GCCA+
THE GLOBAL CLIMATE CHANGE ALLIANCE PLUS INITIATIVE

Funded by the European Union

Case Study Nr. 2 – Maldives

IMPACT AND SUSTAINABILITY STUDY

MALDIVES

SUPPORT TO CLIMATE CHANGE ADAPTATION AND MITIGATION

CRIS CODE: DCI-ENV/2008/163-259

MARCH 2021

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List of Acronyms

AASWM: Ari Atoll Solid Waste Management
ADB: Asian Development Bank
ASPIRE: Accelerating Sustainable Private Investment in Renewable Energy
AUD: Australian Dollar
AUSAID: Australian Agency for International Development
AOSIS: Alliance of Small Island States
BRAT: Bleaching Risk Assessment Tool
CBWMP: Community-based Wetland Management Plans
CC: Climate Change
CCAC: Climate Change Advisory Council
CCAP: Climate Change Adaptation Project
CCTF: Climate Change Trust Fund
CECM: Clean Energy for Climate Mitigation
EC: European Commission
EPA: Environmental Protection Agency
EU: European Union
GCCA+: Global Climate Change Alliance Plus
GoM: Government of Maldives
ICR: Implementation Completion and Results
IDA: International Development Association
IO: Intermediate Outcome
IPCC: Intergovernmental Panel on Climate Change
IUCN: International Union for Conservation of Nature
IWMC: Island Waste Management Center
LGA: Local Government Authority
M&E: Monitoring and Evaluation
MEE: Ministry of Environment and Energy
MEMP: Maldives Environmental Management Programme
MRC: Marine Research Centre
NAMA: Nationally Appropriate Mitigation Action
NAPA: National Adaptation Programme of Action
NPC: National Planning Council
OO: Overall Objective
PDO: Project Development Objective
PMU: Project Management Unit
POISED: Preparing Outer Islands for Sustainable Energy Development
REGENERATE: Reefs Generate Environmental and Economic Resiliency for Atoll Ecosystems
RO: Reverse-Osmosis
ROM: Result Oriented Mission
SACO Consortium: Safege/COWI Consortium
SWM: Solid Waste Management
SIDS: Small Island Developing States
SIP: Safe Islands Policy
SO: Specific Objective
SREP: Scaling-up Renewable Energy Programme
STELCO: State Electric Company

UNESCO: United Nations Educational, Scientific and Cultural Organization
UNFCCC: United Nations Framework Convention on Climate Change
UNDP: United Nations Development Programme
USUL: Upper South Utilities Ltd.
WAMCO: Waste Management Corporation
WB: World Bank
WCCM: Wetland Conservation & Coral Reef Monitoring

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I. Project Details and Outputs Delivered

PROJECT TITLE: Support to Climate Change Adaptation and Mitigation in the Maldives under the Global Climate Change Alliance (later changed into: Contribution to the multi-donor Maldives Climate Change Trust Fund (CCTF) – nr 071418) CRIS Code: DCI-ENV/2008/163-259		
AAP YEAR: 2008	DURATION: 63 months STARTING DATE: December 2009. Initially, an implementation period of 42 months was foreseen, with a final disbursement date on 30 June, 2013. During implementation, the duration of the CCTF Administration Agreement was extended[1] with 21 months, changing the disbursement date from June 2013 to March 2015.	DATE OF COMPLETION: March 2015 (= final disbursement date)
TOTAL PROJECT COST:[2] 7,200,000 EUR, consisting of an EU-contribution to the CCTF of 6.5 M EUR as per Administration Agreement (3.8 M EUR from DCI-ENV/GCCA and 2.7 M EUR from DCI-Asia) and an AusAID contribution of 0.7 M EUR (or, 1 M AUD, disbursed in 2 tranches of 0.5 M AUD in resp. 2010 and 2012). BUDGET BREAKDOWN: ▪ The AASWM[3] project: 1.33 M USD allocated, 1.03 M USD effectively disbursed ▪ The CECM[4] project: 2.53 M USD allocated, 2.51 M USD effectively disbursed ▪ The WCCM[5] project: 3.83 M USD allocated, 3.671 M USD effectively disbursed		GCCA ALLOCATION: 3,800,000 EUR

[1] The extension was needed to give the field projects sufficient time to complete their planned activities.

[2] After these initial total allocations of 7.2 M EUR, the EU and AusAID continued to contribute to the CCTF. For the second CCTF phase, which started in December 2014, the EU provided another 4 M EUR under its Country Programme with the Maldives, mainly to scale-up the on-going projects concentrating geographically on two atolls: Fuvahmulah and Addu. For the management, another addendum to the Administration Agreement between the EU and the IDA/WB was signed in December 2014; the implementation period would run until December 2018. AusAID contributed to the CCTF Phase II with an amount of 1 M AUD, equally supporting new interventions in Fuvahmulah and Addu.

[3] AASWM: The Ari Atoll Solid Waste Management Project.
Rationale for the AASWM project: SWM activities in South Ari Atoll had been previously supported under the WB-implemented Tsunami Reconstruction Project, to which also the EU had financially contributed. An EU impact evaluation found that this project had resulted in the establishment of 16 Island Waste Management Centers (IWMC) but that they were left non-operational. The evaluation report indicated that the regional base waste management system could not be developed due to a combination of design weaknesses, insufficient involvement of island communities and an underestimation of the costs. The unsatisfactory performance of this project was said to potentially lead to concerns vis-à-vis accountability in the EU Parliament. To this end, it was proposed to consider a follow-up project (the AASWM) under the CCTF to finally operationalize the IWMCs.

[4] CECM: The Clean Energy for Climate Mitigation Project

[5] WCCM: The Wetland Conservation & Coral Reef Monitoring Project.

▪ Project preparation grants: 0.845 M USD ▪ Overhead costs for IDA/WB: 195,000 EUR ▪ Visibility: 130,000 EUR	
AID MODALITY: Project approach 3 subprojects or actions were supported; they were formulated and implemented by governmental institutions of the Maldives.	MANAGEMENT ARRANGEMENTS: ▪ Joint management – Administration Agreement with the International Development Association (IDA) of the World Bank for an EU Contribution to the Maldives CC Trust Fund. ▪ Decentralised management for the TA component.

GEOGRAPHICAL COVERAGE:

- **Action 1 – The Ari Atoll Solid Waste Management (AASWM) project**: 5 Islands of the Ari Atoll: Dhigurah, Fenfushi, Ukulhas, Thoddoo and Dhangethi.
- **Action 2 - The Clean Energy for Climate Mitigation (CECM) project**: The Island Thinadoo of the Gaafu Dhaalu Atoll.
- **Action 3 – The Wetland Conservation & Coral Reef Monitoring (WCCM) project**: Community-based wetland management (including ecotourism and drainage management) on the Islands of Fuvahmulah and Hithadoo; rainwater harvesting and the establishment of a drinking water system on the Island of Ukulhas; and coral reef monitoring in private resorts close to Male.

MAIN STAKEHOLDERS AND BENEFICIARIES:

OVERALL MANAGEMENT

- Governance structure of the CCTF: The National Planning Council (NPC), the Climate Change Advisory Council (CCAC); the Technical Committee (monitoring overall implementation progress and assessing results on the ground) based in the President's Office; and the Implementation Review Steering Committee (semi-annual meetings)
- IDA (of the WB Group) as administrator of the CCTF. Staffing: a CCTF programme manager based in the WB Delhi Office + core team (all part time) based in different locations within the South East Asia region.
- Overarching implementing agency: Ministry of Environment and Energy (MEE), housing the Project Management Unit (PMU). The PMU included 3 technical persons: a wetlands coordinator, a coral reef coordinator, and an energy coordinator.

ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT (AASWM) PROJECT:

- The Ministry of Environment and Energy (MEE)/PMU: overall steering and coordination;
- The Environmental Protection Agency (EPA): technical implementation;
- The Island Councils: island-level managers/implementers
- Beneficiaries: The communities of the five targeted islands (Dhigurah, Fenfushi, Ukulhas, Thoddoo and Dhangethi), including about 770 households with approximately 4,509 people. MEE and EPA staff and the concerned Island and Atoll Councils also benefited from the technical and institutional development activities.

ACTION 2 - THE CLEAN ENERGY FOR CLIMATE MITIGATION (CECM) PROJECT:

- The Ministry of Environment and Energy (MEE)/PMU: overall steering and coordination;
- The local utility USUL (later restructured as Fenaka Corporation), benefited from the training and hands-on experience of concept development, and implementation.
- The residents of Thinadoo Island: a relatively sizeable population of around 7,000 registered citizens.

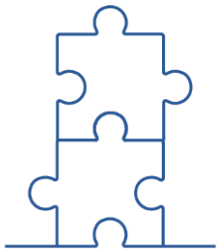
The coral reef monitoring component of the WCCM project is directly built on a key output of the Maldives Environmental Management Programme (MEMP), notably on the national Coral Reef Monitoring Framework. The WCCM project sought to refine and develop this Framework to make it an operational system.

ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT (ADAPTATION) (WCCM) PROJECT:

- Key implementing agencies: The Ministry of Environment and Energy (MEE), the Ministry of Fisheries and Agriculture, the Ministry of Tourism and Culture, the Environment Protection Agency (EPA), Fenaka Corporation, Ukulhas Island Council, and resorts.
- Beneficiaries: The residents of the intervention islands, members of the local councils (training) and officials of the MEE (capacity building). In addition, the availability of coral reef monitoring data was to benefit the policy makers at national level as well as the Global Reef Monitoring Network's affiliates.

GCCA PRIORITY AREA(S):

Adaptation



MAIN SECTOR(S):

Renewable energy, Energy efficiency, Solid Waste Management, Water Supply and Sanitation, Ecosystem-based Adaptation

OVERALL OBJECTIVE[6]:

FOR THE OVERALL PROJECT:

- According to the logframe attached to the Description of the Action / Administration Agreement: To support the country's regional development through focus on its environmental challenges (which are also economic challenges), thereby contributing to the implementation of the Government's Safe Islands Policy (SIP) and to more effective implementation of government policy on climate change at the local, national and international levels.
- The CCTF objective according to IDA / WB progress reports: To support the development and implementation of the climate change strategy and action plan for the Maldives towards building a climate resilient economy and society.

ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT (AASWM) PROJECT:

To build technical and human resource capacity to effectively manage solid waste generated in selected inhabited islands of the Ari Atoll, thereby reducing the environmental risks to marine habitats and greenhouse gas emissions.

ACTION 2 - THE CLEAN ENERGY FOR CLIMATE MITIGATION (CECM) PROJECT:

To reduce dependence on imported fossil fuels for power generation through the use of renewable energy sources and adoption of energy efficiency measures in an island community in the Maldives.

ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT (ADAPTATION) (WCCM) PROJECT:

To (a) strengthen institutional capacity of the Ministry of Environment and Energy (MEE) and local councils for planning and demonstration of community-based wetland and water resources management; and (b) implement a coral reef monitoring system.

[6] Project documents and result frameworks for the 3 actions (AASWM, CECM and WCCM) were developed according to the WB format; meaning that there are no separate overall and specific objectives for the actions. The WB result framework format combines these two levels of objectives – as used in the EU logframes – into only one, notably the "project development objective".

SPECIFIC OBJECTIVE(S):

- According to the logframe attached to the Description of the Action / Administration Agreement: To strengthen the Government of Maldives' capacity to engage in high level policy dialogue on international environmental issues and to formulate, develop and implement sustainable regional development and environmental policies while strengthening local ownership and capacity to deal with the challenges of climate change.
- For the CCTF and the 3 field actions: see previous box "Overall Objective".

EXPECTED RESULTS:

For the overall project (according to the logframe attached to the Description of the Action / Administration Agreement):

1. Enhanced GoM involvement in high level policy dialogue on international environmental issues and increased participation at key events and meetings such as UNFCCC and IPCC workshops and expert meetings, as well as in EU-sponsored initiatives to generally combating climate change;
2. Improved capacity of GoM and other national stakeholders to develop, formulate, implement and mainstream climate change policies and strategies which are congruent with external commitments;
3. Increased adaptive capacity of Maldives to manage climate change related risks following the evolving priorities of the National Adaptation Programme of Action (NAPA) as a result of recommendations made in the studies. Some "quick wins" pilot activities on climate change, which are easily manageable and low-cost will be developed and implemented. These will assist the GoM in fulfilling its commitment on carbon neutrality as well as address coastal erosion issues and will be in line with the regional development strategy;
4. Waste management systems (sorting, transportation) in South Ari Atoll developed and strengthened, thereby enhancing sustainability of post-tsunami actions, reduce the emissions associated with accumulated waste and contamination through sea-dumping and directly contributing to the NAPA;
5. Private-public partnerships and cooperation between resort islands and inhabited islands promoted through support to pilot activities;
6. Improved capacity of civil society organisations to identify, formulate and implement projects and activities;
7. Awareness raised in atolls among the island communities on climate change issues and lessons learned on pilot actions and solid waste management actions disseminated.

ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT (AASWM) PROJECT [7]:

- Component 1: Development and implementation of an island level integrated SWM system;
- Component 2: Development of institutional arrangements and implementation of a waste transfer system for off-island disposal of residual solid waste

ACTION 2 - THE CLEAN ENERGY FOR CLIMATE MITIGATION (CECM) PROJECT:

- Component 1: Grid connected solar photovoltaic systems;
- Component 2: Energy conservation and efficiency improvement;
- Component 3: Technical assistance

ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT (ADAPTATION) (WCCM) PROJECT:

- Component 1: Wetland Conservation and Water Resources Management;
- Component 2: Coral Reef Monitoring

[7] The WB's Result Framework does not include the intervention level of "expected results"; they use the concept of "project components" to indicate the expected intermediary outcomes. The "project components" can be considered as equivalent to the EU's "expected results".

OUTPUTS DELIVERED:

RELATED TO THE OVERALL ACTION:

- CCTF established and functional

RELATED TO ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT PROJECT:

COMPONENT 1:

- Community awareness raised in 5 pilot islands
- 75 individuals trained in composting techniques at the Weligama Municipal Solid Waste Management site in Sri Lanka
- Training video for future training and awareness raising purposes
- Updated waste management plans for 5 pilot islands, and endorsed by the resp. island councils
- System of waste collection and transportation to Island Waste Management Centers (IWMCs) in place in 3 islands
- Composting pads built/extended in IWMCs in 5 pilot islands
- Composting and recycling equipment supplied to IWCMs in 5 pilot islands
- Island Councils and IWCMs staff trained on island waste management planning, composting and community mobilisation
- Institutional mechanism for island level Solid Waste Management (SWM) developed
- Cost recovery system through user fees for sustainable management of the IWCMs developed and introduced in 5 pilot islands
- Strategy for the operationalisation of EU-financed IWCMs (beyond the target area of this action) in the atolls of the Central Province developed

COMPONENT 2:

- Institutional mechanism for the transfer of residual solid waste for off-island disposal developed
- Cost recovery model for residual waste transport system developed (but not put in place)
- Waste transfer model identified
- Draft waste transfer & transportation contract developed
- Draft barge operation and maintenance contract developed

RELATED TO ACTION 2 – THE CLEAN ENERGY PROJECT:

COMPONENT 1:

- Solar photovoltaic systems supplied and installed (grid-connected)
- Fenaka Corporation Ltd staff trained in operating and maintaining the installed solar PV systems

COMPONENT 2:

- Thinadoo islanders sensitised and educated on energy efficiency

COMPONENT 3:

- Government and Fenaka Corporation Ltd staff trained on power systems planning
- Energy audits conducted

RELATED TO ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT:

COMPONENT 1:

- Members of 10 atoll councils (229 persons) trained in CC adaptation (in view of enhanced future mainstreaming)
- Community-based wetland management plans developed, approved and under implementation for the islands Hithadhoo and Fuvahmulah
- Semi-formal Protected Areas Community Advisory Boards established in the islands Hithadhoo and Fuvahmulah

- Report with best practices for wetlands management in the islands Hithadhoo and Fuvahmulah
- Ecotourism facilities constructed in Hithadhoo Island (only partly completed with the project)
- Rainwater harvesting system installed at Ukulhas Island
- Water supply system with reverse osmosis-based desalination installed at Ukulhas Island
- Assessment of geo-hydrological situation at Fuvahmulah Island (report)
- Preliminary study on rainwater harvesting technologies

COMPONENT 2:

- Training module developed for coral reef monitoring
- Government (3 persons) and resort staff (5 resorts) trained in coral reef monitoring
- CoralDatabase developed and functional (though reported to be slow to use)
- Coral Bleach Risk Assessment Tool (BRAT) developed

II. Analysis of impact

2.1. Impact expected as per logframe objectives and their indicators:

THE OVERALL ACTION:

- OO: To support the country's regional development through focus on its environmental challenges (which are also economic challenges), thereby contributing to the implementation of the Government's Safe Islands Policy (SIP) and to more effective implementation of government policy on climate change at the local, national and international levels.
  OO indicator: Improved sustainable environmental policies, planning and management by the GoM

- SO: To strengthen the Government of Maldives' capacity to engage in high level policy dialogue on international environmental issues and to formulate, develop and implement sustainable regional development and environmental policies while strengthening local ownership and capacity to deal with the challenges of climate change.
  SO indicator 1 (SO.1): Participation of GoM representatives in high level international events on environmental issues including on global climate change;
  SO indicator 2 (SO.2): Improved capacity of national stakeholders to implement activities in accordance with recognised standards and best practices;
  SO indicator 3 (SO.3): Number of policies, legislation and strategy papers developed/amended by the government in the area of sustainable environmental development.

Quality of the indicators:

None of the indicators has been given baselines or targets. There are no clear descriptions on how the indicators are to be interpreted and measured. In practice, the logframe attached to the Description of the Action / Administration Agreement was fully replaced by the results frameworks (WB model) for each of the three actions formulated and implemented under the CCTF.

During the inception phase, the project managers (IDA/WB) defined the following overall objective for the CCTF: To support the development and implementation of the climate change strategy and action plan for the Maldives towards building a climate resilient economy and society. No indicators were attached.

ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT PROJECT (AASWM):

PDO: To build technical and human resource capacity to effectively manage solid waste generated in selected inhabited islands of the Ari Atoll, thereby reducing the environmental risks to marine habitats and greenhouse gas emissions.
PDO indicator 1 (PDO.1): 5 pilot islands are participating in an integrated SWM system composed of: (i) waste segregation at the household level; (ii) composting of organic waste, recycling and storage of residual waste at the Island Waste Management Center (IWMC); and (iii) a transport system for the collected residual waste.
PDO indicator 2 (PDO.2): All 5 targeted islands with functioning IWMCs have no observed spillage.

Further indicators at the Intermediate Outcome (IO) level[8]:
IO.1: 50% of households carry out segregation of solid waste.
IO.2: Recycling and composting programmes are effectively implemented in all five participating islands.
IO.3: At least targeted households in two islands pay user fees for island level waste management.
IO.4: All 5 islands' residual waste is transferred to a regional SWM facility.

[8] The indicators at this level that were clearly output-related have been excluded from the present impact assessment

Quality of the indicators:
Due to the short implementation period and the pilot nature of the action, the PDO indicators were formulated to reflect intermediate outcomes, rather than impact. The indicators are relevant and clearly defined. Targets and baselines are provided and the indicators have been used in project monitoring and reporting.

ACTION 2 – THE CLEAN ENERGY PROJECT (CECM):

PDO: To reduce dependence on imported fossil fuels for power generation through the use of renewable energy sources and adoption of energy efficiency measures in an island community in the Maldives.
PDO indicator 1 (PDO.1): Electricity supplied annually from renewable energy displacing fossil fuel.
PDO indicator 2 (PDO.2): Reduction in carbon emissions through the use of renewable energy and energy efficiency.

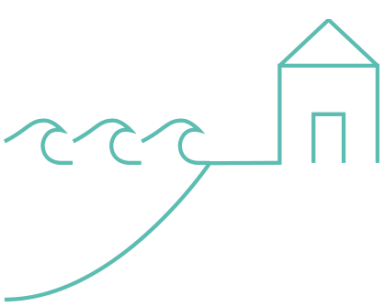
Further indicators at the Intermediate Outcome (IO) level[9]:
IO.1: Reduction in energy consumption through efficiency measures.

Quality of the indicators:
Similarly as for action 1 and for the same reasons, the PDO indicators were formulated to reflect intermediate outcomes, rather than impact. Difficulties have been reported in relation to measuring indicator IO.1 on reduced energy consumption in the sense that reduced consumption could be measured but that it had not been possible to filtre out the effect of the project's efforts. In other words, it is not guaranteed that the observed reductions can be fully attributed to the project. Otherwise, the indicators are relevant, targets and baselines are provided and the indicators have been used in project monitoring and reporting.

ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT (WCCM):

PDO: To (a) strengthen institutional capacity of Ministry of Environment and Energy (MEE) and local councils for planning and demonstration of community-based wetland and water resources management; and (b) implement a coral reef monitoring system.
PDO indicator 1 (PDO.1): Two community-based wetland management plans (CBWMP) that are approved and under implementation.
PDO indicator 2 (PDO.2): Data on coral reef health from at least five tourist resorts is produced within the coral reef monitoring framework.

Quality of the indicators:
Similarly, as for action 1 and for the same reasons, the PDO indicators were formulated to reflect intermediate outcomes, rather than impact. Otherwise, the indicators are relevant and clear. Targets and baselines are provided. The indicators have been used in project monitoring and reporting.



[9] Idem as 8

2.2. Direct and indirect impact as reported in the available documents (desk phase):

THE OVERALL ACTION:

- **Achievement of the indicators**:

The 3 selected actions are all well-aligned with the GoM's existing policies and strategies on climate change and environmental sustainability and are expected to directly contribute to the objectives of the multi-donor CCTF. As already indicated in box 2.1, there has been no specific reporting against the indicators of the initial logframe attached to the Description of the Action / Administration Agreement, nor against the Overall Objective of the CCTF.
Through the implementation of the three actions, there certainly have been contributions to the achievement of two of the three indicators at SO level (Improved capacity of national stakeholders to implement activities in accordance with recognised standards and best practices; Number of policies, legislation and strategy papers developed/amended by the government in the area of sustainable environmental development) but no contributions have been made to the third one envisaging participation of the GoM in high level international events on environment and climate change.

- **Additional impact:**

Apart from the formulation, implementation and monitoring of the three actions, efforts were undertaken to attract additional donor support for the CCFT. These efforts resulted in the additional provision of the "Scaling-up Renewable Energy Programme (SREP) Funds", managed by the WB/ADB[10]. The CECM project thereby acted as a pilot for the larger renewable energy projects that were launched through SREP.

- **Factors that affected the project's outcomes and impact**:

Time constraints have been a major issue in this project; the formulation and preparation stages took much longer than foreseen and substantially reduced the implementation periods for all three actions. The following issues were highlighted as key challenges in IDA's report: (1) Insufficient capacities in the public sector affecting the preparation and implementation processes of the CCTF projects; (2) the need for sustained consultation and engagement with the GoM against the backdrop of political sensitivities[11]; and (3) difficulties in a strategic targeting of activities.

ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT (AASWM) PROJECT

- **Achievement of the indicators:**

RELATED TO "PARTICIPATION IN THE SWM SYSTEM" (INDICATOR PDO.1):

Three out of the five targeted pilot islands are participating in an integrated SWM system composed of: (i) waste segregation at the household level; (ii) composting of organic waste, recycling and storage of residual waste at the Island Waste Management Center (IWMC); and (iii) a transport system for the residual. Or, the integrated SWM systems are operational in **60% of the targeted sites**. The envisaged transport system for transfer of residual waste to a regional disposal facility was not in place by the end of the project.

All five islands prepared island waste management plans under the project and these plans were endorsed, adopted and their implementation had started. Four IWMCs were upgraded under the project and the re-establishment of the IWMC in Thoddoo, that had been impacted by coastal erosion, was initiated. Fully functional island SWM systems were in place for three of the islands – Ukulhas, Fenfushi and Digurah - with over 90 percent of households segregating waste at the household level and with composting organic waste, recycling and storing residual waste at IWMC level. In the other two islands (Dhangethi and Thoddoo), waste segregation was also practiced by over 90 % of the households, but

composting, recycling and storage functions of the IWMCs did not become fully operational in these locations.
The project was designed to have 100% of the solid waste generated in all five pilot islands managed through an integrated SWM system. At the time of completion, 71 % of the envisaged disposal capacity was achieved. With the post-project completion (infrastructure) and start-up of the operations at the Thoddoo IWMC, 100% of the target will be met.

RELATED TO "REMAINING GARBAGE SPILLAGE» (INDICATOR PDO.2):

Three out of five targeted islands with functioning IWMCs have no more observed spillage of solid waste to the beaches and coastal areas. Hence, the **target was achieved for 60%** by the end of the project.
At project closure, three of the pilot islands - Ukulhas, Fenfushi and Digurah - were able to manage the solid waste within the respective IWMCs and to control spillage to coastal and marine waters. Soon after project closure, also Dhangethi managed to reduce the level of spillage with the improved functionality of its IWMC.
However, a spillage assessment that was undertaken after project closure found some level of spillage caused by the phasing-out of the off-island residual waste transfer service. The provisional transfer system organised by the project was not maintained because of financial constraints of the Island Councils in charge. The lack of an operational off-island waste transfer system is potentially undermining the initial success.

RELATED TO "SEGREGATION OF SOLID WASTE" (INDICATOR IO.1):

On average, 90% of the targeted households carry out segregation of solid waste. In three of the islands, 100% of the households segregated their solid waste. Hence, the **target of 50% on average was exceeded.**

RELATED TO "RECYCLING AND COMPOSTING PRACTICES" (INDICATOR IO.2):

By the end of the project, recycling and composting programmes were effectively implemented in four of the five targeted islands. Hence, the **target was achieved for 80%**. As for composting, 100% of the organic waste was composted in 2 islands; 30% was composted in 2 other islands. As for recycling, 50% of recyclables with market value were segregated in all 5 islands.

RELATED TO "PAYMENT OF USER FEES" (INDICATOR IO.3):

In four islands, the targeted households paid user fees for island level waste management by the end of the project with full coverage in two of the islands. **The target was achieved for 200%.**

RELATED TO "TRANSFER OF RESIDUAL WASTE" (INDICATOR IO.4):

For all targeted islands, residual waste is dumped at a central location and occasionally transferred to a regional facility based on the availability of funds and transportation facilities. Hence, **the target was achieved for 100% at project closure**. *However, a sustainable waste transfer system with the procurement of a barge was still to be put in place.*
The organisation of the envisaged transport system for removal of the residual waste from IWMCs and disposal at a regional waste management facility was not fully completed, which resulted in a further delay related to the conclusion of a final agreement with a utility company for the operation and management of the transfer system. At project closure, an interim solution with a hired boat was operational; the MEE had identified an institutional mechanism and cost recovery system; and dialogue with the proposed utility company had been initiated.

[10] ADB = Asian Development Bank
[11] These sensitivities were related to the EU's refusal to finance a sea-wall construction.

- **Additional impact:**

The project contributed significantly to **institutional change and strengthening**.
The project enhanced EPA's capacity to implement the SWM regulation more effectively.
Apart from increased knowledge, capacities and general awareness, the project managed to strengthen the linkages, relationship and coordination between the MEE, EPA and the Island Councils.
SWM has been institutionalised within the MEE. Within MEE, a dedicated department for SWM with staff trained by the project has been created. This department started updating the National SWM Policy based on the experience gained through the project implementation.
The project contributed to changing the SWM-related attitudes of island communities (see the results above related to waste segregation and composting and the reduced spillage).

- **Potential and/or initial replication:**

  - The strengthened linkages between EPA and the Island Councils enabled the replication of SWM best practices in many parts of the country[12] .
  - The project developed a strategy to operationalise the remaining IWMCs in the Central Region and secured GoM commitment to provide financing to the development of these IWMCs.
  - The Ukulhas Island Council has been particularly instrumental in generating further impact. The President of Maldives awarded the Ukulhas Island Council the Maldives Green Leaf Award for exemplary performance in SWM. Ukulhas was the first island in the Maldives to successfully initiate a municipal composting programme and was among the first communities to introduce a waste collection fee for households and a ban on plastic on the island. The Ukulhas Island Council is geared towards becoming a field training site for island-level SWM. The Council trained an additional 30 inhabited islands and resorts during project implementation (without project financing) and contributed to expanding the project outreach beyond the Central Region.

- **Factors that affected the project's outcomes and impact:**

  - The GoM's commitment to SWM and to the project activities contributed considerably to the positive impact that was achieved.
  - Time constraints: Because of the relatively short implementation period of less than 2 years and due to limitations imposed by the CCTF Administration Agreement (D+3 rule), implementation of the participatory processes to ensure readiness of the communities and to formulate the island waste management plans had been challenging. However, leadership of the Island Councils and successful awareness creation by the project generated a change in attitude of the participating communities.
  - The project suffered from important implementation delays, mainly due to operational issues (procurement issues, slow implementation, MEE staff not responsive, coordinator only in place during the last 6 months and not performing satisfactorily). These delays have affected (a) the establishment of a residual off-island waste transfer system; (b) the full operation of the IWMC in Dhigurah; and (c) the completion of the IWCM construction in Thoddoo and subsequent IWCM operation.

- **Others:**

It was reported that the complete achievement of the intermediate outcomes (short- and medium-term aspects) will not be sufficient to fully achieve the long-term aspects of the development outcome of the project, which is linked to the participation of other inhabited islands and resorts in the Atoll.

[12] The model of integrated SWM is now in the process of being replicated in over 100 inhabited and resort islands. Stakeholders responded positively to training on composting and this knowledge expanded beyond the five pilot island. Concretely, by project closure, EPA had been instrumental in spreading the practice to an additional 60 islands .

ACTION 2 – THE CLEAN ENERGY (CECM) PROJECT

- **Achievement of the indicators:**

RELATED TO "SUPPLY OF CLEAN ENERGY" (INDICATOR PDO.1):

The target was to annually supply 300 MWh from renewable sources, displacing fossil fuel. By the end of the project, a value of 768 MWh was achieved, which is a **256% achievement of the target.**

RELATED TO «REDUCED CARBON EMISSIONS » (INDICATOR PDO.2):

The target was to reduce emissions by 180 t CO_2 through using renewable energy and enhancing energy efficiency. Achieved value by the end of the project: 589 t CO_2; which is a **327% achievement of the target**.

RELATED TO "REDUCED ENERGY CONSUMPTION" (INDICATOR IO.1):

The target was to reduce energy consumption by 200 MWh through efficiency measures. By the end of the project, a reduction by 132 MWh was measured. Hence the **target was achieved for 66%.**

- **Additional impact:**
  - Besides the impacts on carbon emissions and energy supply and consumption, the project also generated capacities in the Maldivian utility company (Fenaka) and the GoM. The project's emphasis on learning-by-doing and tailored trainings has been instrumental in making system operators in Thinadoo familiar with hardware and software installations in the PV-diesel hybrid system.
  - Before CECM, decision makers and utility operators in the Maldives were uncertain about installing high numbers of solar PV systems due to doubts regarding reliability and operational challenges. CECM, acting as a real demonstration project, contributed significantly in building confidence of the country's key stakeholders. As a consequence, the project has debunked several myths surrounding solar PV systems' reliability and cost efficiency and related to the safety of integrating large capacity fractions of solar power into the island grids. As such, the CECM also contributed to the achievement of financial and environmental sustainability targets for the utility company, the government and/or future private investors. Overall, the experience with CECM will help the Maldives in planning future renewable energy projects and integrating them in the island grids with greater confidence.
  - The project also contributed to the creation of local jobs and the diversification of the local economy, apart from tourism and fisheries.

- **Potential and/or initial replication:**

CECM laid the groundwork for the smooth implementation of later projects such as ASPIRE[13] and POISED[14], leading to the scaling up of renewable energy investments. Insights from CECM will benefit both the ASPIRE and POISED projects, supported by the World Bank and ADB respectively, as larger installations and system integration assignments are rolled out. Furthermore, CECM provides insights to other small island developing states as well as to any other state working with mini-grid systems that are facing similar challenges. The approach to managing technical as well as institutional risks in a phased manner and after thorough analysis of the options provides important implementation guidance to practitioners.

[13] ASPIRE project = Accelerating Sustainable Private Investment in Renewable Energy project
[14] POISED project = Preparing Outer Islands for Sustainable Energy Development project

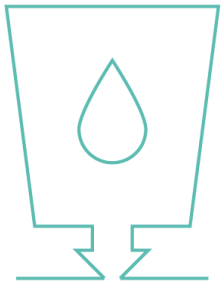
- **Factors that affected the project's outcomes and impact:**

CECM experience showed that achieving results and generating impact from energy efficiency measures is very challenging, especially when these measures are based on behavior change without the provision of supporting financial incentives.

ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING (WCCM) PROJECT:

- **Achievement of the indicators:**

RELATED TO "COMMUNITY-BASED WETLAND MANAGEMENT" (INDICATOR PDO.1):



For two islands, Fuvahmulah and Hithadhoo, a community-based wetland management plan (CBWMP) has been approved by the respective local councils and Community Advisory Boards. For Hithadhoo, the CBWMP included a detailed ecotourism development plan and ecotourism facilities were under construction at project closure. As for Fuvahmulah, the CBWMP focused on water management and included a drainage management plan. The required drainage works were completed by the end of the project. Community-based wetland and water management activities were also undertaken in Ukulhas where water harvesting and water supply systems were installed.
The **target has been achieved for 100%**.

RELATED TO "MONITORING CORAL REEF HEALTH" (INDICATOR PDO.2):

Data on coral reef health from at least five tourist resorts is produced within the coral reef monitoring framework; the target was set at: 1-time dataset for each of the five resorts for each agreed protocol. This **target was achieved for 41%**.
The coral reef monitoring system consisted of trained resort personnel collecting data according to the coral reef monitoring protocols, uploading the data into the CoralDatabase, and ensuring the data are made available for decision making. The project aimed at delivering one dataset on the health of coral reefs in at least 5 resorts, using the coral reef monitoring protocols. At the time of project closure, about 82 percent of the baseline data had been collected and uploaded into the CoralDatabase, while no follow-on datasets were produced. Assigning equal weights to both datasets (baseline and first follow-on assessment), an overall achievement of 41% was obtained.

- **Additional impact:**

  - Capacity building related to community-based wetland management: Capacity building of the MEE staff and of the communities in planning for coastal wetlands conservation, drainage management, and rain water harvesting through pilot activities was given ample attention. The capacity building was mostly done through "learning by doing". Previously, planning and implementation of management plans for protected areas was the mandate of the central level ministries and not the local councils. The new Decentralisation ActLaw had transferred these responsibilities to the local councils. The project activities related to development and implementation of community-based wetland management plans, which also included drainage management plans, became therefore timely and relevant opportunities for the council functionaries to learn and to better deliver on their new mandate.
  - Capacity building related to coral reef monitoring: The project built capacities of tourist resorts in coral reef monitoring and provided technical support to develop a technology platform (referred to as 'the Coral Reef Monitoring Framework') that would enable easy access to data and decision support tools.
  - Institutional impacts attributable to the project, include:
    1. Strengthened capacity within the MEE: seconding of senior government staff to manage the project as coordinators in the PMU has helped to build capacities of the staff as well as the Ministry.
    2. Mainstreaming of local development planning: The project provided training on CC and CC mainstreaming to local council staff. The training increased their awareness on the importance

of factoring in climate change aspects into the island and atoll development plans (plans that since the entry into force of the Decentralisation Act are to be prepared by the local councils). The Local Government Authority (LGA), responsible for helping local councils in preparing their annual development plans, has modified the planning templates as to include climate change considerations, thus further enhancing effective mainstreaming.

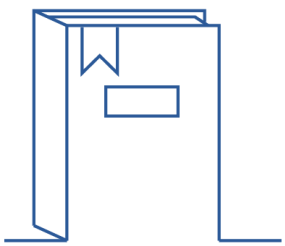
3. The project, through the development of CBWMPs and ecotourism plans, has brought the Island Councils of Fuvahmulah and Hithadoo (Addu Atoll) to appreciate the value of their wetlands, amongst others as a resource base for several eco-friendly economic activities. The motivation to conserve the wetlands has thereby significantly increased.

- **Potential and/or initial replication:**
  - Unfinished works under the community-based wetland management component (e.g. the ecotourism facilities) will be completed under the upcoming Climate Change Adaptation Project that will be financed through the CCTF after replenishment by the EU.

- **Factors that affected the project's outcomes and impact**:
  - The project preparation took about 1.5 years, which is comparatively long for a project of this size, with stakeholder discussions on the principal interventions of the project continuing all the way to the end of the preparation phase. This resulted in some of the preparatory tasks, e.g. the development of the detailed design of the Ukulhas Water Harvesting and Supply Scheme, being shifted into the early implementation period, causing time constraints for the actual implementation.
  - The complexity and innovativeness of the implementation context: The project, in both its components, piloted a new approach which strongly emphasised the involvement of local councils and the establishment of private-public partnerships, e.g. in the area of coral reef monitoring. This new approach combined with sudden changes in the country's political situation that a.o. resulted in the reorganisation of the implementing Ministry of Housing and Environment into the Ministry of Energy and Environment (MEE), added significant to the complexity of getting activities implemented and outputs delivered.
  - The coral reef monitoring component failed to get the tourist resorts sufficiently involved in the activity. While the envisaged monitoring was well integrated in the existing National Coral Reef Monitoring Framework developed under the Maldives Environmental Management Programme (MEMP), compatible with the available expertise in the Marine Research Centre and therefore suitable to gather scientific data on the coral reefs for improved decision making, it was not successful in mobilising the resorts to participate. There was a lack of added value or other types of incentives for the resorts to make them participate. The resorts were not convinced of the utility of the data or their relevance to their business operations, what contributed to the underperformance of this component of the project.

2.3. Findings from the desk phase and specific issues to be further explored during the field phase:

THE OVERALL PROJECT



The focus has been on the development and implementation of the sectoral actions. Apart from looking for additional donor contributions to the CCTF, almost no activities have taken place at the level of the overall CCTF. There has been no monitoring nor reporting against the objectives and expected results of the CCTF.

Further, the overall CCTF objectives are disproportionate to the objectives / indicators of the actual interventions or actions. The actions are well aligned with the higher objectives, but there is an important gap between them. This could be explained by the lack of buy-in to the CCTF from other donors and by the short implementation periods of the individual actions resulting in degrading the PDOs and their indicators to an «outcome level» rather than an impact level.

- **Key points for the field mission:**
  - Continuation of the CCTF and reporting towards CCTF objectives/indicators?
  - Leveraging effect of the CCTF?

ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT (AASWM) PROJECT

The indicators at PDO level were achieved for 60%. The levels of achievement of the IO indicators were significantly higher, with targets being exceeded for e.g. the practice of waste segregation and for the implementation of the user fee system. The fact that the other targets were not fully achieved are mainly time-based and related to (1) the gaps in the off-island transport system for residual waste to a regional disposal facility; (2) the incomplete IWMC infrastructure in Thoddoo and (3) the lack of full operationality in Thoddoo and Digurah. Documents report on local commitment for full completion of these activities post-project.
Regarding the technical and human capacities in SWM (key issue in the action's development objective), the comments in the reports are positive, giving evidence of concrete improvements such as the new and dedicated SWM department within MEE, the increased capacity within EPA to implement the SWM regulation, strengthened coordination between the key stakeholders (MEE, EPA, Island Councils) and the new SWM training site in Ukulhas.

- **Key points for the field mission:**
  - Were implementation gaps indeed addressed after the project ended and is the regional transport system operational?
  - Data on present coastal garbage spilling? Present situation in the 5 target islands? and at atoll-level ?
  - Upgrading and operationality of the EU-funded IWMCs under the tsunami recovery projects?
  - Replication process.
  - Management of the SWM sector by MEE (further progress in policy development and implementation and in regulatory issues; activity level of MEE's SWM department).

ACTION 2 – THE CLEAN ENERGY (CECM) PROJECT

The targets of both PDO level indicators (generation of clean energy and reduction of carbon emissions) were by far exceeded. For the indicator at the lower level (IO) which related to reduced power consumption, the target was achieved for 66%.
Further, capacity of key stakeholders (MEE and Fenaka) was strengthened and, importantly, the project seemed to have well succeeded in its role of pilot project demonstrating the technical and economic feasibility of PV systems in producing and supplying clean energy in an island context. Lastly, the project contributed in the creation of local jobs and therefore in the diversification of the local economy.
Following the reports, replication and scaling up will be supported and coordinated by the projects ASPIRE (WB-funded) and POISED (ADB-funded).

- **Key points for the field mission:**
  - The project intended to generate positive socio-economic and environmental benefits for the island community by demonstrating the viability of producing and using renewable energy and by enhancing energy efficiency. For the latter, the project aimed at changing the population's behaviour with regard to energy consumption through awareness raising and by emphasising the potential savings on electricity bills. Less consumption of electricity produced from fuel would reduce the amounts of diesel imports to the country which would expectedly lead to savings for the government, and lower electricity costs in the longer term. Is there any further progress towards these objectives/intentions?
  - Trends in the share of clean energy in the total energy production / consumption.
  - Did the relevant authorities continued to conduct energy efficiency campaigns after completion of the project? Was the campaign that was conducted under the project used as a model? Were lessons drawn and applied?
  - How about implementation progress and success of the ASPIRE and POISED projects? Do implementers recognise any positive effects (skills, motivation) from the implementation of the CECM project?

ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING (WCCM) PROJECT:

While the project has been successful in achieving its targets under the wetland and water management component, the achievements booked under the coral reef monitoring component were minimal. Main causes were explained in box 2.2.
In addition to the achievement of the PDO indicators, the project also generated positive effects in the areas of institutional strengthening and capacity building.
During project implementation, there were no signs of replication. However, a follow-on phase (CCAP) was envisaged and completion of unfinished activities, consolidation of outputs and replication might have happened/be happening under this extended support.

- **Key points for the field mission:**
  - Continued implementation of the Community-based wetlands management plans in the target islands; and its related impacts for the islands and their population?
  - Any signs of replication regarding the development of CBWMP?
  - CC mainstreaming in recent island development plans (in target islands and beyond).
  - After all, has any use been given to the coral reef baseline data collected with project support?

2.4. Achievement of the logframe indicators at overall and specific objectives levels (direct impact):

INDICATOR	LEVEL OF ACHIEVEMENT	EXPLANATORY NOTES
THE OVERALL PROJECT[15]		
OO: Improved sustainable environmental policies, planning and management by the GoM *No baseline, no targets.*	75%	Through the actions that were implemented under the CCTF, human capacity was built and many of the sectoral staff who were involved in the activities are now holding senior positions in the Ministry of Environment & Energy and/or in the Environment Protection Agency. There is general agreement and evidence that the CCTF projects have been at the basis of a number of the country's environmental policy and planning tools, developed after completion but based on knowledge acquired through CCTF implementation. Examples of such policies and planning tools are: ▪ The Regional Solid Waste Management Strategies. ▪ The Maldives Coral Bleaching Response Plan, 2017 ▪ The Maldives Climate Change Policy Framework ▪ The Maldives Renewable Energy Roadmap, 2015.

[15] The assessment of the indicators related to the overall project is based on contributing elements that were observed during the country visit, reported by stakeholders and/or collected from literature. Systematic monitoring and measuring of progress towards the indicators by concerned stakeholders has not taken place.

		It must be noted, however, that also other projects contributed to the achievement of this indicator.
SO.1: Participation of GoM representatives in high level international events on environmental issues, including on global climate change *No baseline, no targets.*	85%	This indicator has been achieved to a large extent. Clear evidence was found during the field visit when the majority of the Climate Change Department staff appeared to be absent due to their participation in the UNFCCC COP 25. Maldives is also an active member of the Alliance of Small Island States (AOSIS).
SO.2: Improved capacity of national stakeholders to implement activities in accordance with recognised standards and best practices *No baseline, no targets.*	70%	There is evidence of improved capacity of national stakeholders to implement activities in accordance with international standards and best practices. However, as is the case in many small island developing states (SIDS), human capacity remains a challenge in the Maldives with not enough staff available to perform the work and the consequent need of contracting out many activities to international consultants and service suppliers, resulting in long and expensive procurement processes and lost opportunities to build national experience and revenue. The presence of a Project Management Unit operating within the MEE has been instrumental in enhancing the national capacity through on-the-job transfer of knowledge and skills. The CCTF actions have been an important learning platform for national staff.
SO.3: Number of policies, legislation and strategy papers developed/amended by the government in the area of sustainable environmental development *No baseline, no targets.*	85%	Various policies, legislative texts and strategy papers have been prepared or amended, not necessarily during the lifetime of the project but certainly as a legacy of the work done under the CCTF projects. Examples of documents that were developed/amended and that can be linked to the CCTF projects, include: ▪ The National Action Plan on Air Pollutants, 2019 ▪ The 4th Amendment to the Waste Management Regulation, 2018 ▪ The National Water and Sewerage Policy, 2017 ▪ The National Awareness Strategy for Water and Sewerage, 2016 ▪ The Maldives Energy Policy and Strategy, 2016 ▪ The National Waste Management Policy, 2015 ▪ The Process Framework for Regulated Access to Designated Protected Areas in Fuvahmulah and Hithadoo Islands, 2005

ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT PROJECT (AASWM)		
PDO.1: 5 pilot islands are participating in an integrated SWM system composed of: (i) waste segregation at the household level; (ii) composting of organic waste, recycling and storage of residual waste at the Island Waste Management Center (IWMC); and (iii) a transport system for the collected residual waste. *Baseline: zero islands* *Target: 5 islands*	80%	At the completion of the project in 2015, fully functional island SWM systems were in place for 3 of the 5 islands – Ukulhas, Fenfushi and Digurah. The secretariat of the Ukulhas Council reported that a fully functional SWM system was also established on Thoddoo Island after project closure. At all 4 sites, composting, recycling and due storage of residual waste is taking place. The waste transfer vessel was completed in 2015 and handed over to the Waste Management Corporation (WAMCO) that now operates the vessel to transport residual waste from Ari atoll to Thilafushi.
PDO.2: All 5 targeted islands with functioning IWMCs have no observed spillage. *Baseline: zero islands* *Target: 5 islands*	75%	At the time of project completion, no spillage was observed on 3 (Ukulhas, Fenfushi and Digurah) of the 5 targeted islands. Since then, also Dhigurah and Dhangethi made significant progress in reducing spillage by the communities.
IO.1: 50% of households carry out segregation of solid waste *Baseline: 0* *Target: 50% of households*	180%	On average, 90% of the targeted households carried out segregation of solid waste by the end of the project. In three of the islands, 100% of the households segregated their solid waste.
IO.2: Recycling and composting programmes are effectively implemented in all five participating islands. *Baseline: 0* *Target: 5 islands*	80%	By the end of the project, recycling and composting programmes were effectively implemented in four of the five targeted islands. As for composting, 100% of the organic waste was composted in 2 islands; 30% was composted in 2 other islands. As for recycling, 50% of recyclables with market value were segregated in all 5 islands.
IO.3: At least targeted households in two islands pay user fees for island level waste management *Baseline: 0* *Target: 2 islands*	200%	In four islands, the targeted households paid user fees for island level waste management by the end of the project with full coverage in two of the islands.
IO.4: All 5 islands' residual waste is transferred to a regional SWM facility. *Baseline: 0* *Target: 5 islands*	100%	For all targeted islands, residual waste is dumped at a central location and occasionally transferred to a regional facility based on the availability of funds and transportation facilities.
ACTION 2 – THE CLEAN ENERGY PROJECT (CECM)		
PDO.1: Electricity supplied annually from renewable energy displacing fossil fuel.[16] *Baseline: 0 MWh*	256%	In 2014, 558 MWh of electricity had been produced by the solar panels that were installed the project. This power was generated over a period of a number of months, more specifically over the

[16] As a result of project activities.

Target: 300 MWh annually		period from the installation of the solar panels until the end of the year. Recalculated for a full year of operation, the 558 MWh equates to 768 MWh of electricity produced. As a conclusion, the project installed more than twice the originally planned capacity.
PDO.2: Reduction in carbon emissions through the use of renewable energy and energy efficiency.[17] *Baseline: 0 tCO_2 eq* *Target: 180 tCO_2 eq*	327%	In 2014, and as calculated by the WB[18], a reduction of 589 tCO_2 eq was achieved, thereby more than tripling the originally planned target. The reduction of 589 tCO_2 eq that was achieved in 2014, has now been upwardly revised.
IO.1: Reduction in energy consumption through efficiency measures. *Baseline: zero reduction* *Target: reduction by 200 MWh*	66%	By the end of the project, a reduction by 132 MWh was measured.
ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT (WCCM)		
PDO.1: Two community-based wetland management plans (CBWMP) that are approved and under implementation. *Baseline: 0 plans* *Target: 2 plans*	100%	Wetland management plans were produced for Hithadoo (Addu Nature Park) and Fuvahmulah (Fuvahmulah Nature Reserve). Both plans were approved and are currently under implementation.
PDO.2: Data on coral reef health from at least five tourist resorts is produced within the coral reef monitoring framework. *Baseline: 0* *Target: at least 5 resorts*	41%	Baseline data on coral reef health were collected for 82% of the identified sites. Subsequent monitoring by the participating resorts has not taken place and follow-up data are not available. There is no ownership of the coral reef data collection initiative by the resorts. The resort managers are not convinced about the utility of the data nor of their relevance for the resorts' business operations.

2.5. Achievement of the overall and specific objectives (direct impact, exceeding the scope of the indicators)

THE OVERALL ACTION:

OVERALL OBJECTIVE (OO): To support the country's regional development through focus on its environmental challenges (which are also economic challenges), thereby contributing to the implementation of the Government's Safe Islands Policy (SIP) and to more effective implementation of government policy on climate change at the local, national and international levels
Achievement: "1" (>75%)

EXPLANATORY NOTE

[17] As a result of project activities
[18] The data are extracted from the CECM Implementation Completion and Results Report, that also explains the methodology used.

The CCTF project has supported the country's regional development, its responses to environmental challenges and the effective implementation of the climate change policy.
More specifically, the project has contributed to the implementation of the National Strategy for Sustainable Development (2009) and has set the scene for pushing several environmental issues such as solid waste management, wetland conservation and climate change adaptation and mitigation. These issues have become priorities for the Government of Maldives and for the majority of the population. Evidence is provided by the increased focus that these challenges received in the country's Sustainable Development Goals Communication Strategy and Action Plan (2019–2023).
The project also contributed to the implementation of the National Solid Waste Management Policy and the National Adaptation Programme of Action (NAPA) and is to be considered as a precursor to the development of the Maldives Climate Change Policy Framework, the Regional Solid Waste Management Strategies (developed for different regions) and the Maldives Coral Bleaching Response Plan.

SPECIFIC OBJECTIVE (SO): To strengthen the Government of Maldives' capacity to engage in high level policy dialogue on international environmental issues and to formulate, develop and implement sustainable regional development and environmental policies while strengthening local ownership and capacity to deal with the challenges of climate change.
Achievement: "2" (between 50% and 75%)

EXPLANATORY NOTE

The project has strengthened the capacity of the Government of Maldives to engage in policy dialogue as became evident by the almost complete absence of the Climate Change Department staff at the time of the field visit due to their participation in the 25th UNFCCC COP. There is also evidence of higher priority being given to global challenges such as climate change and environmental issues in the annual GoM - EU policy dialogue. In general, dialogues on environmental issues and climate change with development partners are now conducted more frequently and the quality of the dialogues has improved.
Human capacity in the various sectors that were addressed has been built during the implementation of the CCTF projects and this enhanced human capacity has contributed to a subsequent development of several environment-related policies and plans. Examples include: the National Action Plan on Air Pollutants, 2019; the National Water and Sewerage Policy, 2017; the Maldives Climate Change Policy Framework; and the Republic of Maldives Renewable Energy Roadmap, 2015.
These policies, along with the implementation of environmental actions on various islands under the partial supervision of resp. the atoll, island or city councils have strengthened local ownership of projects and their achievements, stimulating local initiatives and responses to solve environmental challenges.
Improved capacities also became evident during – and facilitated - the implementation of the follow up phase II projects such as the Climate Change Adaptation Project (CCAP), the Preparing Outer Island Sustainable Electricity Development Project (POISED) and the Accelerating Sustainable Private Investment in Renewable Energy (ASPIRE).

ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT PROJECT (AASWM)

PROJECT DEVELOPMENT OBJECTIVE (PDO): To build technical and human resource capacity to effectively manage solid waste generated in selected inhabited islands of the Ari Atoll, thereby reducing the environmental risks to marine habitats and greenhouse gas emissions
Achievement: "1" (>75%)

EXPLANATORY NOTE

Technical and human capacity to effectively manage solid waste in the Ari atoll was indeed created. 75 people received training in composting at the Weligama Municipal Solid Waste Management site in Sri Lanka (5 staff of the MEE, 8 staff of the PMU, 59 island council members, 1 lecturer from the Maldives National University, 3 staff from Fenaka (barge operator), and 2 from TV Maldives).
During the visit, Ukulhas Island seemed very clean and there was evidence of a very engaged local community and Island Council. There was no spillage of waste in the area around the Ukulhas Island Waste Management Centre and organic waste was still composted. Plastic bottles and metals were being

separated and stored for later transfer to the Regional Waste Management Centre. Burning of solid waste, including plastic bottles, still happened to a certain extent at the Ukulhas Island Waste Management Centre. A very similar situation could be observed on the island of Fuvahmulah.

ACTION 2 – THE CLEAN ENERGY PROJECT (CECM)

PROJECT DEVELOPMENT OBJECTIVE (PDO): To reduce dependence on imported fossil fuels for power generation through the use of renewable energy sources and adoption of energy efficiency measures in an island community in the Maldives.
Achievement: "1" (>75%)

EXPLANATORY NOTE

The Project Development Objective of reducing dependence on imported fossil fuels for power generation through the use of renewable energy was fully achieved.
Energy efficiency measures adopted on the island of Thinadoo include: (1) the use of LED lights instead of conventional incandescent bulbs, (2) the use of air conditioning equipment with electronic inverters and (3) the conduct of community education and awareness raising campaigns, especially with regards to temperature control and energy savings that can be made by keeping the minimum temperature of the air conditioners not lower than 24° C.
Regarding the production of renewable energy, the project installed a PV capacity on the island of Thinadoo of more than double the initially planned capacity. As a consequence, substantial savings could be made on diesel, the traditional resource for the generation of electricity on the island.
At the end of the project in 2014, an annual carbon reduction of 589 tons CO_2 eq was recorded, over three times higher than the initial target.
In addition, training and tools (guidelines, standards, templates) provided under the project greatly increased the capacity of the Maldives to replicate and up-scale the installation and use of PV systems to other parts of the archipelago. The successful implementation of the CECM project, including the demonstration that renewable energy can provide up to 50% of the peak demand, has boosted the confidence of the Government of Maldives to further invest in renewable energy.

ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT (WCCM)

PROJECT DEVELOPMENT OBJECTIVE (PDO): To (a) strengthen institutional capacity of Ministry of Environment and Energy (MEE) and local councils for planning and demonstration of community-based wetland and water resources management; and (b) implement a coral reef monitoring system.
Achievement: "2" (between 50% and 75%)

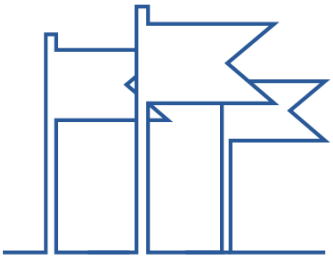
EXPLANATORY NOTE

The first part of the objective related to wetland and water resources management was substantially achieved. Two community-based wetland management plans (CBWMP) which included an ecotourism development plan for Hithadoo and a drainage management plan for Fuvahmulah were developed and approved. Capacity was built for local council members and awareness was raised on the importance of factoring in climate change aspects into the island and atoll development plans. The local council members at Addu and Fuvahmulah are engaged and happy with the way that the project was implemented. They are currently looking for possibilities to implement similar community-driven projects and pay more importance to environmental protection. The establishment of Community Advisory Boards for the two targeted wetland sites and their active involvement in cleaning up and in managing these sites is seen as something innovative and was much appreciated by the local councils.
The Addu and Fuvahmulah Nature Reserves are open since October 2018. The visitor centres for which plans had been prepared under the WCCM project, are completed. The construction took place under the CCAP project (CCTF, Phase II). The visitor centres are modern and provide a lot of information on fauna, flora and ecosystems of the reserves. The reserves have become a known attraction to Maldivians as well as international visitors; they are both seeing substantial increases in the number of visitors.

Rainwater harvesting infrastructure that was constructed under the project on the island of Ukulhas made it possible to collect rainwater from rooftops and to transfer it to a larger centralised storage facility where it is treated, mixed with reverse osmosis desalinated water and finally distributed through the drinking water supply network. This initiative has considerably improved the water security situation on the island. It was reported that the supply of clean water also reduced the occurrence of skin diseases caused by washing with contaminated ground water.

The second part of the objective was not achieved as the coral reef monitoring system as a whole never became operational.
An online Coral Database (https://coraldatabase.gov.mv/) was set up with the Marine Research Centre. The database still exists but is not being updated, nor used as a management tool. The Coral Bleaching Risk Assessment Tool (BRAT) was another output of the project, developed to provide the government with an important tool in the protection of the coral reef against bleaching.
In terms of monitoring activities, baseline data were collected for only 82% of the identified sites and subsequent data collection was never done. The main cause for failure was the system's reliance on the participation of the tourist resorts, while the resort managers were not convinced about the utility of the data nor of their relevance for the resorts' business operations.

2.6. Signs of indirect impact



The following indirect impacts were observed and/or discussed during the country visit:

IN RELATION TO ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT PROJECT (AASWM):

Solid waste management is now on the top of the politial agenda in the Maldives, partly thanks to the successful implementation of the AASWM project. While the Government developed a Regional Waste Management Strategy and related Action Plans for different zones of the country, many islands - encouraged by the positive experience in Ari Atoll - have taken up the issue of waste. To this end, island council members from all over the Maldives are visiting Ukulhas to see how the Solid Waste Management System works. The Ukulhas model is now being replicated on several other islands and trainings have been organised for council members and other people involved in solid waste management.
Further, on Ukulhas itself, the practice of SWM has substantially reduced the amount of flies, rodents and wild cats on the island. Many tourists coming to Ukulhas claim that they had heard about the island through the press, granting the island a positive image because of its cleanliness as a result of the waste management project.

IN RELATION TO ACTION 2 – THE CLEAN ENERGY PROJECT (CECM)

Renewable energy (mostly solar) has become very popular in the Maldives and solar panels are being installed on a lot of inhabited islands as well as resort islands. Many households do invest in their own PV systems.
The country is also considering to bring renewable energy to islands that are short of land for the installation of sufficient PV capacity. As a solution, plans are currently being finalised for the installation of a first open sea floating PV system off Addu City.
The implementation of the CECM project has leveraged funding for other donor projects focusing on the scaling-up of renewable energy investments, such as the ASPIRE and POISED projects.

IN RELATION TO ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT (WCCM)

The WCCM project successfully used social media for the promotion of environmental conservation in the Addu and Fuvahmulah Nature Reserves. Both these Nature Reserves have popular "selfie" points which are used by a lot of people. The photos of these amazing areas and views widely circulated on social media and drew the attention and interest of many others, including locals, to the Reserves. Partly as a result of this experience,

social media are now playing an important role in wetland conservation and in securing public support for this purpose.
The President of the Maldives declared his intention to submit a request to UNESCO for the nomination of the Fuvahmulah and Addu Atolls as Man & Biosphere Reserves. Having witnessed the success of the Addu and Fuvahmulah Nature Reserves, many other islands in the Maldivian archipelago expressed their interest in having their wetland areas declared as Protected Areas. The total area of wetland under protection might therefore soon increase. Further to this, the MEE is planning to establish in 2020 a new and dedicated Department for Conservation to deal more closely with issues related to conservation and protected areas.

2.7. Conclusions on direct and indirect impact generated by the project and discussion on factors for success and failure

Based on the present analysis, 5 years after their closure, it is justified to say that the 3 actions that were implemented under the first phase of the CCTF have overall well performed and generated substantial impact.

ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT PROJECT (AASWM):

The AASWM project proved to be a very useful and convincing demonstration project that clearly showed the economic and social benefits from an adequate Solid Waste Management System. Despite the fact that the system was not 100% functioning on 2 of the 5 pilot islands, the successes in the 3 other islands proved to be sufficient to demonstrate the positive impacts on the community and to convince others to adopt the system.
Tourists are attracted by the clean beaches and increasingly make their way to the island, particularly after regulations on the construction of guest houses on inhabited islands were eased. Positive press coverage enhances the island's popularity among tourists.
Factors that enhanced the generation of impact: good local leadership and support; an integrated and robust system that delivers at the short term a variety of direct and indirect positive effects and benefits.

ACTION 2 – THE CLEAN ENERGY PROJECT (CECM):

The CECM project has been instrumental in showcasing the genuine potential of renewable energy for improving the overall power supply on small islands. Apart from the power supply as such, also a number of economic and environmental benefits coming with the production and use of renewable energy, were quantitatively demonstrated. These benefits have encouraged the Government to further invest in the production of renewable energy.
Critical factors for success: the economic and environmental benefits in replacing diesel-based power generation by solar power, together with the good accessibility of the concerned technology.

ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT (WCCM)

The WCCM project has been able to lift environmental conservation in the Maldives to another level. It successfully supported the official (declaration as protected areas) as well as effective (development of community-based management plans and local capacity building to manage) protection of two extensive wetlands of national importance.
The success has encouraged other islands in the Maldives to protect their wetland areas as they witnessed the positive contributions to local economic and social development.
Factors for success: support given by both the local island council and the Ministry of Environment and Energy; the enthusiasm and full cooperation of the local communities in e.g. site cleaning and transformation in attractive natural space.

The establishment of an operational coral reef monitoring system was not successful.
A major cause for failure was the system's reliance on the participation of the tourist resorts, while the resort managers were not convinced about the utility of the data nor of their relevance for the resorts' business operations.

III. Analysis of Sustainability Levels

3.1. List of services, systems and products that were established/delivered under the project and that should have been maintained (based on the outputs delivered):

RELATED TO THE OVERALL ACTION:

- The Climate Change Trust Fund still operational and being replenished

RELATED TO ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT PROJECT:

- Continued solid waste management practices and services in the 5 pilot islands: updated planning, general operation of the Island Waste Management Centers, composting and recycling practices, waste collection and transportation, financial sustainability (full cost recovery by fees collected, partly subsidised).
- Service for the transfer of residual solid waste for off-island disposal operational and financially/economically viable.

RELATED TO ACTION 2 – THE CLEAN ENERGY PROJECT:

- Solar photovoltaic systems still producing power
- MEE/Fenaka Corporation Ltd active in planning and installing additional solar power systems

RELATED TO ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT:

- Protected Areas Community Advisory Boards in Hithadhoo and Fuvahmulah still active.
- Status of the community-based wetland management plans in Hithadhoo and Fuvahmulah: level of implementation, updates, ongoing planning processes
- Ecotourism activities in Hithadhoo: facility completed, maintained, operational
- Rainwater harvesting system in Ukulhas: well maintained and still operational
- Water supply system (with desalination using reverse osmosis) in Ukulhas: well maintained and still operational
- Coral Reef Monitoring by the government and resorts: institutional system still in place and systematic monitoring ongoing, CoralDatabase updated and used (or replaced by another IT system), Coral Bleach Risk Assessment Tool (BRAT) still used (or replaced by another tool)

3.2. Information and comments on sustainability aspects from the available reports (desk phase)

ON THE CLIMATE CHANGE TRUST FUND:

- Efforts made by the PMU/IDA to leverage wider donor support to the CCTF have failed. During the project's implementation period, Denmark even established another independent Trust Fund in the Maldives for climate action. (source: IDA/WB progress reports)
- The Climate Change Advisory Council (CCAC – part of the governance structure of the CCTF) was abrogated with the change in government in November 2013, when CCTF oversight was taken over by the MEE. A new structure, equivalent to the CCAC, was however not established and effective monitoring, troubleshooting, and steering of CCTF interventions did not get instituted as expected.

OVERALL COMMENTS FROM THE MID-TERM EVALUATION REPORT:

For all three projects, sustainability aspects were duly considered during design and implementation. However, the sustainability of some project activities might become a real concern if appropriate actions to institutionalize them and to provide further financial support, at least in a transition period, are not taken. This is especially true for some key and very relevant components of WCCM, but also for AASWM.

ACTION 1 – THE ARI ATOLL SOLID WASTE MANAGEMENT (AASWM) PROJECT:

As a preliminary remark, it is good to recall that the AASWM project was actually designed to enhance sustainability of a previous, EU-funded intervention[19] through which 16 IWMCs had been established but without being operationalised. Due to budget limitations, the AASWM project could only cover 5 of the 16 sites.

Overall, the perspectives for sustainability of the project outcomes were assessed as adequate. This positive assessment is based on the observed good ownership and commitment of the communities as well as the Island Councils. In addition, the institutional capacity is deemed adequate to sustain the investments in the pilot islands.

The risk of abandoning SWM due to lack of resources is assessed to be moderate. While the project introduced a cost-effective model of municipal waste management at the island level, the non-participation of resorts in the regional SWM system (due to high transportation costs) and the challenges in adopting a self-sustaining cost-recovery system for regional transport are putting at risk the successful implementation of the regional SWM model. However, country-wide investments being made on SWM through external resources as well as own financing, point towards the GoM being committed to making the regional system operational. Further, the GoM ensured that also the other project activities that had remained unfinished by the closing date would be completed by the Government's own resources, amongst others the completion of the IWMC in Thoddoo. As such, the Government would ensure that all five island SWM systems would be fully operational.

The following actions were already taken by GoM to sustain the project's impact:

- **INSTITUTIONAL.** On-going World Bank operations within the MEE and the continuation of the PMU under a second phase of the CCTF are likely to ensure the full achievement and continuation of project impacts into the future. A Solid Waste and Pollution Management Department, recently established in the MEE, will take a lead in updating and implementing the national SWM Policy and in expanding the oversight function. With the technical capacity built in the Island Councils and physical investments provided by the project to the pilot islands, the knowledge and ownership for operations and maintenance of IWMCs are in place. Ukulhas, which provided training to other Island Councils, and Fenfushi with their high performance and commitment are expected to be further developed as training facilities for island level SWM.
- **FINANCIAL.** The project was designed and implemented as a pilot and provided the basic financing to operationalise existing IWMCs. Despite government budget constraints, the GoM allocated a budget to one of the pilot sites and more recently for project expansion to two other islands in the Ari Atoll, demonstrating its commitment to the project objectives. Island Councils are planning to: (a) continue to raise funds for the operation and maintenance through user fees, an approach piloted by the project; (b) sell recyclables and compost; and (c) seek supplemental financing from other sources such as UNDP's Global Environmental Facility Small Grants Programme and resorts located in the Atoll. The GoM is also committed to initially subsidise the operation of the waste transfer vessel until the cost-recovery system is fully established with the participation of other inhabited islands and resorts in the Atoll.
- **TECHNICAL.** The project provided adequate capacity building to manage simple island waste management systems. The experience and capacity gained by Island Councils will ensure planning and adoption of SWM at local levels. The Ukulhas Island Council and the new SWM Department in the MEE are both equipped with knowledgeable staff who can provide technical SWM support to inhabited islands.

[19] The Post-Tsunami Reconstruction Project, WB-implemented.

The SWM Department's recognition of the lessons learned and the current efforts that are being made to incorporate the lessons in the on-going and planned SWM investments offer good perspectives in terms of delivering the results envisaged.

- **POLITICAL.** The GoM recognised the suitability of the project's integrated SWM approach for the country in the context of scarce land resources, threats to the environment, and high cost of waste transportation and final disposal. The integrated island level SWM approach has already been adopted in the North Central Region under the Maldives Environmental Management Programme (MEMP) and in many of the inhabited islands across the country that have IWMCs. It is also included in the design of a project to establish the SWM system in the Southern Region that is proposed by the MEE under the second CCTF phase. The Government's policy states that all inhabited islands should have fully operational IWMCs that manage 100% of the organic waste through composting and that recycle marketable non-organic waste with only a small fraction residual waste requiring final disposal. Supporting regulation is already in place.

ACTION 2 - THE CLEAN ENERGY FOR CLIMATE MITIGATION (CECM) PROJECT:

Sustainability perspectives for the CECM project are promising.

The project has successfully facilitated the generation of 558.5 kWp on Thinadoo. It also provided an important platform and a treasure trove of lessons and experiences for the further successful expansion of solar (PV) power generation on islands that are operating as stand-alone grids. These will also facilitate the implementation of the Accelerating Sustainable Private Investment in Renewable Energy (ASPIRE) project, that aims at scaling up renewable energy in the Maldives with close involvement of the private sector.
Regarding activities that still needed completion by the end of the CECM project, the following items were due: (1) Fixing of software issues, operational automation, and fuel flow meter calibration in order to get robust reliable data, prior to expiry of the contractors' Performance Bonds; and (2) as next steps, collaborating with ADB in the area of hybrid diesel-PV operations.

The government was solidly behind the CECM project, provided the needed support in building consensus with the utility company and other stakeholders, and was open to consider new ideas and advice from the consultants. The government was also a very active participant in the project's activities and is now planning to replicate experiences and lessons learned through the POISED and ASPIRE projects.
The PMU and the Ministry had the skills and perseverance to see this project through from inception to complete implementation, within the timeframe, even though a full second phase was added to the original plan entailing additional procurement transactions and contract management efforts.

ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT (WCCM) PROJECT:

The risk that the development outcome with respect to the wetland and water resources management will not be maintained is significant.
Capacity that has been built among local councils and the local community needs to be deepened by effective implementation of the wetlands management plans. Implementation in Hithadoo had just begun at project closure; in Fuvahmulah, no further progress in CBWMP implementation had been made than the preparation of designs for some planned works. With ecotourism being a major driver for local interest in wetland conservation, it is very likely that the wetlands will not be protected and managed as per the CBWMP unless the ecotourism components become implemented and operational. Thus, the capacities built under the project will not be sustained unless effective implementation of the CBWMP plans will be initiated. It can be expected, though, that support to several sub-components of this project will be continued.

The risk that the development outcome with respect to the coral reef monitoring system will not be maintained is high.
The high risk rating is based on the low interest of the targeted resorts to collect coral reef monitoring data and to upload them in the Coral Database and, importantly, on the lack of active follow-up from the PMU and the Marine Research Centre. Left to itself, it is very likely that the coral reef monitoring system will not remain operational.

REGARDING THE ENVISAGED POST-COMPLETION STEPS:

The WCCM project document envisaged the development of an exit strategy based on an end of project evaluation study. This study was expected to identify specific activities that were to be transitioned from the WCCM to relevant GoM ministries. In the end, no such exit strategy was prepared. However, the project itself had identified at the design stage that the drinking water supply system in Ukulhas would be managed by a government-owned utilities company (Fenaka), while the CBWMPs (including the ecotourism facilities) would be implemented and managed by the local island councils with support from the Community Advisory Boards.

As for the rainwater harvesting and Reverse-Osmosis (RO) desalination plant in Ukulhas, Fenaka (ex-STELCO) has indeed been given the responsibility for operating and maintaining the plant. Residents of the island are expected to receive piped drinking water from the plant once the MEE will have approved the applicable tariff.

Regarding the ecotourism facilities in Hithadoo, they are under development and the Addu City Council is looking forward to managing the facilities with supervision from the Community Advisory Board.

In addition, a follow-on project titled Climate Change Adaptation Project (CCAP) is currently being prepared under the second phase of the CCTF. The CCAP will include interventions in the areas of wetland management (under Component 1) and coral reef monitoring (under Component 2). This project will be the chief vehicle to provide continued support and momentum to the activities initiated in Hithadoo and Fuvahmulah under the WCCM project, especially to those related to wetland conservation and development and operation of ecotourism facilities. CCAP will also introduce coral reef monitoring in these two islands. Thus, the outputs and outcomes that emerge from the WCCM are expected to be deepened and sustained by the CCAP. The MEE will have the overall responsibility for CCAP implementation, what ensures continuity in terms of management support from the GoM.

The WCCM project pioneered the hybrid drinking water supply system, comprising a rainwater harvesting and a desalination plant. UNDP has adopted this system and is rolling out projects with a similar technology. Similarly, coral reef monitoring is attracting other actors, such as IUCN (International Union for Conservation of Nature) with the REGENERATE project. Such developments and replications will further consolidate the current achievements and provide sustainability to the action.

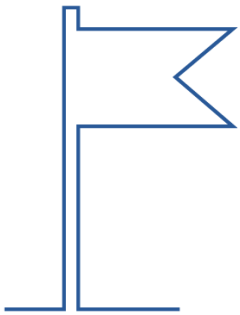
3.3. Summary findings from the desk phase and specific issues to be further explored during the field phase:

According to the mid-term evaluation report, sustainability perspectives were promising for the CECM project. For the other projects (AASWM and WCCM), several post-completion tasks still needed to be carried out to ensure an acceptable level of sustainability of the outcomes.

The final project reports indicated that some of these post-completion initiatives and measures were already being undertaken at the closure of the respective projects. Apart from assessing the sustainability of the items listed under 3.1, the detailed description of these post-completion initiatives and measures (as described in box 3.2) will provide direct guidance for sustainability analysis during the field phase.

3.4. Results of the sustainability analysis (as per table)

11 items were checked for their sustainability and information could be collected for all of these.



The scores of the 11 items are as follows:

- 5 items (46%) scored 1, meaning that they were fully sustained and expanded/improved
- 2 items (18%) scored 2, meaning that they were fully sustained in a “status quo” situation
- 3 items (27%) scored 3, meaning that they still exist but with quality and/or coverage issues
- 1 item (9%) scored 4, meaning that it disappeared or lost functionality

Evidence was found through direct observation for 4 items (36%); through reporting by reliable sources for 5 items (46%); through information gained from uncertain sources for 1 item (9%); and through a mixture of methods (D/R) for 1 item (9%).

3.5. Conclusions on the sustainability aspects and discussion on factors for success and failure

Overall, the sustainability of the CCTF project is high.

The CCTF itself was closed early 2019 after the completion of a second phase (4.21 million USD). This second phase had been focused on the implementation of the CCAP, which was essentially a follow up of the three projects that were supported under the first phase and included activities related to wetland conservation, solid waste management, coral reef monitoring and mainstreaming of climate change into island development planning. Currently, new projects have their own account and dedicated climate funds such as the CCTF are no longer existing.

The solid waste management project (AASWM) obtained high sustainability scores. During the field visit, the island (streets, beaches, private residences, government compounds) of Ukulhas was found to be clean. The solid waste management centre was found to be active, waste is being sorted and organic waste is used for composting. According to the secretariat of the Ukulhas Council, the demand for compost, particularly from tourism resorts in the area, is high and the current production is not yet meeting the demand. The SWM practices that were promoted and demonstrated under the AASWM project on Ukulhas have been picked up throughout the Maldives, partly thanks to the extension efforts of the people on Ukulhas that were trained in waste management. Despite the fact that some of the islands that participated in the project did not manage to set up

a fully operational solid waste management system, the islands that did manage have all been able to sustain it. Also on the island of Fuvahmulah, the solid waste management centre was found to be active with much work being done on the separation and compaction of plastic waste for off-island transfer and disposal; on composting; on glass waste being crushed and stored for re-use in the construction sector.
The other islands that were visited during the field visit were all found to be clean. Discussions with key stakeholders revealed that this was not always the case and that the people of Maldives have indeed become much more conscious about the negative effects (health, environmental, socio-economic) of poor waste management ánd have been taking steps to improve the situation. Today, solid waste management also features as one of the top priorities on the political agenda of the Government of Maldives.

As for the CECM project, addressing issues of energy efficiency and renewable energy, most of the components were found to be higly sustainable despite the fact that certain damaged equipment had not been replaced and that the PV systems were not operating at the full, originally installed capacity. From the four of the five sites on Thinadoo where the project had supported the installation of photovoltaic systems, that were visited during the field phase, only the system at the Power House was found non-operational due to a fire that had occurred five years ago and that had destroyed the solar panels as well as the automated control system for the optimal flow of renewable energy into the electricity grid. To enhance sustainability, the automated control system should be replaced.
During the field visit, it was observed that individuals on Thinadoo had started to install their own rooftop PV systems with the purpose of reducing their electricity bills. Importantly, the Thinadoo pilot project went a long way in convincing the Government of Maldives that with renewable energy substantial savings can be made on the cost of producing and providing electricity for the local population, what boosted the confidence of the Government in promoting the use of renewable energy. Today, there are PV projects under implementation or being planned throughout Maldives, some as part of other donor funded projects such as ASPIRE and POISED.

The wetland conservation component of the WCCM project has probably been the component with the highest positive impact and high sustainability scores. As could be observed during the field visit, the management of the wetland sites has been strengthened over the years. Both sites (Hithadoo and Fuvahmulah) that were targeted by the project for wetland conservation have today gazetted and actively managed Nature Reserves (Addu Nature Park and Fuvahmulah Nature Reserve). These sites first became operational as Nature Reserves in October 2018. Since their opening, they have proved to be very popular with both locals and visitors. Ecotourism activities in the Addu Nature Park have really taken off and include guided tours, guided snorkelling, canoeing, cycling and bird watching. The Addu Nature Park was recently expanded to include additional environmentally and socio-economically important sites such as Manta Point and the historic site with the British Loyalty shipwreck. Perhaps the best indicators for sustainability at this site are the number of staff employed (total of 9 to date) and the total revenue generated from the entry fees, which is partially used to support community-based development projects. The EU-funded follow-on CCAP project has provided the much needed continuity for wetland conservation in the Maldives and is partly responsible for the high levels of sustainability and impact that the wetland conservation component of the project has reached.

One of the factors that negatively affected project implementation and hence sustainability was the short implementation framework for the project. This short implementation period made procurement processes difficult and put project managers under immense pressure.
On the other hand, the several follow-up projects played an important role in ensuring sustainability as well as impact. Also, the clear support from the national government, in particular from the Ministry of Environment and Energy, and the close working relationships with the island and city councils have been a critical factor in achieving the observed levels of sustainability and impact.

IV. Additional elements

4.1. M&E Practice

M&E ACTIVITIES THAT HAVE TAKEN PLACE:

- **External:**
  There is evidence that a Result Oriented Mission (ROM) took place in 2012 and a mid-term evaluation of the Climate Change Trust Fund in the Maldives in 2014, both EU-funded (ROM contract and EU Framework Contract respectively).

- **Internal:**
  Monitoring and evaluation took place at the level of the 3 actions, but not at overall CCTF level. Regarding the 3 actions, monitoring of progress against the elements of the resp. Result Frameworks was carried out and Implementation Completion and Results (ICR) reports were prepared by the WB, being the main implementing partner. These ICR reports were informed by reports from the contractors and consultants in the field. Semi-annual progress reports formed the basis for stock-taking, recalibrating and taking corrective action at the project level.

% OF BUDGET ALLOCATED TO M&E THAT HAS BEEN USED:

No information available.

ADDITIONAL M&E REPORTS THAT HAVE BEEN COLLECTED:

No additional M&E reports were available and were collected as part of the field-phase of the study.

4.2. Contributions to GCCA+ knowledge management and communication

INTERESTING LINKS WITH THE SCIENTIFIC COMMUNITY AND RESEARCH RESULTS THAT ARE RELEVANT FOR WIDER DISSEMINATION OUTSIDE THE COUNTRY:

- Action 3 established a close collaboration with the scientific community in relation to the coral reef Bleaching Risk Assessment Tool (BRAT). The BRAT was developed by the Marine Spatial Ecology Lab (Prof Pete Mumby) from the University of Queensland, Australia to assist the Maldives in the identification of coral reef areas with high (and low) risk of chronic bleaching and in the prediction of the impacts of present and future bleaching. This information feeds into the country's Coral Bleaching Response Plan and contributes to achieving the national marine spatial planning goals.
- The successful waste management project in Ukulhas was visited by a team from Harvard University that wanted to learn from the project's approaches.

COMMUNICATION MATERIALS:

During the field mission, interviewees confirmed that communication materials had been developed about the Addu Nature Park (action 3): several banners on ecosystems and species and a video, available on YouTube.

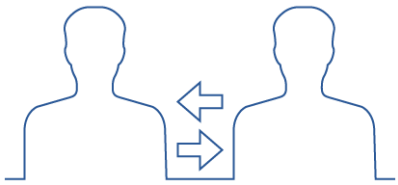
4.3. Opportunities for scaling up (future GCCA support activity)

- Establishment of a system for monitoring of groundwaterlevels and -quality on inhabited islands, including a feasibility study for the installation of low-cost sewage treatment plants.
- Capacity building for designing and installing renewable energy systems.
- Consolidation of the Maldives coral reef database.
- Preparation of regional waste management strategies for different zones.
- Support for research and environmental monitoring for detecting the impacts of climate change on the natural environment.
- Capacity building in project oversight, monitoring and evaluation.
- Capacity building in project preparation to mobilise climate finance.

4.4. Climate Finance – evidence of funding mobilised from public and/or private local sources

The following three cases are relevant:

- The cost recovery system for the waste collection and treatment services, partly based on government subsidies and partly on fees paid by the service users.
- Related to wetland conservation, the funding of community-based projects from the nature reserve entry fees. 50% of the total income is used to fund small and locally formulated and prioritised projects.
- Though outside the direct bounds of this project, it is worthwhile to mention that the Maldives established a “Green Fund” in December 2018. The fund is used for the implementation of projects that address environmental issues, including climate change, and is financed through revenues from local green taxes. Apparently, there is approximately 20 million USD budgeted over the next couple of years (starting 2020) by the Government of Maldives for water treatment, storage and distribution as an adaptation measure to climate change.



V. Sources of Information

DOCUMENTS COLLECTED AND CONSULTED FOR THE DESK PHASE ANALYSIS:

- **Programming documents**
  - Action Fiche, no logframe attached, 2008
  - Project appraisal document, International Development Association (IDA) / World Bank (WB), May 2008
  - Administration Agreement between the EC and IDA/WB, with annexes (Description of the Project, Draft Logframe, General Conditions, Budget of the Operations), December 2009
  - Amendment 1 to the Administration Agreement, April 2010

- **Progress reports**
  - First annual donor report covering Jan-Dec 2010, IDA/WB
  - Second donor report covering Jan 2011 – June 2012, IDA/WB
  - Implementation Completion and Results (ICR) Report of the Ari Atoll Solid Waste Management Project, June 2015
  - Implementation Completion and Results (ICR) Report of the Clean Energy for Climate Mitigation Project, June 2015
  - Implementation Completion and Results (ICR) Report of the Wetland Conservation & Coral Reef Monitoring for Adaptation to Climate Change Project, June 2015

- **Monitoring and Evaluation reports**
  - ROM (EC), September 2012 (only response sheet by IDA/WB)
  - Mid-term Evaluation of the Climate Change Trust Fund in the Maldives, Final Report, May 2014 by SACO Consortium (EU Framework Contract)
  - Final report of the financial audit covering Dec 2009 – Dec 2014, Moore Stephens, September 2015

- **Technical documents**
  - Presentation on the Climate Change Trust Fund at the Nationally Appropriate Mitigation Action (NAMA) Workshop, Mohamed Asif, CC Department – Ministry of Environment and Energy
  - CCTrust Fund – Social Assessment and Management Framework, November 2014

ADDITIONAL DOCUMENTS COLLECTED AND CONSULTED DURING THE FIELD PHASE:

- Regional Waste Management Strategy and Action Plan, zone 6 in Maldives, 2019
- Assessment of Solid Waste Management Practices and Vulnerability to Climate Risks in the Maldives Tourism Sector.
- Framework for an Ecosystem-based Management Plan, Addu Atoll, Republic of Maldives
- The Maldives Climate Change Policy Framework, Ministry of Environment and Energy, 2015.
- The Maldives Coral Bleaching Response Plan, Marine Research Centre, Malé, Maldives, 2017.
- The Maldives National Strategy for Sustainable Development, 2009.
- The National Action Plan on Air Pollutants: Determining Nationally Avoided Emissions, Ministry of Environment, 2019.
- The Maldives Energy Policy and Strategy, Ministry of Environment and Energy, 2016.
- The National Adaptation Programme of Action (NAPA): Project Profiles.
- The National Adaptation Programme of Action, Ministry of Environment, Energy and Water, 2006.
- The National Awareness Raising Strategy for Waste and Sewerage, Ministry of Environment and Energy.
- The National Solid Waste Management Policy for the Republic of Maldives, Ministry of Environment Energy and Water.
- The National Water and Sewerage Policy, Ministry of Environment and Energy, 2017.
- The Process Framework for Regulated Access to the Designated Protected Area in Fuvamulah and S. Hithadoo Islands, Maldives. Climate Change Adaptation Project. January 2015.
- Status of Coral Bleaching in Maldives, Marine Research Centre, 2016.

- Strategic Action Plan for Development (2019 – 2023), Government of Maldives.

RELEVANT WEBSITES:

- MEE website: www.environment.gov.mv/v2/en/department/168
- Coral database: https://coraldatabase.gov.mv
- EPA website: http://en.epa.gov.mv/
- WAMCO website: http://wamco.com.mv/

CONTACTS OF STAKEHOLDERS COLLECTED DURING THE DESK PHASE:

- **EUD (to Sri Lanka and Maldives, based in Colombo):**
  - Ms. Harshini Halangode, Programme Manager, harshini.halangode@eeas.europa.eu
  - Mrs Libuse Soukupova, Previous Head of Operations, libuse.soukupova@eeas.europa.eu
  - Mr Frank Hess, current Head of Cooperation, frank.hess@eeas.europa.eu

- **Implementing partners and institutional beneficiaries[20]:**
  - MEE: the website mentions that the CC department is staffed with 7 officials (Mohamed Asif amongst them) but no individual e-mails are provided. The general e-mail: climate@environment.gov.mv
  - Mr Ajwad Musthafa, Permanent Secretary, MEE, ajwad.musthafa@environment.gov.mv
  - IDA/WB team leader for the AASWM project: Darshani De Silva
  - IDA/WB team leader for the CECM project: Abdulaziz Faghi
  - IDA/WB team leaders for the WCCM project: Priti Kumar (project leader) and Gaurav D. Joshi (ICR[21] team leader): gjoshi1@worldbank.org

PERSONS CONTACTED DURING THE FIELD PHASE:

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[20] The mid-term evaluation report includes an annex with a list of the consulted stakeholders. This list provides a good source for the I&S field study but only contains the names and positions, contact details are lacking.
[21] ICR = Project Implementation - Completion - Results

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Annex to the report: Sustainability Analysis

Nr	Description of System/Service/Product to be sustained	Score	Evidence	Explanatory notes
Overall Project:				
1	The Climate Change Trust Fund still operational and being replenished	4	R	Early 2019, after completion of a second phase,the CCTF was discontinued.
Action 1 – the Ari Atoll Solid Waste Management project				
2	Continued solid waste management practices and services in the 5 pilot islands: updated planning, general operation of the Island Waste Management Centres, composting and recycling practices, waste collection and transportation, financial sustainability (full cost recovery by fees collected, partly subsidised).	3	D/R	According to the Secretariat of the Ukulhas Council, solid waste management practices and services had been sustained in 4 of the 5 pilot islands, with Dhangethi being the island were activities had discontinued. This was attributed to leadership issues within the Dhangethi Council. A field visit to the waste management centre of Ukulhas confirmed that waste is well managed, the area was well fenced, no spillage into the sea could be observed and the organic waste was being composted. Plastic bottles and metals are separated and stored for transportation off-island. A cost recovery system is in place. On Ukulhas, all households and businesses are paying for the collection of their waste. Due to the small scale of the operation, waste collection is financially not fully sustainable and still needs to be subsidized by the Government. The Council claimed that the implementation of the Ari Atoll Solid Waste Management project had substantially reduced the amount of flies, rodents and wild cats on the island. This was also confirmed by local inhabitants. Since the project has ended, many Councils of other islands visited Ukulhas to learn how the island is managing its waste. The success of the project has also captured international attention. For example, a team from Harvard University came to the island to appreciate and assess the project's approaches and achievements. Also tourists coming to the island claim

				that they had heard about the island's successful waste management programme through the media (articles).
3	Service for the transfer of residual solid waste for off-island disposal operational and financially/economically viable.	1	U	A service for transfer of residual solid waste for off-island disposal is available for the islands of the Ari atoll. A vessel was constructed and handed over to the Waste Management Corporation Limited (WAMCO) in 2015.
ACTION 2 – THE CLEAN ENERGY PROJECT:				
4	Solar photovoltaic systems still producing power	3	D	On Thinadoo, photovoltaic systems were installed at 5 locations (Thinadoo School, Aboobakuru School, Masjid Al-Ikhlas (mosque), Dr.Abdul Samad Memorial Hospital and the Power House). During the field visit 4 of the 5 sites were visited and in 3 of the 4 sites that were visited, the PV system was found to be still functioning. At the Power House, a fire (2016) had destroyed a number of solar panels on the roof top as well as the automated system that controlled the influx of the solar energy produced at the 5 locations into the grid. There are still some panels left on the Power House, but they are not working at present. Further, there are signs that faulty equipment is being replaced.
5	MEE/Fenaka Corporation Ltd active in planning and installing additional solar power systems	1	R	MEE/Fenaka is very active in the planning and installation of additional solar power systems. Since the island of Thinadoo successfully piloted the first large-scale photovoltaic project and provided evidence of the associated cost savings, more island Councils became convinced of the utility and advantages. To date, there are at least 58 Islands that installed PV panels and created hybrid systems in which part of their electricity is produced by solar panels and part by diesel generators. Solar power strongly features in the Maldives Renewable Energy Roadmap. In the Male region (capital) there are solar systems installed on Male, Hulhumale, Vilingili, Thilafushi, and Gulhifalhu. As land is a scarce resource in the Maldives, there are also plans to install floating PV systems in Addu City.

ACTION 3 – THE WETLAND CONSERVATION & CORAL REEF MONITORING PROJECT				
6	Protected Areas Community Advisory Boards in Hithadhoo and Fuvahmulah still active.	2	R	The Protected Areas Community Advisory Boards in both Hithadoo and Fuvahmulah are still active. Both the Island Council of Fuvahmulah and the City Council of Addu mentioned to be happy with their functioning to date. At Hithadoo, the Advisory Board recently selected a number of community-based projects that will be financed through the Reserve entry fees, of which 50% is set aside for such community projects.
7	Status of the community-based wetland management plans in Hithadhoo and Fuvahmulah: level of implementation, updates, ongoing planning processes.	1	R	The Community Based Wetlands Management Plans (CBWMP) for the Addu Nature Park (Hithadoo) and the Fuvahmulah Nature Park (Fuvahmulah) were found to be under implementation with a wide range of activities being carried out. These management plans are ruled by the Environmental Protection and Preservation Act (1993), whose management regulations prescribe the development of annual work plans. At both locations, the management plans include a strong awareness raising component targeting the local communities and intend to increase the environmental research and monitoring activities which used to be restricted due to the limited staff available. In September 2019, the President of the Maldives proposed to nominate the Fuvahmulah and Addu Atolls, where the two concerned protected areas are located, as UNESCO Man and Biosphere Reserves. At Fuvahmulah, this nomination will help to sustain and protect important diving sites for tiger sharks and manta rays. As for the Addu Nature Park which was expanded in 2018 to include the Manta point off-Kandihera-Maakandu channel and the British Loyalty shipwreck site, focus will be on sustaining and protecting the newly included areas.
8	Ecotourism activities in Hithadoo: facility completed, maintained, operational	1	D	The visitor centre was completed, is well maintained and is operational. The centre provides the visitors a wide range of information on the natural environment (species, habitats) and also offers spaces that can be rented for conferences and social functions. Ecotourism activities that are organised in the Addu Nature Park include guided tours, guided snorkelling, canoeing, cycling, bird watching and diving. Bicycles and canoes can be rented at very low rates.
9	Rainwater harvesting system in Ukulhas: well maintained and still operational	2	D	The rainwater harvesting system in Ukulhas was found to be operational and well maintained. The system collects rainwater from rooftops that is stored in above ground tanks. From there,

				the water is pumped to a main storage tank at the desalination plant where it is treated and mixed with desalinated water before entering the distribution system.
10	Water supply system (with desalination using reverse osmosis) in Ukulhas: well maintained and still operational.	1	D	The water supply system and the facilities of the STELCO plant were found to be well maintained and fully operational. The building that houses the reverse osmosis equipment had been sound-proofed following complaints about noise from the local population. Further, the capacity of the system has been expanded with additional reverse osmosis units.
11	Coral Reef Monitoring by the government and resorts: institutional system still in place and systematic monitoring ongoing, CoralDatabase updated and used (or replaced by another IT system), Coral Bleach Risk Assessment Tool (BRAT) still used (or replaced by another tool)	3	R	Coral Reef Monitoring is still being undertaken by the Government through the Marine Research Centre (MRC) and their international collaborators. The MRC is the custodian of the coral reef data and is responsible for updating and maintaining the online CoralDatabase (https://coraldatabase.gov.mv/), which does not appear to be functional despite the fact that a login page is online. There is no evidence of the resorts continuing any monitoring or data collection in follow-up of the baseline that was established under the project. The Coral Bleaching Risk Assessment Tool (BRAT) is still being used and is, according to a prominent coral reef scientist, an important tool in the development and updating of the Maldives Coral Bleaching Response Plan.

This **Impact and Sustainability Assessment of the Maldives Support Project to Climate Change Adaptation and Mitigation** (2008/163-259) is one of the 22 case studies that were conducted to feed into the overall **GCCA/GCCA+ Impact and Sustainability Study**. This case study report provides a summary list of outputs delivered, a detailed analysis of ex-post impact and sustainability levels as well as additional information on the project's M&E practices, on the available knowledge and communication products, on scaling-up opportunities and on ex-post climate finance mobilised from local public and private sources.

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