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

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

Annex 14
Selection and Calculation of Beneficiaries

CONTENTS

1. INTRODUCTION

1.1 Overview

The GCF Funding Proposal “Toward Risk-Aware and Climate-resilienT communities (TRACT) – Strengthening climate services and impact-based multi-hazard early warning in Maldives” intends to increase climate resilience and reduce the vulnerability of climate-sensitive sectors and communities in Maldives by strengthening capacity to implement preparedness and anticipatory actions based on reliable climate information and risk knowledge.

This document outlines the approach used for identifying and selecting beneficiaries, the calculation of direct and indirect beneficiaries, as well as the adaptation benefit deriving from the project activities.

2. SELECTION CRITERIA FOR BENEFICIARIES

2.1 General eligibility criteria for beneficiaries

Beneficiaries will be identified based on the following general eligibility criteria:

- **Exposure and vulnerability to hydrometeorological hazards**: Measured based on historical trends in data reported by the National Disaster Management Authority (NDMA) and secondary data analysis, including the Vulnerability Index (see Section 2.2). Geographical targeting based on exposure and vulnerability is the first level of beneficiary selection and will be validated by national stakeholders in the Project Steering Committee (PSC).
- **Potential to support increased resilience of the most vulnerable or marginalised groups**: The project will prioritise inclusion of beneficiaries that satisfy at least one of the following criteria:
    - Women / Single parent / Elderly / Widows / Youth / People with Disabilities
    - Not receiving external assistance for similar interventions (*i.e.*, from international organisations, NGOs, community groups, etc.)
    - High levels of debt / no access to credit / no formal savings that could be used to (re)start livelihood
    - Previous loss of assets or labour opportunities due to a climate-related disaster or extreme weather event
- **Willingness to participate in project activities**.

At the inception phase, the Project Management Unit (PMU) will further elaborate and refine transparent and just selection criteria in consultation with the PSC, the Social and Gender Safeguards (SGS) Specialist and the M&E Officer. Selection criteria will be made available to all and will be disseminated to affected populations and shared with local government authorities and community-based organisations, including those representing women's interests, for endorsement. A beneficiary feedback mechanism will be established through the PSC to monitor that the selection criteria continue to be appropriate throughout implementation of the project and that the most vulnerable people are being reached.

2.2 Climate Vulnerability Index

The NDMA is tasked with supporting communities in Maldives in the event of an emergency or crisis situation. To strengthen the assistance provided, in 2022, NDMA developed a Vulnerability Index methodology for identifying the islands most vulnerable to disasters, based on disaster data collected during the preceding five years. The Vulnerability Index assesses three key factors:

- **Exposure**, measured by the island's population size;
- **Hazard**, determined by the number of disasters that occurred in the past five years;
- **Capacity**, which evaluates the island's resilience, considering factors such as participation in disaster preparedness training and the availability of operational pumps.

This approach allows NDMA and other entities operating within Maldives, such as the Maldivian Red Crescent (MRC), to prioritise islands for disaster risk reduction and climate change adaptation measures.

3. CALCULATION OF BENEFICIARIES

3.1 Definitions

3.1.1 Direct beneficiaries

As per GCF guidance,[1] *direct beneficiaries* of an adaptation intervention are defined as individuals who receive i) targeted support from a GCF-funded intervention and ii) a measurable adaptation benefit from a GCF-funded intervention.

3.1.2 Indirect beneficiaries

Indirect beneficiaries of an adaptation intervention are defined as individuals who do not receive targeted support from a GCF-funded intervention but are likely to receive a measurable adaptation benefit from a GCF-funded intervention.

3.1.3 Adaptation benefit

An *adaptation benefit* is an outcome derived from a GCF-funded intervention that aims to increase resilience[2] or reduce vulnerability[3] of a specific target system against the adverse effects of climate change when compared to a baseline scenario. In the context of the proposed TRACT project, the specific systems targeted to receive adaptation benefits are communities (in a specific geographical area) and their associated health, well-being, and food and water security.

3.2 ARA1 – Core Indicator 2: Direct and indirect beneficiaries

3.2.1 Direct beneficiaries

Calculation of the number of direct beneficiaries under the proposed project is based on the number of individuals satisfying both of the following two requirements.

1 – Individuals receiving targeted support from GCF-funded intervention(s)

The number of individuals receiving targeted support under the project is based on the island populations that benefit from at least one of the following interventions:

- Multi-hazard risk assessments and mapping (Sub-Activity 1.2.3)
- Enhanced Vulnerability and Capacity Assessments (Sub-Activity 1.2.5)
- Upgraded hydrometeorological observation infrastructure (Sub-Activity 2.1.4)
- Alerts using innovative communication technology (Sub-Activity 3.1.4)
- Community-Based Disaster Risk Management (Sub-Activity 4.1.6)

The above interventions have been selected to be representative of the four key elements of a multi-hazard early warning system (MHEWS), which the proposed GCF project aims to establish, while also having the specificity in targeting to avoid double counting. The total number of individuals receiving targeted support from GCF-funded interventions, linked to the four key elements of MHEWS, is calculated as outlined in Table 1.

[1] GCF, 2022. Integrated Results Management Framework: Results Handbook (Draft)
[2] As per the IPCC AR6 definition, *Resilience* refers to the capacity of interconnected social, economic and ecological systems to cope with a hazardous event, trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure.
[3] As per the IPCC AR6 definition, *Vulnerability* refers to the propensity or predisposition to be adversely affected. It encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

Table 1. Calculation of individuals receiving targeted support linked to the four key elements of MHEWS

MHEWS element	Definition of individuals receiving targeted support	Adjustments to avoid double counting	Individuals receiving targeted support (after adjustments to avoid double counting)
1 – Disaster risk knowledge based on the systematic collection of data and disaster risk assessments	Direct beneficiaries are the populations of the islands covered by the multi-hazard risk assessments and mapping conducted under Sub-Activity 1.2.3.	Populations of the islands targeted under Sub-Activities 1.2.5, 2.1.4, 3.1.4 and 4.1.6 are not counted.	Total: 211,908 *Female: 87,014* *Male: 124,894*
	Direct beneficiaries are the populations of the islands in which Enhanced Vulnerability and Capacity Assessments (EVCAs) will be conducted under Sub-Activity 1.2.5.	Populations of the islands targeted under Sub-Activity 2.1.4 are not counted.	Total: 95,040 *Female: 37,474* *Male: 57,566*
2 – Detection, monitoring, analysis and forecasting of the hazards and possible consequences	Direct beneficiaries are the populations of the islands where existing weather stations will be renovated or where new weather stations will be installed under Sub-Activity 2.1.4.	No adjustments undertaken.	Total: 90,490 *Female: 42,317* *Male: 48,173*
3 – Dissemination and communication, by an official source, of authoritative, timely, accurate and actionable warnings and associated information on likelihood	Direct beneficiaries are the populations of the islands where TETRA-linked sirens and/or mobile messaging systems have been deployed under Sub-Activity 3.1.4.	Populations of the islands targeted under Sub-Activity 2.1.4 are not counted.	Total: 8,810 *Female: 4,280* *Male: 4,530*
4 – Preparedness at all levels to respond to the warnings received	Direct beneficiaries are the populations of the islands in which Community-Based Disaster Risk Management (CBDRM) will be implemented under Sub-Activity 4.1.6.	Not counted due to the same islands being targeted under Sub-Activity 1.2.4.	0
Target direct beneficiaries across four MHEWS elements		***Female***	142,980
		Male	191,988
		Total	334,968

As shown in the table above, the total number of individuals receiving targeted support from GCF-funded intervention(s) is 334,968.

2 – Individuals receiving a measurable adaptation benefit from GCF-funded intervention(s)

The adaptation benefits in relation to the most vulnerable people and communities (ARA 1) from the GCF-funded interventions selected to represent the overall targeted support received from the GCF are outlined in Table 2 below.

Table 2. Adaptation benefits for communities targeted through selected GCF-funded interventions

Intervention	Adaptation Benefits
Multi-hazard risk assessments and mapping (Sub-Activity 1.2.3)	• Increased availability of data on climate-related risks at the island level underpinning the generation of more locally relevant, impact-based forecasts and warnings
Enhanced Vulnerability and Capacity Assessments (Sub-Activity 1.2.5)	• Improved community-level knowledge and understanding of localised climate-related risks • Increased capacity of communities to identify actions to reduce climate-related risks

	• Increased availability of data on climate-related vulnerabilities and capacities at the community level underpinning the generation of more locally relevant, impact-based forecasts and warnings
Upgraded hydrometeorological observation infrastructure (Sub-Activity 2.1.4)	• Increased availability of high-quality weather and climate data underpinning more accurate climate information required for evidence-based decision-making for climate change adaptation
Alerts using innovative communication technology (Sub-Activity 3.1.4)	• Increased access to early warnings that inform preparedness and anticipatory actions that reduce disaster risks and avert or minimise climate-related losses and damage
Community-Based Disaster Risk Management (Sub-Activity 4.1.6)	• Increased capacity of community-level actors to effectively prepare for and manage disaster risks

It is estimated that 90% of the individuals receiving targeted support for Sub-Activities 1.2.3, 1.2.5, 2.1.4, 3.1.4 and/or 4.1.6 will receive one or more of the adaptation benefits outlined in the above table. The conservative estimate is based on the following assumption: 10% of the target population is assumed to be i) incapable of receiving early warnings or acting on the information received; and/or ii) unwilling to act or undertake behavioural change as a result of receiving risk information, early warnings or capacity building support under the project.

Calculation of direct beneficiaries

Based on the considerations set out above, the total number of direct beneficiaries for the project is calculated to be 301,471 (128,681 females; 172,790 males).

3.2.2 Indirect beneficiaries

The proposed project targets the entire population of Maldives, all of whom are deemed to be vulnerable to climate change and will benefit from the establishment of user-driven climate services and a people-centred, impact-based MHEWS, complemented by relevant institutional frameworks and coordination mechanisms. Indirect beneficiaries are therefore considered to constitute the population of Maldives that is not a direct beneficiary of the project. The total number of indirect beneficiaries for the project is calculated to be 213,661 (74,457 females; 139,204 males).

3.3 ARA1 – Supplementary Indicator 2.4: Beneficiaries (female/male) covered by new or improved early warning systems

3.3.1 Number of individuals

GCF Supplementary Indicator 2.4 counts all individuals residing within an area covered by a new or improved early warning system (EWS) for climate change-related risks and hazards following GCF-funded support.

As per the Sendai Framework, an EWS is an integrated system comprising four key elements:

1. Disaster risk knowledge based on the systematic collection of data and disaster risk assessments
2. Detection, monitoring, analysis and forecasting of the hazards and possible consequences
3. Dissemination and communication, by an official source, of authoritative, timely, accurate and actionable warnings and associated information on likelihood and impact
4. Preparedness at all levels to respond to the warnings received

The proposed project aims to directly or indirectly benefit the entire population of Maldives through the establishment of a people-centred, impact-based MHEWS. While 58.5% of the population will benefit directly (see Section 3.2.1), all members of the population stand to benefit at least indirectly from improvements to the four inter-connected elements of an EWS as outlined above. Supplementary

Indicator 2.4 therefore has a value of 515,132 beneficiaries, corresponding to 203,138 females (39%) and 311,994 males (61%).[4]

3.4 ARA2 – Core Indicator 2: Direct and indirect beneficiaries

3.4.1 Direct beneficiaries

As outlined in Section 3.2.1, calculation of the number of direct beneficiaries under the proposed project is based on the number of individuals satisfying both of the following two requirements.

1 – Individuals receiving targeted support from GCF-funded intervention(s)

As shown in Table 1, the total number of individuals receiving targeted support from GCF-funded intervention(s) is 334,968 (142,980 females; 191,988 males).

2 – Individuals receiving a measurable adaptation benefit from GCF-funded intervention(s)

The adaptation benefits in relation to health, well-being, food, and water security (ARA 2) from the GCF-funded interventions selected to represent the overall targeted support received from the GCF are outlined in Table 2 below.

Table 3. Adaptation benefits for health, well-being, food, and water security delivered through GCF-funded interventions

Intervention	Adaptation Benefits
Multi-hazard risk assessments and mapping (Sub-Activity 1.2.3)	• Increased availability of data on climate-related risks to health and well-being, and food and water security at the island level
Enhanced Vulnerability and Capacity Assessments (Sub-Activity 1.2.5)	• Improved community-level knowledge and understanding of climate-related risks to health and well-being, and food and water security • Increased capacity of communities to identify actions to increase resilience of health and well-being, and reduce food and water insecurity • Increased availability of data on climate-related vulnerabilities and capacities in the context of health and well-being and food and water security at the community level, underpinning the generation of more locally relevant, impact-based forecasts and warnings
Upgraded hydrometeorological observation infrastructure (Sub-Activity 2.1.4)	• Increased availability of high-quality weather and climate data underpinning more reliable climate information required to make informed decisions that improve health and well-being outcomes, and reduce food and water insecurity
Alerts using innovative communication technology (Sub-Activity 3.1.4)	• Increased access to early warnings that inform preparedness and anticipatory actions that reduce the impact of climate-related hazards on health and well-being • Increased access to early warnings that inform measures that reduce food losses and improve water resource management
Community-Based Disaster Risk Management (Sub-Activity 4.1.6)	• Increased capacity of community-level actors to deliver first aid and psychosocial support, leading to improved health and well-being outcomes • Increase capacity of community-level actors to safeguard food and water security in the event of a climate-related emergency

It is estimated that 90% of the individuals receiving targeted support for Sub-Activities 1.2.3, 1.2.5, 2.1.4, 3.1.4 and/or 4.1.6 will receive one or more of the adaptation benefits outlined in the above table. The conservative estimate is based on the following assumption: 10% of the target population is assumed to be i) incapable of receiving early warnings or acting on the information received; and/or ii) unwilling to act or undertake behavioural change as a result of receiving risk information, early warnings or capacity building support under the project.

[4] Note that the high sex ratio of males to females is due to the large proportion of male foreign migrant workers in Maldives. More data available at: https://census.gov.mv/2022/wp-content/uploads/2024/03/Population_Census-2022_Report-Updated-130324.pdf (Accessed: 15 April 2024)

Calculation of direct beneficiaries

Based on the considerations set out above, the total number of direct beneficiaries for the project is calculated to be 301,471 (128,681 females; 172,790 males).

3.4.2 Indirect beneficiaries

As outlined in Section 3.2.2, the proposed project targets the entire population of Maldives, all of whom are deemed to be vulnerable to climate change and will benefit from the establishment of user-driven climate services and a people-centred, impact-based MHEWS, complemented by relevant institutional frameworks and coordination mechanisms. Indirect beneficiaries are therefore considered to constitute the population of Maldives that is not a direct beneficiary of the project. The total number of indirect beneficiaries for the project is calculated to be 213,661 (74,457 females; 139,204 males).

APPENDIX 1 – VULNERABILITY INDEX

The National Disaster Management Authority (NDMA) developed a methodology to assess the Vulnerability Index of different islands across Maldives. An overview of the objectives and calculation method of the Index is provided below.

Vulnerability Index

Developed in February 2022 by Sonath Abdul Sattar, Project Associate (MUDRP), for National Disaster Management Authority

Introduction

NDMA has been closely supporting and working with the islands of the Maldives in times of emergency and crisis, be it a flood or fire. In order to further strengthen the assistance, NDMA identified the most vulnerable islands based on the data received past five years.

Objectives

The objective of this paper is to:

1. Identify the vulnerable islands based on past five years
2. Based on the vulnerable islands decide a possible list of islands NDMA would be providing pumps
3. Based on the vulnerable islands decide a possible list of islands NDMA would be conducting Island Disaster Management Plan (IDMP) program
4. Based on the vulnerable islands decide a possible list of islands NDMA would be conducting Community Emergency Response Team (CERT) training

Methodology

The following methodology was used to attain the objectives of this paper.

Step 1: Base Database

As a base database, past five years (2017 to 2021) reported NDMA incidents were taken into consideration. These include a total of 95 islands that have reported fires and floods (storm, rainwater, surges) to NDMA in the past five years.

Step 2: Vulnerability Island Score (VIS)

Vulnerability is “the conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards”, UNDRR, 2022. In short, vulnerability can be explained in the formula below;

Vulnerability = (Exposure X Hazard) – Capacity.

To understand the vulnerability among the islands of Maldives, the following formula was developed:

VIS = (Resident Population Score X Disaster Score) - Capacity Score

Where;

Resident Population Score:

Resident population is taken to understand the exposure component in this vulnerable context. It takes into consideration the Maldivians and foreigners living in the island, both males and females.

Resident Population Score Calculation:

Out of these 95 islands, the lowest island has a population of 255, while the highest have 136,755. Among these, there are 47 islands with a population below 1000, and 48 with a population above 1000. The islands with a population above 1000 were given a score of 1, while the islands with a population below 1000 were given 0.

Disaster Score:

Disaster, namely fire and floods were taken to understand the hazard component in this vulnerable context. A total of 35 fire incidents from 20 islands and 172 flood incidents from 91 islands were reported in the past five years.

Disaster Score Calculation:

Fire incidents ranged from 0 to 13 among the 95 islands, and flood incidents ranged from 0 to 6 among these islands. Hence, Normalization Formula (X normalized = (X – Xmin) / (Xmax – Xmin)) used in Statistics was used to bring down all the numbers between 0 to 1. The Total Disaster Score was calculated by adding the sum of this normalized value of the reported fires and floods to NDMA.

Capacity Score:

Capacity components in this vulnerable context were taken to understand the island's capability in times of a crisis or emergency. In this regard, first it was identified if the community has participated in any type of disaster preparedness trainings like NDMA's IDMP / CERT or MRC's VCA / CBDRM / ERT trainings. Next, if they have pumps in the island which are now in partial or full working conditions, given under different projects since 2014 by UNDP, UNICEF, NDMA and MRC.

Capacity Score Calculation:

If the community have participated in any type of disaster preparedness training, they were given a score of 1, otherwise 0. These trainings were conducted in 33 islands from the 95 islands. And, if the pumps in the island are now in partial or full working condition, they were given a score of 1, otherwise 0. There were these pumps in 29 islands. The Total Capacity Score was calculated by adding the sum of this values of the trainings and pumps in the islands.

APPENDIX 2 – SELECTION CRITERIA FOR THE CBDRM PROGRAMME

The Maldivian Red Crescent (MRC) proposed the implementation of a Community-Based Disaster Risk Management (CBDRM) programme across 48 islands. In collaboration with the NDMA, MRC aims to identify target islands and beneficiaries based on vulnerability, current capacity, community engagement in CBDRM efforts, and status of Automatic Weather Station (AWS) infrastructure. An initial version of the selection criteria is outlined below.

Selection Criteria for Target Islands under the CBDRM Programme

Introduction

The Maldivian Red Crescent (MRC), as part of the TRACT Proposal to the Green Climate Fund (GCF), has proposed the implementation of a Community-Based Disaster Risk Management (CBDRM) Programme in 48 islands. As part of the selection process of target islands, MRC In coordination with the National Disaster Management Authority (NDMA), aims to identify target islands and beneficiaries based on vulnerability, capacity, and community engagement towards CBDRM as the primary. The selection process will also prioritize islands identified for Automatic Weather Station (AWS) sensor replacement, renovation, or deployment under Sub-Activity 2.1.4 of the TRACT Project.

Interventions Planned in each target Island

- Enhanced Vulnerability Capacity Assessment (VCA) & Island Disaster Management Plan (IDMP) Workshop | 30 People per Island
- Community Emergency Response Team (CERT) Training | 25 People Per Island
- Standard First Aid Training | 25 People Per Island
- Psychological First Aid Training | 25 People Per Island
- Community level Simulation Exercise | 100 People Per Island
- Y-Adapt Workshop | 25 People Per Island
- Y-Adapt Community project | 100 People Per island

Each selected island will have the following activities conducted at each island will have an approximate Reach of the following breakdown per island:

Direct Reach per Island: 330 +-
In-Direct Reach Per Island: Minimum of 1650 People [5]
Approximate Total Reach Per Island = 1980 People
Approximate Total reach via CBDRM Activities (48 islands) = 95,040

Objectives

The objective of this document is to propose considerations towards selection of target islands to implement CBDRM Programmes.

MRC proposes to take the following approach towards selection:[6]

1. To maximize synergies within the project, Islands already targeted for AWS sensor replacement, renovation, or new deployment under Sub-Activity 2.1.4 will provide the baseline of Islands to be targeted under the Project.

2. Identify Island communities which as on-going engagement with National Disaster Management Authority to initiate CBDRM Programmes to strengthen community level resilience into the baseline of target islands.

3. Utilize, NDMA's Vulnerability Index Paper (Review in Progress) to assess the capacity score of the list of islands using the formula | VIS = (Resident Population Score X Disaster Score) - Capacity Score.

4. Identify the 48 Islands who scored the highest utilizing the Index as a reference and take into the following consideration prior to finalization: -
    - Community's willingness to commit to the full CBDRM Programme
    - Ensure diverse geographical coverage rather than focused effort on a collection of islands within one atoll / region[7]
    - Consult on government level commitments to island communities / regions to ensure community buy-in to the interventions proposed under the project.

[5] *MRC calculates in-direct reach for the purpose of data collection with the formula 1 direct beneficiary = 5 In-direct Reached*
[6] *MRC implements all CBDRM Programmes in close coordination and partnership with NDMA. Any selection process for target island selection will be reviewed and endorsed between both organizations prior to selection.*
[7] *Expanding activities across multiple regions and atolls enhances geographic coverage and ensure regional capacity for emergency response to support at atoll/regional level.*