority (NDA):** The Environment Authority, Oman
 - The NDA ensures that the project aligns with national priorities and policies and acts as the focal point for the GCF, facilitating coordination between national stakeholders and the AE.

5.3. Monitoring and Reporting System

- a) **Monitoring System:**
 - **Continuous Monitoring:** The Environment Authority, as the EE, will continuously monitor project activities to ensure they are progressing according to the plan. This includes tracking key performance indicators (KPIs) related to climate resilience and the effectiveness of the early warning system.
 - **Regular Reporting:** The Environment Authority will submit quarterly and annual progress reports to UNIDO. These reports will cover the status of activities, financial expenditures, challenges encountered, and corrective actions taken.

5.3.2. Reporting Relationships:

- **EE to AE:** The Environment Authority is obligated to provide regular reports to UNIDO, which include technical, financial, and performance data. These reports are critical for ensuring that project activities align with GCF and national requirements.
- **AE to GCF and NDA:** UNIDO, as the AE, compiles and consolidates the reports from ODGM and any other implementing partners. These consolidated reports are then submitted to the GCF and the NDA, providing a comprehensive overview of project progress, financial management, and climate results. UNIDO is also responsible for submitting the Annual Performance Report (APR) to the GCF, summarizing the project's progress, challenges, and achievements for each year.

5.3.3. Project Monitoring & Evaluation System

The project's M&E system will employ a structured approach to data capture, recording, and assessment of proposed indicators to ensure continuous tracking of progress and impact, especially focusing on the reporting of outcome-level indicators.

a) Data Collection & Capture Mechanisms:

- **Automated Data Systems:** Climate and early warning data will be captured through real-time monitoring platforms operated by the Directorate General of Meteorology and the National Center for Emergency Management. These platforms will allow for the collection of time-sensitive data such as weather patterns, climatic hazards (e.g., heatwaves, floods), and early warnings. To report on outcome-level indicators like improved preparedness, these systems will track metrics such as response times, accuracy of alerts, and the number of at-risk populations reached with warnings. Real-time data feeds from these systems will be integrated into the centralized M&E database, ensuring that critical information about the effectiveness of climate response efforts is immediately accessible for analysis and reporting.
- **Surveys & Community Feedback:** Beneficiary perception surveys and community engagement reports will be conducted annually to assess the effectiveness of early warning dissemination and response measures. These surveys will be used to track changes in key outcome indicators, such as increased public awareness of early warning systems and improved community response to hazards. Additionally, these surveys will assess the extent to which communities understand and trust the early warning system, as well as the degree to which they act upon warnings (e.g., evacuations, preparedness actions), providing a direct link to outcome indicators like enhanced resilience and risk reduction.
- **Institutional Reporting:** Implementing partners, including the Directorate General of Meteorology and the National Center for Emergency Management, will submit periodic updates on activities such as equipment deployment, training completion, and policy adoption. These updates will serve as a foundation for reporting on institutional capacity building and the operationalization of the NMHEWS. Key outcome-level indicators, such as the establishment of operational structures, effective coordination between agencies, and the adoption of climate-resilient policies, will be captured in these reports.

b) Data Recording & Verification:

- **Centralized M&E Database:** All collected data will be systematically recorded in a centralized M&E database managed by the Environment Authority. This centralized system will be equipped with capabilities to track outcome-level indicators such as improvements in climate resilience, response capacity, and disaster preparedness at the community and institutional levels. The M&E database will allow for the tracking of progress over time, providing a clear view of whether expected outcomes, such as a reduction in climate vulnerability and an increase in adaptive capacity, are being achieved.
- **Verification Protocols:** Verification protocols will include cross-checking progress reports with field assessments and technical audits conducted by UNIDO. This process will ensure the reliability and accuracy of the data collected on outcome indicators. For example, outcome indicators related to the impact of early warning systems (such as timely evacuations and reduced disaster losses) will be cross-checked through field surveys and post-event analyses to validate the effectiveness of interventions.

c) Assessment of Proposed Indicators:

- **Quarterly & Annual Reports:** Regular reports will measure progress against key performance indicators (KPIs), ensuring transparency and adaptive management. These reports will be integral to monitoring outcome-level indicators, such as the number of beneficiaries who benefit from early warning alerts, the effectiveness of the early warning system in reducing risk, and improvements in community preparedness. Outcome-level indicators related to behavior change, such as increased public participation in preparedness activities, will also be tracked. Reports will provide detailed analysis of progress and highlight any challenges faced in achieving desired outcomes. These reports will be crucial for informing the GCF, the Government of Oman, and other stakeholders about the tangible impacts of the project.
- **Mid-term & Final Evaluations:** Independent evaluations will be conducted at mid-term and at the project's conclusion. These evaluations will assess the overall effectiveness of the project in achieving its intended outcomes, such as increased community resilience to climate hazards, the functionality of the early warning system, and the integration of climate adaptation into national policies. Evaluators will also assess whether the project has successfully met its outcome-level indicators, such as improved stakeholder engagement and

strengthened institutional capacity for disaster risk reduction. These evaluations will provide insights into the sustainability of outcomes and recommend adjustments if necessary.

- **Real-Time Dashboard:** A digital tracking tool will provide real-time updates on the status of key deliverables, allowing for timely decision-making and enabling stakeholders to monitor project progress and outcomes as they unfold. This dashboard will specifically track the status of outcome-level indicators, providing visual representations of how the project is performing against targets such as the number of people reached by early warning systems, the extent of climate-resilient infrastructure developed, and improvements in emergency response times. Stakeholders will be able to access up-to-date information on these indicators, ensuring that the project remains adaptive and responsive to changing conditions.

5.3.4. Reporting on Actual Beneficiaries Post-NMHEWS Implementation

Once the National Multi-Hazard Early Warning System (NMHEWS) is fully functional, the project will implement a dedicated approach to report on the actual beneficiaries impacted by the system. This will ensure that the outcomes and benefits of the system reach the intended populations and that all stakeholders have access to up-to-date beneficiary data.

a) **Beneficiary Identification and Tracking:**

A clear system will be established to identify and track beneficiaries who directly benefit from the NMHEWS. This will include communities at risk of climate-related hazards such as floods, droughts, and heatwaves, as well as local stakeholders involved in the implementation of the early warning system. Beneficiary data will be integrated into the M&E database, which will capture demographic information, location, and the specific services accessed (e.g., early warnings, preparedness training, etc.).

b) **Beneficiary Engagement:**

As part of ongoing engagement with beneficiaries, the project will establish community liaison mechanisms to ensure that beneficiaries are informed and actively participating in the system. This will include awareness campaigns, regular feedback sessions, and periodic surveys to assess the level of understanding, preparedness, and responsiveness of the communities.

c) **Reporting on Beneficiary Impact:**

Reports on the effectiveness of the NMHEWS in reaching beneficiaries will be generated as part of the quarterly and annual M&E reports. These reports will provide specific information on:

- The number of beneficiaries receiving early warnings and how these warnings have influenced their behavior (e.g., evacuations, preparedness measures).
- The level of engagement and participation in early warning dissemination activities.
- The impact of the NMHEWS on local communities' ability to respond to climate hazards, including how the system has helped reduce vulnerability and enhance resilience.

d) **Beneficiary Feedback and Evaluation:**

As part of the mid-term and final evaluations, the project will specifically assess the effectiveness of the NMHEWS in delivering benefits to its direct beneficiaries. This will involve conducting beneficiary surveys to measure satisfaction with the system, as well as evaluating the accessibility and reliability of the warnings issued. This will help identify gaps or challenges in the delivery of services and inform potential improvements.

e) **Real-Time Beneficiary Tracking:**

The digital tracking system and real-time dashboard will also capture data related to beneficiaries, allowing for live updates on how the system is reaching different communities and the effectiveness of its outreach efforts. This information will be available to stakeholders, including the Green Climate Fund (GCF), the Government of Oman, and other partners.

5.4. Evaluation System

5.4.1. Annual Performance Report (APR):

- UNIDO will prepare and submit an APR to the GCF, providing a detailed overview of the project's annual progress. This report will include assessments of whether the project is on track to meet its climate resilience goals, financial management summaries, and any adjustments made during the reporting period.
- The APR serves as a key tool for maintaining transparency and accountability, ensuring that both the GCF and the Government of Oman are informed of the project's status.

5.4.2. Interim Evaluations:

- Mid-term evaluations will be conducted approximately halfway through the project's implementation period.

- These evaluations will assess the effectiveness of the project activities and the likelihood of achieving the intended climate outcomes. The evaluations will identify any challenges or barriers to success and recommend adjustments to the project plan to ensure the project remains on track.

5.4.3. Final Evaluation:

- A final evaluation will be conducted at the conclusion of the project.
- This evaluation will provide a comprehensive assessment of the project's overall impact, sustainability, and scalability. It will measure the achievement of climate resilience targets, evaluate the effectiveness of the early warning system, and assess the benefits delivered to local communities and stakeholders.

5.4.4. Completion Report:

- Upon project completion, UNIDO will prepare a Completion Report, summarizing the entire project lifecycle. This report will include a final summary of the project's achievements, financial accounting, challenges faced, lessons learned, and recommendations for the sustainability of the project's outcomes.
- The Completion Report serves as the final documentation for project closure and is submitted to the GCF, the Government of Oman, and the NDA.

5.5. Contractuel and Institutionnel Arrangements

- **GCF and Government of Oman:** Both the GCF and the Government of Oman will provide strategic guidance and financial oversight, ensuring that the project is implemented effectively and aligns with national climate priorities.
- **UNIDO (AE):** UNIDO will enter into agreements with both the GCF and the Government of Oman, as well as service agreements with ODGM (EE) and other partners. UNIDO is responsible for ensuring that all contractual obligations are met, and that resources are managed efficiently.
- **The Environment Authority (EE):** will coordinate with local agencies and partners to leverage national expertise and resources. They are responsible for the day-to-day implementation and monitoring of the project, ensuring that it meets its objectives and aligns with the broader national strategy.