Increasing Climate Resilience Through an Integrated Water Resource Management Programme

Maldives

Agency: United Nations Development Programme
Executing Agency: Ministry of Environment and Energy
UNDP PIMS: 4582, UNDP Atlas Project Number: 00078494

Mid-term Evaluation Inception Report

February 6, 2014

Photos: "Concrete" Adaptation Measures. Clockwise from top left: ADh. Mahibadhoo RO Plant Building Site View; ADh. Mahibadhoo RO Plant Building; HA. Ihavandhoo Rainwater Tank Site; GDh. Gadhdhoo RO Plant Building, GRP Tank Foundation, and Intake Borehole. Credit: Josh Brann.

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Acronyms

ADB	Asian Development Bank
AF	Adaptation Fund
AWP	Annual Work Plan
CAF	Cancun Adaptation Framework
CBM	Cubic meters
CDR	Combined Delivery Report
CO	Country Office
CP	Country Programme
CPAP	Country Programme Action Plan
CPD	Country Programme Document
CSO	Civil society organization
DNP	Department of National Planning
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EIA	Environmental Impact Assessment
EOI	Expression of Interest
EPA	Environment Protection Agency
GDP	Gross Domestic Product
GEF	Global Environment Facility
GOM	Government of Maldives
GRP	Glass reinforced plastic
HA	Hectares
HDPE	High density polyethylene
HH	Household
IDB	Islamic Development Bank
IFRC	International Foundation of the Red Cross
IWRM	Integrated Water Resources Management
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
KM	Kilometers
LDC	Least Developed Country
LGC	Local Government Authority
l/p/d	liters/person/day
M&E	Monitoring and evaluation
MAR	Managed Aquifer Recharge
MEE	Ministry of Environment and Energy
MFT	Ministry of Finance & Treasury
MHA	Ministry of Home Affairs
MHAHE	Ministry of Home Affairs, Housing & Environment
MHE	Ministry of Housing & Environment (formerly MEEW & MHAHE)
MIE	Multilateral Implementing Entity
MOU	Memorandum of Understanding
MPND	Ministry of Planning & National Development
MTAC	Ministry of Tourism Arts & Culture
MTE	Mid-term Evaluation
MVR	Maldivian Rufiyaa
MWSC	Maldives Water and Sewerage Company

NAPA	National Adaptation Programme of Action
NDMC	National Disaster Management Centre
NEAP	National Environment Action Plan
NEX	National Execution
NGO	Non-Governmental Organization
NIE	National Implementing Entity
NPD	National Project Director
NPM	National Project Manager
OECD-DAC	Organization for Economic Co-operation and Development – Development Assistance Committee
PB	Project Board
PCC	Project Coordination Committee
PID	Project Initiation Document
PIF	Project Identification Form
PMU	Project Management Unit
PPR	Project Progress Report
PSIP	Public Sector Investment Program
RBM	Results-based Management
RO	Reverse Osmosis
SIDS	Small Island Developing State
SOE	State of Environment report
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNOPS	United Nations Office for Project Services
USAID	United States Agency for International Development
USD	United States dollars
WB	World Bank
WHO	World Health Organization

I. Executive Summary

Table 1 Project Summary Data

Project Title:	Increasing climate resilience through an Integrated Water Resource Management Programme in HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo Island			
UNDP PIMS ID:	4582		*At endorsement (US$)*	*At completion (US$)*
UNDP ATLAS Project ID:	00078494	AF financing:	$8,285,000	N/A
Country:	Maldives	UNDP own:	$0	N/A
Region:	Asia Pacific	Government:	$1,800,000 (in-kind)	N/A
Focal Area:	Climate Change Adaptation	Other:	$0	N/A
AF Outcomes:	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level Outcome 4: Increased adaptive capacity within relevant development and natural resource sectors	Total co-financing:	$1,800,000 (in-kind)	N/A
Executing Agency:	Ministry of Environment and Energy	Total Project Grant Cost:	$8,285,000	N/A
Other Partners Involved:	UNOPS, other government ministries relevant for water management	ProDoc Signature (date project began):		December 15, 2011
		(Operational) Closing Date:	Proposed: October 2015	Actual: N/A

1. The Maldives IWRM project was funded by the Adaptation Fund with a grant amount of $8.29 million (not including $0.70 in project implementation fees), and originally planned in-kind co-financing from the Government of Maldives of $1.80 million United States dollars (USD). The United Nations Development Programme (UNDP) is the Multilateral Implementing Entity (MIE), with the Ministry of Environment and Energy (MEE)[1] as the National Executing Entity. The project has a planned approximately four-year implementation period, from December 2011 to October 2015.[2]

2. As stated in the project document, the project objective is *"to ensure reliable and safe freshwater supply for Maldivian communities in a changing environment."* As outlined in the Terms of Reference, the primary problem addressed by this project is a significant, climate change-induced decline of freshwater security that is affecting vulnerable communities in Maldives. As surface freshwater is generally lacking throughout the country, the key problems pertaining to long-term freshwater security relate to the management of increasingly variable rainwater resources and increasingly saline and polluted groundwater. The project seeks to

[1] Formerly the Ministry of House and Environment.

[2] Note: The project document indicates a four year implementation period. Other project documentation, including the Project Performance Report, indicates a completion date of October 2015, although this would not constitute a full four year period from UNDP Prodoc signature, much less from the time of staff hiring (April 2012) or the inception workshop (June 2012).

demonstrate climate-smart freshwater management in the Maldivian context and establish integrated and resilient water supply systems on the densely populated islands of HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo, with a view on countrywide replication and up-scaling. The project will increase total freshwater storage capacity on all target islands to buffer the effects of less reliable rainfall and freshwater shortages during longer dry periods, and improve the quality of harvested rainwater through adjustments in rainwater collection, filtration and storage. The robustness and connectivity of communal rainwater storage schemes will be strengthened, and additional production capacity for desalinated freshwater will be installed to provide backup capacity in times of water stress. Artificial groundwater recharge will be enhanced to improve the quality and quantity of water stored in the natural aquifer, and contamination of household effluents will be reduced to prevent damages to the sensitive reef ecosystem. In their integration, these elements provide a compound solution to a number of critical climate and non-climate- related problems and a suitable model for replication on other islands with similar vulnerabilities. Experiences from this project will be used to inform capacity development of public and private sector stakeholders at national, atoll and island level.

3. The project objective is planned to be achieved through three main components:

- **Component 1: Establishment of integrated, climate-resilient water supply and -management systems in Mahibadhoo, Ihavandhoo and Gadhdhoo**
- **Component 2: Increase participation in the development, allocation and monitoring of freshwater use in a changing climate**
- **Component 3: Replication and up-scaling of climate-resilient freshwater management**

4. Geographically the project is focusing on three pilot islands. The islands selected for implementation of this project are HA. Ihavandhoo, ADh. Mahibadhoo, and GDh. Gadhdhoo, respectively in the north, central, and south regions of the country.

SUMMARY OF MAIN FINDINGS AND CONCLUSIONS

5. The Maldives IWRM project has faced slow-going in the initial two years of the project, but there has been significant progress in the past six months, and there are indications that the project could be considered successful by the anticipated time of completion, in late 2015. A number of benchmarks will have to be met however with regard to completion and operation of the water systems in the three islands, and the likely sustainability of the systems will have to be demonstrated. At the same time, the significant delays faced thus far mean that there must be zero tolerance for further slippage. In the second half of the project, activities must be completed as planned, and activities not yet started must commence immediately. With any further delays in core project results the project risks losing prospects for sustainability, and as such, risks failure. The project team and partners must take all possible measures to ensure the project remains on track from this point forward.

6. The project objective is ***relevant*** to and in-line with the Maldives' national needs and priorities related to climate change adaptation, and relevant to the local priorities for the communities on the three pilot islands. The project objective is also relevant to the Adaptation Fund's strategic priorities, UNDP's strategic objectives for Maldives, and the Cancun Adaptation Framework under the UNFCCC. The project strategy and design is less than fully relevant, as it

does not include any elements to strategically and catalytically address the issue of water security in Maldives at a national level, which is currently a major gap in national policy. The project also did not take an adequate approach to the issue of groundwater quality, which is critical for the long-term water security in the islands.

7. As of the mid-term evaluation, the **efficiency** of the project is considered ***moderately unsatisfactory.*** The project management budget is planned as 9.3% of the project budget, and is currently on-track to stay within this budget limit; this is a positive indicator for the project. However, other aspects of efficiency are low: The financial delivery rate for the project activity budget is only 13.0%, and the main elements of the project are delayed approximately 13-15 months. The project will also be delivering a system with lower freshwater storage and RO plant capacity than originally planned (though there are strong technical justifications for this), and the system delivered will be almost twice as costly and take twice as long to complete as a similar system constructed on another island by a private utility company, though further detailed technical analysis would be required to make a direct comparison. There is also no tracking of the expected co-financing from the government.

8. The **effectiveness** and **results** of the project as of the mid-term evaluation are considered ***unsatisfactory***. As indicated above, the project has only disbursed 13% of the budget for activities, and the main components are approximately 13-15 months behind the originally planned timeframe. As such progress toward the expected outcomes is still limited. However, 2014 is anticipated to be a critical year for project progress. The main procurement elements of the planned water systems (Component 1) have been contracted (comprising $5.73 million USD, or approximately 76% of the project budget) and construction on the water systems in the three islands is expected to be completed early in the 3rd quarter of 2014. Handover and operational startup of the three water systems is also expected in the 3rd quarter of 2014. The project will then have approximately 12 months before project completion for the trial period of operation of the water systems. This just allows the minimum one year trial period considered necessary for adequate testing and strengthening the likelihood of sustainability of the systems.

9. Activities under Components 2 and 3 of the project are also delayed. In particular, little has been done with respect to information sharing, education, and awareness since the completion of the Communications plan in May 2013. This was also the time of completion of the Willingness to Pay study, the output of which has not been further developed as yet. The expected activities on information sharing, awareness raising, education and outreach related to water security and climate change adaptation are critical elements of the project, and progress on these activities is an urgent priority.

10. The project has been hampered by a number of factors, some of which could have been foreseen, some not. These include inadequate project preparation and readiness, inadequate initial risk assessment, the need to significantly revise the technical design, political instability, and challenging implementation arrangements.

RECOMMENDATIONS

11. The recommendations below are intended to support the project in continuing its progress, ensuring results, and strengthening prospects for sustainability. The recommendations

are summarized below, with additional details provided in the recommendations section at the end of this report.

12. ***Key Recommendation 1:*** To ensure that the water system handover process is as seamless as possible at this critical juncture for the sustainability of the system, the key stakeholders (UNOPS, UNDP, MEE and FENAKA) should by May 31, 2014 establish a detailed written agreement about handover processes and procedures, to ensure there is no miscommunication or misunderstanding, and ensure all relevant aspects of the handover process are considered and adequately covered. This would include clear and specific detailed roles and responsibilities and timing, including aspects such as transfer of staff, transfer of capital assets, maintenance and operations support agreements, etc. [UNOPS project team, UNDP Maldives Country Office, MEE, and FENAKA].

13. ***Key Recommendation 2:*** The MTE recommends that the Project Board (with planning support from the PMU and UNDP) re-allocate resources from Outputs 1.4, 3.2, and 3.3, and re-direct any cost-savings from Outputs 1.1-1.3, to ensure that the handover and initial year of system operation is supported to whatever extent necessary. The system handover and start-up phase is the most critical part of the project, as it is at this key juncture that any disruptions could have significant negative repercussions for project results and sustainability. [Project Board, PMU, UNDP]

14. ***Key Recommendation 3:*** FENAKA and MEE need to immediately discuss and finalize a proposed tariff structure that can be communicated to the island communities at least a few months in advance of start-up of the system. This means that the tariff structure should be finalized by the end of April. The PMU is expected to facilitate this discussion, with UNDP's support as necessary. [PMU, UNDP, FENAKA, MEE]

15. ***Key Recommendation 4:*** Conduct team-based risk assessment for remaining project period. Due to the significant delays in the design phase, there is no time or resources available to buffer further slippage in the start-up and trial phase for operation of the water systems in the three pilot islands. Thus, before planned closure of the project in October 2015 it is absolutely critical for the project to demonstrate that the planned results have been achieved and sustainability is likely. To ensure that no significant setbacks or delays are further encountered, the project coordination committee should sit-together to conduct a specific risk assessment to identify any potential issues that could arise, and identify back-up plans and alternative approaches as mitigation measures that can be rapidly implemented in case any problems occur. This should be a team exercise to ensure that the project is successful by completion; the PCC may consider asking FENAKA to participate in this exercise. [PCC: UNOPS project team, PMU, UNDP Maldives Country Office]

16. ***Key Recommendation 5:*** Immediate initiation of community information and awareness raising activities. Successful start-up and sustainable operation of the water management system in each of the three islands requires the beneficiary/client communities to be better informed - and informed in advance - about the planned construction, operations and tariff system. Furthermore, to meet the education and awareness objectives of the project, the planned community communication campaign must be implemented. Given that UNOPS is not well-positioned to undertake these activities, and the PMU's limited resources are likely to be focused on continuing coordination with UNOPS for the completion of construction and start-up of the

water system, the MTE recommends that responsibility for these project activities be devolved to UNDP. Further, to rapidly carry out these activities, the MTE recommends that UNDP collaborate with the community-based CSOs in the three islands (such as local NGOs and the women's development councils) to disseminate information in the communities. [UNDP, Project Board]

17. ***Key Recommendation 6:*** Strengthen results-based monitoring in the 2nd half of the project. The project applies multiple monitoring tools, such as the PPR, and quarterly progress reports and FACE forms. However there are not adequate linkages between the reporting on project activities, project expenditures, and achievement of project indicator targets. The PMU, UNDP, and UNOPS should work together to identify adjustments as necessary to strengthen the results-oriented view of reporting on project activities and expenditures. [PMU, UNDP, UNOPS]

18. ***Recommendation 7:*** The MEE must plan to strengthen implementation capacity for future donor-funded climate change adaptation projects with budgets of greater than $1 million USD and timeframes of three years or longer. It is common international practice to have a dedicated PMU for such projects to ensure efficient and timely execution (and a dedicated PMU was foreseen for the IWRM project). There are, however, other models that could be followed, such as a cluster implementation unit, with multiple project managers, but shared support staff and infrastructure, such as in Armenia. Another approach employed by some projects is to secure external support, such as an international technical advisor on a part-time basis, to support key aspects of the project. Considering that international finance for climate change adaptation is expected to increase significantly in coming years, the Government of Maldives must demonstrate that the country is capable of absorbing the funds it urgently requires to adapt to climate change impacts. Further, it must ensure that the national implementation capacity is in place to support successful and timely implementation of such projects. [MEE]

19. ***Recommendation 8:*** The project should consider training of trainers within FENAKA as part of the handover process to support long-term technical sustainability for the project. Turnover of well-qualified personnel is a significant issue in the Maldives, particularly in the public water sector, when there are many private sector tourism employers seeking qualified individuals. Since individuals trained in water system management may not have a long tenure, FENAKA should be capacitated to train new staff as necessary. This could also include development of a well-structured training module, with necessary manuals, etc. [UNDP, UNOPS, PMU]

20. ***Recommendation 9:*** When the tariff structure is finalized, FENAKA, UNDP and the MEE should clearly explain to community stakeholders the basis for the tariff structure, the assumptions on which is it built, and any measures community stakeholders can take to support potentially reaching a lower tariff structure in the future. FENAKA understandably has a preference for a tariff structure based on conservative assumptions about the operation of the system, including the amount of rainwater collected for the system. At the same time, if the tariff system is significantly above the levels identified in the Willingness-to-Pay study, there is a risk that community members will understandably conserve their "free" rainwater for their own use, and choose not to participate in the community rain water collection system – which will in fact bring to fruition FENAKA's conservative assumptions about rain water collection. [FENAKA, UNDP, MEE]

21. ***Recommendation 10:*** Institute financial incentives for community members to participate in the rainwater collection system. FENAKA should strongly consider instituting a rebate system in the tariff structure, whereby community members whose householders are contributing rainwater to the centralized collection system receive an annual rebate on their water bill. Such a system would strengthen the likelihood of the financial, technical, and socio-political sustainability of the project results, and reduce the likelihood that government subsidies would be required in the long-run to ensure the continued operation of the system in the three islands. [FENAKA, MEE]

22. ***Recommendation 11:*** To support the community education and awareness component of the project the PMU and UNDP should consider a "community liaison officer" model whereby one or two individuals are contracted on a part-time basis to serve as information dissemination channels, and organize community-related activities for education and awareness related to water security and climate change adaptation. Such a model can be seen in numerous other projects, and often engages individuals from local level community-based organizations. [UNDP, PMU]

23. ***Recommendation 12:*** Refocusing of work on groundwater management. Many stakeholders have emphasized the importance of the groundwater related aspects of the project. However, at this point in time, little has been taken forward on this issue, as the widespread groundwater recharge pits have not been incorporated in the technical design, for multiple reasons. While there may have once been potential for the project to contribute to the development of technical knowledge on this issue, at this stage in the project the focus should primarily be on ensuring that the RO plant and rainwater capture systems are completed, fully operational, and are demonstrating the likelihood for sustainability by the end of the project. The resources and time remaining to address groundwater management issues are minimal, and the project is not likely to make a substantive contribution on this issue at this stage. As such, the focus of the project with respect to groundwater should be on identifying partners and potential funding sources for further work on this issue following project completion, while ensuring that there are adequate financial resources to support the handover and initial operations of the RO plant and rainwater collection systems. [Project Board]

24. ***Recommendation 13:*** Community stakeholders should be consulted well in advance of construction activities that may affect community life, such as pipe-laying in community streets. UNOPS and the PMU should ensure that communities (e.g. island councils) are immediately notified and consulted on pipe-laying, which is anticipated to begin in April 2014. Communication should be ongoing throughout the construction process, for example, through public-posting and regular updating of the construction work schedule. [UNOPS, PMU]

25. ***Recommendation 14:*** UNOPS and FENAKA should ensure that all potential future revenue generating opportunities for the system are discussed (with the goal of increasing the likelihood of financial sustainability), and any necessary technical requirements should be incorporated in the construction and pipe laying for the water distribution system. For example, multiple stakeholders highlighted the opportunity to bottle and sell water to nearby islands, to sell water at the harbor to fishermen, and also the possibility of future ice making (as has been incorporated in the MWSC project in Dhuvaafaru Island). [UNOPS, FENAKA]

26. ***Recommendation 15:*** According to the project document ATLAS budget and the UNOPS work package budget in the original PID, the UNOPS PMU has a budget of $21,000 in each of the last two years of the project (out of the total UNOPS PMU budget of $384,000). As of February 20, 2014, the UNOPS PMU budget spent was $252,532, leaving a balance of $131,468. From this balance it seems feasible for UNOPS to reserve the necessary funds to provide the required support during the operational phase of the project, from Q3 2014 to Q3 2015. This evaluation recommends that UNOPS ensure it has the financial resources available to provide any necessary support through the closure of the project, as planned in the project document. [UNOPS]

27. ***Recommendation 16:*** To increase cost-effectiveness for the construction of RO plant-rainwater harvesting systems on islands in the Maldives in the future, this evaluation recommends that future donors consider investment approaches using innovative financial mechanisms to establish public-private partnerships and provide the financial incentives necessary to make the required capital investment attractive for these utility companies. This could be in the form of interest rate subsidies, capital investment subsidies, or any other financial approach for catalyzing such public-private partnerships. [Future donors for water projects in Maldives]

MALDIVES IWRM PROJECT MTE SUMMARY RATINGS TABLE

Category	Rating
Progress Toward Results	
Project Design	MS
Relevance of Project Objective	*S*
Relevance of Project Strategy and Approach	MS
Progress Toward Outcomes	U
Results	*U*
Effectiveness	*U*
Adaptive Management	
Work Planning	U
Finance and Co-finance	MU
Monitoring and Evaluation Systems	MS
Risk Management	U
Reporting	MS
Management Arrangements	MS
Efficiency	MU
Sustainability	
Overall Likelihood of Sustainability of Results	MU
Financial and Economic Risks	MU
Socio-political Risk	L
Institutional Framework and Governance Risks	ML
Technical Risks	MU
Environmental Risks	L
Overall Project Mid-term Rating	MU

II. Maldives IWRM Mid-term Evaluation Approach

A. Mid-term Evaluation Purpose and Objectives

28. The **purpose** of the evaluation is to provide an independent external view of the progress of the project at its approximate mid-point, and to provide feedback and recommendations to UNDP and project stakeholders that can help strengthen the project and ensure its success during the second half of implementation.

29. The **objective** of the evaluation is identify potential project design problems, evaluate progress towards the achievement of the project objective, identify and document lessons learned (including lessons that might improve design and implementation of other UNDP supported AF projects), and make recommendations regarding specific actions that should be taken to improve the project. The MTE will evaluate early signs of project success or failure and identify the necessary changes to be made.

30. As outlined in the AF M&E framework, the objectives of the evaluation also include:

- To promote accountability and transparency within the Fund, and to systematically assess and disclose levels of project or programme accomplishments. Are programs and projects achieving what they were intended to achieve? An evaluation validates results and can make overall judgments about the extent the intended and unintended results were achieved (e.g., increased resilience, decreased vulnerability, improved cost-effectiveness).
- To organize and synthesize experiences and lessons that may help improve the selection, design, implementation, and evaluation of future AF funded interventions. What worked or what did not work and why? How project achievements contribute to the mandate of the AF. Aggregated analysis and reporting of individual project achievements provide evidence of the effectiveness of AF operations in achieving its goal.
- Feedback into the decision-making process to improve ongoing and future projects, programmes, and policies
- Assessment of the relevance, effectiveness, and efficiency of project design, objectives, and performance.

B. Mid-term Evaluation Scope

31. The evaluation will be conducted based on five **main evaluation criteria**, as identified by the OECD-DAC, and the Adaptation Fund Evaluation Framework:

- *Relevance* of the Adaptation Fund and funded projects/programmes: to local and national sustainable development plans, priorities, and policies; poverty alleviation plans; national communications or adaptation programmes, and other relevant instruments; objectives of the Adaptation Fund; and the guidance from the Convention.
- *Effectiveness:* The extent to which the intended outcome(s) has (have) been achieved or how likely it (they) will be achieved
- *Efficiency:* A measurement of how economically the funds, expertise, time, etc. provided by the AF have been converted into results
- *Impact:* The positive/negative and unforeseen changes to, and effects produced by, the AF support, individually or at the aggregated level.

- ***Sustainability*:** Likelihood of continued benefits for an extended period of time after project completion
    - Financial risks
    - Socio-political risks
    - Institutional framework and governance risks
    - Environmental risks

32. In addition to these criteria, AF project evaluations must report on *results* achieved against those agreed upon in the RBM framework. Results include direct outputs, short- to medium-term outcomes, and longer term impacts.

33. The **scope** of the evaluation is as outlined in the Terms of Reference for the evaluation, including coverage of the three categories of project progress:

- Progress toward results
    - Project Design
    - Progress Toward Expected Outcomes and Objective
- Adaptive management
    - Work Planning
    - Finance and Co-finance
    - Monitoring Systems
    - Risk Management
    - Reporting
- Management arrangements
    - Quality of Execution
    - Quality of Implementation, including support provided by UNDP

34. As outlined in the AF M&E framework, the scope of the evaluation also includes:

- Achievement of project/programme outcomes, including ratings and with particular consideration of achievements related to the proposed concrete adaptation measures, if applicable;
- Contribution of Project/Programme achievements to the Adaptation Fund Targets, Objectives, Impact and Goal
- Evaluation of risks to sustainability of project/programme outcomes at project completion and progress towards impacts including ratings;
- Evaluation of processes influencing achievement of project/programme results, including an assessment of the preparation and readiness, country ownership, stakeholder involvement, financial management, NIE/MIE supervision and backstopping; and project/programme start up and implementation delays;
- Evaluation of contribution of project/programme achievements to the Adaptation Fund targets, objectives, impact and goal, including report on AF standard/core indicators;
- Evaluation of the M&E systems.

- Preparation and readiness
- Country ownership
- Stakeholder involvement
- Financial management
- Implementing Entity supervision and backstopping
- Delays in project/programme start up and implementation

35. The scope of the evaluation may include additional topics to those outlined above, as deemed relevant and appropriate to fulfill the overall objectives and purpose of the evaluation.

36. In addition, the UNDP requires that all evaluations assess the mainstreaming of UNDP programming principles, which include:

- UNDAF/CPAP/CPD Linkages
- Poverty-Environment Nexus / Sustainable Livelihoods
- Disaster Risk Reduction / Climate Change Mitigation / Climate Change Adaptation
- Crisis Prevention and Recovery
- Gender Equality / Mainstreaming
- Capacity Development
- Rights-based Approach

37. The performance standards, indicators and metrics for assessing the evaluation criteria are presented in the mid-term Evaluation Matrix, which is attached as Appendix A to this inception report. The evaluation will provide ratings on the required elements and the main evaluation criteria, based on the six-point ratings system indicated in the Terms of Reference. The ratings system and draft ratings table to be applied are included as Appendix B to this inception report.

C. Principles for Design and Execution of the Evaluation

38. The AF M&E Framework references **principles for evaluation**, though these are not clearly stated. In lieu of this reference, this evaluation will ascribe to the principles outlined in the GEF M&E policy,[3] as follows:

- Credibility
- Utility
- Impartiality
- Transparency
- Disclosure
- Participation

39. The evaluation will also be conducted in line with United Nations Evaluation Group norms and standards.[4]

[3] See http://www.thegef.org/gef/Evaluation%20Policy%202010.

[4] See http://www.uneval.org/normsandstandards/index.jsp?doc_cat_source_id=4.

40. The evaluation team will work closely with UNDP to ensure a collaborative approach and strong communication throughout the evaluation process.

D. Evaluation Approach and Data Collection Methods

41. The evaluation will be carried out in accordance with the guidance outlined in the UNDP Handbook on Planning, Monitoring and Evaluating for Development Results.[5] The evaluation will also be conducted in accordance with the evaluation guidance as outlined in the AF Evaluation Framework.[6]

42. A basic inception report will be provided, outlining in greater detail the objectives and scope of the evaluation, the main evaluation criteria, and performance standards to be assessed. The inception report will also outline the process and timeframe for the evaluation. The evaluation will employ a participatory, mixed-methods approach, with three main data collection methods. These will include:

- Desk review of relevant project documentation (see Appendix C to the inception report).
- Interviews with key stakeholders (see Appendix D to the inception report), including some multi-person focus group interviews. It is not anticipated that the evaluation will collect evidence from all stakeholders indicated in the table.
- Visits to the three project field sites, the islands of HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo.

43. Individuals targeted for interviews are intended to represent the main project stakeholders, partners and beneficiaries, and those most knowledgeable about various aspects of the project. The evaluation will also seek to include a representative sample covering all different types of stakeholders, including national and local government, civil society, local communities, and the private sector.

44. The principal responsibility for managing this evaluation resides with the UNDP Country Office (UNDP CO) in Male', Maldives. The evaluation itinerary is included as Annex 4 to this evaluation report. The itinerary was developed by the project team and UNDP, in consultation with the evaluation team.

E. Limitations to the Evaluation

45. Any potential limitations or caveats encountered during the evaluation process will be outlined in the mid-term evaluation report. Based on the preliminary document review and communication with the project team and stakeholders, the limitations are not expected to be significant. The main necessary documents are in English, and the evaluation itinerary is expected to include visits to all three project field sites. With time and resource limits, there are always some limitations to the number of interviews that can be collected, and depth of analysis possible in the evaluation report; however, it is fully anticipated that the evaluation approach and data collection methods proposed will allow the evaluation to completely fulfill its purpose and objectives.

[5] See http://www.undp.org/evaluation/handbook.

[6] See https://www.adaptation-fund.org/content/evaluation-framework.

III. Project Overview

A. Maldives Development Context

46. Maldives consist of chain of coral atolls, 80- 120 km wide, stretching 860 km from latitude 706'35"N to 0042'24"S and lying between longitude 72033'19"E to 73046'13"E. The chain has 26 geographic atolls and the atoll comprises a total of 1,192 small, low-lying, flat, coral islands spread on the 1600 km long Laccadives-Chagos submarine ridge extending into the central Indian Ocean from south-west coast of the Indian sub-continent.

47. The total land area of the country is about 300 km^2. The islands vary in size from 0.5 km^2 to around 5.0 km^2 and in shape from small sandbanks with sparse vegetation to elongated strip islands. Around 80% of the land area is less than 1 meter above mean sea level at high tide, with maximum height of land being 3 meters. The average height of the islands, above mean sea level, is less than 1.9 meters. The small sizes along with the dispersed and low-lying nature of the islands make the Maldives among the most vulnerable to climate change and the associated sea level rise.

48. The tsunami of 2004 exposed the fragility and the vulnerability of the country as never before in its history. More than 1300 people suffered injuries; 83 people are confirmed dead and another 25 are missing and feared dead.[7] All but nine islands were flooded and 14 islands were destroyed so much that they had to be evacuated. Nearly 12,000 people were displaced from their islands, and another 8,500 people were temporarily relocated to other places on their own island. More than 100,000 citizens of the country suffered directly or indirectly from the tsunami: homes, livelihoods and public services, including hospitals, schools, transport and communications systems, were destroyed or damaged, water tables and farmland contaminated with salt water. During the tsunami, saltwater intrusion into fresh water lenses on almost all of the 1,200 islands resulted in vegetation browning and dieback. Also the impact of the tidal wave was such that the pressure caused destruction to the septic tanks and toilets resulting in disposal of sewage onto the ground and contamination of water lens.

49. In 2004 the Government responded to the water scarcity due to tsunami by sending drinking water from Male' to the islands. In addition, starting in 2005, the Government distributed more than 20,000 household rainwater catchment tanks to all occupied households in 90 islands (2,500 liter tank per household), of which 567 tanks were for internally displaced people. The provision of water tanks program was assisted by UNICEF, IFRC and local non-governmental organizations (NGOs). The Ministry of Environment, Energy and Water (currently MEE), with the support from UNICEF, coordinated the installation of community water tanks received after the tsunami, providing financial assistance for their installation in locations decided by island authorities[8].

50. Since then, every year, government has provided emergency freshwater to many islands. The provision of water is managed by the National Disaster Management Centre (NDMC), established after the tsunami.

[7] Tsunami-Impact and Recovery, Joint Needs Assessment conducted by WB, ADB and UN system, 8th Feb 2005

[8] The Maldives- Two years after the tsunami, MPND, 2007

51. Even before the tsunami, access to safe drinking water was limited. Sources of safe drinking water were rainwater and ground water. Ground water aquifers normally lie between 1 – 1.5 m below the surface. Urbanization and population growth and undue exploitation of the ground water had been causing gradual degradation of the water quality in some islands even before the tsunami. The impact of climate change and sea level rise has resulted in some salt water intrusion into the ground water lens. The lack of proper sanitation infrastructure in some islands exacerbated the problem.

52. The estimated population in 2014 is nearly 400,000 living in 193 of the 1,192 islands. Male' the capital, houses one third of the total population of the country while, many islands have 500 or fewer people living on them. The dispersed nature of the population poses a unique challenge to the equitable delivery of basic services, the small population of most islands result in severe diseconomies of scale. Among the essential services that have not reached all the people of the Maldives are access to safe drinking water and proper sanitation.

53. In Male', desalinated water is supplied to households by the government company, Maldives Water and Sewerage Company (MWSC). MWSC also operates desalination plants for the provision of freshwater to communities in five other islands. With the exception of these few islands, inhabited islands on Maldives do not have a functioning water supply and distribution network available that can ensure sufficient supply of safe freshwater during dry periods. This situation is rooted in a lack of financial resources to ensure comprehensive coverage in such a widely spread island nation; high initial investment costs for alternative water supply (e.g. desalination); high initial investment costs for wastewater treatment installations; and high operation and maintenance costs in connection with centralized water supply and management schemes (with state subsidies required to keep them going).

54. However, the Government of Maldives has undertaken substantial efforts to improve freshwater security in a number of islands, using different financial mechanisms. These include funding from the national budget (public sector investment-PSIP), loans, grants, development assistance and private sector investments. Key players who contribute loan and grant financing to water management projects include WHO, UNICEF, UNDP, the World Bank, the Asian Development Bank, the Islamic Development Bank, JBIC, JICA, and the Kuwait Fund.

55. Environmental Protection Agency (EPA) is the regulator and enforcement authority for standards and regulations of water and sewerage facilities and services in Maldives. The EPA is challenged in exercising its authority by the lack of a legal framework. For instance, Water and Sanitation Act has been in the drafting stage for some years. However, the MEE anticipates, the draft Act will be tables in the first month of the incoming parliament in May 2014. In addition, EPA also needs to put in place a tariff system for water and sewerage services a tariff system.

56. Ministry of Environment and Energy (MEE) is mandated for developing the water and sanitation policies and regulations. In 2009, seven utilities companies, oversee by MEE, were formed to provide water, waste, power and sewerage services to seven provinces in the country and were based in the regions they were mandated to service. In 2012, these seven companies were consolidated to a central utility company, FENAKA with the mandate to service all the islands (except Male' region) and their branch offices are operating in some islands at present. However, currently FENAKA lack the capacity to service all the islands mandated to them by the

government. Ministry of Environment and Energy is the government body responsible for providing the four utilities services to the population and is closely engaged in all the projects.

B. Project Concept Background

57. According to individuals involved in the project design phase the project concept may originally have grown from the freshwater access problems the country faced in the aftermath of the 2004 tsunami, which contaminated the fresh groundwater table in many islands in the country. Following the tsunami, international donors provided infrastructure to many islands (e.g. household and community rainwater storage tanks, and RO plants) as further discussed in the following Section III.C, though in many cases these have not been sustained, other than the fact that many island households continue to use their own rainwater storage tanks. Also since the tsunami, the government has been required to annually provide emergency freshwater supplies to many islands during the dry season, at a high cost (mainly the cost of transporting the water).

58. In addition, water security was naturally identified in Maldives' NAPA as a significant threat from climate change. This evaluation was not able to get data on the exact origin of the project concept, but it appears to have been initiated through discussions between UNOPS and the MEE, following previous joint activities. Maldives' also was represented on the Adaptation Fund Board at the time (as it is today), so this may have been the link whereby the MEE and UNOPS identified the Adaptation Fund as a potential source of funding for the idea of piloting the installation of a combined RO plant / rainwater collection system on three islands. UNDP was then brought into the partnership as the accredited implementing entity necessary for accessing funding from the Adaptation Fund.

59. The project document does not include a clear explanation of the selection of the three islands as the pilots for the project, and a number of stakeholders wondered about the choice of the three islands. Individuals involved with the project development phase indicated that the islands were initially drawn from a list of islands provided by the government that were high priority in terms of water security. These particular three islands were further selected to represent the three main regions of the country – north, central, south – and because they were considered of adequate population size to likely make the water system financially sustainable.

C. Problems the Project Seeks to Address

60. The demand for water resources is continuously increasing with increasing population and standard of living. At the same time, the capacity to meet this demand is in decline because of over harvesting, in-appropriate agricultural practices, and pollution.

61. Conventional water resources available on islands in Maldives are confined shallow ground water aquifers and rainwater. The freshwater aquifer is dependent on rainfall recharge, which is becoming more variable in a global changing climate. The aquifers on many of the islands are contaminated with wastewater discharged into ground due to absence of appropriate sanitation systems in the islands including appropriate mechanisms for wastewater discharge, treatment and disposal. Overexploitation of freshwater aquifer in some islands has been leading to salinization of the groundwater. This situation has been aggravated by climate change-induced effects of sea level rise, inundation and flooding during extreme water events, which increases saltwater intrusion into the freshwater lens. In many islands, tsunami of 2004 exacerbated the

process and condition of salinization of groundwater. The tsunami also led to contamination of the fresh groundwater from onsite sewerage disposal systems in the islands. According to the SOE (2004), groundwater in 54% of the islands was not suitable for drinking.

62. The other source of conventional water resource is rainwater. Maldives has two monsoon periods: the southwest monsoon from May to November, when it rains and households collect water; and the northeast monsoon from January to March, also known as the dry season. Maldivians have traditionally built cement tanks in their households to collect water. Much of the tanks had been either completely destroyed or rendered unusable during the tsunami disaster. However, the government (with international donor support) provided, almost every household in the country a 2,500 liter capacity high density polyethylene (HDPE) storage tank after the event. In addition, such tanks were also installed in community places such as mosques and island offices. Even then, due to shifting weather patterns and prolonged dry periods, many communities do not have sufficient freshwater to last the year. Since 2005, government has also provided emergency freshwater to many of the islands.

63. In the face of the limited conventional sources of freshwater, use of non-conventional water resources such as desalinated water, bottled water both from imported and local production has increased in the islands. After the tsunami, more than 40 RO plants were supplied to islands and installed as supplementary water supply source. The RO plants were just and were to be used during emergencies in the dry period. At present 20% of these plants are being operated by FENAKA and the rest are being repaired.

64. There is awareness and knowledge among the government that freshwater issues are many pronged; these issues include climate change, lack of improper waste management, lack of institutional capacity, lack of public finance to address the problem, and insufficient policies. The government has undertaken significant efforts to improve the freshwater security in a number of island with assistance from a variety of agencies (WHO, UNICEF, UNDP, WB, ADB, IDB, JBIC, JICA, and the Kuwait Fund) and by allocating funds from the government's Public Sector Investment Programme (PSIP) to specific projects.

65. However, the coherence and efficacy of these efforts has been less than ideal. For instance, there is insufficient awareness of the impact of climate change on fresh water resources. Often times, water management projects, especially relating to groundwater, do not take into consideration climate change impact, and thus are incapable of fully addressing the issue. In addition, current practices of wastewater management and lack of proper sanitation systems in the islands exacerbate the problem. As mentioned above, in the last decade, every year millions of Rufiya are spent to send emergency water to islands.

D. Project Description and Strategy

66. The Maldives IWRM project was funded by the Adaptation Fund with a grant amount of $8.29 million (not including $0.70 in project implementation fees), and originally planned in-kind co-financing from the Government of Maldives of $1.80 million USD. UNDP is the MIE, with the

MEE[9] as the National Executing Entity. The project has a planned approximately four-year implementation period, from December 2011 to October 2015.[10]

67. As stated in the project document, the project objective is *"to ensure reliable and safe freshwater supply for Maldivian communities in a changing environment."* As outlined in the Terms of Reference, the primary problem addressed by this project is a significant, climate change-induced decline of freshwater security that is affecting vulnerable communities in Maldives. As surface freshwater is generally lacking throughout the country, the key problems pertaining to long-term freshwater security relate to the management of increasingly variable rainwater resources and increasingly saline and polluted groundwater. The project seeks to demonstrate climate-smart freshwater management in the Maldivian context and establish integrated and resilient water supply systems on the densely populated islands of HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo, with a view on countrywide replication and up-scaling.

68. The project objective is expected to be achieved through nine outputs spread across three main outcomes:

1. **Component 1: Establishment of integrated, climate-resilient water supply and -management systems in Mahibadhoo, Ihavandhoo and Gadhdhoo**
   - 1.1. Output 1.1: Artificial groundwater recharge systems established to protect groundwater resources from salinization and improve aquifer yields in dry seasons
   - 1.2. Output 1.2: Existing rainwater harvesting schemes are redesigned, interconnected and structurally improved to buffer climatic extremes and ensure equal water supply for all households during dry periods
   - 1.3. Output 1.3: Production and distribution system for desalinated water supply established
   - 1.4. Output 1.4: Existing wastewater management systems redesigned and improved to ensure sufficient quantities of safe groundwater
2. **Component 2: Increase participation in the development, allocation and monitoring of freshwater use in a changing climate**
   - 2.1. Output 2.1: Community consultations on each target island ensure participative design, sustainability and continued maintenance of integrated water resource management schemes
   - 2.2. Output 2.2:Targeted training events conducted in each region to strengthen water user participation and skills in adaptive, integrated water resource management
3. **Component 3: Replication and up-scaling of climate-resilient freshwater management**
   - 3.1. Output 3.1: Training of technicians in the design, operation and management of integrated water resource management systems

[9] Formerly the Ministry of Housing and Environment.

[10] Note: The project document indicates a four year implementation period. Other project documentation, including the Project Performance Report, indicates a completion date of October 2015, although this would not constitute a full four year period from UNDP Prodoc signature, much less from the time of staff hiring (April 2012) or the inception workshop (June 2012).

3.2. Output 3.2: Institutional mechanisms created to integrate adaptive management of freshwater resources into the design and rollout of new water management projects and schemes

3.3. Output 3.3: Action plan developed and financing mobilized to replicate integrated, climate-resilient freshwater management on at least 4 additional islands

69. Geographically the project is focusing on three pilot islands. The islands selected for implementation of this project are Adh. Mahibadhoo, GDh. Gadhdhoo and Ha. Ihavandhoo. The main characteristics of these islands are outlined in Table 2 below.

Table 2 Key Characteristics of Three Project Pilot Islands

	Region	Size (ha)[11]	Population (Census 2006)[12]	Population density
Ha. Ihavandhoo	North	61.9	2447	40
ADh. Mahibadhoo	Central	22.3	1780	80
GDh. Gadhdhoo	South	25.2	1439	57

E. Implementation Approach

70. The overall project implementation structure is shown in Figure 1 below. The project is being implemented through UNDP's National Execution Modality (NEX), with the MEE as the designated national executing agency. As the implementing partner, MEE has the technical[13] and administrative responsibility for applying AF inputs to reach expected outcomes/outcomes of the project. The MEE is also responsible for coordination with all relevant stakeholders, including other line ministries, local government authorities in the islands and UN agencies.

71. The main oversight mechanism is the Project Board (PB), which is responsible for approving key management decisions of the project, and which plays a critical role in assuring the technical quality, financial transparency and overall development impact of the project. The PB includes senior personnel from the following institutions, including multiple reps from some:

- MEE
- Ministry of Housing and Infrastructure
- National Disaster Management Center
- Ministry of Home Affairs
- Ministry of Finance and Treasury
- UNDP

[11] Statistical yearbook 2013, DNP

[12] Statistical yearbook 2013, DNP

[13] Recognizing that the adjective "technical" can have different meanings in different contexts, in this evaluation report "technical" is used to refer to technical elements or aspects of the various components of the water management and supply system being implemented by the project. As such an individual with "technical" responsibilities is someone with specialized engineering or other knowledge related to the specific functioning of the water system.

Figure 1 Project Implementation Structure

Diagram 1: AF Project Organogram

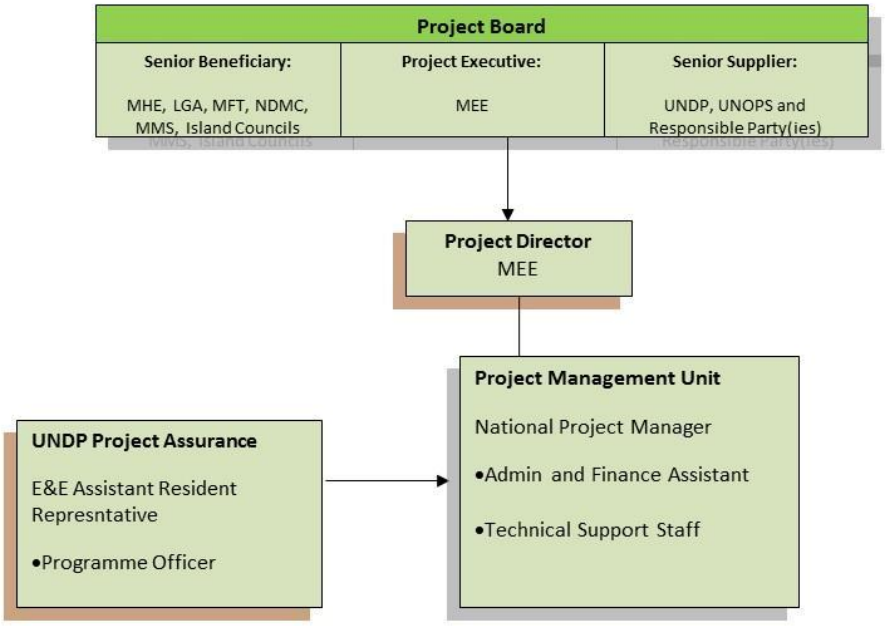
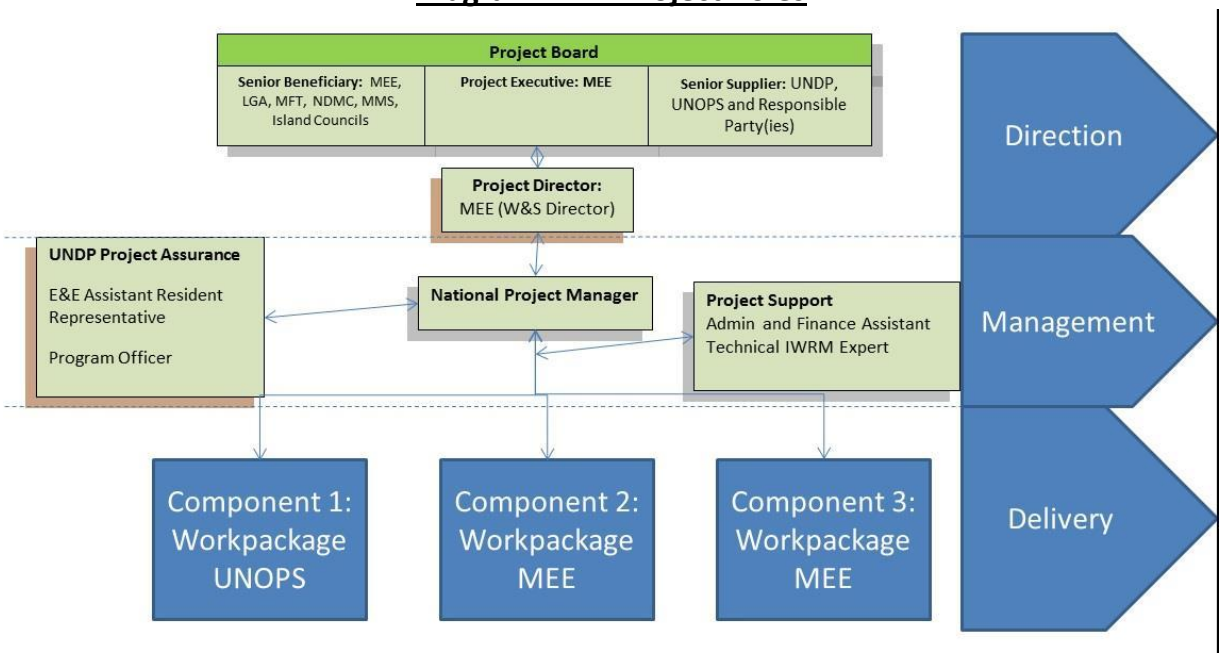


Diagram 2: AF Project Roles



Source: UNOPS PID v.02-01, October 17, 2013.

72. In the project document membership in the Project Board was also foreseen to include representatives from the pilot islands, but they have not participated in the Project Board meetings to date. The project document states, "The PB will be composed of designated senior-level representatives of the [MEE], island council representatives and other key stakeholders," and indicates that the full list of project board members will be indicated in the project inception report.

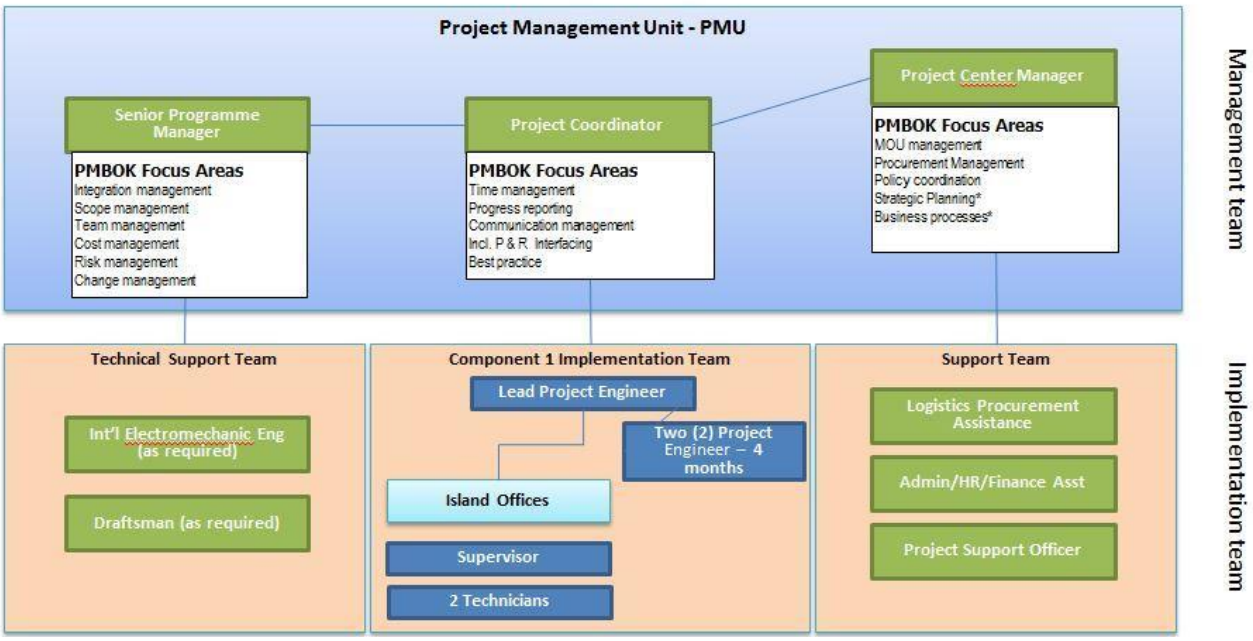
73. Three PB meetings have been held, not including the inception workshop: August 15, 2012 (six members attending); September 22, 2013 (nine members attending); and December 24, 2013 (four members attending).

74. A senior staff of MEE is designated the National Project Director (NPD) and represents the Government of Maldives' in kind contribution to the project. A Project Management Unit (PMU) that also works as the PMU for another climate change project works closely with the NPD and is housed in the MEE. The PMU comprises the National Project Manager (NPM) with the responsibility to ensure that the project produces the results specified in the project document to the required standard of quality and within the specified time and cost. Other staff in the PIU are financial and administrative assistants.

75. A tripartite project coordination meeting is held almost week between PMU, UNDP and UNOPS to discuss progress, challenges and constraints to the project implementation.

76. MEE signed an MOU for UNOPS to deliver the infrastructure of the project under Component 1. The "UNOPS PMU" includes senior technical staff and support staff, as indicated in Figure 2 below. At the project sites, two staff recruited for the project work as employees of UNOPs, to oversee progress of technical project components. The consultative process between UNOPS and MEE for hiring personnel and procurement services is outlined in Annex 9.

Figure 2 UNOPS Implementation Structure for Delivery of Component 1



Source: UNOPS PID v.02-01, October 17, 2013.

F. Maldives IWRM Project Key Milestone Dates

77. The key milestone dates for the project are indicated in Table 3 below. The development phase for the Maldives IWRM project was quite rapid, going from project concept submission to approval by the AF Board in approximately nine months, with no project development funding used from the AF. However, as later discussed in Section V. on Preparation and Readiness, this may have contributed to some of the challenges faced in the design phase in the first half of the project. Following final approval by UNDP and the Government of Maldives in December 2011 there was a delay of approximately four months in the project start-up, with the project management unit staff not appointed until April 2012. At this point an inception "seminar" was held, followed by the actual full project inception workshop two months later, in June 2011. The project document had specified that the inception workshop should be held within four months of project start-up, so at this point the project was only approximately two months behind schedule. The full development phase of the project, from concept to start of activities was approximately 21 months The mid-term evaluation is being conducted in February-March 2014, approximately five months later than originally anticipated, though due to the slow progress during the first half of the project it is considered that this is an appropriate time for the mid-term evaluation.

78. Additional details and information on the timing of the project workplanning and actual activity completion is discussed in Section VII. on results.

Table 3 Maldives IWRM Project Key Milestone Dates[14]

Milestone	Expected date [A]	Actual date [B]	Months (total)
1. Submission of Concept to Adaptation Fund Secretariat	N/A	October 2010	N/A
2. Approval of Concept by Adaptation Fund Board	December 2010	N/S	2 (2)
3. Development Funding Approval	N/A	N/A	0 (2)
4. Initiation of Development of Full Project	January 2011	January 2011	1 (3)
5. Submission to Adaptation Fund for a Full-sized Project Proposal	June 2011	June 2011	6 (9)
6. Adaptation Fund Board Approval	June 2011	June 22, 2011	1 (10)
7. UNDP-Adaptation Fund Board Agreement Signature	N/S	November 3, 2011	5 (15)

[14] Sources: 1.A. Not Applicable; 1.B. Project Document Projected Calendar; 2.A. Project Document Projected Calendar; 2.B. Not Specified; 3.A. Not Applicable – No project development funding allocation from the AF was used; 3.B. Not Applicable; 4.A. Project Document Projected Calendar; 4.B. Personal communication with UNDP staff; 5.A. Project Document Projected Calendar; 5.B. Assumed, based on AF Board approval data; 6.A. Based on project development timing and the schedule of quarterly AF Board meetings; 6.B. 2013 PPR; 7.A. Not Specified; 7.B. 2013 PPR; 8.A. Project Document Projected Calendar; 8.B. 2013 PPR; 9.A. Assumed, based on implementation start date; 9.B. Inception Workshop Report; 10.A. Inception Workshop Report Key Milestones Calendar; 10.B. Inception Workshop Report; 11.A. The project document states that the project inception workshop should be held within four months of project start-up; 11.B. Inception Workshop Report; 12.A. Project Document Projected Calendar; 12.B. Date of Mid-term Evaluation Field Mission and Data Collection; 13.A. Project Document Projected Calendar; 13.B. Not Applicable; 14.A. Project Document Projected Calendar; 14.B. Not Applicable; 15.A. Assumed based on UNDP standard operational procedures; 15.B. Not Applicable.

8. UNDP-Government Prodoc Signature (Implementation Start)	November 2011	December 15, 2011	1.5 (16.5)
9. Project Staff Appointment	January 2012	April 3, 2012	3.5 (20)
10. Project Initiation Seminar	April 2012	April 25, 2012	1 (21)
11. Project Inception Workshop and Follow-up Meeting	April 2012	June 20, 26, 2012	2 (23)
12. Mid-term Evaluation	October 2013	February 2014	20 (43)
13. Project Operational Completion	October 2015	N/A	N/A
14. Terminal Evaluation	July 2015	N/A	N/A
15. Project Financial Closing	December 31, 2015	N/A	N/A

G. Key Project Stakeholders

79. The main stakeholder organizations and institutions for the project are indicated in Table 4 below. This is partially adapted from the stakeholders table in the project document, but with updates and additions.

Table 4 Maldives IWRM Project Key Stakeholders

Stakeholders	Roles / Responsibilities	Roles and Responsibility in Terms of the Project	Project Board
1. Ministry of Housing and Infrastructure (MHI)	Integration of water and sewerage services with new housing development projects; land use planning (relevant for recharge planning).	Granting permission to allocate lands for required infrastructure.	Yes
2. Ministry of Environment and Energy (MEE)	Authorizes projects for Environmental protection, conservation and management	The project PMU sits in the MEE and is overseen by the Director General of Water and Sanitation Section, who is the project director; responsible for community engagement components (components 2 and 3)	Yes
3. Ministry of Fisheries and Agriculture (MoFA)	Disposal of agricultural pesticides and use of fertilizers; promotion of water conservation practices; use of alternative technologies.	Not significant	No
4. Environment Protection Agency (EPA)	Regulatory authority for Environment Act; oversees EIAs	Authorized and approved EIA; will finalize tariff arrangements in collaboration with FENAKA	No
5. Ministry of Finance and Treasury (MoFT)	Resource mobilization and budgeting for public policy delivery	The Tender Board analyzed EOIs for infrastructure component	No
6. Dept. Of National Planning/Statistical Department (DNP)	Ensure water and sewerage services are integrated into national plans; collecting and disseminating relevant data.	Not significant	Yes
7. Ministry of Home Affairs (MoHA)	Local Government Authority (LGA) is under the MoHA; LGA is responsible for monitoring local councils.	Not significant	Yes

Stakeholders	Roles / Responsibilities	Roles and Responsibility in Terms of the Project	Project Board
8. Ministry of Economic Development (MED)	Integrates water and sewerage delivery into public-private partnership schemes and facilitates the mobilization of investments for sector needs	Not significant	Yes
9. Ministry of Health (MoH)	a. Centre for Community Health and Disease Control: Responsible for disease control and improvements of community health; b. Maldives Food and Drug Authority: Responsible for quality and safety of imported and locally bottled water.	Not significant	No
10. Ministry of Tourism (MoT)	Facilitates regulation of water and sanitation services by EPA in tourism resorts.	Not significant	No
11. National Disaster Management Centre (NDMC)	Facilitates provision of water and sanitation services and coordinates with the MHE to ensure water security of islands during emergencies.	Not significant	Yes
12. Ministry of Education (MoE)	Promotes good hygiene practices and ensures provision of safe water and sanitation services to students, also during times of water insecurity.	Not significant	No
13. Private Sector	Provides water supply and metering services and improves access to safe water and sanitation in all parts of the country through contractual agreements with provincial utilities‟ company.	Not significant	No
14. Malé Water and Sewerage Company (MWSC)	Delivery of water and sanitation services in Malé, and other regions	Assisted in the design of the project	No
15. FENAKA	Provide utility style water supply, sewerage and electricity services to inhabited islands	Involved from the design phase; Set to take over operations of the RO plants; and Local project staff	No
16. Members of local island and atoll councils, local authorities	Represent newly established, representative local institutions at island level, which advocate community interests and represent the people living on the islands. Responsible for administrative services of inhabited islands and overseeing the operation/maintenance of public infrastructure.	Local councils and communities for the target islands were consulted, at varying levels, in all the phases of the project.	No
17. Environmental NGOs	Raise public awareness on climate change and environment; Support participative processes; improve environmental awareness	Not significant	No
18. UN Agencies: UNOPS, UNICEF, WHO	Providing baseline data and input to field assessment missions. Based on a request by MHE, UNOPS can provide direct implementation support services to component 1 of the project	UNDP is the executing agency while UNOPS is the implementing agency for the infrastructure component.	Yes

EVALUATION FINDINGS AND CONCLUSIONS

IV. Relevance

A. Relevance of the Project Objective

i. Relevance to National and Local Policies and Strategic Priorities

80. To reduce the aforementioned barriers to effective climate change adaptation in the water management sector, it is essential to reinforce the perspective of Integrated Water Resources Management (IWRM). As surface freshwater is generally lacking throughout the country, the key problems pertaining to freshwater security relate to the management of increasingly saline groundwater and increasingly variable rainwater resources. It was initially envisaged that the project would addresses the significant climate change induced decline of freshwater security that is affecting vulnerable communities in Maldives.

81. At the national level, the project objective was to ensure that measures responding to additional climate change related risks (such as greater rainfall variability, unreliable recharge of aquifers, longer dry periods, and increasing damage to infrastructure from extreme weather events) are addressed in concert with a response to basic development problems, such as insufficient sewage and wastewater treatment, lack of environmental awareness, lack of water conservation, and lack of comprehensive stakeholder participation in the design and monitoring of water management.

82. The key national policy on water and sanitation has always been to provide access to safe drinking water and improved sanitation to all Maldivians. Provision of access to safe drinking water and adequate sewerage systems to people in Maldives became a constitutional right for the first time in 2008. The Government of Maldives is also committed to the goals of the International Decade for Action and the Millennium Development Goals, including goal 7, Target 10: “Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation” and is exerting every effort to increase the number of people with access to safe drinking water and improved sanitation. The Goals and Objectives of the water and sanitation sector are:

1. Ensure access to safe drinking water and sanitation facilities as a basic human right
2. Protect and preserve the country’s vital fresh water resources and establish water stocks for use in emergency and disasters.
3. Enhance the role of private sector participation in the provision of water and sanitation services while encouraging a smooth shift in the role of the government as a regulator and facilitator in the provision of these services.
4. Introduce the use of renewable energy and other modern, appropriate and sustainable technologies to minimize the cost of providing drinking water and sanitation systems and to protect the ground water.

83. In terms of formal linkages to government level documents, the project is responsive to objectives spelled out in the Government of Maldives Strategic Action Plan 2009, the 3rd National

Environment Action Plan (NEAP 3, 2009), the National Sustainable Development Strategy (2009), and the National Adaptation Programme of Action (2007).

84. The interviews with the government stakeholders highlighted that the project remains relevant and in congruence with the above policies.

85. At the local level, the project objective was to ensure consistent, safe and equitable access of three island communities, namely HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo, to safe freshwater.

86. The target islands are densely populated and have been experiencing a significant potable water crisis and serious sanitation issues due to lack of available quality water as well as a proper wastewater disposal system. Consultations with the island communities for the midterm evaluation, corroborated, as the project document states, that the current facilities in the three targeted islands, namely potable water supply, wastewater management and groundwater recharge, are very similar. The degree of hardship experienced every year by inhabitants during the prolonged drought periods are also similar. At present, no functional pipe-borne water supply scheme or wastewater treatment system exists in these islands, and the inhabitants are obliged to rely on traditional rainwater harvesting techniques for their drinking and cooking water requirements. Inhabitants use contaminated shallow groundwater for other domestic water needs such as washing of clothes and bathing. Imported and locally produced bottled-water is extensively utilized for drinking and cooking, particularly during dry season.

87. During the consultations for the MTE, with island communities, it was revealed that the saltiness of the ground water rendered it unusable for washing utensils because it leads to rusting and the water is not appropriate to be used to water plants. In addition, since the roads of the three islands are sandy, the high temperatures lead to a very dusty atmosphere. Residents are hesitant to use ground water to water the roads because pumping ground water leads to more deterioration of the lens. These communities and their children are exposed to dust, continuous exposure of which may lead to respiratory disorders and the contaminated nature of the water lead to communicable diseases such as diarrhea, typhoid etc. A subsequent and less direct impact of the freshwater constraints is the impact on expenditure, where high expenditure on water would imply less expenditure on another socio-economic good such as better food.

88. Meetings with the three islands' councils, NGOs, and communities also stressed the necessity and the value of the project outputs to these islands. However, it was also emphasized by all three islands that their number one priority for the development of the island is having a proper sanitation (sewage and waste water treatment) system. A sanitation system has been installed on ADh. Mahibadhoo, but is not functioning at a level satisfactory to the residents.

ii. Relevance to UNDP Country Priorities

89. The project falls under the United National Development Assistance Framework (UNDAF) Outcome 8: "Communities have access to safe drinking water and adequate sanitation and sustainably manage the natural environment to enhance their livelihoods." It is relevant to the primary outcome of "mainstreaming environment and energy" and secondary outcome of "expanding access to environment and energy services for the poor" under the UNDP Strategic Plan's Environment and Sustainable Development

90. The expected Country Programme (CP) Outcome is "environmental services and protection measures accessed by more communities with greater participation of youth in planning and implementation" and the expected Country Programme Action Plan (CPAP) Outputs are "1. Empower local communities concerning sustainable operation and management of infrastructure, on waste management and water and sanitation installed during tsunami recovery; and progressively devolve key management responsibilities to pilot communities within a strategy agreed with community-based organizations, and particularly youth;" and "2. National environmental policies / regulations / standards / guidelines on solid waste management, hazardous waste, water and sanitation, environmental health, land management, and coastal modification formulated to guide sectoral policies, programmes and local practices."

91. The project will install RO plants and household connections to provide fresh water at a lower price than what is currently spent on freshwater. This contributes to the UNDAF outcome of communities having safer drinking water.

92. However, even though the project is relevant in terms of the UNDAF outcome, the relevance to the CP outcome is deficient. Awareness of local communities about the project and the project components is currently unsatisfactory. Community involvement with management of the system is currently low, even though household and community roofs are to be used for harvesting rainwater, and it has already been decided that FENAKA will the operator of the RO plants installed in this project; therefore, it is questionable how much the project will contribute to the CPAP outputs 1 stated above. Likewise, because the project does not have a component on the formulation of environmental policies / regulations / standards / guidelines, the project does not clearly relate to CPAP outcome 2, stated above.

iii. Relevance to Adaptation Fund Strategic Objectives

93. The Adaptation Fund has produced a Strategic Results Framework,[15] identifying the AF goal, impact, and seven expected outcomes, with associated outputs. The Maldives IWRM project supports multiple AF Results Framework outcomes and outputs, as well as the overall goal and impact. The key relevant outcomes and outputs are summarized in Table 5 below.

Table 5 Relevant Adaptation Fund Results Framework Outcomes and Outputs

Outcomes	Outcome Indicators	Outputs	Output Indicators	Relevant Project Activities
Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.2. Number of people with reduced risk to extreme weather events	Output 2.2: Targeted population groups covered by adequate risk reduction systems	2.2.1. Percentage of population covered by adequate risk-reduction systems 2.2.2. No. of people affected by climate variability	Establishing safe reliable water systems on three islands, which reduces vulnerability to rainfall intensity variability, wet and dry season variability, and salinized groundwater supplies.
Outcome 3: Strengthened	3.1. Percentage of targeted	Output 3: Targeted	3.1 No. and type of risk reduction	The project plans to implement an education

[15] See https://www.adaptation-fund.org/document/results-framework-and-baseline-guidance-project-level

Outcomes	Outcome Indicators	Outputs	Output Indicators	Relevant Project Activities
awareness and ownership of adaptation and climate risk reduction processes at local level	population aware of predicted adverse impacts of climate change, and of appropriate responses 3.2. Modification in behavior of targeted population	population groups participating in adaptation and risk reduction awareness activities	actions or strategies introduced at local level	and awareness campaign at least on the three islands, which aims to increase awareness of adverse impacts of climate change, and catalyze relevant behavior changes with respect to water use and management.
Outcome 4: Increased adaptive capacity within relevant development and natural resource sectors	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	Output 4: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1. No. and type of health or social infrastructure developed or modified to respond to new conditions resulting from climate variability and change (by type)	The project is installing an integrated water resource management system on three islands, using desalinization technology, and centralized rainwater collection. This includes the reverse osmosis plant facilities (housing building, lab, offices), large water storage tanks, and the piping infrastructure to collect and redistribute water. This infrastructure is intended to respond to the climate-change influenced trends in rainfall patterns.

iv. Relevance to the UNFCCC

94. The Maldives IWRM project is relevant to the UNFCCC, and in particular to the Cancun Adaptation Framework (CAF),[16] under the UNFCCC. The project represents support for the Maldives to implement priorities related to its NAPA, and address loss and damage associated with climate change impacts – including loss of access to fresh water resources. The project supports the third cluster of the CAF, "Institutions", by contributing to the strengthening of national institutions related to water management in the Maldives. The project supports the fourth cluster of "Principles" as it is in-line with the four main principles identified in the CAF (albeit, some more strongly than others):

- Be undertaken in accordance with the Convention;
- Follow a country-driven, gender-sensitive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems;

[16] See http://unfccc.int/adaptation/items/5852.php.

- Be based on and guided by the best available science and, as appropriate, traditional and indigenous knowledge;
- Be undertaken with a view to integrating adaptation into relevant social, economic and environmental policies and actions.

95. Finally, the project is also supportive of the fifth cluster, stakeholder engagement.

B. Relevance of the Project Approach: Project Strategy and Design

96. While the project objective is highly relevant to the various aspects discussed above, it is also important to consider the relevance of the actual project strategy and design to attain the objective. On this point the project still must be considered relevant at the local level, but there are missed opportunities to address climate-related water impacts in the Maldives in a more strategic and catalytic manner.

97. From a certain point of view, the project is essentially one small ad-hoc contribution to installing water systems on three of the ~200 islands in the Maldives significant populations. Installing water systems to address climate-driven water insecurity would cost $500 million - $1 billion or more US dollars, and this still would not reach the populations on the many islands with less than 500 people. And, every year the government is forced to distribute emergency water supplies at a significant cost.

98. The Maldives still lacks a cohesive national strategy and policy on water security and access; for example, there is a draft "Water Act" that has been languishing for years, but is still not finalized or adopted. Yet the project does not include any national policy or strategy level work or support for the national government to address water security in a systematic and strategic way, to actually begin to cohesively address the larger problem at the national level.

99. Actually addressing the issue of water security in the face of climate change impacts will require a comprehensive integrated national strategy. During the mid-term evaluation mission the evaluation team was informed of a government Cabinet policy paper developed a few years ago that proposed some strategic approaches to this issue, such as designated water distribution points within regions of the country. Apparently this policy paper has not been further followed-up on or been translated into any actual policies or legislation. This remains a significant opportunity for the country in terms of addressing water security for long-term adaptation to climate change in the Maldives.

100. Another issue of strategic relevance of the project design is the project's approach to groundwater. A key issue the project is addressing is the salinization of the island groundwater tables that resulted from the 2004 tsunami, and many stakeholders still see fresh and good quality groundwater as critical to long-term water security. The project included activities on groundwater (Outputs 1.1 and 1.4), but these were expected to be relatively small components, with a total of less than 4% of the project budget. Considering the great importance of groundwater resources for the future of many islands in the Maldives, the project might alternatively reduced the number of pilot islands where RO plant and rainwater systems were being installed, and instead used the $2.3 or $5.6 million[17] to explore groundwater cleansing and recharge techniques and technologies.

[17] Given that the cost of installing the water systems on the pilot islands is ~$2.3 million each.

101. In terms of implementation, the project has faced some challenges due partly to the uncomfortable partnership between UNDP, UNOPS, and the MEE, which presents some "structural difficulties" as one key stakeholder put it. This mainly relates to the fact that it is not within UNDP's remit to do infrastructure projects, while this is squarely within UNOPS raison d'etre. As described in Section III.B. above on the project concept background, the MEE and UNOPS had their sights set on installing a water system in three islands, but had to engage UNDP as the partner capable of accessing Adaptation Fund resources. UNDP has worked to include in the project as much of a "soft development" approach as possible, with key activities planned on community engagement and awareness related to climate change adaptation. However, looking at the project budget for activities it is clear that 93.7% is planned for water system infrastructure, while 6.3%% is allocated to the "soft" aspects of the project. This is further indicated by the fact that the PMU is based in the water management directorate, rather than the climate change unit.

102. This partnership arrangement is not inherently problematic, as UNDP and UNOPS both have comparative advantages to bring to supporting climate change adaptation activities and investments. However, it appears that there remains a fundamental disconnect between various stakeholders about the basis and rationale of the project. According to the UNEP Guidebook on IWRM for SIDS,[18] there are three key pillars to IWRM: *"stakeholder participation; continuous sensitisation and public awareness; and the creation of scenarios for looking at different pathways to solving problems."* Yet, during interviews with technical staff of stakeholder organizations, IWRM was continuously referred to as the basic approach of operating a water system that *uses both RO-produced water AND rainwater collection* [emphasis added]. Given that there remains such a fundamental discrepancy among project implementers, it is not surprising that the "soft" IWRM part of the project has had limited traction thus far.

103. The project was to address the effects of variable rainfall, extreme weather events, salinization and pollution of aquifers by:

1. Establishment of a sustainable freshwater supply system that incorporates desalination and rainwater harvesting technology
2. Establishment of a sustainable groundwater management system that incorporates groundwater recharge and wastewater management technology
3. Increasing community participation in the development allocation and monitoring of freshwater use in a changing climate
4. Replication and up scaling of climate resilient freshwater management

104. At mid-point of the project, it is apparent that only number 1. above, can be accomplished. As such, the relevance of the objective of IWRM appear to be vague at this point in the project, as some components that were to directly deal with the ground water rehabilitation has been dropped. The objective showcasing the project as one of IWRM also is a challenge at this point. It was found during the evaluation that MWSC has completed a similar project and the project director also referred to the fact in the meeting held with her.

[18] UNEP. 2012. Integrated Water Resources Management Planning Approach for Small Island Developing States. UNEP, 132 + xii pp.

V. Preparation and Readiness

A. Preparation and Readiness

105. As discussed above, the project development period was very short, at approximately nine months. There are pros and cons to a quick project development period. One of the cons for a technically complex project such as this is that there was not sufficient time in the development phase to adequately prepare the technical design of the project. The project document did include detailed design information, but much of this was postulated on assumptions that were to be validated after project approval. As a result, following approval the technical design had to be revalidated, then the detailed design had to be prepared. Consequently the detailed design was not approved until ~15 months after project approval, when the project document foresaw the majority of construction of the system being completed by mid-2013.[19] Even the project inception report indicates that the project detailed design would be completed by September 2012. Having a rapid development phase followed by a more extended design phase after approval is not fundamentally problematic, but the project workplanning should have taken this into consideration from the beginning, instead of expecting that the project would be prepared and ready to begin construction from the 3rd quarter of 2012.

B. Risk Assessment

106. The project document includes a section on risk assessment, in section III.B "Measures for financial project / programme risk management" (p. 45). The risk assessment section includes six risks, only one of which is rated "high": the institutional risk related to potential delays due to challenges in recruiting qualified project staff. The risk assessment was updated in the 2013 PPR, with now 22 risks identified, of which six are rated "high". Of the 22, 12 are considered critical risks.

107. The risk assessment process in the project development phase is not considered to have been adequate, as indicated by a.) The large increase in the number of risks after the first full year of implementation (from 6 to 22); and b.) The factors that did affect project implementation that should have been foreseen. The political instability of the country may not necessarily have been possible to predict, though regular election cycles typically affect projects with planned operational periods of four years or longer. The risk of the need for an extended project design phase could have been foreseen, given the status of the water system design at project approval; however, the project document includes only one risk related to design risk, which is the acceptance of the design by the community. The risk of procurement challenges is something that not only could have been foreseen, but should have been expected. Given the amount of procurement budgeted in this project, and the location of the project, procurement issues were one of the issues the MTE expected to find even before beginning the document review phase of the evaluation.

108. One of the clear lessons from this project is that risk assessment during the project design phase needs to be strengthened. Another lesson is that procurement-heavy projects in LDCs and SIDS should expect to face long procurement timeframes, higher than average procurement costs, and challenges in finding contractors to meet technical requirements.

[19] Annex G of the project document, "Project Milestones and Disbursement Schedule".

C. Stakeholder Participation in Development

109. According to the project document, "The scope of this initiative was defined in close consultation with members of the local Island Councils; the Minister of Housing and Environment; the Maldives' Designated National Authority for the Adaptation Fund; the UNFCCC focal point; the GEF Focal Point and a range of relevant UN agencies who provided baseline data and assessment information about the target islands (UNOPS, UNICEF, WHO)." In addition, consultations were held at the local level, as stated in the project document:

- HA. Ihavandhoo: local elected island council members, NGOs, representatives from health and education services, private sector, and youth groups
- ADh. Mahibadhoo: local elected island council members and administrators; elected members of Atoll Council
- GDh. Gadhdhoo: local elected island council members, local island council administration, representatives from the private sector (FENAKA)

110. Key stakeholders were previously identified in Section III.G. Table 6 shows the participation of the stakeholders in the project inception phase.

Table 6 Stakeholder Participation in the Project Inception Phase

Organization	Project Initiation Seminar for Stakeholders – April 25, 2012	Inception Workshop – June 20, 2012	Inception Follow-up Meeting – June 26, 2012
MEE (MHE)	Attended	Attended	Attended
MEE - PMU			Invited
MEE- Water section			Invited
UNDP	Attended	Attended	Invited
MHI (MHE)	Attended	Attended	
LGA	Attended	Attended	Attended
Atoll Councils	Attended		
Island Councils	Attended		
EPA	Attended	Attended	
MEA	Attended		Attended
STELCO	Attended		
MoT (MoTAC)	Attended	Attended	
UNOPS	Attended	Attended	Attended
MoFT	Invited		Attended
MoH		Attended	Attended
MWSC		Attended	Attended
MoHA			Attended
NDMC			Attended
TM		Attended	
MoFA			Attended
FENAKA (utilities)	Attended		Attended

111. A project initiation seminar for stakeholders was held on April 25, 2012. Representatives from the Atoll Councils of Haa Alif Atoll, Alif Dhaalu Atoll and Gaafu Dhaalu Atoll and Island

Council representatives from ADh. Mahibadhoo and GDh. Gadhdhoo joined the discussions along with representatives of utility companies and government institutions. Community consultations were conducted for each island at the following dates:

- ADh. Mahibadhoo – June 24th - 25th, 2012 – Community meeting (50 community members), Island Council meeting, Atoll Council meeting
- HA. Ihavandhoo – July 3rd, 2012 – Community meeting
- GDh. Gadhdhoo – July 8th, 2012 – Community meeting

112. However, project data and MTE discussions with community members indicated that these meetings may not have been well attended, at least in relation to the overall population of the islands. The 2013 PPR indicates that participants included "more than 30 people" from each community. However, in total this represents less than 1.5% of the estimated population of these islands.[20]

113. Stakeholders sitting in the administrative capital are engaged more than the direct stakeholders who are the proposed beneficiaries of the project. For example, UNDP, MEE and UNOPS hold weekly coordination meetings. However, EPA and FENAKA are not engaged as much as they should be given that, EPA and FENAKA needs to start preparations for the operations of the RO plants.

114. The project has a component on increasing participation in the development, allocation and monitoring of freshwater use in a changing climate, which included community consultations on each target island. However, meetings held with community stakeholders, specifically community members (not just elected representatives), revealed an overall dissatisfaction with the lack of consultations and engagement sought from them. While meetings were held with at the design stage of the project with communities, these meetings were not attended well. Further efforts do not seem to have taken place from the side of the project executing or implementation partners to garner engagement of the community. As a result, in both GDh. Gadhdhoo and HA. Ihavandhoo, community members do not know details of the project. However, HA. Ihavandhoo fared better in this regard.

VI. Efficiency

115. Based on the factors discussed under the various headings below, efficiency at this stage of the project is considered ***moderately unsatisfactory***. Construction of the water system (under Component 1) on the three islands is 12–15 months behind schedule, and other activities under Components 2 and 3 are also delayed. As of the mid-term evaluation the project has disbursed only 13.0% of the budget planned for project activities, although 94.5% of the project budget had been planned for disbursement in the first two years of the project.

116. Although the project officially started in December 2011, activities did not substantively start until mid-2012, when the project inception workshop and initial community meetings were held. The project is currently planned for completion in the 4th quarter of 2015. It may be tempting to extend the project at least six months to cover the initial lost time – however, it

[20] As based on the project document 2011 population estimate of 6,701 persons.

appears that the project management and oversight budget will be consumed as of the original completion date, if not before. As such, any project extension should be avoided.

117. Although the efficiency of the project is rated as low at present, this is significantly related to the pace of implementation during the first half of the project. In the last six months the project implementation pace has notably improved, though there are still many activities to be carried out. By completion the project could receive at least a moderately satisfactory rating for efficiency if it delivers the envisioned water system, the system is operational, and project management costs remain within the budgeted amount. At the same time, in terms of the overall results delivered in relation to the overall cost, it is anticipated that the project will remain less cost-effective than originally planned, and less cost-effective than some other potential alternative approaches for delivering similar results (e.g. public-private partnerships).

A. Implementation, Including UNDP Oversight

118. As indicated in the project document, UNDP plays a key oversight role, including supporting "project implementation by assisting in the monitoring of project budgets and expenditures, contracting project personnel and consultancy services, and subcontracting and procuring equipment at the request of the MHE. On the technical side, UNDP Maldives will monitor progress of project implementation and achievement of project outcomes/outputs as per the endorsed project document." In addition, UNDP's support role as the AF Implementing Entity is outlined in detail in Annex A of the project document, and covers the five main phases of the project, from "Identification, Sourcing and Screening of Ideas" through "Implementation" to "Evaluation and Reporting".

119. UNDP, as the AF IE, is also the primary disburser of the project budget. For Component 1 UNOPS receives direct transfers from UNDP. For Components 2 and 3 UNDP makes advances to the MEE, based on agreed quarterly budgeted workplans. According to the 2013 PPR, lengthy timeframes are required for this process, often taking four weeks or more. Also according to the PPR, some project activities under Components 2 and 3 (e.g. Willingness-to-Pay survey) were delayed due to complications from delayed transfer of funds.

120. UNDP has adequately fulfilled its oversight role, as evidenced by the complete project annual reporting (i.e. PPR), active participation in PB meetings to address critical project issues (as documented in the meeting minutes), and support for the MTE. UNDP staff have also participated in one of the project visits to a pilot island, in December 2013. UNDP's main challenge appears to be the lack of adequate leverage to push implementation of project activities more quickly.

121. At the same time, UNDP is also significantly (though not wholly) responsible for the project development and design phase. As discussed in Sections IV.B, V.A, and V.B above, there were a number of shortcomings in this regard. These may be partially understandable given the short development timeframe, complex technical issues, and political realities for this project in the Maldives. Another important point is that the project does not clearly represent a strong strategic venture for UNDP, given that UNDP's mandate does not typically involve infrastructure investment; UNDP's support for addressing climate change adaptation issues in the Maldives may be more effective in the future through other approaches. This is a strategic challenge, as the

project does fit within the Adaptation Fund's purview, and UNDP is a key Adaptation Fund Implementing Entity in the Maldives.

B. Execution, Including Country Ownership

122. The MEE is the government executing partner, with the PMU established in the Water and Sanitation Department, as indicated in previous Section III.E outlining the project implementation approach. UNDP has justifiably demonstrated concern over the lack of progress on the project activities related to community engagement, education and awareness, and information sharing on climate change adaptation. The fact that the PMU is housed in the Water Department – rather than the Climate Change Unit - is indicative of the PMU's focus on the Component 1 related aspects of the project, which is also justified considering that this component constitutes 93.7% of the budget allocated for project activities.

123. At the same time, it appears that even the information sharing aspects of the project related to Component 1 have not been carried out to the extent necessary, or to the extent foreseen in the project document. Under Output 2.1, the project document states that planned activities include:

- Facilitation of inclusive, participatory consultations between MHE, island councils, community representatives, civil society organisations, utility companies and project staff to present the project, verify assumptions and solicit additional feedback on technical design issues
- Conduct regular feedback sessions between MHE, island councils, community representatives, civil society organisations, utility companies and project staff to enable analysis of project experiences and lessons learned

124. Following project approval initial community consultations were held on each of the islands, as described in Section V.C above. There is no information on any community or island meetings between July 2012 and August 2013. Once contracting and construction began visits have become more frequent, as necessitated to address specification of the construction sites, communication with the island councils, handover of the sites to the contactors, and construction progress monitoring. Between August 2013 and January 2014 nine visits were conducted (see Table 7) to the pilot islands: three visits to GDh. Gadhdhoo, two visits to HA. Ihavandhoo, and four visits to ADh. Mahibadhoo.

Table 7 Pilot Island Visits by Project Representatives Since July 2012[21]

Date	Island	Primary Project Contact	Additional Participants	Stakeholders Met	Primary Purpose
August 23, 2013	GDh. Gadhdhoo	MEE PMU Senior Water Resources Engineer	MEE PMU Procurement Officer, UNOPS Malé Senior Technical Officer, Contractor reps	Island Council VP and 3 councilors	Site handover to contractor
August 28, 2013	Ha. Ihavandhoo	MEE PMU Senior Water Resources Engineer	UNOPS Malé Senior Technical Officer, UNOPS Malé support staff, Contractor reps	Island Council President and staff, health clinic staff	Site handover to contractor
August 31, 2013	ADh. Mahibadhoo	MEE PMU Knowledge Management Officer	UNOPS Malé Senior Technical Officer, Contractor reps	Island Council President	Site handover to contractor

[21] Source: Site visit records provided by PMU

Date	Island	Primary Project Contact	Additional Participants	Stakeholders Met	Primary Purpose
October 3-4, 2013	Ha. Ihavandhoo	UNOPS Malé Senior Technical Officer		Island Council President, VP, and 2 councilors; health clinic staff	Site confirmation and handover to contractor
November 2-3, 2013	ADh. Mahibadhoo	UNOPS Malé Senior Technical Officer	UNOPS Technical Support Consultant	Island Council VP, councilor, 2 FENAKA staff, 2 Contractor site staff, UNOPS site supervisors	Progress monitoring
November 6-7, 2013	GDh. Gadhdhoo	UNOPS Malé Senior Technical Officer	UNOPS Technical Support Consultant	Island Council President, Contractor site staff, UNOPS site supervisors	Progress monitoring
November 28, 2013	ADh. Mahibadhoo	MEE PMU Senior Water Resources Engineer	UNOPS Colombo Senior Project Manager, UNOPS Colombo Procurement Officer, UNOPS Malé Senior Technical Officer, UNOPS Malé support staff	Island Council	Progress monitoring
December 25-26, 2013	GDh. Gadhdhoo	MEE PMU Procurement Officer	UNOPS Colombo Procurement Officer, UNDP Maldives Environmental Program Officer, Contractor reps	Island Council President, School principal and staff, FENAKA manager, School board	Site handover to contractor
January 23, 2014	ADh. Mahibadhoo	MEE PMU Senior Water Resources Engineer	Not specified	Not specified	Progress monitoring

125. On these nine visits, the PMU-contracted international Senior Water Resources Engineer participated in four visits, and PMU staff (procurement office, and knowledge management officer) participated in two additional visits. The UNOPS senior technical staff member in Malé led the three remaining visits. Island council presidents (and sometimes members) were the most frequently met persons on these visits.

126. These visits all focused on technical issues and aspects, such as validation of construction sites, site handover, and progress monitoring. None of the meetings have focused on informing and engaging the community; the project is relying on the Island Councils to perform this function to some extent. It is notable that the MEE PMU project manager has not participated in any of these site visits, but again they have mainly been of a technical nature, and the MEE PMU project manager does not have a technical function, and is not well-positioned to provide technical oversight.

127. The insufficient level of activity on community information sharing may be related to the human resource capacity of the PMU. As previously discussed, the PMU staff is only working half-time on the IWRM project, while the project document foresaw a full-time PMU. On the one hand, a full-time PMU may not be necessary for this project, considering that the MEE PMU budget ($276,602) is almost as much as the budget for the activities it is responsible for under Component 2 and 3 ($304,000). On the other hand, in reality, much of the PMU's time and energies have been taken up with attention to Component 1 in serving as the link between UNOPS and other government stakeholders, and providing oversight on this component. As a

result, activities under Component 2 and 3 have not been significantly advanced, which implies that additional PMU capacity would have been useful. At this stage of the Maldives IWRM project there would not be significant additional benefit for adding further implementation capacity, for example, through increasing staff for the PMU.

128. According to project documentation, the MEE has gone through recruitment procedures to attempt to engage additional qualified personnel, but without success. There are some bureaucratic challenges in this respect, because it should in theory be possible for current qualified MEE staff to take a leave of absence from their positions to serve as project staff, although this is not the ideal approach because it then reduces the capacity of the MEE to carry out its normal basic functioning. Another approach used by some multilateral agencies (e.g. the World Bank) but not available to UN agencies is "topping up" government staff member salaries as compensation for engagement on projects. The other issue is that civil sector employment is not as lucrative as private sector employment (particularly in the environmental sector), and so projects such as this have trouble attracting sufficiently qualified individuals. This is a common issue seen in many environmental projects in many countries in the world, but is exacerbated in a country like Maldives (as well as in other SIDS), which has a population of less than 400,000.

129. This evaluation recommends that the MEE must plan to strengthen implementation capacity for future donor-funded climate change adaptation projects with budgets of greater than $1 million USD and timeframes of three years or longer. It is common international practice to have a dedicated PMU for such projects to ensure efficient and timely execution (and a dedicated PMU was foreseen for the IWRM project). There are, however, other models that could be followed, such as a cluster implementation unit, with multiple project managers, but shared Project Board, support staff and infrastructure, such as in Armenia (see Annex 10). Another approach employed by some projects is to secure external support, such as an international technical advisor on a part-time basis, to support key aspects of the project. Considering that international finance for climate change adaptation is expected to increase significantly in coming years, the Government of Maldives must demonstrate that the country is capable of absorbing the funds it urgently requires to adapt to climate change impacts. Further, it must ensure that the national implementation capacity is in place to support successful and timely implementation of such projects.

C. Key Factors Influencing Project Implementation/Execution

130. The project implementation has been negatively affected by a number of issues, some more foreseeable than others. Some issues have already been mentioned, such as the challenge in recruiting and retaining well-qualified personnel. Others include:

- Political instability and government turnover since project initiation
- Turnover in UNOPS personnel during project implementation
- Limited communication channels with pilot islands
- Expensive transportation to pilot islands
- Time consuming and bureaucratic procedures for procurement
- Difficulty in attracting technically qualified bids within the targeted budget range for the key procurement activities

- Insufficient technical knowledge on island groundwater reservoirs at project initiation
- Insufficient technical knowledge on groundwater recharge technologies at project initiation
- Geographic and physical planning constraints on the three pilot islands
- Overambitiousness of the project document, particularly with regard to project timeframes, water system capacity, groundwater recharge activities, wastewater treatment activities

D. Partnership Approach

131. The project has an interesting partnership approach, outlined in the implementation arrangements. The implementation structure represents a partnership between the government and two UN agencies, while also engaging other stakeholders, such as the government-linked utility company FENAKA. The theoretical synergy of this partnership approach is that the project is positioned to have a broader and more integrated approach to addressing water security in relation to climate change impacts. UNOPS is responsible for the technical side of implementation, while the government (with UNDP support) is responsible for education and awareness aspects, and community engagement, relating to climate change adaptation.

132. As yet, the project has not been able to successfully exploit the potential synergy of this partnership, as the government PMU has been consumed with facilitating the interaction between UNOPS and other relevant government stakeholders, such as the EPA. In addition, the partnership has actually led to some additional drag on implementation due to additional layers of reporting and bureaucracy related to procurement (see additional discussion in Section VI.G below on financial planning and delivery).

133. It remains to be seen if in the second half of the project the “integrated” approach to water management will come to more fruition than it has thus far.

E. Project Workplanning and Timing

Table 8 Maldives IWRM Project Planned vs. Actual Activity Completion[22]

Activity		2012				2013				2014				2015				Delay vs Inception
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2*	Q3	Q4	Q1	Q2	Q3	Q4	
1. Design	Original																	
	Inception																	
	Actual																	6 mos
1. Tenders	Original																	
	Inception																	
	Actual																	15 mos
1. Construction	Original																	
	Inception																	
	Actual																	9 mos
1. Handover	Original																	
	Inception																	
	Actual																	6 mos
1. Operation	Original																	
	Inception																	
	Actual																	12 mos
2.1 Community consultations	Original																	
	Inception			WTP														
	Actual					WTP												9 mos
2.2 Trainings in all atolls on IWRM	Original																	
	Inception																	
	Actual																	Not started
3.1 Technician training	Original																	
	Inception																	
	Actual																	Not started
3.2 Institutional mechanisms	Original																	
	Inception																	
	Actual																	Not started
3.3 Action plan on replication	Original																	
	Inception																	
	Actual																	Not started

** Present time, MTE.*

[22] Sources: "Original": UNOPS PID v.1 for Component 1 activities, and Prodoc ATLAS Budget and Workplan for Component 2 and 3 activities. "Inception": Inception Report Milestones (p. 17). "Actual": Based on reported initiation and completion of activities.

134. Table 8 above provides a rough summary of project planned and actual workplanning, with the goal of indicating the overall delays in various project steps. A couple of notable points stand out:

- At the time of the mid-term evaluation (Q2 2014), the project activities are approximately 15 months behind schedule, with completion of construction originally expected in Q2 2013, and now expected in Q3 2014.
- The project design phase took approximately twice as long as anticipated, and finished approximately nine months later than planned.
- The procurement process started approximately a year later than originally planned, and has taken approximately twice as long as originally planned.
- The water system on the three islands is only expected to start operation in Q3 2014, and thus will have approximately 12 months of test operation prior to project closure, compared to the originally foreseen 26 months.
- Few activities have been carried out under Components 2 and 3 relative to those planned.

135. The critical issues with the delays are twofold. One is that there will be less than half as much time for the system trial period, to resolve any issues, and gain greater insight into the long-term sustainability. The second is that the long design period has required more resources than initially planned, and UNOPS has indicated that their support budget will be exhausted by August 2014. It is not clear that the process will be in place to fully transfer UNOPS's contracted island-based project supervisory staff to FENAKA by that time. If not, there is a significant risk that these trained personnel will be lost as they take other jobs rather than going for a period of time without income.

136. In addition, UNOPS may not be in a position to provide any required support to FENAKA in the operation of the system during the first year of operation. According to the project inception report initial year workplan, $110,000 in total was budgeted for design and planning for Component 1. However, according to financial data in the 2013 PPR, $228,269 was spent under Component 1 through June 30, 2013 (not including $51,964 for borehole construction) – prior to the contracting of the main construction work. Also, according to the project document ATLAS budget and the UNOPS work package budget in the original PID, the UNOPS PMU has a budget of $21,000 in each of the last two years of the project (out of the total UNOPS PMU budget of $384,000). As of February 20, 2014, the UNOPS PMU budget spent was $252,532, leaving a balance of $131,468. From this balance it seems feasible for UNOPS to reserve the necessary funds to provide the required support during the operational phase of the project, from Q3 2014 to Q3 2015. This evaluation recommends that UNOPS ensure it has the financial resources available to provide any necessary support through the closure of the project, as planned in the project document.

F. Adaptive Management and Results-based Management

137. There were a number of minor changes made at the project inception seminar and workshop, including minor revisions to the results framework and updating of project workplans to reflect actual timing of inception.

138. During the first half of the project, there have been significant delays in implementation, which has greatly limited the project's financial delivery (see further discussion in Section VI.G below on financial management). As such, the Project Board has approved annual budget revisions, as required. For example, four reductions expected financial delivery for 2013 for Component 1 were confirmed throughout 2013 in June, September, November and December.

139. With respect to implementation structure, one adjustment that has been helpful is the contracting of an international external expert on IWRM to provide support to the PMU. This was necessary following the project's inability to attract qualified technical personnel for the PMU as envisioned in the project document. The international expert will only be contracted for a portion of the project implementation period, but according to various stakeholders this has been an important and welcome source of support to help the project through the design phase.

140. The project has not as yet had formal major shifts in strategy or planned activities. The most significant changes relate to the finally approved technical designs of the water systems in the three islands, relative to the design foreseen in the project document (see further discussion under Section VII.A below on Component 1). It is not possible or necessary to fully outline all of the details of these technical changes, but it is worth pointing out a few key modifications:

141. Rainwater collected by individual households for use will not be treated. The project document originally foresaw household level water treatment for collected rainwater. Water dispensed from the centralized system will be treated through chlorination, but households may theoretically still use water from their own tanks as drinking water, as it will be free, whereas water from the centralized system will have a cost.

142. The RO plant capacity has been reduced, as indicated below:

- HA. Ihavandhoo: $70m^3$ – from the original $90m^3$ ($20m^3$ reduction)
- ADh. Mahibadhoo: $50m^3$ – from the original $60m^3$ ($10m^3$ reduction)
- GDh. Gadhdhoo: $60m^3$ – from the original $60m^3$ (no change)

143. The rainwater harvesting storage tank capacity has been significantly reduced, as indicated below:

- HA. Ihavandhoo: $9{,}000m^3$ (original plan) to $1{,}550m^3$
- ADh. Mahibadhoo: $6{,}300m^3$ (original plan) to $1{,}250m^3$
- GDh. Gadhdhoo: $6{,}300m^3$ (original plan) to $1{,}450m^3$

144. According to project technical staff, these changes were necessary based on various limiting factors, including the practical realities of the physical space available on each of the islands for the infrastructure. In addition, the technical design has eliminated the inclusion of back-up generators for the RO plants, as the funds planned for the generators are required to cover the higher-than expected costs of the RO plants.

145. These technical changes primarily relate to Component 1. The total budget for Component 1 of $7.32 million USD has been retained, but there was significant adjustment of the budget among the four outputs under this component: mainly this entailed a shift of approximately $2.34 million USD from Output 1.2 to Output 1.3.

146. It should be mentioned that even with the technical changes compared to the original design, the project still anticipates creating a system that will generate the planned minimum

water requirements for the population of the islands in the year 2030, as indicated in Table 9 below. At the same time, there are certain assumptions built into this projection, most notably of which is the amount of rainwater actually harvested each year on each of the islands, which influences the overall rainwater to RO water mix produced, which further influences the cost of operating the system, as it is more expensive to run the RO plants to produce straight RO water than it is to produce treated rainwater.

Table 9 Projected Freshwater Generation Capacity of the Planned IWRM System, by Island

Island	Est. Population 2030	RWH/yr (m^3)	Water needs for 15l/d/p (2030)		Water needs for 20l/d/p (2030)		Water needs for 50l/d/p (2030)	
			Water mix of RO Plant (%)	Water mix of RWH (%)	Water mix of RO Plant (%)	Water mix of RWH (%)	Water mix of RO Plant (%)	Water Mix of RWH (%)
HA. Ihavandhoo	3366	10,130	45%	55%	58.78%	41.22%	83.5%	16.5%
ADh. Mahibadhoo	2369	7,846	38.7%	61.3%	54.64%	45.36%	81.9%	18.1%
GDh. Gadhdhoo	3206	17,757	0%	101.2%	24.13%	75.87%	69.6%	30.4%

147. It is likely that following the mid-term evaluation some formal decisions will be taken by the Project Board regarding some of the project outputs and activities:

- Output 1.1 on artificial groundwater recharge: This part of the technical design of the system has been significantly scaled back due to technical concerns of various stakeholders (see more information in Section VII.A on results under this output). The project document foresaw the installation of artificial groundwater recharge pits on the three islands, including 1,470 household recharge pits and 90 community recharge pits. Only a few recharge pits are being installed near the RO plant facilities on the three islands for instances where it may be necessary to produce water in excess of the available storage capacity.
- Output 1.4 on wastewater management: The anticipated wastewater management and treatment systems on HA. Ihavandhoo and GDh. Gadhdhoo are still far from being a reality, and the project has not made significant progress on activities relating to ensuring existing septic systems are regularly maintained and cleaned.
- Outputs 3.2 and 3.3 on replication aspects: This evaluation recommends adjustments to these activities.
- Results framework: The MTE is recommending some specific revisions to the project results framework. See further discussion in Annex 7.

G. Financial Planning by Component and Delivery

148. The Maldives IWRM project has three main components, but the bulk of the project's resources - more than 88% - are budgeted for Component 1 (see Table 10). Components 2 and 3 are budgeted for 1.3% and 1.0% of the total project budget, respectively. In total 9.3% is budgeted for project management costs, including monitoring and evaluation aspects. However, the budget for project management is split between the PMU within the MEE, and project management costs allocated to UNOPS, which has the primary responsibility of implementing Component 1.

Table 10 Maldives IWRM Project Financial Planning and Delivery by Component

	AF amount planned	% of AF amount planned	AF amount actual	% of AF amount planned
Component 1	7,320,398	88.4%	919,648	12.6%
Component 2	110,000	1.3%	46,583	42.3%
Component 3	80,000	1.0%	7,284	9.1%
Sub-total of project activity costs	$7,510,398	90.7	382,016	13.0%
Monitoring and Evaluation*	114,000	1.4%	1,277	1.1%
UNOPS PMU	384,000	4.6%	252,532	65.8%
MEE PMU	276,602	3.3%	92,626	33.5%
Sub-total of project management costs	774,602	9.3%	345,158	52.2%
Total‡	8,285,000	100.0%	1,219,950	15.9%

Sources: Project Document for planned amount; CDRs data provided by UNDP for actual AF amounts for Components 2, 3, and Monitoring and Evaluation. Representing dollar amounts through December 31, 2013. Data for Component 1, UNOPS PMU and MEE PMU as of February 20, 2014, based on data provided by the PMU.

**The project document includes a detailed M&E budget. The total M&E budget includes activities that would be funded from the project management budget line (such as annual reporting) or other sources (such as UNDP oversight). However, it appears that the project does actually have a dedicated M&E budget line, unlike many UNDP projects where the M&E budget is drawn from other budget lines, such as project management.*

***‡** The total does not include the IE fee to UNDP, which was paid separately by the AF Trustee, and which amounted to $704,225. This means that the total cost of the project to the AF was $8,989,225.*

i. Project/System Level Cost-Effectiveness Comparisons

149. In terms of the overall cost for outputs, the main project outputs will be the water systems for the three pilot islands. The water systems mainly relate to Output 1.2 and 1.3. The revised budget for these two outputs is currently $7,038,134 ($1.39 million for Output 1.2 and $5.65 million for Output 1.3), which, divided by three, equates to a per-island cost of approximately $2.35 million, though this does not include project management and administration costs. If we assume a 1 to 1 correlation of management costs to project activity costs, we should assume that 93.7% of the project management costs went to support these two outputs (including IA fee in this case, as this must be considered part of the total cost of delivering the project), since Outputs 1.2 and 1.3 make up this share of the total project activity costs. As such, the per-island cost of the water system rises to $2.81 million.

150. Since other similar systems have now been constructed on other islands by MWSC and FENAKA, there are some benchmarks for comparison. According to MWSC, a similar system was constructed on the island of Dhuvaafaru in 16 months, at a cost of roughly $28 million MVR, which is approximately $1.82 million dollars.[23] However, this system was bigger than the system for any of the three islands in the Maldives IWRM project, considering that the population of Dhuvaafaru is over 4,000 people. We also do not know what amount of MWSC's general administrative costs may have gone to support this particular project.

151. Thus, it appears that the water systems on the three pilot islands for the Maldives IWRM project are being delivered significantly less cost-effectively than those delivered directly and wholly by the MWSC. Under this admittedly crude analysis, **the average cost of the Maldives IWRM project systems is more than 50% more costly than the system delivered by MWSC for Dhuvaafaru, and the systems on the IWRM project islands are smaller and will have taken**

[23] Based on an exchange rate of 15.4, as cited by Yahoo Finance Currency Converter (http://finance.yahoo.com/currency-converter) for March 13, 2014.

approximately twice as long to begin operation. Considered on a per person basis, the Adaptation Fund Maldives IWRM project cost of water provision is approximately $1,250 USD per person, while the MWSC project in Dhuvaafaru provided water at a cost of approximately $450 USD per person.[24]

152. However, much more detailed analysis would be required to make a direct technical comparison of the systems, as conditions on individual islands can significantly influence cost factors. It may be the case that MWSC chose to invest in Dhuvaafaru because the cost factors on this island were such that a system could be constructed extremely cost-effectively, while the cost factors may be higher in the pilot islands for the IWRM project. In addition, at the time the IWRM project was conceived the technical approach was considered ground-breaking (although the Dhuvaafaru project, using a similar RO-rainwater system, has now been completed before this project, and as such is considered more of a national pilot for this approach than the IWRM project). The technical quality of the two projects would also have to be compared, as well as the potential for sustainability. However, given that MWSC intends to generate revenue from the Dhuvaafaru system for many years, the sustainability of this system appears likely. In fact, according to MWSC calculations, a three to four year payback period is required for the system to begin operating in the black, and during the initial operating period MWSC's revenue from provision of electricity will subsidize the water system.

153. In fact, UNOPS and the MEE have undoubtedly gained experience and knowledge from this project that will contribute to improved efficiency of similar future projects. UNOPS is anticipating constructing a similar system on Hinnavaru Island with USAID funding over 14 months at a cost of approximately $3.40 million. Hinnavaru has an estimated population of over 4,600 persons (cost of ~$730 USD per person).

154. At the time this project was conceived the MWSC and FENAKA may not have been institutionally capable of fully delivering such a system on the three pilot islands. However, MWSC has already now initiated and completed a similar system on another island, and is planning more similar investments, and FENAKA's institutional and technical capacity has increased significantly over the past five years. As such, either of these utility companies would be capable of completing similar systems in the future. Therefore, to increase cost-effectiveness for the construction of RO plant-rainwater harvesting systems on islands in the Maldives in the future, this evaluation recommends that future donors consider investment approaches using innovative financial mechanisms to establish public-private partnerships and provide the financial incentives necessary to make the required capital investment attractive for these utility companies. This could be in the form of interest rate subsidies, capital investment subsidies, or any other financial approach for catalyzing such public-private partnerships.

[24] The per-person cost analysis is only intended to serve as another rough benchmark to assess cost-effectiveness of water provision to island populations. Calculations for the per-person cost are based on the population figure for 2011 for the three project islands, as indicated in the table on p. 7 in the project document. Population figures for Dhuvaafaru and Hinnavaru are based on the population figures cited on Wikipedia.com for 2012, which appear to be based on people registered on those islands. The budget figures used for Dhuvaafaru and Hinnavaru are also rough estimates based on the information available.

ii. Financial Delivery

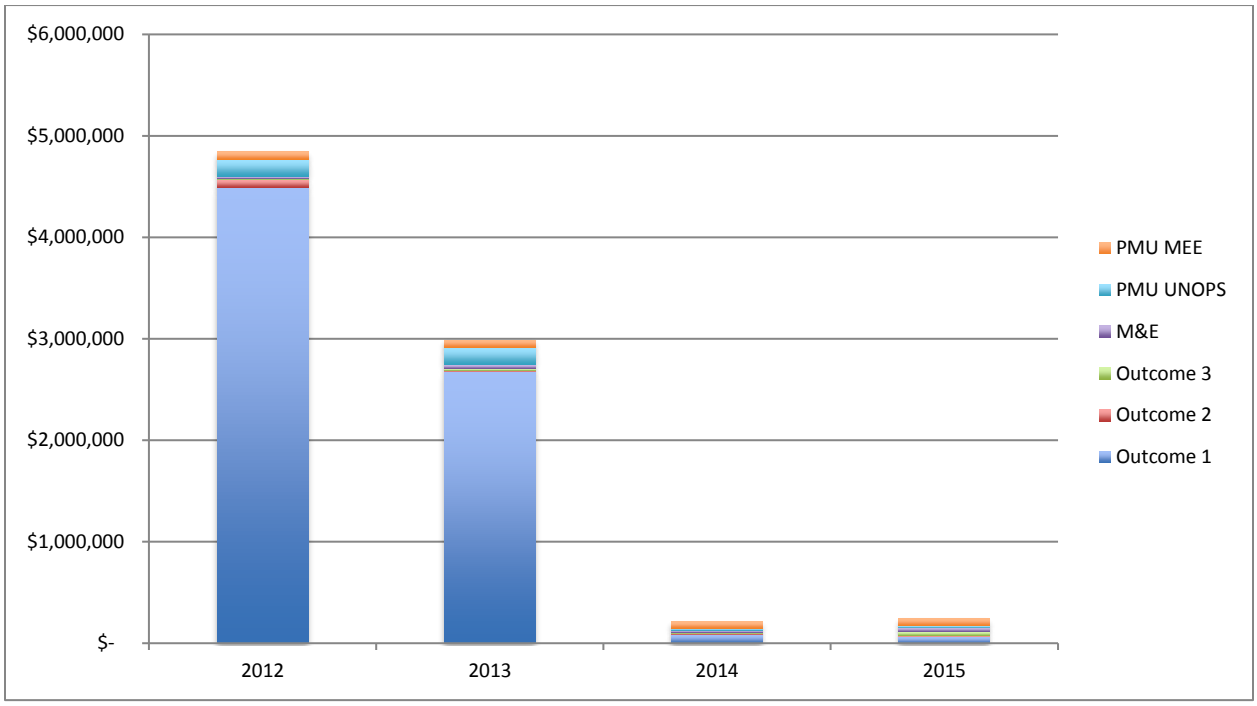
155. As of this mid-term evaluation,[25] the project had only disbursed 15.9% of its total budget. Of this amount only 13.0% of the project activity budget has been disbursed, while 52.2% of the project management budget has been disbursed.

156. Procurement-heavy projects, such as the Maldives IWRM project, are not necessarily expected to have financial delivery proceed in a linear fashion throughout the course of a project. It is anticipated that delivery will be relatively low until contracting and delivery of the main procurement materials – in this case, the RO plant facility construction, the RO plants themselves, the GRP tanks for the RO plant facilities, the rainwater collection tanks, and the piping to connect the system. However, disbursement has still been significantly slower than expected for the Maldives IWRM project. Due to the slow design phase, the project only commenced contracting and implementation of the main procurement activities in the 4th quarter of 2013. Further information on the delays in the design phase is included in later Section VII.A on Component 1.

157. Figure 3 below shows the planned project financial delivery, by activity. The delivery schedule foreseen in the project document was clearly overambitious, indicating that 58.4% of the project budget would be disbursed in the first year of the project, 2012. An additional 36.1% of the budget was expected to be disbursed in 2013, leaving just 5.5% to be disbursed in the final two years of the project. The overall expenditure for the first half of the project cannot be considered overambitious however, as this was the period planned for the main project expenditures corresponding to the construction of the water system infrastructure on the three islands. The project had logically planned that the final two years of the project would constitute the testing and initial operational period of the system, allowing sufficient time for adjustments to ensure sustainability.

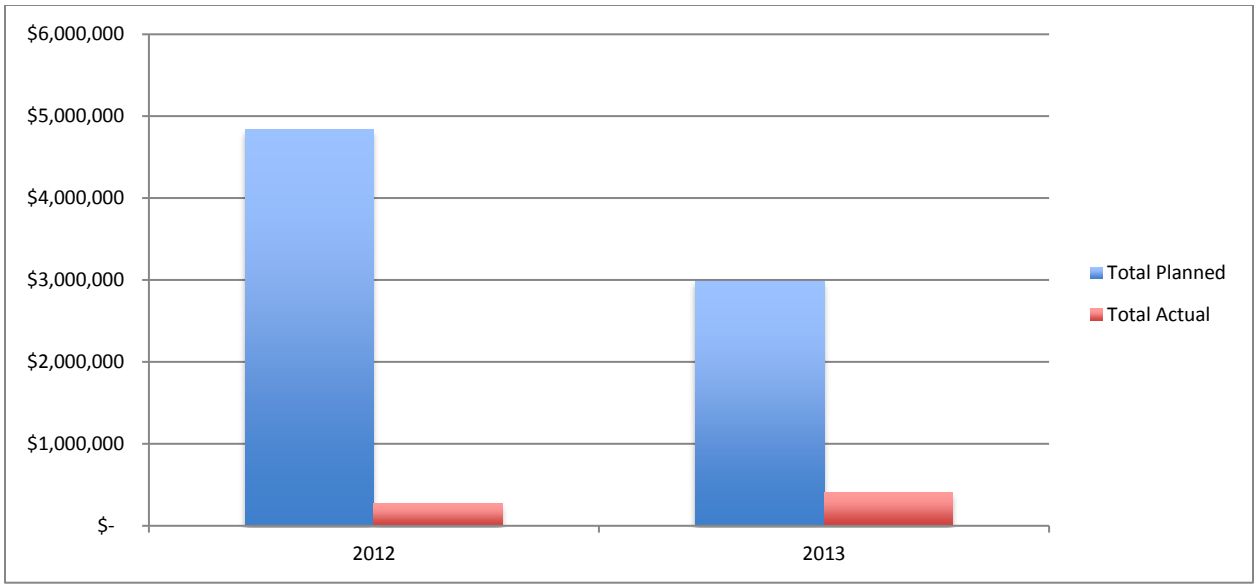
[25] See "Sources" information for Table 8 to see exact time periods for which financial data was available.

Figure 3 Maldives IWRM Project Planned Financial Disbursement[26]



158. Figure 4 below shows the actual expenditure in the first two years of the project relative to the planned amounts.

Figure 4 Maldives IWRM Project Planned vs. Actual Disbursement, 2012 and 2013



159. While financial delivery in the first two years of the project has been critically low, it is fully expected that 2014 will see the major financial delivery. The contracting for the main water

[26] Source: ATLAS version of the project budget, as indicated in Annex C of the project document.

system infrastructure began in the 4th quarter of 2013. According to financial data provided by UNOPS, from January 1 - February 20, 2014 the project had spent an additional $591,499 on Component 1. Thus, in the first two months of 2014 the project had almost double the financial delivery for Component 1 compared to the entire first two years of the project. This is a highly encouraging sign, although there remains approximately $6.4 million to be delivered for Component 1, most of which is expected by August 2014.

160. The main procurement activities for Component 1 are planned as indicated in Table 11 below. As can be seen in the table, the project is anticipating additional expenditure of approximately $6.23 million in 2014, of which $4.11 million is already contracted. Considering that tenders for items 6 and 7 below are only currently being issued however, based on the previous procurement experience of the project there is some risk of these activities not being completed in time. Procurement for the initial items below required at least three months, which means that contracts for items 6 and 7 would likely not be issued until late May 2014, at the earliest. Both items 6 and 7 must be completed for the system to begin operation in August 2014.

Table 11 Maldives IWRM Project Main Remaining Anticipated Procurement Activities

Activity	Contracted or Budgeted Amount	Expected Completion	Status as of MTE
1. Construction of reinforced concrete rainwater storage tanks on all three islands.	$648,148	April 30, April 18, and July 10.	Progress on the three islands of 71%, 76% and 15%. This has been approximately confirmed during the MTE missions.
2. Construction of RO plant buildings and GRP tank foundation on all three islands.	$1,129,406	April 30, April 14, and February 23. The construction will clearly not be completed by these dates.	Progress on the three islands of 38%, 55% and 22%. This has been approximately confirmed during the MTE missions.
3. Supply and installation of GRP tanks on all three islands.	$685,594	April 23	Delivery expected in March.
4. Supply of pipes, valves, and fittings for water system in all three islands.	$897,519	April 12	First delivery of pipes expected in March.
5. Supply, installation, testing and commissioning of RO plants on all three islands.	$753,344	End of August	Final contract approvals in completion. Planned 6 month contract.
6. Supply and installation of solar panel system for water system in all three islands.	$847,742 (budgeted, not yet contracted)	End of July necessary to start RO plant operations in August.	Tender to be issued in late February 2014.
7. Laying of pipes for water distribution network in all three islands.	$763,891 (budgeted, not yet contracted)	End of June necessary to prepare for start-up and testing of water system in July and August.	Tender to be issued in late February 2014.
8. Other activities related to groundwater recharge and	$501,693 (budgeted, not yet contracted)	Not specified.	MAR studied has been initiated in February 2014.

quality, following recommendations from the MAR study.			

161. Although the main project financial delivery is planned under Component 1, there is also significant delivery required for Components 2 and 3, in percentage terms, as only 42.3% of the budget of Component 2 has been used, and 9.1% of the budget for Component 3 (see Table 10 above). Additional discussion of progress under these components is further discussed in Sections 183 and VII.C on results for these components.

162. In terms of project management costs, the project is relatively on-track, with 52.2% expenditure of the budget for project management. However, this represents an internal imbalance between the UNOPS PMU (with expenditure of 65.8% of planned budget) and the MEE PMU (with expenditure of 33.5% of planned budget). The budget for the UNOPS PMU theoretically has a balance of $131,468, but there is some concern that under the current rate of expenditure UNOPS will run short of funding for implementation support services after July 2014, although the original project budget called for $21,000 per year for the UNOPS PMU for the 3rd and 4th years of the project. By project completion there should be some cost savings from the MEE PMU, as the project budget was allocated for a full-time PMU, while the MEE PMU is only half-time dedicated to this project. This would be a positive indicator of efficiency for the project, if it comes to fruition.

163. The project is currently undergoing an audit, with the audit report expected in March 2014, approximately the same time as this evaluation report. The audit should provide further information and insight on the adequacy of the project's overall financial management system. Unfortunately the preliminary findings from the audit were not available for this evaluation, which limited this evaluation's ability to include findings or conclusions from the audit.

H. Co-financing

164. The project document indicates that the Government of Maldives expected to contribute approximately $1.80 million USD in co-financing for the project. According to the project document this was to include participatory Environmental Impact Assessments on each of the three pilot islands, and the in-kind contribution of the National Project Director, a government employee.

165. It does not appear that government co-financing has been tracked by the PMU, UNDP, or any other project partners. The government has contributed in multiple in-kind ways, but it is unclear that this would equate to anywhere near the $1.80 million indicated in the project document. In addition, the project ultimately paid for the Environmental Impact Assessment, although it had been agreed in the project document that this would be covered by the MEE. According to the Project Board minutes, the MEE indicated that it would be a conflict of interest for them to cover the cost of the Environmental Impact Assessment.

166. Co-financing was also to be mobilized for the wastewater management projects in HA. Ihavandhoo and GDh. Gadhdhoo islands. The wastewater system projects on these islands are not yet initiated. There remain indications that they will be, though it is uncertain whether it will be before the end of the IWRM project.

167. It was also expected, according to the project document, that "co-financing" would be mobilized for the replication of the IWRM project in four additional islands. This might more clearly be considered "leveraged" or "associated" financing (as defined by the Global Environment Facility, for projects in its portfolio), since it is not contributing directly to implementation of the project and would only be confirmed sometime after project completion. If such financing for replications were considered co-financing, the co-financing target would be met by the MWSC's "replication" of the project on Dhuvaafaru Island, for which the budget was approximately $1.82 million. Also, as previously mentioned, UNOPS is expecting to implement a similar project with $3.40 million in funding from USAID on Hinnavaru Island.

I. Project Level Monitoring and Evaluation

168. The project M&E plan is described in section III.B. of the project document (p. 46), and includes a qualitative description of the main M&E activities, as well as a summary table of the budgeted M&E plan, including responsible parties, budget and timeframe. The M&E plan includes the inception workshop and report, results tracking through indicators, annual and quarterly progress "reviews", Project Board meetings, technical reports, the mid-term evaluation, terminal report, audit, field visits, and final evaluation. The M&E plan meets Adaptation Fund and UNDP minimum standards. The planned budget is $114,000, which is adequate for a project of this size and scope. It is also important to note that the project budget in UNDP's ATLAS system included a specific separate budget line for M&E activities, in contrast to having the M&E budget integrated with other project components and the project management budget. This is considered good practice for ensuring that the resources for M&E activities are actually available as required, and for transparency in project budgeting.

169. The project M&E plan has thus far been adequately implemented as planned. The inception workshop was held and inception report produced, three additional Project Board meetings have been held, and the project has produced regular quarterly progress reports, as well as the annual PPR. The mid-term evaluation is also being conducted around the mid-point of the project. However, this evaluation recommends that the project strengthen results-based monitoring in the 2nd half of the project. There are not adequate linkages between the reporting on project activities, project expenditures, and achievement of project indicator targets. This may not have been a priority during the project design phase, but results-based monitoring will be critical as the project moves into start-up and operation of the water system, and works to achieve all planned results before project completion. The PMU, UNDP, and UNOPS should work together to identify adjustments as necessary to strengthen the results-oriented view of reporting on project activities and expenditures.

170. The project results framework is included as Annex B of the project document. Minor revisions were also made to the results framework at the inception phase. This evaluation recommends additional revisions, as indicated in Annex 7 of this report. The results framework indicators and targets adequately meet "SMART" criteria, although a number of indicators under Components 2 and 3 are more at the output level than outcome level, and other indicators are not clearly defined. For example, under Output 3.1 the indicator relates to the number of staff trained, rather than relating to the desired outcome that such training would aim to support (e.g. sustained functioning and operation of the water supply systems). An improved indicator could relate, for example, to the number of days of the year that the water system is out of order. The

indicator under Output 2.2 relates to the "Number of Maldivians that aware about their rights, roles, and responsibilities in the management of freshwater resources in a changing climate" but there is no clear target value for the actual number, and the target is only given in terms of the number of education and awareness activities.

171. Although the project document M&E plan specifies that the Project Manager is responsible for "measurement of indicator status / means of verification" there was still some confusion at the inception phase and initial Project Board meetings about who was responsible for reporting on the indicators. This evaluation would like to re-emphasize that it is the responsibility of the PMU to apply the project results framework to guide results-based management of the project, and to use the results framework in regular progress reporting, particularly through tools such as the annual PPR. The PMU may rely on other project partners or stakeholders for the initial collection and reporting of the data required, but it is the PMU's responsibility to report on results using the results framework.

VII. Effectiveness and Results: Progress Toward Objectives and Outcomes

172. The project objective is "*To ensure reliable and safe freshwater supply for Maldivian communities in a changing climate*," and in particular to provide water security for the communities on the three pilot islands of HA. Ihavandhoo, ADh. Mahibadhoo, and GDh. Gadhdhoo.

173. Considering that approximately only 13% of the project budget was disbursed by the project mid-term (see Section VI.G on financial management), at the present stage, progress toward the project objective is very limited, and **effectiveness** and **results** so far are both considered ***unsatisfactory***. It is difficult for much progress to have been made when many of the project activities have barely started. The project results framework includes one main objective level indicator, which has two targets – one relating to the main project outputs on the three pilot islands, and one relating to the project replication aspects. Table 12 below summarizes the objective indicator targets and the present status.

Table 12 Maldives IWRM Project Objective Indicator Target Status

Indicator	Target	Status
Number of Maldivians with safe and reliable freshwater supply in any extreme climatic condition	Integrated water resource management systems on HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo provide 24% of all Maldivians who are vulnerable to water shortages and degrading water quality in a changing climate with a reliable supply of safe freshwater	Achievement: Unclear. The population of the three islands that comprise around 2% [27] of the total population should have access for safe freshwater when the project the system becomes operational, if the system proves to be sustainable. However, the baseline information would also need to be updated to determine what percentage of the population vulnerable to water shortage had been addressed by the project.
	Replication of the project on 4 additional islands provides at least 50% of all Maldivians who are exposed to water	Other projects are already in place that replicate most parts of this project. MWSC has completed a similar project in R. Dhuvaafaru and a potential

[27] Total population of the three islands, according to 'inflated' estimates suggest 8,000. Total Maldives population is estimated to be 350,000.

	shortages and degrading water quality in a changing climate with a reliable supply of safe freshwater	project is being planned in Ha Thuraakunu. However, it is difficult to say that this is as a result of this project.

174. While activities have been delayed and results thus far are limited, there has been much important progress in the six months from August 2013 – February 2014, and this evaluation is optimistic that higher ratings for effectiveness and results can be achieved at the end of the project. The project appears to be mostly sufficiently moving ahead since the planning and design phase has been completed in mid-2013, and construction of the water systems has started, for which completion is anticipated early in the 3rd quarter of 2014. If the system begins operation in the 3rd quarter of 2014 there will still be time for the system to operate for one full year prior to project completion.

175. However, although the water system will be constructed, planned project results relating to groundwater recharge and groundwater quality improvement are not likely to be achieved as these have been eliminated or minimized in the project final design phases.

176. The **key project results** thus far are:

- Completion and approval of the detailed design phase for the centralized RO plant and rainwater capture system, including the EIA;
- Contracting for the first phases of construction of the systems on all three islands;
- Initiation of construction on all three islands;
- Substantial progress toward completion of construction of initial infrastructure;
- Completion of the Willingness-to-Pay study;
- Completion of a communications strategy.

177. To be considered at least moderately satisfactory by the end of the project, the project should meet the following benchmarks:

- Water systems on the three pilot islands that are continuously operational and reliable, and are capable of providing at least 15 l/p/d of clean and safe water for the populations of the islands;
- Have an operational and reliable distribution pipe network that distributes the clean and safe treated freshwater from the centralized system to the households on the island;
- Be charging and collecting revenue at a level that is a.) Accepted by the populations of the islands; and b.) Is sufficiently close to covering the annual operations and maintenance costs of the system such that financial sustainability is likely within three years of completion of the system;
- Have demonstrated at least one year (one full wet season and one full dry season) of technical sustainability, i.e. reliable operation of all parts of the system;
- Have engaged and informed a majority of the islands' populations on their roles, rights, and responsibilities with respect to water security in the face of climate change.

A. Component 1: Establishment of Integrated, Climate-resilient Water Supply and Management Systems in Mahibadhoo, Ihavandhoo and Gadhdhoo

178. The first outcome of the project, to be produced by the activities under Component 1, is "*Ground water aquifer protected and freshwater supply ensured in HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo to provide reliable, equitable and cost-effective access to safe freshwater in a changing climate.*" As previously discussed, the majority of the project activities are to be completed under this component, with $7.32 million in funding, which is 88.4% of the total project budget, and 93.7% of the budget planned for actual activities.

179. This component has four main sub-components, or outputs, which can be summarized as:

i. Groundwater recharge
ii. Rainwater collection and storage
iii. Reverse osmosis plant water production
iv. Groundwater quality improvement

180. Table 13 below summarizes the main indicators and targets for Component 1, and provides a brief overview of the status.

Table 13 Maldives IWRM Component 1 Indicators and Target Status

Indicator	Target	Status
Number of people living on HA. Ihavandhoo, ADh. Mahibadhoo, and GDh. Gadhdhoo who have uninterrupted access to reliable and safe freshwater supply in extreme climatic conditions	100% of the population living on HA. Ihavandhoo, ADh. Mahibadhoo, and GDh. Gadhdhoo will have uninterrupted access to reliable and safe freshwater supply of at least 20 liters per person per day at all times, including during extreme climate events	The current system design is targeting a minimum of 15 l/p/d. Once the system is completed and is demonstrated to be sustainable, then this target should be met.
Groundwater quality on each target island	By the end of the project, the quality of groundwater in each target island has improved to levels that are safe for hygiene and agricultural purposes HA. Ihavandhoo: 700 groundwater recharge pits and 30 community recharge wells developed GDh. Gadhdhoo: 495 groundwater recharge pits and 30 community recharge wells developed; ADh. Mahibadhoo: 275 groundwater recharge pits and 30 community recharge wells developed	The project activities were revised so that groundwater recharge is not substantively being pursued. There will be a few groundwater recharge pits at the rainwater storage tank sites to allow any excess water collected to be directed into the groundwater table.
Volume of rainwater collected and stored to supply safe and clean freshwater during dry periods	Improved rainwater harvesting and storage capacity will be installed as follows: HA. Ihavandhoo: 9,000 m^3 ADh. Mahibadhoo: 6,300 m^3 GDh. Gadhdhoo: 6,300 m^3 All new rainwater harvesting systems will be equipped with disinfection safeguards to ensure safety of water supply	The system will be installed with a lower storage capacity than originally planned: HA. Ihavandhoo: 1,550m^3 ADh. Mahibadhoo: 1,250m^3 GDh. Gadhdhoo: 1,450m^3 Completion of the system is expected in the 3rd quarter of 2014. The rainwater will be collected in centralized facilities from household and community building roofs, and will be treated

		with chlorination to WHO standards before redistribution. Rainwater collected by households for their own use will not be treated, though it is expected that households will use that water for non-potable purposes.
Capacity of desalinated freshwater supply available during dry spells, drought and flooding	The following minimum amounts of desalination capacity will be installed on each target island: HA. Ihavandhoo: 90 m^3 ADh. Mahibadhoo: 60 m^3 GDh. Gadhdhoo: 60 m^3 Potable water quality levels will be in conformity with WHO standard at all times	The revised system design has been slightly scaled back from the original plan, as indicated below: HA. Ihavandhoo: 70 m^3 ADh. Mahibadhoo: 50 m^3 GDh. Gadhdhoo: 60 m^3 (no change) Completion of the system is expected in the 3rd quarter of 2014. The water produced from the RO plants will be mixed with the collected rainwater and all water will be treated with chlorination to WHO standards before distribution.
Number of planned wastewater management and sewage systems which integrate targeted measures to reduce groundwater pollution	All sewage and wastewater management systems which are planned and/or constructed on the 3 target islands integrate targeted measures to reduce groundwater pollution All septic tanks on each target island are cleaned at least twice per year to prevent groundwater pollution from flooding events	Wastewater treatment systems have only been constructed on ADh. Mahibadhoo thus far, and it is not anticipated the others will be completed prior to project closure. There have been no substantive activities on this part of the project yet, and it is not anticipated that on-the-ground results will be produced. It is not anticipated that the project will significantly influence the cleaning of septic tanks.

181. Output 1.1 Artificial groundwater recharge systems established to protect groundwater resources from salinization and improve aquifer yields in dry seasons: This output has been significantly scaled back. According to the project document, the project would install 1,470 household recharge pits and 90 community recharge pits among the three pilot islands. However, the budget for this output has only been revised from the original $228,296 down to $188,162.

182. The expectation for this output was based on previous experience with recharge pits installed on Malé. However, as noted in the project documentation, "The initial design of recharging ground water through this network of recharge pits was not accepted by the government stakeholders based on experience with the similar system implemented in the capital Malé and [which] faced difficulties with maintenance. [The] Implementing Partner and other key stakeholders confirmed that there is a lack of technical knowledge of the target aquifer to support initially proposed engineering solution of a network of recharge pits." According to some stakeholders, other concerns about the recharge pits related to their potential impact for future land-use planning on the islands. In lieu of installing the many recharge pits, the project is supporting a study to examine more in depth the current conditions of the groundwater aquifers of the three islands, which will lead to a Managed Aquifer Recharge (MAR) Plan for later implementation by the government. The project will be installing a small number of recharge pits on each island near the RO plant facilities and rainwater collection tanks to capture the overflow from the tanks to use for slow and controlled recharge of the aquifers.

183. Output 1.2: Existing rainwater harvesting schemes are redesigned, interconnected and structurally improved to buffer climatic extremes and ensure equal water supply for all households during dry periods **AND** Output 1.3: Production and distribution system for desalinated water supply established: The system that will be installed on each of the three

islands is primarily being constructed under Outputs 1.1 and 1.2. The construction of the system requires multiple pieces of infrastructure:

- Large concrete community rainwater harvesting storage tanks
- The concrete building to house the RO plant operations, and the concrete foundation for the GRP water storage tanks (including solar power installation, and bore holes for saline water inputs to the RO tanks)
- The GRP tanks themselves
- The RO plants themselves
- The water piping collection and redistribution system

184. The budget for these two components has been slightly revised to $7.04 million, approximately the same as the original budget. However, approximately $2.33 million of the originally planned budget has been shifted from Output 1.2 to Output 1.3.

185. The project document included the rough outlines of the technical design for the project, but according to some project stakeholders, it was anticipated that the system would have to be revised and redesigned after the project received approval. Thus prior to the start of construction on any of the infrastructure, the detailed design plan had to be completed by UNOPS and agreed by the MEE, including completion of the EIA. The detailed design phase of the project was completed in March 2013, with final sign-off of the detailed design by the MEE and EPA.

186. It would not be fruitful for this evaluation to elaborate the details of why the design phase took so much longer than planned, though the reasons can be summarized as such:

- Insufficient preparation and planning in the project development phase
- Challenges in finding space and location for such large pieces of infrastructure on such small islands (e.g. multiple discussions with community representatives on relocation of facilities from originally expected sites)
- Multiple changes requested to the technical design by local stakeholders and by government stakeholders (e.g. extensive discussion about collection of rainwater from only community buildings, from households, groundwater recharge pits, etc.)
- Inadequate planning by UNOPS to anticipate and proactively address some of the technical design issues in a practical and proactive manner
- Some significantly erroneous assumptions in the project design phase about the technical aspects of the project (e.g. that groundwater recharge pit examples from Malé could be replicated; the size of the rainwater collection and storage tanks feasible to be constructed on the islands)
- Turnover in both government and UNOPS staff

187. The procurement process for the infrastructure elements started in April 2013. As may have been expected for a project of this size and nature, the procurement process took at least three to four months, although the timeline in the project inception report foresaw only one to two months needed. There are multiple understandable reasons for this, including the fact that it is important to ensure transparency, quality, and affordability in procurement. The project faced challenges in attracting a sufficient number of qualifying bids for many of the tenders, and

many of those that were qualifying were significantly above budget. Thus some of the tenders had to be re-opened to finally secure adequate bids. Given the extent of procurement required for the project, and the locations in which the infrastructure was to be constructed, it could have been foreseen that procurement would require a significant amount of time, and this is one of the lessons from this project.

188. As mentioned above, construction on the infrastructure has commenced on all three islands. Annex 11 provides photographic views on the main infrastructure elements, and more verification pictures are available from the MTE on request.

189. Output 1.4: Existing wastewater management systems redesigned and improved to ensure sufficient quantities of safe groundwater: This output was expected to link with the planned wastewater treatment systems to be constructed in HA. Ihavandhoo and GDh. Gadhdhoo, and with the system already constructed in ADh. Mahibadhoo. In the project document it was originally envisioned that activities under this output would include establishing a cleaning protocol for septic tanks and ensuring annual cleaning of tanks before the wet season; ensure connectivity between wastewater treatment systems and freshwater supply/storage distribution system; and providing workable design options on integrating the water supply and wastewater treatment systems.

190. The wastewater systems in HA. Ihavandhoo and GDh. Gadhdhoo are not yet initiated, and it is not clear exactly when they will be; it appears to be unlikely before the end of the Maldives IWRM project. Originally planned for approximately $78,000, in the most recent project budget revisions this output is planned for $94,100, and no substantive work on this output has been done as yet. It is unclear to what extent work can be carried out if the planned wastewater treatments systems do not begin before the end of the project.

B. Component 2: Increase participation in the development, allocation and monitoring of freshwater use in a changing climate

191. The expected outcome for component 2 is 'strengthened local awareness and ownership of integrated, climate resilient freshwater management'. This budget for this component is planned as $110,000, or 1.3% of the project budget.

Indicator	Target	Status
Number of integrated water management systems which are based on participatory planning between water users and water providers and can be sustained in line with actual willingness to pay	Integrated water management systems on all target islands are designed and installed based on community participation, and their operation and maintenance is based on actual willingness to pay	Achievement: Uncertain. Water supply services are provided on other islands in the country, though generally in the more populated islands such as Male', Hulhumale' Villingilli, Maafushi. The question is to what extent populations on more remote lower population islands are willing to pay for water. Results from the willingness to pay study indicate that communities are willing to pay for water at rates similar to in Malé; however, per person demand for water is much lower in the less populated islands, so higher tariff rates are required to generate the necessary revenue to maintain and operate the system. The tariff rates for the system implemented

for operation and maintenance		by the project is not yet determined, and it remains to be seen how community members will react to the proposed tariff system, which is likely to be higher than the rates in Malé.
Communal willingness to pay for continued operations and maintenance of freshwater supply on each target island	Integrated water resources management systems on each target island are designed and installed on the basis of community input, and their continued operation is aligned with actual willingness to pay for the operation and maintenance of the installed infrastructure	Achievement: Uncertain, see above. There is awareness and acceptance within the communities that to operate the system, a user pay mechanism is required. This model has already been implemented for electricity, so communities have understood and accepted how a system operates.
Number of Maldivians which are aware about their rights, roles and responsibilities in the management of freshwater resources in a changing climate	At least 1 IWRM training campaign is conducted in each administrative region (7 total) to strengthen dialogue between water users and providers and increase sensitization about the economic, social and environmental role of water in a changing climate	Achievement: Moderately unlikely. Awareness of the value of water as economic and social good is not limited as perceived from consultations held with communities. What may be limited, although there is some understanding, is of the climate related shocks and stresses in relation to water. So far, not IWRM campaign has been conducted. It is unlikely that seven regions can be covered in the remaining year of the project.

192. In general, the education, awareness, and information sharing aspects of the project are one of the weakest parts so far, with little activity, and no substantive results so far. Much more work will need to be done in this realm in the second half of the project for the project to produce any notable results in this regard. While the budget for this part of the project is small compared to the overall project budget, it is still adequate to produce some valuable results on this innovative and important aspect of the project.

193. 2.1. Community consultations on each target island ensure participative design, sustainability and continued maintenance of integrated water resource management schemes:

194. Activities planned for this output include:

- Facilitation of inclusive, participatory consultations between MHE, island councils, community representatives, civil society organizations, utility companies and project staff to present the project, verify assumptions and solicit additional feedback on technical design issues
- Conduct a “willingness to pay”- survey on each island to guide the design of a water supply service and maintenance scheme
- Devise a scheme to finance the continued operation and maintenance of integrated water resource management systems on each target island after the project has ended
- Integrate community representatives in project-related works, including construction, operation, maintenance and water quality testing

- Conduct regular feedback sessions between MHE, island councils, community representatives, civil society organizations, utility companies and project staff to enable analysis of project experiences and lessons learned

195. Of these, only the Willingness-to-Pay survey has been completed, in May 2013. The survey is generally well-structured, and provides sufficient data and insight on revenue related aspects of the water supply system, from the community point of view. The survey was conducted directly with community members. The actual sample size was 219 for HA. Ihavandhoo, 184 for ADh. Mahibadhoo, and 261 for GDh. Gadhdhoo. The minimum sample size required for each island to achieve a 5% margin of error and 95% confidence level was calculated based on the population size of each island. The actual sample size exceeded the minimum sample size required to meet these parameters.

196. The Willingness-to-Pay survey identified water tariff rate scales for each of the three islands, with the proposed rate scales for HA. Ihavandhoo and GDh. Gadhdhoo being the same, as indicated in the example Table 14 below.

Table 14 Proposed Water Payment Rate Table

Proposed Tariff Table				
Customer Class	**Band**	**Liters per day / HH**	**CBM per month**	**MVR per CBM**
Domestic	A	0-100	3.00	22.00
	B	101-500	3.01 – 15.00	70.00
	C	>500	>15.01	95.00
Institutional	D	Flat rate		75.95
Commercial	E	Flat rate		101.26

197. Under this proposed table, a household would pay 22 Maldivian Rufiyaa ($1.43) per cubic meter of water for the first three cubic meters of water in the month, when using at a rate of less than 100 liters per day. Community members interviewed during the mid-term evaluation found this rate to be acceptable.

198. The Willingness-to-Pay survey indicated that based on the expected required revenue and operations costs of the water supply systems, such a tariff schedule would allow the system to operate in the black, and thus, to be financially sustainable. The trouble is that this finding is based on two important assumptions, one of which is the amount of rainwater to be harvested, and the second of which is the demand for water from the system. According to interviewees for the mid-term evaluation, the actual tariff system applied is likely to be based the most conservative estimate for maintenance and operations costs (rather than the expected ideal), and this implies a significantly higher tariff structure. For further discussion on sustainability, see Section VIII below.

199. 2.2. Targeted training events conducted in each region to strengthen water user participation and skills in adaptive, integrated water resource management: Activities planned for this output include a variety of national level outreach, education, and awareness activities about IWRM in general, and in particular about the adaptation benefits of this project. This

included a "country-wide communication and awareness campaign about principles of Integrated Water Resource Management", consultations at the site level includes island councils and key project partners, public debates and focus group sessions on the rights and responsibilities of different water users, school presentations relating to water efficiency and water resource protection, study visits for atoll political authorities to the pilot islands to demonstrate the system implemented by the project, media and online awareness activities, and development of training materials.

200. Thus far, only result of under this output is the production of the Social Marketing Strategy Communication Plan and Creative Briefs, completed in May 2013. This is a report produced by a consulting firm contracted by the project. The report may be adequate when considered in the context of a potential national education and awareness campaign, but on the whole includes generic approaches to outreach campaign plans (e.g. the first 30 pages of the 85-page report include only four references to the Maldives. More specific references can be found in the detailed plan that begins on p. 33 of the document). The Communication Plan promotes the use of basic generic messages such as "I am water," "We are water," and "Love water".

201. No progress has been made implementing the awareness strategy, although the project progress report for Q2 2013 indicated that procurement to contract external parties to implement the strategy would begin in July 2013.

202. This evaluation recommends strengthening the communication and information sharing aspects of the project immediately, particularly on issues such as potential tariff schedules and work schedules on the pilot islands. More details are discussed in the recommendations section of this report.

C. Component 3: Replication and upscaling of climate-resilient freshwater management

203. The outcome for component 3 is described in the project results framework as "Improved institutional capacity to promote and enforce climate-resilient freshwater management on all inhabited islands." This component was budgeted at $80,000, or approximately 1% of the total project budget. Disbursement under this component as of the end of 2013 was only $7,284 USD, indicating that no substantive activities have been yet carried out under this component.

Indicator	Target	Status
Number of fully financed follow-up projects which adopt the climate resilient, integrated water resources management approach demonstrated by the project	Project approach is replicated on at least 4 islands	Achievement: Likely, though difficult to assess to what extent replications resulted from or were influenced by this project, particularly for those started and completed before the water system for this project is even operational. UNOPS has a potential project planned with $3.4 million USD in USAID funding that will replicate the project on Hinnavaru Island. MWSC has completed a similar project on Dhuvafaru Island; the design of which may have been influenced by this project.

		There are water and sanitation projects at design phase for three islands; the details are not know at this point.
Number of staff from water and sewage utility companies trained in the technical principles and skills required to design, implement and maintain climate-resilient and integrated water management systems	At least 5 staff from each water and sewage utility company currently active in Maldives are trained in the technical principles of integrated water resource management and recognize basic design principles which make water supply and sewage systems adaptive to a changing climate	Achievement: Possible, though no activities have yet taken place related to this.
Number of new water and sewage management projects which are reviewed and improved on the basis of lessons learned from the project	Each new water and wastewater management project that is approved by the Government of Maldives is subject to technical reviews on the basis of IWRM and climate resilience principles	Achievement: Moderately unlikely, though possible. No activities have been carried out under Component 3 as yet, and it is unclear if or when they will be.
Financing allocated to new water management projects which integrate climate resilient and integrated design and are approved by the government for implementation	The government approves at least 4 new, fully financed freshwater and/or wastewater management projects on the basis of lessons learned and design principles replicated from the proposed project	See comments under the first indicator for this component.

204. The three outputs planned under this component are:

- Output 3.1: Training of technicians in the design, operation and management of integrated water resource management systems
- Output 3.2: Institutional mechanisms created to integrate adaptive management of freshwater resources into the design and rollout of new water management projects and schemes
- Output 3.3: Action plan developed and financing mobilized to replicate integrated, climate-resilient freshwater management on at least 4 additional islands

205. The catalytic influence of this project is critical, in order for the project to have any greater strategic value beyond just the water systems on three of the Maldives's hundreds of inhabited islands. However, it is the view of this evaluation that considering that the key national government stakeholders in the water and climate change sectors are directly involved in this project, replication will naturally occur if this project is successful, with additional specific effort to make it happen. As such, this evaluation recommends that the project redirect any available resources from this component into ensuring that the water systems handover, initiation of operations, and sustainability are as robust as possible. The planned Output 3.1 does appear likely to contribute in this way, but the currently planned Outputs 3.2 and 3.3 may not be critically necessary.

D. Impacts and Project Contribution to Adaptation Fund Indicators and Targets

206. The project is expected to contribute to the Adaptation Fund strategic indicators and targets as indicated in Annex 8 at the end of this report.

E. Replication and Up-scaling

207. This aspect of the project is specifically targeted under Component 3, and has been previously discussed in full under Section VII.C above, as well as in Section VI. on efficiency.

VIII. Sustainability

208. While a sustainability rating is provided here as required, sustainability is a temporal and dynamic state that is influenced by a broad range of constantly shifting factors. In the context of AF-funded projects there is no clearly defined timeframe for which results should be sustained, although it is implied that they should be sustained indefinitely.[28] When evaluating sustainability, the greater the time horizon, the lower the degree of certainty possible. In addition, by definition, mid-term evaluations are not well-positioned to provide ratings on sustainability considering that many more activities will be undertaken before project end that may positively or negatively affect the likelihood of sustainability.

209. The project faces three major sustainability risks. The first is that financial sustainability depends on the communities' use of their systems to be at a level high enough to generate the revenue necessary for maintenance and operations costs. At present this does not appear likely, as FENAKA has indicated that, depending on the tariff levels, the demand required to sustain the system would be from 15-30 l/p/d, whereas experience with similar systems on other islands has indicated that demand is likely to be in the range of 6-8 l/p/d. With this low level of water demand there would not be enough revenue to sustain the system on its own, and government subsidies would be required. Ironically, resolving water security issues on these small and remote islands with limited water resources requires the communities to *USE MORE WATER*, to generate sufficient revenue to sustain the water supply system.

210. The second major sustainability risk is a technical risk, which is that maintenance of the RO plants requires operation of the plants every approximately four to seven days, to maintain the delicate osmosis membranes. It is not apparent that during the wet season the communities will require enough water from the system to generate the revenue sufficient to maintain and operate the RO plants during the wet season.

211. The third major sustainability risk is also technical, related to the availability and retention of skilled labor to operate and maintain the entire water supply system on each of the three pilot islands. The project is investing in training and human resources, but frequently in countries such as the Maldives, individuals with technical skills are incentivized to leave the public sector for other opportunities.

[28] The water supply system implemented in the three pilot islands for this project is designed to meet minimum water supply requirements for the population of the islands until 2030. Any benefits beyond this time horizon would be considered "extra"; however, the operation of the system should account for depreciation with the goal of re-investing for future water security as well. The goal of the project is not just to provide water security for the next 15 years, but to address the long-term issue of water security for these islands indefinitely.

212. The various risks to sustainability are discussed in further detail in each of the sections below. Based on UNDP evaluation policies and procedures, the overall rating for sustainability cannot be higher than the lowest rating for any of the individual components. Therefore the overall **sustainability** rating for the Maldives IWRM project for this mid-term evaluation is ***moderately unlikely*****.** Insight on the likely sustainability of the system should be more apparent by the end of the first year of operations, in time for the terminal evaluation of the project.

A. Financial Risks

213. There is one overall main critical equation that determines the financial sustainability of the system implemented under this project, and that is whether the revenue generated from the communities who begin paying for their water will be sufficient to cover the operations and maintenance costs of the system consistently on an annual basis. There are multiple factors that determine the outcome of this equation, including the number of households connected to the system, the tariff structure, the amount of rainwater feeding into the system (which influences RO plant operations costs), and most significantly - the average daily water usage per person of those paying for water.

214. The actual outcome of this financial equation will not be known until the system is up and running, and even then the financial situation may change from year to year. According to MWSC sources, they plan for a water system to operate in the red for three to four years, during which time operations and maintenance costs are subsidized by revenue from power generation. This is only possible when a single entity is operating multiple utility services.

215. For a single-island water system to be financially sustainable an island has to have a certain population to generate sufficient demand to provide adequate revenue for the system. The three pilot islands may be at the lower margins of this equation. According to MWSC, the system instituted in Dhuvaafaru (4,000 people) is only expected to be profitable with the additional water demand from an ice-making plant and other commercial activities in the area.

216. FENAKA will be taking over operations of the water systems in at least two of the islands, and is responsible for determining the tariff system. Communities are willing to pay, as the Willingness-to-Pay survey indicates, as well as consultations held with community members during the mid-term evaluation. However communities expect to pay rates similar to water rates in Malé. This is not feasible as the total water demand in Malé is much higher (average of 90 l/p/d), and thus the rate structures can begin with lower priced initial tiers.

217. Based on the estimated information from other similar projects and the guidance provided by FENAKA, it appears moderately unlikely that the revenue generated by the system will not be adequate for the maintenance and operations of the system, particularly during the wet season, unless the tariff structure is sufficiently high – rates which are not likely to be accepted by the community. Only actual operation of the system, and long-term experience, will allow further insight on this issue. However, one of the key recommendations from this evaluation is that FENAKA and the government agree on a proposed tariff structure as soon as possible, so this tariff structure can be introduced to the communities sufficiently in advance of actual operation of the system.

B. Socio-political Risks

218. The country has been going through rapid changes in the government. In the past five years, three governments have come in with subsequent changes to institutions that are relevant to the project. The relevant government agency MHE, responsible for the project implementation, as identified during the inception of the project is now changed to MEE. Then, there were seven utilities companies with mandate for provision and management of water and sanitation in the island for seven provinces, thus the three pilot islands in this project fell under three different utilities companies. Now the mandate is centralized in one company, FENAKA, which has branches in GDh. Gadhdhoo and HA. Ihavandhoo. However, there is reason to expect that the changes such as the above are not going to be repeated in the next five years.

219. In some islands, the issue was raised of FENAKA being a government company, and if FENAKA is given operational responsibility, would islands not acting in favor of the government be at risk of water stoppage? Fortunately, this seems most unlikely, primarily because populations in each island are diverse in whom they support – the incumbent government or the apposition.

220. The government as local councils are supportive of the project, and the community has high expectations of the benefits; as such, sustainability of the project in relation to this component is likely.

C. Institutional and Governance Risks

221. In GDh. Gadhdhoo and HA. Ihavandhoo, FENAKA already has a presence and the islands' communities appear to accept them as the natural operator of the water system. FENAKA voiced their need of more personnel, both administrative and technical when they start operations of the RO plants. The understanding at the moment is that the local staff working as project personnel will also be hired by FENAKA. The assumption is that the staff will be willing to work at FENAKA for lower pay. Often, the more experienced and skilled people become the more likely they are to go elsewhere.

222. In ADh. Mahibadhoo, the local council is managing the power plant and services. Thus, they have experience of managing a utilities service delivery. Council members met for the MTE, indicated that they would like STELCO to take over the power operations but since STELCO has refused to compensate for the capital investment, they have not reached an agreement. They are willing to have FENAKA manage the RO plant. FENAKA is currently managing the sewage treatment plant, although there have been a number of operational breakdowns in this system.

223. Even though, there is no resistance from the islands for FENAKA to operate the RO plants, the government needs to be able to address any eventuality of FENAKA not being able to manage/ or refusing to manage the RO plants. In relation to this aspect, sustainability is considered moderately likely.

D. Technical Risks

224. Implementing a system such as the one planned for the Maldives IWRM project inherently involves some technical risks, and particularly so when such integrated, centralized water management systems have not been widely used. Beyond the technical aspects related to institutional capacity noted in the section above, there are a few particular technical risks worth

noting. The sensitive reverse osmosis water filtration membranes of the RO plants must be kept fresh through use of the plant at least approximately once per week, or even every three to four days. Thus the timing of the demand for water throughout the year is an issue. There is a risk that during the wet season there will be insufficient demand for RO-produced water, there will not be enough revenue to regularly operate the RO plants, and then the membranes (and any other sensitive parts) will become unusable due to disuse.

225. Another issue is that in the event (which is unlikely except in the very long run) that groundwater becomes rehabilitated so much that it can be used as a substitute for RO water (water supplied by the system), the RO water will not be used.

226. In Male', despite every household having water connections from the MWSC, almost no one drinks tap water – but bottled water is bought, due to the mistrust placed on the quality of water from MWSC. If a similar perception also develops in the islands, then again RO water may not be used for drinking.

227. Coupled with number 1, both will lead to a complete stop in the use of RO water, leading to problems with generating revenue for the operation of the RO plant.

228. Another significant technical risk is the project's use of household roofs for rainwater collection. This is a relatively untested approach, and according to the water utilities, has been avoided by other projects due to potential pitfalls. The water collection system does not require extensive maintenance, but some regular maintenance and cleaning of the rainwater collection infrastructure is expected. How this will be carried out in cooperation with the many households whose rooftops are being borrowed remains to be seen.

229. Based on the variety and nature of technical risks, sustainability in this regard is considered moderately unlikely.

E. Environmental Risks

230. Multiple stakeholders noted that if the construction is not completed before the wet season rains come in July or August then there could be further delays in the construction. Shifting long-term weather patterns could also affect the operations of the system, which aims to utilize rainwater. Changes in the quality of the groundwater lens on each island could also affect RO plants' operations, which draw water from boreholes. It is not known exactly how different aspects of the system could be affected by environmental factors, but overall environmental risks are not considered significant. This aspect of sustainability is considered likely.

IX. Mainstreaming of UNDP Program Principles

231. The evaluation report is required to address the mainstreaming of UNDP program principles in relation to the project. The principle of UNDAF/CPD/CPAP linkages has been addressed under relevance, under Section IV.A.ii. The principle of disaster risk reduction and climate change mitigation/adaptation is covered throughout this report, as it is the primary focus of the project. The remaining principles are addressed below.

232. *Poverty-Environment Nexus / Sustainable Livelihoods:* The project does not have a strong linkage to the poverty environment nexus, except that the basic premise of the project is that

strengthening climate resilience by providing water security contributes to a decrease in poverty. The Willingness to Pay study found that between average expenditure on water was 2% of total household expenditure on ADh. Mahibadhoo, 3% on GDh. Gadhdhoo, and 5% on HA. Ihavandhoo. However, under the project water system scheme households would still have to pay for water, but the quality and reliability of drinking water would be increased, which would likely lead to improvements of health related aspects of the communities.

233. *Crisis Prevention and Recovery:* The project's main objective is to provide water to the project islands in a sustainable manner. Freshwater scarcity became an issue after the tsunami of 2004 and since then, every year, around 1/3 of the inhabited islands have been supplied with water. The project will enable communities a consistent supply of RO water to their households. Since the capacity of the RO plants are more than the water needs of the community, it is anticipated that these RO plants may also be able to cater, to an extent, to the water needs of nearby islands as well.

234. Given that the infrastructure of RO plants in GDh. Gadhdhoo and ADh. Mahibadhoo are situated on the periphery of the islands, areas most prone to impacts from tidal waves and tsunami, in the event of such, there might be damages to the infrastructure resulting in similar problems as before. In addition, because the water lens recharge component of the project is not implemented fully (or at all), ground water will not be replenished. Added to this is the fact that ground water will not be replenished naturally in these islands as much as now, since all rainwater is to be directed to some form of storage.

235. So, in terms of contributing to crisis prevention and recovery from similar incidents as in the past, the project may not be as effective initially envisaged.

236. *Gender Equality / Mainstreaming:* In Maldives, as elsewhere, because women do all the housework, including washing and cleaning, they are the primary collectors and users of water in a household and the community. Therefore Women hold important information about the requirement of water and the implications of water scarcity, in terms of health and living standards. Participation of and consultation with women from the early stages of the project may likely be key to success and sustainability of the project. However, very few women attended meetings in the islands during the field visits and consultations by the project team. On the other hand, there is evidence of more participation by women in the 'willingness to pay' survey conducted by the PMU in the islands.

237. In the field visits and consultations conducted in the islands for the MTE also, few women participated. Those who did voiced their expectations of the project in terms of improvement the project will bring to their lives. For instance, spending time to collect water will be decreased and it will be cheaper to pay for water from the RO than buying bottled water. The latter is also welcomed because women manage the expenses of the household too and therefore, burden of managing households within the income also falls on them.

238. Overall, the project did not try to garner participation from women. There was no effort made to hold discussions with women groups. While there are Island Women's Development Committees in each island these committees were not consulted although individual members of the IWDC may have attended some meetings.

239. *Capacity Development:* The project is making a small contribution to capacity development as the individual and institutional levels. The project will result in a strengthening of FENAKA's capacity to develop and operate water systems. The project has also engaged two individuals on each of the islands as construction supervisors, and it is anticipated that these individuals will be employed by FENAKA in the water system operations at the handover period. However, it appears that more structured training of the individuals on project specific aspects would be useful.

240. *Rights-based Approach:* The right to safe water is stated in the Constitution as well as, is inherent in many human rights conventions and agreements that the Maldives is party to. There are two stakeholder groups in rights-based approach—the rights holders, in this case the population of the Maldives who suffer the consequence of freshwater scarcity and climate change and the duty bearers, the government of Maldives and development partners, who should fulfill the right. Rights based approach aim at strengthening the capacity of duty bearers and empowering the rights holders.

241. In this project, Rights-based approaches aim at strengthening the capacity of duty bearers and empower the rights holders. In terms of strengthening capacity of the duty bearers, this project aims to replicate lessons learnt, train locals in the operations of the RO plants and create a platform for pursuing Integrated Water Resource Management. In terms of fulfilling the rights of the rights holder, the project aims to improve access and availability of freshwater to the target population in an equitable manner, through household taps and engagement of community in the operations, which are close to the people.

242. Nevertheless, limited information dissemination to stakeholder communities may create challenges when the operations of the RO plants start, specifically in relation to the use of household roofs and the requirement to pay for water.

X. Lessons and Recommendations

A. Lessons from the Experience of the Maldives IWRM Project

243. ***Lesson:*** Future projects relating to water security and climate change adaptation must be more strategically linked to and supportive of a national water security strategy and policy. The current IWRM project represents a one-off, ad-hoc effort to improve water security in three of 300+ inhabited islands in the Maldives, and it does little to assist the country in addressing the problem in a catalytic and strategic manner at the national level. The IWRM approach may have been innovative at the time the project was developed, but by the mid-point of the project this technical approach has already been applied by other stakeholders, and there remains no cohesive national strategy to address the issue at the policy level.

244. ***Lesson:*** Climate change adaptation projects that include activities to benefit community level stakeholders should consider having representatives from the community level as members of the Project Board. This can help increase information flow in both directions between the community and central levels, and strengthen stakeholder engagement, which is a hallmark of successful development projects, including climate change adaptation interventions.

245. ***Lesson:*** Information sharing and community engagement are critical throughout the implementation of climate change adaptation projects, including in the early phases of the project. Ensuring adequate information sharing and community engagement in the early part of

a project can also help ensure efficient and effective results throughout the project. In the Maldives IWRM project there has not yet been sufficient information dissemination at the community level, even though the project has made some preliminary efforts in this direction. The project includes an education and awareness component, but this is only going to be implemented in the second half of the project.

246. ***Lesson:*** Procurement-heavy projects in many developing countries, and in LDCs and SIDS in particular, can be expected to face long and difficult procurement processes, due to a variety of factors. Long procurement timeframes, higher than average procurement costs, and challenges in finding contractors to meet technical requirements should not be a surprise, and must be accounted for in project work planning and budgeting from the very beginning.

247. ***Lesson:*** Similarly, projects are also likely to face challenges in finding and attracting fully qualified personnel. A pool of qualified candidates for positions such as project managers and senior technical experts should be identified in the project development stage, and project implementation arrangements must be planned to conform to this reality. This likely means financial planning for salaries for key positions that are competitive with the private sector in national income standards.

248. ***Lessons:*** For adaptation projects that aim to resolve water problems, a detailed understanding of local hydrology and local regulatory requirements are essential for success. Usually familiarization and feasibility assessments require sufficient time allocation. This was not the case in this project; as a result, the project encountered considerable delays (from PPR).

249. ***Lesson:*** Risk assessment during the project design phase needs to be strengthened. The risk assessment analysis in the Maldives IWRM project was inadequate, and did not include a number of risks that could have been foreseen. As a result, project budgeting and workplanning had to be significantly revised after project initiation.

250. ***Lesson:*** Delays and difficulties in project implementation can result from inadequate project planning in the development and design phase; conversely adequate time spent in the project development phase can contribute to smooth implementation and minimization of delays due to unforeseen circumstances. In the case of the Maldives IWRM project, stakeholders felt that the project design phase was rushed with inadequate time spent on technical designs, and then once project implementation started there was a need to significantly re-do technical design aspects, which led to significant delays.

251. ***Lesson:*** Project implementation arrangements and workplanning should take into account the expectation that there will be government turnover during the life of the project, which is likely to affect the project implementation in multiple ways. There was turnover among government staff involved with the Maldives IWRM project during the project development and implementation phases, which has slowed implementation.

252. ***Lesson:*** Good project planning can also reduce delays by leading to appropriate sequencing of key technical steps, such as completion of technical designs and the EIA process. In the case of the Maldives IWRM project some EIA steps had to be repeated, leading to delays, because the technical design was revised multiple times.

253. ***Lesson:*** “Community consultation” meetings may look good on paper, but in reality they have limited practical value for disseminating information to communities, as they are often

attended by only a small fraction of community members (as was the case for this project). For a project such as the Maldives IWRM project this is not sufficient, as the water systems to be installed on the three pilot islands will affect all households. As such, projects need to find creative and alternative means to disseminate information to the entire community. Consultation meetings can be useful when collecting input from the community level, as a smaller number of community representatives may be able to sufficiently articulate community needs, priorities, concerns, and desires.

254. ***Lesson:*** The Maldives IWRM project has addressed challenges in fining qualified personnel by investing in young, eager, recently educated individuals. The "island engineers" contracted by UNOPS and tasked with monitoring infrastructure construction are mostly young recent university graduates. This can also be a cost-effective approach. However, even if these promising young individuals have some relevant education, there is still a need for significant on-the-job training, and direct guidance by experienced and well-qualified senior staff. While the efforts of UNOPS' "island engineers" are laudable, there is significant concern that they have not been given the necessary training to fully and appropriately monitor all of the detailed construction processes underway in constructing the project infrastructure.

B. Recommendations

255. ***Key Recommendation 1:*** Establish a detailed written handover agreement. After an initial extended planning period, construction has started on all three islands on the respective water management infrastructure under Outcome 1, with completion exepcted in the July-August 2014. At this time, UNOPS' primary role will be winding down, and it is foreseen that in all three islands FENAKA will be assuming responsibility for operations and maintenance of all aspects of the system. To ensure that this handover process is as seamless as possible at this critical juncture for the sustainability of the system, the key stakeholders (UNOPS, UNDP, MEE and FENAKA) must by May 31, 2014 establish a detailed written agreement about handover processes and procedures, to ensure there is no miscommunication or misunderstanding, and ensure all relevant aspects of the handover process are considered and adequately covered. This would include clear and specific detailed roles and responsibilities and timing, including aspects such as transfer of staff, transfer of capital assets, maintenance and operations support agreements, etc. [UNOPS project team, UNDP Maldives Country Office, MEE, and FENAKA].

256. ***Key Recommendation 2:*** The MTE recommends that the Project Board (with planning support from the PMU and UNDP) re-allocate resources from components 1.4 and 3, and re-direct any cost-savings from components 1.1-1.3, to ensure that the handover and initial year of system operation is supported to whatever extent necessary. The system handover and start-up phase is the most critical part of the project, as it is at this key juncture that any disruptions could have significant negative repercussions for project results and sustainability. Under the original project timeframe it was foreseen there would be an approximately two-year timeframe where the system would be operating prior to project completion. Due to the delays in the design phase of the project, there will now be only one year of trial operation (considered the minimum required period) prior to project completion, and the originally foreseen UNOPS support may not be available. [Project Board, PMU, UNDP]

257. ***Key Recommendation 3:*** MEE and FENAKA to finalize agreed tariff structure immediately. A tariff structure proposal was developed through the Willingness-to-Pay survey, but according

to FENAKA the tariff structure proposed in this document is not feasible to ensure the sustainable operation of the system, when making the most conservative assumptions about the parameters involved. FENAKA and MEE need to immediately discuss and finalize a proposed tariff structure that can be communicated to the island communities at least a few months in advance of start-up of the system. This means that the tariff structure should be finalized by the end of April at the absolute latest. The PMU is expected to facilitate this discussion, with UNDP's support as necessary. [PMU, UNDP, FENAKA, MEE]

258. ***Key Recommendation 4:*** Conduct team-based risk assessment for remaining project period. Due to the significant delays in the design phase, there is no time or resources available to buffer further slippage in the start-up and trial phase for operation of the water systems in the three pilot islands. Thus, before planned closure of the project in October 2015 it is absolutely critical for the project to demonstrate that the planned results have been achieved and sustainability is likely. To ensure that no significant setbacks or delays are further encountered, the project coordination committee should sit-together to conduct a specific risk assessment to identify any potential issues that could arise, and identify back-up plans and alternative approaches as mitigation measures be rapidly implemented in case any problems occur. This should be a team exercise to ensure that the project is successful by completion; the PCC may consider asking FENAKA to participate in this exercise. [PCC: UNOPS project team, PMU, UNDP Maldives Country Office]

259. ***Key Recommendation 5:*** Immediate initiation of community information and awareness raising activities. Successful start-up and sustainable operation of the water management system in each of the three islands critically requires the beneficiary/client communities to be better informed - and informed in advance - about the planned operations and tariff system. In addition, to reduce risks during the construction phase, the communities should be informed and consulted about issues such as pipe laying plans and schedules, through mechanisms such as publicly posting the construction schedule on the island council and FENAKA billboards. Furthermore, to meet the education and awareness objectives of the project, the planned community communication campaign must be implemented. Given that UNOPS is not well-positioned to undertake these activities, and the PMU's limited resources are likely to be focused on continuing coordination with UNOPS for the completion of construction and start-up of the water system, the MTE recommends that responsibility for these project activities be devolved to UNDP. Further, to rapidly carry out these activities, the MTE recommends that UNDP collaborate with the community-based CSOs in the three islands (such as local NGOs and the women's development councils) to disseminate information in the communities. UNDP should consider forming community water working groups in each of the three islands, with 4-6 member representatives from community groups and islands council, to serve as the main point of information sharing to the broader community. Other means of disseminating information would be through public information boards at the FENAKA and Islands Council offices, outside schools at the time parents pick up their children, through flyers distributed door to door, or possibly at other community events such as dances, or meetings providing food and music. [UNDP, Project Board]

260. ***Key Recommendation 6:*** Strengthen results-based monitoring in the 2nd half of the project. The project applies multiple monitoring tools, such as the PPR, and quarterly progress

reports and FACE forms. However there are not adequate linkages between the reporting on project activities, project expenditures, and achievement of project indicator targets. This may not have been a priority during the project design phase, but results-based monitoring will be critical as the project moves into start-up and operation of the water system, and works to achieve all planned results before project completion. The PMU, UNDP, and UNOPS should work together to identify adjustments as necessary to strengthen the results-oriented view of reporting on project activities and expenditures. This is likely to include at least two elements: i.) Specific ex-post explanation for project expenditures when there are deviations from the proposed workplan that was approved when funds were advanced; ii.) Stronger linkage between reporting on project activities in quarterly reports and the project results framework indicators and targets. Either or both of these elements may necessitate a reporting amendment to the standard quarterly progress report form. [PMU, UNDP, UNOPS]

261. ***Recommendation 7:*** Strengthen implementation structure for future adaptation projects. At this stage of the Maldives IWRM project there would not be significant additional benefit for adding further implementation capacity, for example, through increasing staff for the PMU. However, the MEE must plan to strengthen implementation capacity for future donor-funded climate change adaptation projects with budgets of greater than $1 million USD and timeframes of three years or longer. It is common international practice to have a dedicated PMU for such projects to ensure efficient and timely execution (and a dedicated PMU was foreseen for the IWRM project). There are, however, other models that could be followed, such as a cluster implementation unit, with multiple project managers, but shared support staff and infrastructure, such as in Armenia. Another approach employed by some projects is to secure external support, such as an international technical advisor on a part-time basis, to support key aspects of the project. Considering that international finance for climate change adaptation is expected to increase significantly in coming years, the Government of Maldives must demonstrate that the country is capable of absorbing the funds it urgently requires to adapt to climate change impacts. Further, it must ensure that the national implementation capacity is in place to support successful and timely implementation of such projects. [MEE]

262. ***Recommendation 8:*** The project should consider training of trainers within FENAKA as part of the handover process to support long-term technical sustainability for the project. Turnover of well-qualified personnel is a significant issue in the Maldives, particularly in the public water sector, when there are many private sector tourism employers seeking qualified individuals. Since individuals trained in water system management may not have a long tenure, FENAKA should be capacitated to train new staff as necessary. This could also include development of a well-structured training module, with necessary manuals, etc. [UNDP, UNOPS, PMU]

263. ***Recommendation 9:*** When the tariff structure is finalized, FENAKA, UNDP and the MEE should clearly explain to community stakeholders the basis for the tariff structure, the assumptions on which is it built, and any measures community stakeholders can take to support potentially reaching a lower tariff structure in the future. FENAKA understandably has a preference for a tariff structure based on conservative assumptions about the operation of the system, including the amount of rainwater collected for the system. At the same time, if the tariff system is significantly above the levels identified in the Willingness-to-Pay study, there is a risk

that community members will understandably conserve their "free" rainwater for their own use, and choose not to participate in the community rain water collection system – which will in fact bring to fruition FENAKA's conservative assumptions about rain water collection. [FENAKA, UNDP, MEE]

264. ***Recommendation 10:*** Institute financial incentives for community members to participate in the rainwater collection system. FENAKA should strongly consider instituting a rebate system in the tariff structure, whereby community members whose householders are contributing rainwater to the centralized collection system receive an annual rebate on their water bill. Such a system would strengthen the likelihood of the financial, technical, and socio-political sustainability of the project results, and reduce the likelihood that government subsidies would be required in the long-run to ensure the continued operation of the system in the three islands. [FENAKA, MEE]

265. ***Recommendation 11:*** To support the community education and awareness component of the project the PMU and UNDP should consider a "community liaison officer" model whereby one or two individuals are contracted on a part-time basis to serve as information dissemination channels, and organize community-related activities for education and awareness related to water security and climate change adaptation. Such a model can be seen in numerous other projects, and often engages individuals from local level community-based organizations. [UNDP, PMU]

266. ***Recommendation 12:*** Refocusing of work on groundwater management. Many stakeholders have emphasized the importance of the groundwater related aspects of the project. However, at this point in time, little has been taken forward on this issue, as the widespread groundwater recharge pits have not been incorporated in the technical design, for multiple reasons. While there may have once been potential for the project to contribute to the development of technical knowledge on this issue, at this stage in the project the focus should primarily be on ensuring that the RO plant and rainwater capture systems are completed, fully operational, and are demonstrating the likelihood for sustainability by the end of the project. The resources and time remaining to address groundwater management issues are minimal, and the project is not likely to make a substantive contribution on this issue at this stage. As such, the focus of the project with respect to groundwater should be on identifying partners and potential funding sources for further work on this issue following project completion, while ensuring that there are adequate financial resources to support the handover and initial operations of the RO plant and rainwater collection systems. [Project Board]

267. ***Recommendation 13:*** Community stakeholders should be consulted well in advance of construction activities that may affect community life, such as pipe-laying in community streets. UNOPS and the PMU should ensure that communities (e.g. island councils) are immediately notified and consulted on pipe-laying, which is anticipated to begin in April 2014. Communication should be ongoing throughout the construction process, for example, through public-posting and regular updating of the construction work schedule. [UNOPS, PMU]

268. ***Recommendation 14:*** UNOPS and FENAKA should ensure that all potential future revenue generating opportunities for the system are discussed (with the goal of increasing the likelihood of financial sustainability), and any necessary technical requirements should be incorporated in the construction and pipe laying for the water distribution system. For example, multiple

stakeholders highlighted the opportunity to bottle and sell water to nearby islands, to sell water at the harbor to fishermen, and also the possibility of future ice making (as has been incorporated in the MWSC project in Dhuvaafaru Island). [UNOPS, FENAKA]

269. ***Recommendation 15:*** According to the project document ATLAS budget and the UNOPS work package budget in the original PID, the UNOPS PMU has a budget of $21,000 in each of the last two years of the project (out of the total UNOPS PMU budget of $384,000). As of February 20, 2014, the UNOPS PMU budget spent was $252,532, leaving a balance of $131,468. From this balance it seems feasible for UNOPS to reserve the necessary funds to provide the required support during the operational phase of the project, from Q3 2014 to Q3 2015. This evaluation recommends that UNOPS ensure it has the financial resources available to provide any necessary support through the closure of the project, as planned in the project document. [UNOPS]

270. ***Recommendation 16:*** To increase cost-effectiveness for the construction of RO plant-rainwater harvesting systems on islands in the Maldives in the future, this evaluation recommends that future donors consider investment approaches using innovative financial mechanisms to establish public-private partnerships and provide the financial incentives necessary to make the required capital investment attractive for these utility companies. This could be in the form of interest rate subsidies, capital investment subsidies, or any other financial approach for catalyzing such public-private partnerships. [Future donors for water system projects in Maldives]

XI. Annexes

Annex 1: Terms of Reference

Annex 2: Mid-term Evaluation Matrix

Annex 3: Rating Scales

Annex 4: Evaluation Mission Itinerary

Annex 5: Persons Interviewed

Annex 6: Documents Reviewed

Annex 7: Maldives IWRM Results Framework and Progress Toward Indicator Targets

Annex 8: Maldives IWRM Project Expected Contribution to Adaptation Fund Results Framework

Annex 9: Process Flow for Personnel Recruitment and Procurement

Annex 10: Armenia Model for Execution of International Donor Climate Change Projects

Annex 11: Construction progress on three islands

A. Annex 1: Terms of Reference

TERMS OF REFERENCE FOR MIDTERM EVALUATION

Increasing climate resilience through an Integrated Water Resource Management Programme in HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo Island

1. INTRODUCTION

In accordance with the UNDP and AF M&E policies and procedures, a mid-term evaluation of the project Increasing climate resilience through an Integrated Water Resource Management Programme in HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo Island implemented through the Ministry Environment and Energy is to be undertaken in 2014. The project was signed on 15th December 2011 and is in its 3rd year of implementation. This Terms of Reference (TOR) sets out the expectations for this mid-term evaluation.

The essentials of the project to be evaluated are as follows:

Project Title:	**Increasing Climate Change Resilient of Maldives through the Adaptation in the Tourism Sector (TAP)**			
UNDP Project ID:	00078494	**Project financing**	*at endorsement (Million US$)*	*at MTE (Million US$)*
ATLAS Project ID:	00078494	GEF/AF financing:	8,285,000	
Country:	Maldives	IA/EA own:		
Region:	Asia Pacific	Government:	1,800,000 (in-kind)	
Focal Area:	Climate Change Adaptation	Other (UNDP):		
		Total co-financing:	1,800,000 (in-kind)	
Executing Agency:	Ministry of Environment and Energy	Total Project Cost **in cash**:	8,285,000	
Other Partners involved:		ProDoc Signature (date project began):		15th December 2011
			Planned closing date: October 2015	Revised closing date:

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2. PROJECT BACKGROUND INFORMATION AND OBJECTIVES

The primary problem addressed by this project is a significant, climate change-induced decline of freshwater security that is affecting vulnerable communities in Maldives. As surface freshwater is generally lacking throughout the country, the key problems pertaining to long-term freshwater security relate to the management of increasingly variable rainwater resources and increasingly saline and polluted groundwater. The proposed project will demonstrate climate-smart freshwater management in the Maldivian context and establish integrated and resilient water supply systems on the densely populated islands of HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo, with a view on country-wide replication and upscaling. The project will increase total freshwater storage capacity on all target islands to buffer the effects of less reliable rainfall and freshwater shortages during longer dry periods, and improve the quality of harvested rainwater through adjustments in rainwater collection, filtration and storage. The robustness and connectivity of communal rainwater storage schemes will be strengthened, and additional production capacity for desalinated freshwater will be installed to provide backup capacity in times of water stress. Artificial groundwater recharge will be enhanced to improve the quality and quantity of water stored in the natural aquifer, and contamination of household effluents will be reduced to prevent damages to the sensitive reef ecosystem. In their integration, these elements provide a compound solution to a number of critical climate and non-climate-related problems and a suitable model for replication on other islands with similar vulnerabilities. Experiences from this project will be used to inform capacity development of public and private sector stakeholders at national, provincial, atoll and island level.

Three **outcomes will contribute to this objective; the progress toward the objective and outcomes is measured through the following indicators:**

Objective / Outcomes	Indicators	Target by end of project, relative to the baseline of 2009 (unless specified otherwise)
Objective: To ensure reliable and safe freshwater supply for Maldivian communities in a changing climate	Number of Maldivians with safe and reliable freshwater supply in any extreme climatic condition	Integrated water resource management systems on Ihavandhoo, Mahibadhoo and Gadhdhoo provide 24% of all Maldivians who are vulnerable to water shortages and degrading water quality in a changing climate with a reliable supply of safe freshwater Replication of the project on 4 additional islands provides at least 50% of all Maldivians who are exposed to water shortages and degrading water quality in a changing climate with a reliable supply of safe freshwater

Outcome 1: Ground water aquifer protected and freshwater supply ensured in HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo to provide reliable, equitable and cost-effective access to safe freshwater in a changing climate	Number of people living on HA. Ihavandhoo, ADh. Mahibadhoo, and GDh. Gadhdhoo who have uninterrupted access to reliable and safe freshwater supply in extreme climatic conditions	100% of the population living on HA. Ihavandhoo, ADh. Mahibadhoo, and GDh. Gadhdhoo will have uninterrupted access to reliable and safe freshwater supply of at least 20 liters per person per day at all times, including during extreme climate events
Output 1.1: Artificial groundwater recharge systems established to protect groundwater resources from salinization and improve aquifer yields in dry seasons	Groundwater quality on each target island	By the end of the project, the quality of groundwater in each target island has improved to levels that are safe for hygiene and agricultural purposes *Ihavandhoo:* 700 groundwater recharge pits and 30 community recharge wells developed *Gadhdhoo:* 495 groundwater recharge pits and 30 community recharge wells developed; *Mahibadhoo:* 275 groundwater recharge pits and 30 community recharge wells developed
Output 1.2: Rainwater harvesting schemes redesigned, interconnected and structurally improved to buffer climatic extremes and ensure equal water supply for all households during dry periods	Volume of rainwater collected and stored to supply safe and clean freshwater during dry periods	Improved rainwater harvesting and storage capacity will be installed as follows: *Ihavandhoo:* 9,000 m^3 *Mahibadhoo:* 6,300 m^3. *Gadhdhoo:* 6,300 m^3 All new rainwater harvesting systems will be equipped with disinfection safeguards to ensure safety of water supply

Output 1.3 Production and distribution system for desalinated water supply established	Capacity of desalinated freshwater supply available during dry spells, drought and flooding	The following minimum amounts of desalination capacity will be installed on each target island: *Ihavandhoo:* 90 m^3 *Mahibadhoo:* 60 m^3. *Gadhdhoo:* 60 m^3 Potable water quality levels will be in conformity with WHO standard at all times
Output 1.4 Existing wastewater management systems redesigned and improved to ensure sufficient quantities of safe groundwater during dry periods	Number of planned wastewater management and sewage systems which integrate targeted measures to reduce groundwater pollution	All sewage and wastewater management systems which are planned and/or constructed on the 3 target islands integrate targeted measures to reduce groundwater pollution All septic tanks on each target island are cleaned at least twice per year to prevent groundwater pollution from flooding events
Outcome 2: Strengthened local awareness and ownership of integrated, climate-resilient freshwater management systems	Number of integrated water management systems which are based on participatory planning between water users and water providers and can be sustained in line with actual willingness to pay for operation and maintenance	Integrated water management systems on all target islands are designed and installed based on community participation, and their operation and maintenance is based on actual willingness to pay
Output 2.1: Community consultations on each target island ensure participative design, sustainability and continued maintenance of integrated water resource management schemes	Communal willingness to pay for continued operations and maintenance of freshwater supply on each target island	Integrated water resources management systems on each target island are designed and installed on the basis of community input, and their continued operation is aligned with actual willingness to pay for the operation and maintenance of the installed infrastructure

Output 2.2: Targeted training events conducted in each region to strengthen water user participation and skills in adaptive, integrated water resource management	Number of Maldivians which are aware about their rights, roles and responsibilities in the management of freshwater resources in a changing climate	At least 1 IWRM training campaign is conducted in each administrative region (7 total) to strengthen dialogue between water users and providers and increase sensitization about the economic, social and environmental role of water in a changing climate
Outcome 3: Improved institutional capacity to promote and enforce climate-resilient freshwater management on all inhabited islands	Number of fully financed follow-up projects which adopt the climate resilient, integrated water resources management approach demonstrated by the project	Project approach is replicated on at least 4 islands
Output 3.1: Training of technicians in the design, operation and management of Integrated Water Resource Management systems	Number of staff from water and sewage utility companies trained in the technical principles and skills required to design, implement and maintain climate-resilient and integrated water management systems	At least 5 staff from each water and sewage utility company currently active in Maldives are trained in the technical principles of integrated water resource management and recognize basic design principles which make water supply and sewage systems adaptive to a changing climate
Output 3.2: Institutional mechanisms created to integrate adaptive management of freshwater resources into the design and rollout of new water management projects and schemes	Number of new water and sewage management projects which are reviewed and improved on the basis of lessons learned from the project	Each new water and wastewater management project that is approved by the Government of Maldives is subject to technical reviews on the basis of IWRM and climate resilience principles

Output 3.3 Action plan developed and financing mobilized to replicate integrated, climate-resilient freshwater management on at least 4 additional islands	Financing allocated to new water management projects which integrate climate resilient and integrated design and are approved by the government for implementation	The government approves at least 4 new, fully financed freshwater and/or wastewater management projects on the basis of lessons learned and design principles replicated from the proposed project

3. OBJECTIVES OF THIS MID-TERM EVALUATION (MTE)

The objective of the MTE is to provide an independent analysis of the progress of the project so far. The MTE will identify potential project design problems, evaluate progress towards the achievement of the project objective, identify and document lessons learned (including lessons that might improve design and implementation of other UNDP-GEF supported AF projects), and make recommendations regarding specific actions that should be taken to improve the project. The MTE will evaluate early signs of project success or failure and identify the necessary changes to be made. The project performance will be measured based on the indicators of the project's logical framework (ee A nex 1).

The MTE must provide evidence based information that is credible, reliable and useful. The evaluation team is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, UNDP Country Office, project team, UNDP-GEF Technical Adviser based in the region and key stakeholders. The evaluation team is expected to conduct field missions to Maldives including the following project sites; HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo Islands. Interviews will be held with the following organizations and individuals at a minimum:

1. UNDP staff who have project responsibilities;
2. Executing agencies
3. The Chair of Project Board
4. The NPD and NPM
5. Project stakeholders, to be determined at the inception meeting; including academia, local government and CBOs

The team will evaluate all relevant sources of information, such as the project document, project reports – including Annual PPRs, AF Tracking Tools, project budget revisions, progress reports, project files, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based evaluation. A list of documents that the project team and UNDP Country Office will provide to the team for review is included in Annex 2 of this Terms of Reference.

4. SCOPE OF THE MTE

The evaluation team will evaluate the following three categories of project progress. For each category, the evaluation team is required to rate overall progress using a six-point rating scale outlined in Annex 3.

4. 1 Progress towards Results

Project design:

- Evaluate the problem addressed by the project and the underlying assumptions. Evaluate the effect of any incorrect assumptions made by the project. Identify new assumptions.
- Evaluate the relevance of the project strategy (and theory of change) and whether it provides the most effective route towards expected/intended results.
- Evaluate how the project addresses country priorities.
- Evaluate the baseline data included in the project results framework and suggest revisions as necessary.

Progress:

- Evaluate the outputs and progress toward outcomes achieved so far and the contribution to attaining the overall objective of the project.
- Examine if progress so far has led to, or could in the future catalyze, beneficial development effects (i.e. income generation, gender equality and women's empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis. Suggest measures to improve the project's development impact, including gender equality and women's empowerment.
- Examine whether progress so far has led to, or could in the future lead to, potentially adverse environmental and/or social impacts/risks that could threaten the sustainability of the project outcomes. Are these risks being managed, mitigated, minimized or offset? Suggest mitigation measures as needed.
- Evaluate the extent to which the implementation of the project has been inclusive of relevant stakeholders and to which it has been able to create collaboration between different partners, and how the different needs of male and female stakeholders has been considered. Identify opportunities for stronger substantive partnerships.

4. 2 Adaptive management

Work Planning

a) Are work planning processes result-based? If not, suggest ways to re-orientate work planning to focus on results.
b) Examine the use of the project document logical/results framework as a management tool and evaluate any changes made to it since project start. Ensure any revisions meet UNDP-GEF requirements and evaluate the impact of the revised approach on project management.

Finance and co-finance:

a) Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions.
b) Complete the co-financing monitoring table (see Annex 4).
c) Evaluate the changes to fund allocations as a result of budget revisions and the appropriateness and relevance of such revisions.

Monitoring Systems.

a) Evaluate the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required?
b) Ensure that the monitoring system, including performance indicators meet UNDP-GEF minimum requirements. Develop SMART indicators as necessary.
c) Ensure broader development and gender aspects of the project are being monitored effectively. Develop and recommend SMART indicators, including sex-disaggregated indicators as necessary.
d) Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to M&E? Are these resources being allocated effectively?

Risk Management

a) Validate whether the risks identified in the project document, PPRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why. Give particular attention to critical risks.
b) Describe any additional risks identified and suggest risk ratings and possible risk management strategies to be adopted.

Reporting

a) Evaluate how adaptive management changes have been reported by the project management, and shared with the Project Board.
b) Evaluate how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

4. 3 Management arrangements

a) Evaluate overall effectiveness of project management as outlined in the project document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement.
b) Evaluate the quality of execution of the project Implementing Partners and recommend areas for improvement.
c) Evaluate the quality of support provided by UNDP and recommend areas for improvement.

5. MID TERM EVALUATION DELIVERABLES

Deliverable	Content	Timing	Responsibilities
Inception Report	Evaluation team clarifies timing and method of evaluation	No later than 2 weeks before the evaluation mission	Evaluation team submits to UNDP Country Office
Presentation	Initial Findings	End of evaluation mission	To project management and UNDP Country Office

Draft Final Report	Full report (as template in annex 5) with annexes	Within 3 weeks of the evaluation mission	Sent to UNDP CO, reviewed by RTA, PCU, …
Final Report	Revised report with audit trail detailing how all received comment have (and have not) been addressed in the final evaluation report).	Within 1 week of receiving UNDP comments on draft	Sent to UNDP CO

6. IMPLEMENTATION ARRANGEMENTS

The principal responsibility for managing this evaluation resides with the UNDP Country Office (UNDP CO) in *Male' , Maldives*. The UNDP CO will contract the consultants and ensure the timely provision of per diems and travel arrangements within the country for the evaluation team. The project team will be responsible for liaising with the evaluation team to set up stakeholder interviews, arrange field visits with missions to HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo Islands.

7. TIMEFRAME

The total duration of the evaluation will be 4 weeks starting 9th February 2014 according to the following plan:

Activity	Timeframe
Preparation	4 days
Evaluation mission and debriefing	10 days
Draft evaluation report	6 days
Finalisation of final report	4 days

8. TEAM COMPOSITION

A team of two independent evaluators will conduct the evaluation - one international team leader and one national expert. The consultants will not have participated in the project preparation and/or implementation and should not have conflict of interest with project related activities. The team should have prior experience in reviewing or evaluating similar projects. Experience with AF financed projects is an advantage.

The selection of consultants will be aimed at maximizing the overall "team" qualities in the following areas:

- Recent experience with result-based management evaluation methodologies;
- Experience applying SMART indicators and reconstructing or validating baseline scenarios;

- Competence in Adaptive Management, as applied to conservation or natural resource management;
- Demonstrable analytical skills;
- Work experience in relevant technical areas for at least 10 years;
- Excellent English communication skills;
- Project evaluation/review experiences within United Nations system will be considered an asset;
- Experience working in *Asia Pacific* region.

9. PAYMENT MODALITIES AND SPECIFICATIONS

%	Milestone
50	Upon approval of 1st draft mid-term evaluation report
50	Upon approval of final mid-term evaluation report

10. APPLICATION PROCESS

All applications including P11 form, CV, and technical and financial proposals should be submitted to the UNDP Country Office in a sealed envelope indicating the following reference "International Consultant for Mid term Evaluation for Increasing climate resilience through an Integrated Water Resource Management Programme in HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo Island or by email at following address ONLY: *Zeeniya.ahmed@undp.org/aminath.shooza@undp.org* by *(16:15 & 26th January 2014)*. Incomplete applications will be excluded from further consideration.

Recommended Presentation of Proposal: Introduction about the consultant/CV; Proposed methodology and workplan (max 1 page); Financial proposal, including proposed fee and all other travel related costs (such as flight ticket, per diem, etc)..

Criteria for Evaluation of Proposal: The selection will be made based on the educational background and experience on similar assignments. The price proposal will weigh as 30% of the total scoring

B. Annex 2: Mid-term Evaluation Matrix

Evaluation Questions	Indicators	Sources	Data Collection Method
Evaluation Criteria: Relevance			
• Did the project's objective align with the priorities of the local government and local communities?	• Level of coherence between project objective and stated priorities of local stakeholders	• Local stakeholders • Document review of local development strategies, environmental policies, etc.	• Local level field visit interviews • Desk review
• Did the project's objective fit within the national environment and development priorities, including climate change adaptation priorities?	• Level of coherence between project objective and national policy priorities and strategies, as stated in official documents	• National policy documents, such as National Adaptation Plan of Action, National Capacity Self-Assessment, etc.	• Desk review • National level interviews
• Did the project concept originate from local or national stakeholders, and/or were relevant stakeholders sufficiently involved in project development?	• Level of involvement of local and national stakeholders in project origination and development (number of meetings held, project development processes incorporating stakeholder input, etc.)	• Project staff • Local and national stakeholders • Project documents	• Field visit interviews • Desk review
• Did the project objective fit Adaptation Fund strategic priorities?	• Level of coherence between project objective and AF strategic priorities (including alignment of relevant objective and outcome indicators)	• AF strategic priority documents	• Desk review
• Was the project linked with and in-line with UNDP priorities and strategies for the country?	• Level of coherence between project objective and design with UNDAF, CPAP, CPD	• UNDP strategic priority documents	• Desk review
• Did the project's objective support implementation of the UNFCCC? Other relevant MEAs?	• Linkages between project objective and elements of the UNFCCC, such as key articles and programs of work	• UNFCCC website • National UNFCCC reports	• Desk review
Evaluation Criteria: Efficiency			
• Was the project cost-effective?	• Quality and adequacy of financial management procedures (in line with Implementing Entity and national policies, legislation, and procedures) • Financial delivery rate vs. expected rate • Management costs as a percentage of total costs	• Project documents • Project staff	• Desk review • Interviews with project staff

Evaluation Questions	Indicators	Sources	Data Collection Method
• Were expenditures in line with international standards and norms?	• Cost of project inputs and outputs relative to norms and standards for donor projects in the country or region • Cost of project inputs and outputs relative to norms and standards for the subject field in which the project is working	• Project documents • Project staff	• Desk review • Interviews with project staff
• Was the project implementation approach efficient for delivering the planned project results?	• Adequacy of implementation structure and mechanisms for coordination and communication • Planned and actual level of human resources available • Extent and quality of engagement with relevant partners • Quality and adequacy of project monitoring mechanisms (oversight bodies' input, quality and timeliness of reporting, etc.)	• Project documents • National and local stakeholders • Project staff	• Desk review • Interviews with project staff • Interviews with national and local stakeholders
• Was the project implementation delayed? If so, did that affect cost-effectiveness?	• Project milestones in time • Planned results affected by delays • Required project adaptive management measures related to delays	• Project documents • Project staff	• Desk review • Interviews with project staff
• What was the contribution of cash and in-kind co-financing to project implementation?	• Level of cash and in-kind co-financing relative to expected level	• Project documents • Project staff	• Desk review • Interviews with project staff
• To what extent did the project leverage additional resources?	• Amount of resources leveraged relative to project budget	• Project documents • Project staff	• Desk review • Interviews with project staff
Evaluation Criteria: Effectiveness			
• Are the project objectives likely to be met? To what extent are they likely to be met?	• Level of progress toward project indicator targets relative to expected	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review

Evaluation Questions	Indicators	Sources	Data Collection Method
	level at current point of implementation		
• What were the key factors contributing to project success or underachievement?	• Level of documentation of and preparation for project risks, assumptions and impact drivers	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
• What are the key risks and barriers that remain to achieve the project objective and generate Global Environmental Benefits?	• Presence, assessment of, and preparation for expected risks, assumptions and impact drivers	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
• Are the key assumptions and impact drivers relevant to the achievement of Global Environmental Benefits likely to be met?	• Actions undertaken to address key assumptions and target impact drivers	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
Evaluation Criteria: Results			
• Have the planned outputs been produced? Have they contributed to the project outcomes and objectives?	• Level of project implementation progress relative to expected level at current stage of implementation • Existence of logical linkages between project outputs and outcomes/impacts	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
• Are the anticipated outcomes likely to be achieved? Are the outcomes likely to contribute to the achievement of the project objective?	• Existence of logical linkages between project outcomes and impacts	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
• Are impact level results likely to be achieved?	• Impact indicators • Level of progress through the project's Theory of Change	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
Evaluation Criteria: Sustainability			
• To what extent are project results likely to be dependent on continued financial support? What is the likelihood that any required financial resources will be available to sustain the project	• Financial requirements for maintenance of project benefits • Level of expected financial resources available to support maintenance of project benefits	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review

Evaluation Questions	Indicators	Sources	Data Collection Method
results once the AF assistance ends?	• Potential for additional financial resources to support maintenance of project benefits		
• Do relevant stakeholders have or are likely to achieve an adequate level of "ownership" of results, to have the interest in ensuring that project benefits are maintained?	• Level of initiative and engagement of relevant stakeholders in project activities and results	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
• Do relevant stakeholders have the necessary technical capacity to ensure that project benefits are maintained?	• Level of technical capacity of relevant stakeholders relative to level required to sustain project benefits	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
• To what extent are the project results dependent on socio-political factors?	• Existence of socio-political risks to project benefits	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
• To what extent are the project results dependent on issues relating to institutional frameworks and governance?	• Existence of institutional and governance risks to project benefits	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
• Are there any environmental risks that can undermine the future flow of project impacts and Global Environmental Benefits?	• Existence of environmental risks to project benefits	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review
Cross-cutting and UNDP Mainstreaming Issues			
• Did the project take incorporate gender mainstreaming or equality, as relevant?	• Level of appropriate engagement and attention to gender-relevant aspects of the project	• Project documents • Project staff • Project stakeholders	• Field visit interviews • Desk review

C. Annex 3: Rating Scales

Progress towards results: use the following rating scale	
Highly Satisfactory (HS)	Project is expected to achieve or exceed all its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as "good practice".
Satisfactory (S)	Project is expected to achieve most of its major global environmental objectives, and yield satisfactory global environmental benefits, with only minor shortcomings.
Moderately Satisfactory (S)	Project is expected to achieve most of its major relevant objectives but with either significant shortcomings or modest overall relevance. Project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environment benefits.
Moderately Unsatisfactory (MU)	Project is expected to achieve its major global environmental objectives with major shortcomings or is expected to achieve only some of its major global environmental objectives.
Unsatisfactory (U)	Project is expected not to achieve most of its major global environment objectives or to yield any satisfactory global environmental benefits.
Highly Unsatisfactory (HU)	The project has failed to achieve, and is not expected to achieve, any of its major global environment objectives with no worthwhile benefits.

Adaptive management AND Management Arrangements: use the following rating scale	
Highly Satisfactory (HS)	The project has no shortcomings and can be presented as "good practice".
Satisfactory (S)	The project has minor shortcomings.
Moderately Satisfactory (S)	The project has moderate shortcomings.
Moderately Unsatisfactory (MU)	The project has significant shortcomings.
Unsatisfactory (U)	The project has major shortcomings.
Highly Unsatisfactory (HU)	The project has severe shortcomings.

Sustainability: use the following rating scale	
Likely (L)	There are no or negligible risks that affect this dimension of sustainability/linkages
Moderately Likely (ML)	There are moderate risks that affect this dimension of sustainability/linkages
Moderately Unlikely (MU)	There are significant risks that affect this dimension of sustainability/linkages
Unlikely (U)	There are severe risks that affect this dimension of sustainability

D. Annex 4: Evaluation Mission Itinerary

Date: 10th February 2014 (Monday)

Time	Venue	Organization	Person	Designation	Purpose
3.00 pm – 4.00 pm	UNDP	PMU/UNDP	Najfa Shaheem Razee	Project Manager	Discus the schedule of the missions and the inception report
			Mohamed Inaz	Assistant Resident Representative	
			Mihad Mohamed	Program Analyst	
4.00 pm – 4.30pm	UNDP	UNDP	David McLachlan-Karr	Co-Chair of project board/Resident Representative a.i	Briefing about the mission
			Azusa Kubota	Deputy Resident Representative	

Date: 11th February 2014 (Tuesday)

Time	Venue	Organization	Person	Designation	Purpose
8.30 am – 10.30 am	Ministry of Environment and Energy	Ministry of Environment and Energy	Shaheeda Adam	Project Director /DG	Stakeholder interview
			Abdul Matheen Mohamed	Co-Chair of the project board/ Minister of State	
			Amjad Abdulla	DG/Climate Change Department	
10.30 am – 11.00am	Ministry of Housing and Infrastructure	Ministry of Housing and Infrastructure	Abdulla Ziyad	Project board member/Minister of state	Stakeholder interview
11.00 am – 12.00pm	National Disaster Management Center	National Disaster Management Center	Hisan Hassan	Board Member/Project Coordinator	Stakeholder interview
			Abdul Razzag Adam	Board Member/Project Coordinator	
2.00 pm – 3.00 pm	Ministry of Home Affairs	Ministry of Home Affairs	Ahmed Shareef Nafees	Board Member/ DG	Stakeholder interview

3.00am – 4.30pm	UNOPS	UNOPS	Eemaan Rameez	Deputy Manager	Stakeholder interview
			Govindarajan Saravanan	Technical Engineer	
			Lahiru G Perera	Contracts Manager	
			Aminath Nawal	Project Support Officer	

Date: 12th February 2014 (Wednesday) – ADh. Mahibadhoo field visit

Time	Venue	Organization	Person	Designation	Purpose
8.30 am – 10.00 am	Travel to ADh. Mahibadhoo				
10.00 am – 11.00 am	Island Council	Island Council		Council Members	Stakeholder interview
11.00 am – 12.00 pm		NGO	3-5		Stakeholder interview
2.00 pm – 4.00 pm		Community members	6-8		Stakeholder Discussion
4.00pm – 5.30pm	Travel to Male				

Date: 13th February 2014 (Thursday) – HA. Ihavandhoo Field Visit

Time	Venue	Organization	Person	Designation	Purpose
7.10 am – 8.30 am	Flight to Hanimaadhoo				
8.30 am - 9.30 am	Speed boat to HA. Ihavandhoo				
10.00 am – 11.00 am	Island Council	Island Council		Council Members	Stakeholder interview
11.00 am – 12.00 pm		NGO	3-5		Stakeholder interview
2.00 pm – 4.00 pm		Community members	6-8		Stakeholder Discussion
4.00 pm – 6.00 pm	Visit to construction sites				

Date: 14th February 2014 (Friday)

Time	Venue	Organization	Person	Designation	Purpose
9.30 am – 10.30 am	Speed boat to Hanimaadhoo				

12.00 pm – 1.35 pm	Flight to Male

Date: 15th February 2014 (Saturday) – GDh. Gadhdhoo Field Visit

Time	Venue	Organization	Person	Designation	Purpose
10.45am – 12.00 pm	Flight to Kaadehdhoo				
12.00 pm – 1.30 pm	Speedboat to GDh. Gadhdhoo				
2.30 pm – 4.30 pm	Visits to construction sites				

Date: 16th February 2014 (Sunday)

Time	Venue	Organization	Person	Designation	Purpose
9.00 – 10.00	Island Council	Island Council		Council Members	Stakeholder discussion
10.00 – 11.00		NGOs	3-5		Stakeholder discussion
11.00 – 12.00		Fenaka			Stakeholder interview
2.00 pm – 4.00 pm		Community Members	6-8		
4.00 – 5.30	Speedboat to Kaadehdhoo				
7.00pm – 8.20	Flight to Male				

Date: 17th February 2014 (Monday)

Time	Venue	Organization	Person	Designation	Purpose
8.30 – 10.00	Fenaka	Fenaka			
10.00 – 11.00	MWSC				
11.00 – 12.00	LGA				
2.00 – 3.00	Ministry of Health				

Date: 18th February 2014 (Monday)

Time	Venue	Organization	Person	Designation	Purpose
8.30 – 10.00					
10.00 – 11.00					
11.00 – 12.00					

2.00 – 4.00	UNDP	PMU/MEE/UNDP/UNOPS			Presentation of findings

E. Annex 5: Persons Interviewed

Note: The itinerary in Annex 4 above includes the names of a majority of the key individuals met and interviewed during the evaluation mission. The PMU has on file the detailed and specific record of all individuals met during the evaluation mission.

F. Annex 6: Documents Reviewed

- UNDP Project Document
- UNOPS Project Initiation Document
- Project inception report
- AF Project Performance Reports (PPRs) & AF Tracking Tool
- Quarterly progress reports and work plans
- Combined Delivery Reports
- Audit reports
- M & E Operational Guidelines
- Mission reports
- Financial and Administration guidelines
- Minutes of the Project Board Meetings
- Maps
- The AF Operations Guidelines
- UNDP Monitoring and Evaluation Frameworks
- Project technical reports and documents (e.g. Willingness-to-Pay study, etc.)
- Detailed Design Report

G. Annex 7: Maldives IWRM Results Framework and Progress Toward Indicator Targets

Type of Indicator	Indicator	Baseline	Target for Project End	Progress since inception (as of July 2013)	MTE Assessment and Suggested Revisions
Objective: To ensure reliable and safe freshwater supply for Maldivian communities in a changing climate	Number of Maldivians with safe and reliable freshwater supply in any extreme climatic condition	According to the 2010 MDG assessment for Maldives, 14% of all Maldivians living outside the capital zone lack reliable access to an improved freshwater source and face water shortages during climatic extremes	Integrated water resource management systems on HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo provide 24% of all Maldivians who are vulnerable to water shortages and degrading water quality in a changing climate with a reliable supply of safe freshwater Replication of the project on 4 additional islands provides at least 50% of all Maldivians who are exposed to water shortages and degrading water quality in a changing climate with a reliable supply of safe freshwater		Achievement: Unclear. The population of the three islands that comprise around 2%[29] of the total population should have access for safe freshwater when the project the system becomes operational. However, additional contextual information would also be needed to determine what percentage of the population vulnerable to water shortage had been addressed by the project. Other projects are already in place that replicate most parts of this project. MWSC has completed a similar project in R. Dhuvaafaru and a potential project is being planned in Ha Thuraakunu. However, it is difficult to say that this is as a result of this project. Revision suggestion: Better definition is required of "safe and reliable" freshwater supply. This should be defined in terms of the liters of clean freshwater available per person per day. For example, although the project will provide treated water from a centralized system, the household rainwater collection tanks will not be treated and could

[29] Total population of the three islands, according to 'inflated' estimates suggest 8,000. Total Maldives population is estimated to be 350,000.

Type of Indicator	Indicator	Baseline	Target for Project End	Progress since inception (as of July 2013)	MTE Assessment and Suggested Revisions
					still have water of unsafe quality.
Outcome 1: Ground water aquifer protected and freshwater supply ensured in HA. Ihavandhoo, ADh. Mahibadhoo and GDh. Gadhdhoo to provide reliable, equitable and cost-effective access to safe freshwater in a changing climate	Number of people living on HA. Ihavandhoo, ADh. Mahibadhoo, and GDh. Gadhdhoo who have uninterrupted access to reliable and safe freshwater supply in extreme climatic conditions	6701 people living on HA. Ihavandhoo, ADh. Mahibadhoo, and GDh. Gadhdhoo are not able to meet their freshwater needs in a highly variable and changing climate. Water needs are met through unreliable supply of rainwater, which is frequently contaminated through insufficiently protected collection and storage systems. Total freshwater collection and storage capacity on each island is insufficient to address water needs during the dry season. Groundwater is highly saline and polluted and unfit for domestic use. Backup desalination systems do not supply the minimum humanitarian water requirements during climatic extremes and disaster events.	100% of the population living on HA. Ihavandhoo, ADh. Mahibadhoo, and GDh. Gadhdhoo will have uninterrupted access to reliable and safe freshwater supply of at least 20 liters per person per day at all times, including during extreme climate events	Technical constraints resulted in a prolonged design period of 13 months since the signing of the project to reach an approved detail design. The detail design was approved at the end of March 2013. Procurement processes has been initiated in April 2013 by UNOPS (responsible party) for the delivery of the water supply plant, rainwater harvesting network, storage tanks and distribution networks.	Achievement: Likely. Evaluation did not get any information that would allude to any measure to protect ground water (as stated in outcome 1). Upon operation of the RO plants, 100% of the population in these islands will have access to the water, given new households are connected to the system or if those not connected can buy the water from the island.
	Groundwater quality on each target island	Perception with target population of all islands that due to salinity and pollution, groundwater is unfit for consumption and most household uses. No current data available on the quality of groundwater in target islands Existing groundwater recharge capacity: HA. Ihavandhoo: 0 m3 ADh. Mahibadhoo: 0 m3. GDh. Gadhdhoo: 0 m3	By the end of the project, the quality of groundwater in each target island has improved to levels that are safe for hygiene and agricultural purposes HA. Ihavandhoo: 700 groundwater recharge pits and 30 community recharge wells developed GDh. Gadhdhoo: 495 groundwater recharge pits and 30 community recharge wells developed; ADh. Mahibadhoo: 275 groundwater recharge pits and 30 community recharge wells developed	Past experience on the use of groundwater recharge pits in the Maldives have not been successful. These have quickly accumulated silt and become redundant as is seen in the capital island Male'. Therefore, the options for groundwater recharge technology suitable for use in the islands will be designed is to be carried out after assessments and surveys of the groundwater aquifer is completed in the next reporting period.	Achievement: Unlikely. Ground water recharge component has been dropped from the project so it is unlikely that this outcome will be achieved.

Type of Indicator	Indicator	Baseline	Target for Project End	Progress since inception (as of July 2013)	MTE Assessment and Suggested Revisions
	Volume of rainwater collected and stored to supply safe and clean freshwater during dry periods	Existing rainwater harvesting capacity: HA. Ihavandhoo: 1,289m3 (households) + 105m3 (communal) GDh. Gadhdhoo: no data (individual systems only) ADh. Mahibadhoo: no data (individual systems only) Most existing rainwater harvesting systems have insufficient capacities of 2,5 m3 per household and lack proper disinfection safeguards	Improved rainwater harvesting and storage capacity will be installed as follows: HA. Ihavandhoo: 9,000 m3 ADh. Mahibadhoo: 6,300 m3. GDh. Gadhdhoo: 6,300 m3 All new rainwater harvesting systems will be equipped with disinfection safeguards to ensure safety of water supply	The design has been modified to include collection of rainwater from public, community and private households that do not use their rainwater. Communal rainwater tanks connected to the central plant will be installed. Rainwater will then be treated and circulated in combination with desalinated water. This will reduce costs and allow for the desalination plant to be operated throughout the year. Desalinated plants cannot be left more than 24 hours without operation as it can result in deterioration of the membranes.	Achievement: Likely. Revision suggestion: The target values should be adjusted to reflect the values expected in the final approved technical design document.
	Capacity of desalinated freshwater supply available during dry spells, drought and flooding	Existing capacity to generate freshwater supply from desalination: HA. Ihavandhoo: 0m3 / day GDh. Gadhdhoo: 10m3 / day ADh. Mahibadhoo: 10m3 / day	The following minimum amounts of desalination capacity will be installed on each target island: HA. Ihavandhoo: 90 m3 ADh. Mahibadhoo: 60 m3. GDh. Gadhdhoo: 60 m3 Potable water quality levels will be in conformity with WHO standard at all times	The design proposed for all three islands includes the installation of a desalinated plant. Plant capacity initially proposed was considered to be too big since the project was attempting to demonstrate cost effective supply through a hybrid rainwater + desalinated water model. The distribution network layout for all three islands was completed during the reporting period and BOQs were prepared. During the reporting period, procurement was initiated for the supply of pipes and fittings. This procurement was not successful as only one party bid. Rebidding to take place in the next reporting period.	Achievement: Likely. Discussions with FENAKA revealed that water testing ability is not present in the island. However, all RO plants buildings being in the island houses a small laboratory. Revision suggestion: The target values should be adjusted to reflect the values expected in the final approved technical design document.

Type of Indicator	Indicator	Baseline	Target for Project End	Progress since inception (as of July 2013)	MTE Assessment and Suggested Revisions
	Number of planned wastewater management and sewage systems which integrate targeted measures to reduce groundwater pollution	1 sewage treatment plant under construction by a contractor in ADh. Mahibadhoo 1 sewage treatment plant in design phase in HA. Ihavandhoo; 1 sewage treatment plant in design phase in GDh. Gadhdhoo Sea level rise and unsecured septic tanks pollute groundwater and render it unsafe for household uses	All sewage and wastewater management systems which are planned and/or constructed on the 3 target islands integrate targeted measures to reduce groundwater pollution All septic tanks on each target island are cleaned at least twice per year to prevent groundwater pollution from flooding events	This component is to be addressed in the next reporting period.	Achievement: Unlikely. This output is irrelevant to the project since the project does not contribute to the outputs. At present, only ADh. Mahibadhoo has a sanitation system, however, community concerns about the system prevail with regard to smell. Consultations with the other islands did not reveal any knowledge of a potential sanitation project It is questionable whether the septic tanks in ADh. Mahibadhoo are cleaned twice per year. However, it can be anticipated that potential sewage and wastewater management systems will have measure integrated to protect groundwater.
Outcome 2: Strengthened local awareness and ownership of integrated, climate-resilient freshwater management systems	Number of integrated water management systems which are based on participatory planning between water users and water providers and can be sustained in line with actual willingness to pay for operation and maintenance	Willingness to pay for integrated water management services is unknown No participatory planning and design process for water supply and management schemes	Integrated water management systems on all target islands are designed and installed based on community participation, and their operation and maintenance is based on actual willingness to pay	The project inception, conceptual designs and detailed designs have been through a participatory approach with sharing of information during the reporting period. Community consultations have been undertaken to gauge the perception on the project and expectations. Ministry has completed a willingness to pay survey on all 3 islands. The results have produced a tariff structure that has been recommended to the future operator Fenaka -	Achievement: Uncertain. Water supply services are provided on other islands in the country, though generally in the more populated islands such as Male', Hulhumale' Villingilli, Maafushi. The question is to what extent populations on more remote lower population islands are willing to pay for water. Results from the willingness to pay study indicate that communities are willing to pay for water at rates similar to in Malé; however, per person demand for water is much lower in the less

Type of Indicator	Indicator	Baseline	Target for Project End	Progress since inception (as of July 2013)	MTE Assessment and Suggested Revisions
				Government Utility corporation.	populated islands, so higher tariff rates are required to generate the necessary revenue to maintain and operate the system. The tariff rates for the system implemented by the project is not yet determined, and it remains to be seen how community members will react to the proposed tariff system, which is likely to be higher than the rates in Malé.
	Communal willingness to pay for continued operations and maintenance of freshwater supply on each target island	Willingness to pay for integrated water management services is unknown No participatory planning and design process for water supply and management schemes	Integrated water resources management systems on each target island are designed and installed on the basis of community input, and their continued operation is aligned with actual willingness to pay for the operation and maintenance of the installed infrastructure	Same as above.	Achievement: Uncertain, see above. There is awareness and acceptance within the communities that to operate the system, a user pay mechanism is required. This model has already been implemented for electricity, so communities have understood and accepted how a system operates.
	Number of Maldivians which are aware about their rights, roles and responsibilities in the management of freshwater resources in a changing climate	Limited awareness across all islands and atolls about the value of water as both an economic as well as social good, which is sensitive to climate-related shocks and stresses and therefore needs to be managed responsibly.	At least 1 IWRM training campaign is conducted in each administrative region (7 total) to strengthen dialogue between water users and providers and increase sensitization about the economic, social and environmental role of water in a changing climate	Awareness strategy and national campaign has been formulated. The components will be rolled out in the next reporting period.	Achievement: Moderately likely. Awareness of the value of water as economic and social good is not limited as perceived from consultations held with communities. What may be limited, although there is some understanding, is of the climate related shocks and stresses in relation to water. So far, not IWRM campaign has been conducted. It is unlikely that 7 regions can be covered in the remaining year of the project.

Type of Indicator	Indicator	Baseline	Target for Project End	Progress since inception (as of July 2013)	MTE Assessment and Suggested Revisions
Outcome 3: Improved institutional capacity to promote and enforce climate-resilient freshwater management on all inhabited islands	Number of fully financed follow-up projects which adopt the climate resilient, integrated water resources management approach demonstrated by the project	Maldives has no integrated water resources management project in place that is suitable for replication and upscaling	Project approach is replicated on at least 4 islands	The Government has already taken on board the cost effectiveness of combining the utilization of community rainwater harvesting with desalination and is the process of formulating a new project in the island of Ukulhas based on the design processes of this project. The Male Water and Sewerage Company (private sector) has initiated and is piloting a project in Dhuvaafaru utilizing concepts of integrating rainwater and desalinated water as proposed by this project in 2011.	Achievement: Likely, though difficult to assess to what extent replications resulted from or were influenced by this project, particularly for those started and completed before the water system for this project is even operational. UNOPS has a potential project planned with $3.4 million USD in USAID funding that will replicate the project on Hinnavaru Island. MWSC has completed a similar project on Dhuvafaru Island; the design of which may have been influenced by this project. There are water and sanitation projects at design phase for three islands; the details are not know at this point.
	Number of staff from water and sewage utility companies trained in the technical principles and skills required to design, implement and maintain climate-resilient and integrated water management systems	No staff of public or private utility companies in Maldives has received targeted training on IWRM	At least 5 staff from each water and sewage utility company currently active in Maldives are trained in the technical principles of integrated water resource management and recognize basic design principles which make water supply and sewage systems adaptive to a changing climate	Targeted training and international exposure is planned in the next reporting period. Since project formulation the provincial utility companies has been dismantled and in place Fenaka Corporation has been established with the mandate to provide utility services in these islands. Fenaka has been brought on board and is part of the project coordination team and will be a targeted recipient of training initiatives.	Achievement: Possible, though no activities have yet taken place related to this.

Type of Indicator	Indicator	Baseline	Target for Project End	Progress since inception (as of July 2013)	MTE Assessment and Suggested Revisions
	Number of new water and sewage management projects which are reviewed and improved on the basis of lessons learned from the project	Maldives has no adaptive and integrated water resources management project in place that is suitable for replication and upscaling The government is not able to draw on best practices in the adaptive management of freshwater resources	Each new water and wastewater management project that is approved by the Government of Maldives is subject to technical reviews on the basis of IWRM and climate resilience principles	No planned progress.	Achievement: Moderately unlikely, though possible. No activities have been carried out under Component 3 as yet, and it is unclear if or when they will be.
	Financing allocated to new water management projects which integrate climate resilient and integrated design and are approved by the government for implementation	The government is not able to draw on best practices in the adaptive management of freshwater resources to enable systematic planning and financing of additional projects	The government approves at least 4 new, fully financed freshwater and/or wastewater management projects on the basis of lessons learned and design principles replicated from the proposed project	4 new projects are planned by the Government for 2013.	See comments under the first indicator for this component.

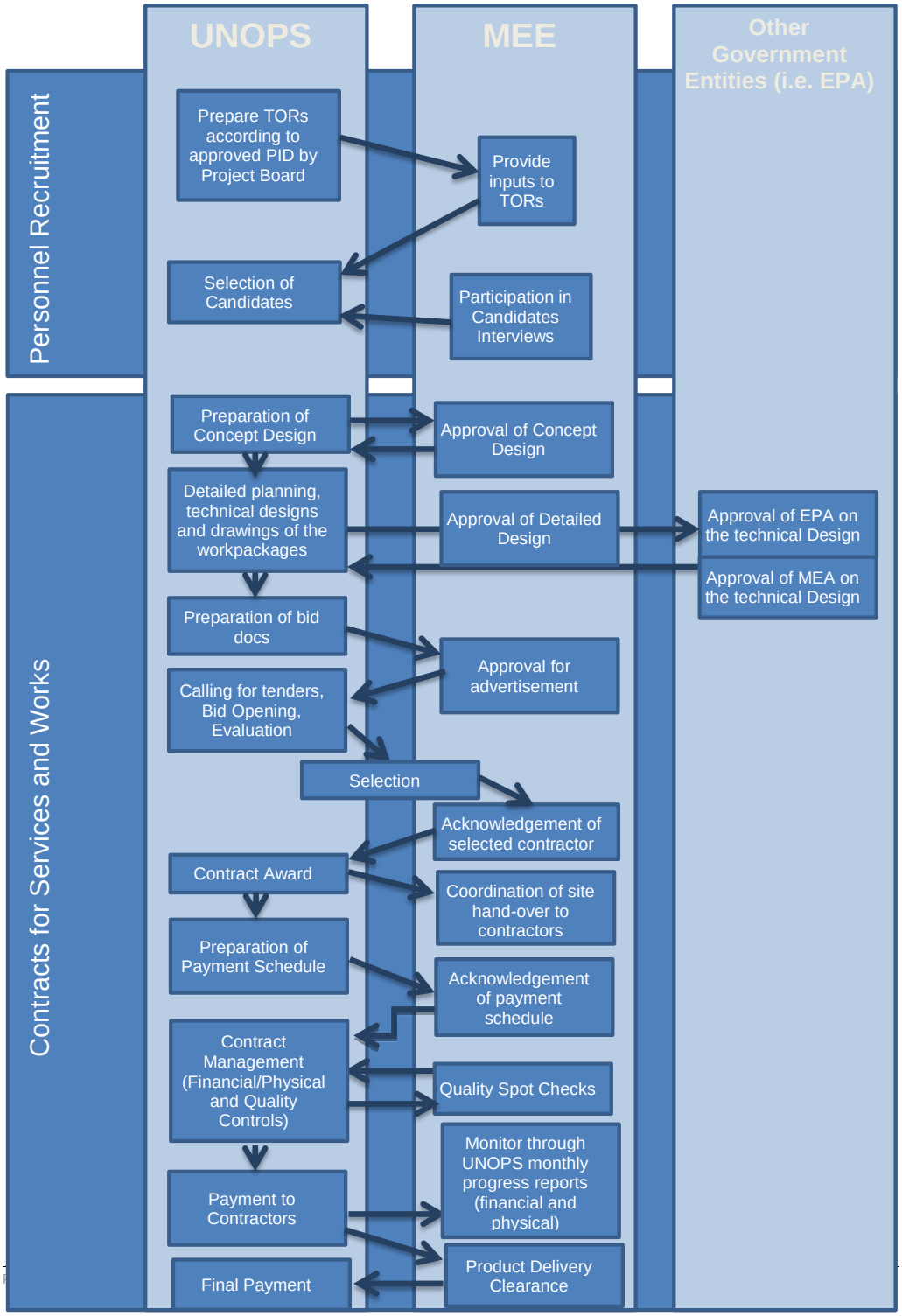
H. Annex 8: Maldives IWRM Project Expected Contribution to Adaptation Fund Results Framework

Project Component	AF Outcome/Output	AF Outcome/Output Indicators	Baseline	IWRM Project Target
Component 1	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.2. Number of people with reduced risk to extreme weather events	0 - Number (men and women and other vulnerable groups)	6,701 – estimated population of pilot islands
Component 1	Output 2.2: Targeted population groups covered by adequate risk reduction systems	2.2.1. Percentage of population covered by adequate risk-reduction systems	Quantitative: Percentage (includes women – and other vulnerable groups – and men). - 14% of Maldivian population living outside the capital lacks access to an improved freshwater source and face water shortages during climatic extremes - Qualitative: Adequacy: include direct analysis of major areas; adequacy/effectiveness of systems or analysis of perceptions of populations and institutions.	Direct - A reduction of 24% of all rural Maldivians who are currently dependent on unreliable and unsafe freshwater supply and experience water shortages during dry periods (14% of the population outside the capital zone) Indirect – Replications benefiting a further 26%.
		2.2.2. No. of people affected by climate variability	Baseline not specified - Number (broken down by gender and, if possible, by vulnerable groups defined in the area of intervention) of people	A reduction of 6,701.
Component 2	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change,	Baseline not specified - 5: Fully aware 4: Mostly aware 3: Partially aware 2: Partially not aware 1: Aware of neither	Target not specified

Project Component	AF Outcome/Output	AF Outcome/Output Indicators	Baseline	IWRM Project Target
	reduction processes at local level	and of appropriate responses	predicted adverse impacts of climate change nor of appropriate responses	
		3.2. Modification in behavior of targeted population	Baseline not-specified 5: All 4: Almost all 3: Half 2: Some 1: None	Target not specified
Component 2	Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1 No. and type of risk reduction actions or strategies introduced at local level	Baseline not specified - Number and type (in separate columns) at local level.	Target not specified
Component 1	Outcome 4: Increased adaptive capacity within relevant development and natural resource sectors	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	Scale 1-5: Baseline - 1: Not improved	5: Fully improved
Component 1	Output 4: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1. No. and type of health or social infrastructure developed or modified to respond to new conditions resulting from climate variability and change (by type)	Baseline – 0 Number and type	3 – water systems on three pilot islands

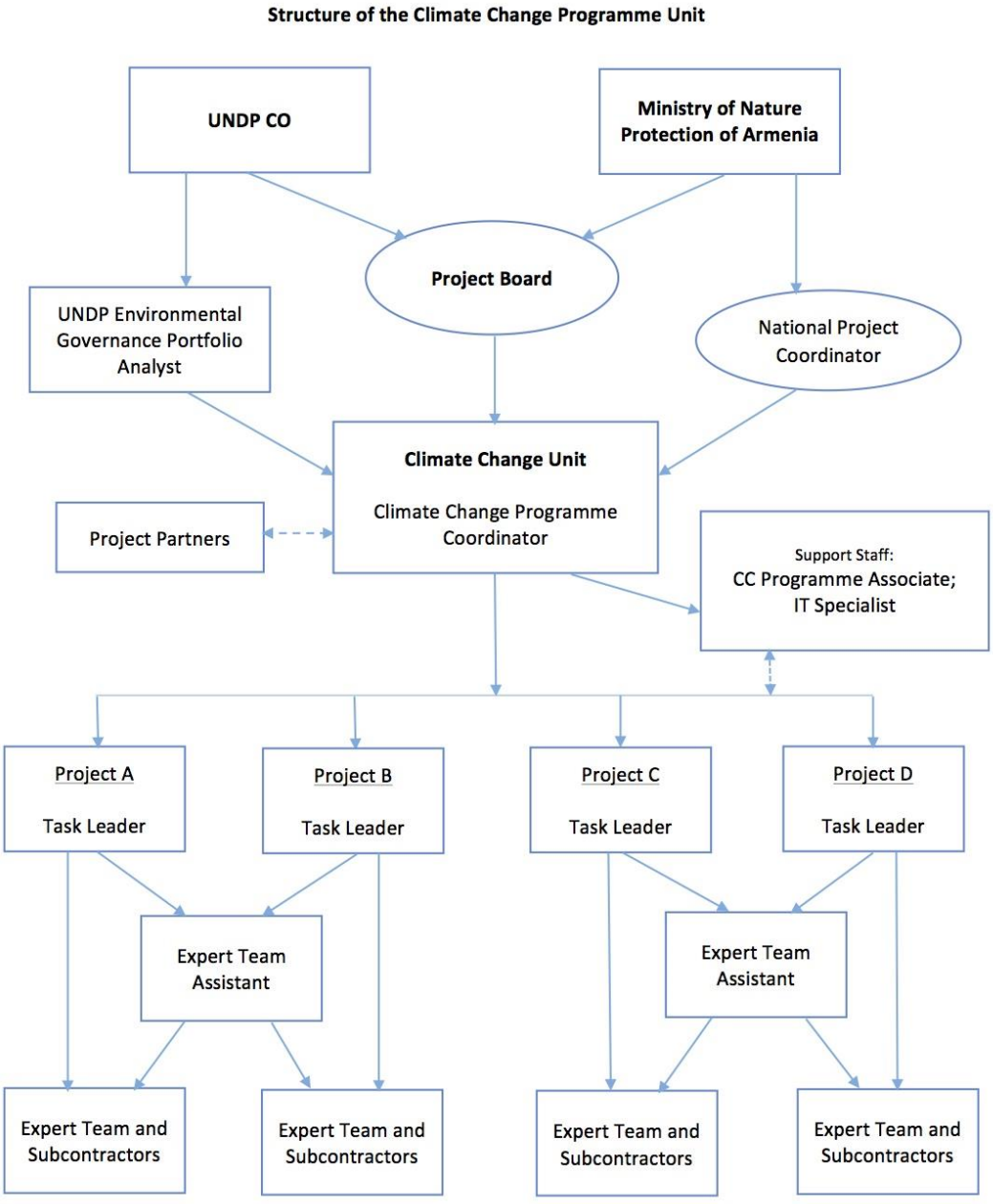
I. Annex 9: Process Flow for Personnel Recruitment and Procurement

Process flow for Personnel Recruitment and Contracts for Services and Works



Source: UNOPS Revised Project Initiation Document, v. 02-01, October 16, 2013, p. 35.

J. Annex 10: Armenia Model for Execution of International Donor Climate Change Projects



K. Annex 11: Construction progress on three islands

HA. Ihavandhoo

Photo 1 Ihavandhoo Rainwater Collection Tank 1

Photo 2 Ihavandhoo Rainwater Collection Tank 2

Photo 3 Ihavandhoo RO Plant Site

ADh. Mahibadhoo

Photo 4 Mahibadhoo GRP Tank Foundation

Photo 5 Mahibadhoo GRP Tank Foundation

Photo 6 Mahibadhoo Rainwater Collection Tank 1 (top)

Photo 7 Mahibadhoo Rainwater Collection Tank 1 (side)

Photo 8 Mahibadhoo RO Plant Borehole

Photo 9 Mahibadhoo RO Plant Building

Photo 10 Mahibadhoo RO Plant Building

Photo 11 Mahibadhoo Project Site Information Signboard

GDh. Gadhdhoo

Photo 12 Gadhdhoo Project Site Information Signboard

Photo 13 Gadhdhoo GRP Tank Foundation

Photo 14 Gadhdhoo Rainwater Collection Tank 1 (site)

Photo 15 Gadhdhoo RO Plant Building

Photo 16 Gadhdhoo RO Plant Building

Photo 17 Gadhdhoo RO Plant Building and GRP Tank Foundation

Photo 18 Gadhdhoo RO Plant Building, GRP Tank Foundation, and Borehole