

April

| 2020

Final Report

Terminal Evaluation of “Climate Change Adaptation Programme in the Coastal Zone of Mauritius”

Adaptation Fund Project #: 000622857

UNDP Project #: 00080227

Evaluation Team:
Team Leader: Ms. Sohinee Mazumdar
Expert: Ms. Fabiola Monty

International
National

I. TERMINAL EVALUATION REPORT

CLIMATE CHANGE ADAPTATION PROGRAMME IN THE COASTAL ZONE OF MAURITIUS

Title of UNDP supported Adaptation Fund financed project:	CLIMATE CHANGE ADAPTATION PROGRAMME IN THE COASTAL ZONE OF MAURITIUS
Adaptation Fund Project #	000622857
UNDP Project #:	00080227
Evaluation Timeframe:	Nov 2019 – April 2020
Country, Region:	Republic of Mauritius, Sub-Saharan Africa
Implementing Entity / Executing Entity:	UNDP/ Ministry of Environment, Solid Waste Management and Climate Change
Evaluation Team Members:	Team Leader/ International Expert: Ms. Sohinee Mazumdar National Expert: Ms. Fabiola Monty

Acknowledgements

This terminal evaluation was carried out with the close collaboration and generous time commitment of various stakeholders. The evaluators would like to convey particular thanks to the Project Assistant Mr Boolkah, for arranging, and following-up on the numerous stakeholder interviews during the evaluation mission, as well as providing all the necessary project documentation. A special thanks also goes to all implementing partners and personnel, at the Ministry of Environment, Solid Waste Management and Climate Change (ICZM Division, EIA division, Beach Authority, Climate Finance) many of whom participated in multiple meetings and interviews, as well as the Ministry of Finance, Economic Planning and Development

the Ministry of Blue Economy, the Ministry of Local Government, Mauritius Meteorological Services, the National Disaster Risk Reduction and Management Centre, the University of Mauritius and the NGO Reef Conservation. All those interviewed shared their views in a thorough and forthcoming manner, and with a spirit of continuous learning, and the evaluation would not be possible without the lessons and experiences imparted by these individuals. The evaluators would also like to extend thanks to the contractors and engineers responsible for overseeing the various physical works of the project that travelled to the project sites to share detailed information. The evaluators would also like to extend their sincere thanks to UNDP staff, particularly the Head of the Environment Unit, Mr Satyajeet Ramchurn, as well as the Management specialist Mr Eugene Pak and the Resident Representative Ms. Amanda Serumaga, for taking ample time to participate in long interviews during a very busy period, in order to frankly share their views and recommendations regarding the project, the challenges encountered and constructive ways forward for future climate finance. Finally, the evaluators thank the numerous community members at the project sites who gave their time to answer our questions and who most directly face the urgency of building resilience as the coastal areas of Mauritius become more vulnerable to the impacts of climate change. Our hope is that the recommendations and lessons herein will serve to strengthen the design and implementation of future adaptation efforts in Mauritius and

elsewhere, and result in increasing our resilience in the face of a rapidly changing climate, while prioritizing lives and well being of the most vulnerable communities.

ii. EXECUTIVE SUMMARY

Project Summary Table

Project Title	Climate Change Adaptation Programme in the Coastal Zone of Mauritius
AFB Project ID:	00062857
UNDP Project ID:	00080227
Total Project Budget	USD 9,119,240
Country:	Republic of Mauritius
Region:	Sub-Saharan Africa
Implementing Agency:	UNDP
Executing Partner:	Ministry of Environment and Sustainable Development
Project Start Date:	30 August 2012
New Project End Date:	31 August 2019 (two extensions granted)
TE Date	November – April 2020

Brief Description of the Project

The **objective** of the project (becoming evident by the end of the project) was defined in the project document as *increased climate resilience of communities and livelihoods in coastal areas in Mauritius (all islands)*, through the following components:

- **Component 1:** Application of adaptation measures to protect currently vulnerable coastal ecosystems and community features (at three priority sites on the island of Mauritius, namely Mon Choisy, Rivières des Galets, Quatre Soeurs);
- **Component 2:** Development and implementation of an early warning system for incoming surge on Republic of Mauritius (ROM);
- **Component 3:** Training to promote compliance with climate-proofed planning, design, and location guidelines;
- **Component 4:** Policy Mainstreaming;
- **Component 5:** Knowledge Dissemination and Management.

The project structure, with approximately 82% of the project implementation costs on Component 1 (adaptation measures); and 11% on enabling environment (early warning, policy mainstreaming, training) and 7% on knowledge dissemination and management was believed to be the most effective way to approach coastal adaptation, with priority given to actual interventions that reduce coastal vulnerability. Accordingly, although the Terminal Evaluation (TE) covers all project components, it places requisite emphasis on the first component of the project, which comprises the vast majority of the project budget.

The goal of the project was to be achieved through the following intended **Outcomes** tied to each project component:

1. **C1: Application of Adaptation Measures for Coastal Protection:**

O1: Increased adaptive capacity within relevant development and natural resource sectors.

2. **C2: Early Warning System:**

O2: Reduced exposure at national level to climate-related hazards and threats.

3. **C3: Training:**

O3: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.

4. **C4: Policy Mainstreaming:**

O4: Improved policies and regulations that promote and enforce resilience measures.

5. **C5: Knowledge Dissemination and Management:**

O5: Effective capturing and dissemination of lessons from the applied activities in the programme.

A summary of the project Components, associated Outcomes, as well as the Outputs for each of the Outcomes is summarized below, with the project original budget allocated to each Output which was later revised and approved by the Adaptation Fund in May 2014 are also indicated.

			Total for #1 = US\$ 6,465,700 (82% Project Implementation Budget)
<u>2. Early Warning System for incoming storm surge</u> This component will focus on development of an early warning system for incoming storm surge manned on a 24 hr./day basis, such that coastal communities in ROM are able to safely evacuate prior to future storm surge events.	2.Reduced exposure at national level to climate-related hazards and threats	2.1 Assessment report of the current sea state monitoring systems (Mauritius Meteorological Services and Mauritius Oceanography Institute) including a definition of required critical parameters and operational requirements for an early warning system. 2.2 The early warning system installed and implemented (to link with existing early warning system for cyclones), with communication linkages established from the level of National Coast Guard at Headquarters down to the level of coastal communities.	33,155 100,550 Total for #2 = US\$ 133,705 (1.7% Project Implementation Budget)

<p>3. Training.</p> <p>This component will promote compliance with climate-proofed planning, design, and location guidelines. Activities will ensure that all Government interventions in the coastal zone, designed to reduce erosion or address storm surge effects, incorporate site-specific features and measurably reduce the risk of flooding or the rate of erosion, and will put in place the capacity for on-going replication of effective coastal adaptive measures by both the Government and private sector.</p>	<p>3. Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses</p>	<p>3.1 “Handbook on Coastal Adaptation” packaged as training modules for coastal communities, relevant Government agencies, NGOs and CBOs, and private sector stakeholders (such as hotel operators); training sessions delivered on a regular basis over the course of the programme (at least twice annually), supported with regular training-of-trainers sessions with NGOs and CBOs.</p>	<p>164,600</p>
		<p>3.2 Short course on Coastal Engineering designed and delivered (twice during programme period).</p>	<p>134,600</p>
		<p>3.3 Specialized course on Cost-Benefit Analysis of coastal adaptation measures designed and delivered (annually, over four years).</p>	<p>94,825</p>
		<p>Total for #3 = US\$ 394,025 (5% of Project Implementation Budget)</p>	

<p>4. Policy Mainstreaming.</p> <p>This component will work to ensure that all policies, strategies, plans, and regulations are consistent in recognizing climate change impacts in the coastal zone over the next 50 years and actively supporting adaptation to them. At the same time, opportunities and obligations with regard to management of the coastal zone will be clear for all stakeholders, including Government.</p>	<p>4.Improved policies and regulations that promote and enforce resilience</p>	<p>4.1 A National Coastal Zone Adaptation Strategy that addresses all perceived climate change risks in the coastal zone of ROM over at least the next 20 years, with recommendations for supporting policies and regulations.</p>	<p>144,350</p>
		<p>4.2 A set of recommendations on best technical and institutional adaptation practices suitable for the coastal zone of ROM.</p>	<p>46,025</p>
		<p>4.3 Creation of one “clearinghouse” for climate change oversight in the coastal zone of ROM (a unit or institution, or collection of individuals from various agencies, which is able to make final decisions on the climate appropriateness of future development projects; also having a follow-up enforcement capacity).</p>	<p>72,825</p>
		<p>4.4 Recommendations for new economic instruments.</p>	<p>86,850</p>

<p><u>5.Knowledge Dissemination and Management.</u></p> <p>This component will facilitate more frequent and accessible public information on climate change effects in the coastal zone and appropriate interventions, such that District and National Plans reflect perceived climate risks in the coastal zone over the next 50 years and future private sector development will be designed to minimize climate risks in the coastal zone.</p>	<p>5. Effective capturing and dissemination of lessons from the applied activities in the programme.</p>	<p>5.1 Handbook, training modules, and website content capturing best coastal adaptation practices for the Mauritius context.</p>	<p>86,050</p>
		<p>5.2 Dissemination of lessons learned from the programme with coastal stakeholders in other locations in the southern Indian Ocean.</p>	<p>131,100</p>
		<p>5.3 Interpretive signs and small-scale models of coastal processes designed and installed at each site, explaining the science of climate change and coastal processes (in lay terms), so that the linkages between weather, stability of coastal features, and adaptation measures are clear.</p>	<p>135,600</p>
		<p>5.4 Public awareness campaigns on climate change in the coastal zone designed and delivered by outreach trainers, involving the Mauritian media (TV, radio, Internet).</p>	<p>125,550</p>
		<p>5.5 Priority ranking of vulnerable coastal sites established, to guide the order of future investment by the Government of Mauritius and the private sector.</p>	<p>83,050</p>
		<p>Total for #5 =</p> <p>561,350</p>	

			(7% Project Implementation Budget)
7. Project Implementation – Total Costs			7,904,830
8. Project/Programme Execution cost			500,000
9. Total Project/Programme Cost			8,404,830
10. Project Cycle Management Fee charged by the Implementing Entity (8.5% of programme cost)* <i>Note 1</i>			714,410
Amount of Financing from AFB			9,119,240

Evaluation Rating Table

A summary of the ratings given, according to UNDP evaluation criteria, given below:

Rating Project Performance		
Criteria	Rating	Summary of Reasons for Rating
Monitoring and Evaluation: Highly Satisfactory (HS), Satisfactory (S) Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U), Highly Unsatisfactory (HU)		
Overall quality of M&E	Moderately Satisfactory (MS)	The M&E plan was adequate, monitoring reports were produced in a timely manner and M&E activities budgeted for, however implementation had significant shortcomings in terms of timely follow-up of actions to achieve project objective/outcomes.
M&E design at project start up	Satisfactory (S)	The M&E design was adequate, but fell short in establishing a robust baseline and realistic targets. The project outputs did not clearly link to the intended project outcomes.
M&E Plan Implementation	Moderately Unsatisfactory (MU)	Periodic monitoring of the project, as well as the recommendations and risks flagged in the project documents and MTE were not acted upon adequately in order to ensure delivery against project outcomes.
IA& EA Execution: Highly Satisfactory (HS), Satisfactory (S) Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U), Highly Unsatisfactory (HU)		
Overall Quality of Project Implementation / Execution	Moderately Satisfactory (MS)	Major project outputs which were started earlier were achieved in the last 18 months of project implementation signalling significant shortcomings in project implementation, due to a range of factors.
Implementing Agency Execution	Moderately Satisfactory (MS)	Support by UNDP was able to remove several significant roadblocks, particularly in terms of

		procurement, however a greater emphasis on Results-Based Management (RBM) and a greater degree of oversight was required at an earlier stage in project implementation.
Executing Agency Execution	Moderately Unsatisfactory (MU)	There were significant bottlenecks in terms of both operational and technical elements of the Project implementation. The bottleneck posed by the national procurement guidelines was not dealt with in a proactive manner and led to significant delays in delivery. Most importantly, significant time was lost due to detours in decision-making, which could have been avoided. The scope and technical complexity of the project exceeded the institutional capacity to absorb the scale of funding received.
Outcomes: Highly Satisfactory (HS), Satisfactory (S) Moderately Satisfactory (MS), Moderately Unsatisfactory (MU), Unsatisfactory (U), Highly Unsatisfactory (HU)		
Overall Quality of Project Outcomes	Moderately Unsatisfactory (MU)	Given that 90% of the delivery of the project occurred in the last two years of project implementation, after several project extensions, and that most measures under Component 1 (82% of project budget), were only completed in the last 6-9 months, it is impossible to show achievement of project outcomes in the project lifetime as intended. Furthermore, the achievement of project outcomes depends on the long-term monitoring of coastal adaptation measures, as well as internalization of the training, policy and institutional components of the project. Regardless, the project provides ample learning opportunities for both UNDP and the MoESD and other key stakeholders. The project investment will likely have a catalytic impact, and can be used as a foundation for the design of future coastal climate change adaptation interventions, if the measures are monitored over time to understand their impact, solidifying the cost-benefit analysis approach.
Relevance: relevant (R) or not relevant (NR)	Relevant (R)	Overall the project design was very relevant in regards to the national context and priorities. Changes to project design in order to prioritize a focus on the climate resilience of the most vulnerable primary stakeholders would have made the project even more relevant, as well as better aligned with UNDP and Adaptation Fund objectives. The project's most costly interventions leaned towards protection of economic assets, and disaster risk management/reduction rather than long-term adaptation of coastal communities.

Effectiveness	Moderately Unsatisfactory (MU)	The majority of project outputs were achieved, although better alignment of outputs with outcomes and the project objective was required. The effectiveness of the project would have been greatly enhanced through certain design changes (mentioned under efficiency), as well as a greater emphasis on monitoring the impacts of project interventions in order to actually assess their effectiveness. Effectiveness in achieving the project objective would also be enhanced by formalizing the processes of site selection as well as the design of the coastal adaptation measures. The procurement, and design process was significantly underestimated given technical complexity of the project, leading to significant project delays.
Efficiency	Moderately Unsatisfactory (MU)	Due to weaknesses in the initial design of the project, as well as challenges with decision-making (unnecessary detours) and technical expertise, significant resources were spent on avoidable (e.g. considering community resettlement at Rivières des Galets as part of the project) or unanticipated activities (private land acquisition for the refuge centre at Quatre Soeurs) during project implementation. Design changes in the chosen coastal adaptation measures (better planting protocol for dune stabilization in Mon Choisy, higher seawall at Rivières de Galets, changes to mangrove planting methodology & greater usable area of refuge centre at Quatre Soeurs) would all have increased the cost efficiency and effectiveness of the project interventions. A more rigorous approach to quantifying costs and benefits of coastal adaptation measures is required to improve the effectiveness and efficiency of current and future measures.
Sustainability: Likely (L); Moderately Likely (ML); Moderately Unlikely (MU); Unlikely (U).		
Overall Likelihood of Risks to Sustainability	Moderately Likely (ML)	A lack of earmarked resources and plan for monitoring the integrated impacts of interventions past project close, poses a significant risk to project sustainability. Competing priorities for coastal development, as well as uncertainty in internalization of policy and institutional processes, given how recently many outputs were completed, also pose risks to sustainability. A higher degree of community participation, as well as participation from the private sector, and a greater emphasis on

		knowledge management would strengthen the sustainability of the project.
Financial Resources	Moderately Likely (ML)	Key elements for long-term monitoring (such as ecosystem impacts of down-drift erosion at Mon Choisy, and flood damages at Rivières des Galets) have not been budgeted for as part of the project, and have not been explicitly set-aside in the budget of responsible government bodies, presenting a significant risk for financial sustainability. There is a gap, that must be closed, in responsibility for funding and implementing the Environmental and Social Management Plans (ESMP) completed as part of the ESIA process for new infrastructure (coastal adaptation measures) funded by donors, as for most new developments this is financed by the private sector (project proponent).
Socio-economic	Moderately Likely (ML)	There is limited public/community awareness of the project's long-term goals and although key stakeholders see the utility of the project, localized community engagement strategies are required to build primary stakeholder ownership.
Institutional Framework and Governance	Moderately Likely (ML)	The implementation of the National Coastal Zone Adaptation Strategy (NSZAS) will be key for institutional /governance sustainability. The lack of a Strategic Environmental Assessment (SEA) policy which accounts for climate change impacts, as well the lack of due consideration for anthropogenic factors compounding climate change impacts, such as poor land management practices, and unregulated development on private land (including in environmentally sensitive areas such as wetlands critical for flood regulation), pose risks to the achievement of project outcomes in the long-term.
Environmental	Moderately Likely (ML)	On-going coastal, marine and in-land development and economic activities without sufficient coordination or landuse planning threaten possible environmental improvements. Monitoring of the integrated environmental impacts (impacts on ecosystems, bio-physical impacts at larger spatial scales, impacts on livelihoods, as well as economic losses, injury and death) of the coastal adaptation measures over time is essential to understand potential environmental and social improvements.
Impact: Significant (S), Minimal (M), Negligible (N)		
Overall impact	Minimal (M)	It is difficult to show any verifiable impact of project interventions given the delivery timeline of project outputs (at the very end of the project) and major gaps in the long-term monitoring

		<p>processes for the coastal adaptation measures in place, by project close. Project impact can be considerably improved through the implementation of recommendations and corrective actions identified in the TE. Regardless, the project will likely have a catalytic impact on approaches to coastal adaptation in Mauritius, and provides valuable lessons in the design and implementation of future climate change projects nationally and internationally (particularly SIDS).</p>
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Summary of Conclusions, Recommendations and Lessons

Main Conclusions

Programme Design/ Formulation

The programme design was comprehensive and integrated, however proved too ambitious for the original project timeframe, and resulted in several extensions resulting in a project implementation period of double the planned time (8 years rather than the originally allotted 5 years). The site selection and chosen interventions could have been optimized to enhance the resilience of communities and livelihoods, which was the stated objective of the project. A disproportionate portion of the programme budget was put towards technical interventions, without a robust consideration of operational, technical and political risks and the capacity of the Ministry of Environmental and Sustainable Development (the executing entity) to absorb the scale of funding received. Design and implementation flaws in the interventions proposed in the project document, as well as consideration of adaptation options, which were not viable under the project (such as community resettlement at Rivières des Galets), also led to very long delays in implementation.

Programme Implementation

Given that 90% of the delivery of the project occurred in the last two years of project implementation, after several project extensions, and that most measures under Component 1 (82% of project budget), were only completed in the last 6-9 months prior to project close, it is evident that there were significant shortcomings in project implementation. Major bottlenecks included an underestimation of budget, associated challenges with procurement (particularly the national procurement guideline limitations and the availability of appropriate technical expertise), challenges in procurement of technical expertise, as well as weaknesses in decision-making processes leading to significant detours in implementation. The project would have benefitted from project management continuity and a performance-based contract for the project manager, as well as a Chief Technical Advisor (CTA) and a dedicated monitoring and evaluation officer, as well as greater oversight from UNDP at the country office and regional levels.

Programme Results

The project was able to achieve most of the intended project outputs by the very end of the project. Unfortunately, given the challenges in implementation and long-delays on many project outputs, the impact of the project, and the results from the various components remain speculative and can only be adequately assessed through on-going monitoring and assessment, as well as the implementation of corrective actions and recommendations found herein. However, the project provides ample learning opportunities for both UNDP and the MoESD and other key stakeholder involved, in regards to

approaches to the design and implementing of coastal adaptation measures, as well as a range of lessons in regards to risk assessment and operational issues. Programme results are particularly dependent on the long-term implementation of sustainable monitoring plan in order to learn which coastal adaptation measures are the best investment. Data collection and assessment, knowledge management, community engagement, and the dissemination of lessons learned should be emphasized going forwards.

Relevance Rating - Relevant

Overall the project's objective was very relevant given the vulnerability of the Mauritius to the impacts of climate change and the necessity for strengthening the climate resilience of communities in coastal areas, at the frontline of sea level rise, storm surges and cyclones. The project design itself was also relevant in terms of building national expertise on approaches to coastal adaptation and cost-benefit analysis. The project would have been more relevant however by focusing on the most vulnerable sites/communities and choosing appropriate interventions accordingly, that is those, which prioritize the climate resilience and livelihoods of primary stakeholders; whereas the site selection and design of interventions leaned towards protection of economic assets (beach and tourism sector at Mon Choisy), and disaster risk reduction (Rivières des Galets) /management (Quatre Soeurs), rather than long-term adaptation. The relevance of the various components of the project however, is well understood by all institutional stakeholders.

Effectiveness Rating – Moderately Unsatisfactory

Changes in project design and implementation would have greatly enhanced effectiveness. The outputs of the project were achieved in a rapid push, mostly in the last year of implementation, although better alignment of outputs with outcomes and the stated project objective was required. The procurement of goods and international expertise, as well as the technical design process were significantly underestimated, leading to significant project delays. Project management processes and structures were not adequate in ensuring the achievement of project outcomes by project close. Unnecessary detours in the selections of coastal adaptation options (such as community resettlement) also undermined the effectiveness of the project in achieving its planned outcomes. Finally changes to the design of the chosen coastal adaptation measures would have also rendered the project more effective and efficient in achieving its outcomes as indicated below in efficiency.

Efficiency Rating – Moderately Unsatisfactory

Efficiency is primarily related to the cost effectiveness of project design and implementation. Although the project was able to deliver on most of the indicated outputs, it was not designed or implemented in the most efficient manner to achieve the stated project outcomes. Large portions of the project budget went to consultation and design exercises which proved to be a dead end, were not allowable under the guidelines of the Adaptation Fund, and had already been eliminated as a considered option in the project document (such as the resettlement of the community of Rivières des Galets). Efficiency of the project would have been greatly enhanced by better design and identification of options at the outset (i.e. anticipating the breakwater structure at Mon Choisy would be considered an eyesore by the public, realizing that the site chosen for the refuge centre was inappropriate). Project efficiency would also have been greatly enhanced through design changes to the chosen coastal adaptation measures (better planting protocol for dune stabilization in Mon Choisy, higher seawall at Rivières de Galets, changes to mangrove planting methodology & greater usable area of refuge centre at Quatre Soeurs). Although the consideration of options is part of the iterative learning process, it cannot be said that this

was done efficiently. Finally cost efficiency of the training and knowledge management components of the project would have been enhanced by establishing a baseline to understand changes and uptake of new knowledge and capacities.

Sustainability Rating -Moderately Likely

The sustainability of the project depends largely on the establishment of a national monitoring systems and processes for the implemented of coastal adaptation measures (and other future measures) past the life of the project. Unfortunately, it was found that long-term monitoring of the several key impacts of the chosen adaptation measures was lacking, and that a budget and mandate for monitoring was not adequately put in place. A clear mandate for long-term monitoring of coastal adaptation measures will therefore greatly enhance project sustainability. The sustainability of the project is also related to the uptake the policy initiatives developed under the project (such as implementation of the National Coastal Zone Adaptation Strategy) cross sectoral collaboration, and successful demonstration of the adaptation measures. A handbook on applying a Cost-Benefit Analysis methodology to adaptation decision-making was also produced, and the uptake of this knowledge product by key institutional actors will also enhance project sustainability. Finally project sustainability can be greatly enhanced through the implementation of a Strategic Environmental Impact Assessment law.

Impact - Minimal

It is difficult to show any verifiable impact of project interventions (particularly the coastal adaptation measures, but also impacts from the establishment of the EWS, training, policy and institutional efforts) given the delivery timeline of project outputs. The project's long-term impact can be considerably improved through the implementation of the corrective actions and recommendations presented in the TE, both directly in regards to the interventions funded under the project, and in terms of lessons learned for future climate change adaptation projects. Finally, project impact can be greatly enhanced through complementary efforts to address the anthropogenic factors that exacerbate the impacts of climate change

Lessons Learned and Recommendations for Future Projects

1. Project Design and Monitoring

- **Recommendation:** Design future projects with a realistic scope that accounts for institutional capacity to deliver/absorb, accounts for lessons learned on past projects, particularly in regards to procurement delays and the procurement of technical expertise. Consider using UNDP procurement modalities and UNDP marketplace for international expertise from the outset given past experience.
- **Recommendation:** Future projects should give adequate attention to pre-feasibility, design and identification of measures before budgeting and costing given how extensive the delays were, and the limitations and bottlenecks in terms of procurement. Budgeting should be done particularly carefully for any future GCF projects, given strict requirements to meet pre-determined budgets for disbursements.
- **Recommendation:** Conduct a thorough risk assessment and apply the risk assessment to the design of the future projects, with a more robust consideration of risk mitigating strategies. Account for political, operational and financial risks based on previous experience. Develop

capacity within the UNDP CO and well as with potential executing agencies in Mauritius on the evolving and stringent requirements of climate funds and UNDP in regards to environmental and social standards, stakeholder engagement and gender mainstreaming.

- Recommendation: In future projects of significant budget and/or technical complexity, hire a dedicated monitoring and evaluation officer, focused on results-based management, to support day-to-day monitoring, and to develop plans and strategies, including site-level links and community engagement strategies.

2. *Project Implementation*

- Recommendation: In future projects of significant technical complexity hire an appropriately qualified Chief Technical Advisor (CTA), that is able to make key technical decisions and remove bottlenecks in technical decision-making, as well as draft Terms of Reference (TORs) for technical experts, engineers and firms hired under the project.
- Recommendation: In future project hire a Gender officer with Natural Resource Management (NRM) expertise that can help to implement the Gender Assessment and Action Plan (GAAP), prepared prior to project approval, as well as collect gender disaggregated baseline data, and check the validity of chosen indicators in the national context, and ensure progress towards targets. The MoESD should also hire a gender expert that can account for the gendered aspects of sustainable development at the institutional and policy levels, but also in the implementation of donor-funded projects, helping to ensure adherence to increasing comprehensive gender requirements.
- Recommendation: In future project's develop a Stakeholder Engagement Plan (SEP) with an emphasis on early community consultation that can inform project design, as well as ensure community engagement throughout project implementation. Future coastal adaptation projects should include community adaptation planning at each project site, including the establishment of a technical planning committee linked to local government structures as an on-going initiative, which includes monitoring of community-level impacts.
- Recommendation: Advocate with climate funds to out practical and flexible mechanisms in place for adaptive management. This is particularly important in project where all adaptation measures are not determined at the outset, but rather determined through a cost-benefit analysis process, or when a feasibility study needs to be carried out as part of the project, which will determine final cost allocations.
- Recommendation: In future project proposals, appoint one or two officers of the executing entity (the ministry responsible for implementation) that are attached to the project management team, so that their capacity is built in terms of hands on training, and that capacity is not just concentrated in the Project Manager (who may or may not remain involved in related activities after project close). The integration of ministry staff that are more intimately integrated in decision-making in regards to the project will help to mitigate losses in knowledge and institutional capacity.

- **Recommendation:** Develop a comprehensive project exit strategy based on the recommendations of the TE, particularly the Outcome-Level recommendations found below, with clear lines of responsibility between UNDP and MoESD.
- **Recommendation:** For future projects of significant technical complexity it is imperative to hire an appropriately qualified Chief Technical Advisor (CTA) with specialized technical knowledge of integrated coastal zone management, as well qualifications as an engineer to supervise the design and implementation of coastal adaptation measures.
- **Recommendation:** For future projects invest in careful selection of sites based on multi-criteria vulnerability mapping and on community vulnerability as supported by site-level socio-economic assessments.
- **Recommendation:** For future training and capacity building activities more broadly, including for professional actors, within the private sector and government, first establish a baseline prior to training in order to understand the level of expertise among participants. Following the training, administer a post-training assessment in order to assess actual changes in skills and knowledge, rather than using simple delivery targets (which are output rather than outcome focused).
- **Recommendation:** Ensure that future projects in regards to coastal climate change adaptation (Adaptation Fund, Global Environmental Facility and Green Climate Fund) make use of experts trained under the project.
- **Recommendation:** Establish a GIS database that can be used by all institutional stakeholders working on elements of climate change adaptation planning, which includes a layer of the communities targeted by the project and other priority sites (as per the coastal vulnerability map) and the baseline conditions and monitoring data from each site.

Recommendations to close Project: Outcome Level

Rec #	Recommendation
1	<u>Component 1: Coastal Adaptation Measures</u> Outcome 1: Increased adaptive capacity with relevant development and natural resources sectors
1.1	Develop and implement a long-term ecological monitoring plan to assess the biophysical impact of the artificial reef at the Mon Choisy site (including on marine biodiversity and changes to the sea bed and wave height) with an official mandate and requisite budget for

	offshore monitoring given to the Ministry of Blue Economy. Ensure that beach monitoring conducted by the Beach Authority does not just measure beach erosion rates of the facing beach, but also the possibility of down drift erosion by expanding the spatial extent of erosion monitoring to understand impacts.
1.2	Mon Choisy dune stabilization planting protocol should be adjusted to account for a reasonable density of planted vegetation to ensure survival rates, according to species. Given that most of the planting is already completed, the site should be monitored in the medium and long-term to understand which species survive at the planted density and the appropriate protocol disseminated for dune stabilization projects.
1.3	Rivières des Galets monitoring the efficacy of the seawall rehabilitation by recording storm surge events and the impacts on flooding in the community in regards to flooding damages, injury and/or death. If possible this should be compared to historical events to understand the value of the capital investment and to conduct a cost-benefit analysis.
1.4	Long-term mangrove monitoring should be undertaken at the Quatre Soeurs in regards to ecological parameters and survival rate in order to refine planting methodologies for replication at other sites. Flood and/ or storm surge attenuation monitoring should also be undertaken for the purposes of understanding the ecosystem function of the mangrove as a flood regulator, and for the purposes cost benefit analysis.
1.5	Develop and implement a handover plan for the Quatre Soeurs Refuge Centre site to the Ministry of Local government as previously agreed, so that the refuge centre is functional as soon as possible. Include a community sensitization plan, so that the purpose and protocols related to accessing the refuge centre are clear.
1.6	Implement measures for optimization of the Quatre Soeurs Refuge Centre, including cyclone proofing of windows by installing shutters, converting the roof space into useable shelter space (doubling shelter capacity/area), changing the location of the solar water heater to under the concrete side wall so that it is less exposed to damage in cyclone conditions.
1.7	Improve the gender-responsiveness of the Quatre Soeurs Refuge Centre by ensuring that there are functional spaces according to user groups (room for breastfeeding, rooms for women and children to change and/or sleep separately). Refuge centre staff should be given gender-based violence (GBV) in disasters sensitivity training. A female staff member should be trained and assigned to deal with any complaints or grievances in regards to GBV.
1.8	Gather and analyse data over a 5-year time horizon on the impacts of implemented coastal adaptation measures at the three project sites. Develop a simplified matrix for technical design criteria and cost benefit analysis with the lessons learned at each of the sites, which can be used to gauge the appropriateness of measures for coastal adaptation at sites for replication. The government of Mauritius should not attempt to replicate coastal adaptation measures (such as the artificial reef) at other sites without a data-based understanding of the impacts on ecological and biophysical parameters.
1.9	Ensure that donor-funded projects have a budget for the implementation of the Environmental and Social Management Plan (ESMP) past the life of such projects, and that the mandate and budget for long term monitoring according to the ESMP is given to the Environmental Impact Assessment (EIA) Division, the Beach Authority and the Ministry of Blue Economy as appropriate for the current project.

2	<p><u>Component 2: Early Warning System</u></p> <p>Outcome 2.Reduced exposure at national level to climate-related hazards and threats</p>
2.1.	Develop a manual that formalizes the operation of the current wave height modelling system so that if there is loss of personnel, the operation of the system remains uninterrupted and viable.
2.2	Once the Digital Elevation Model (DEM) is available in May 2020, complete the calibration of the model which correlates wave height with inland flooding and develop a protocol in collaboration with NDRMCC to notify local government counterparts and community members, once the flooding passes the determined threshold for evacuations.
2.3	Develop shared protocols for dissemination of EWS system information at the community level, using the most appropriate means of communication as identified through local stakeholder consultation (radio, television, community communication protocols). Ensure that information dissemination is inclusive and reaches the most vulnerable (i.e. women, youth, the elderly and the disabled).
2.4	Link the national EWS to the World Meteorological Organization's (WMO) Global Multi-Hazard Alert System (GMAS).
3	<p><u>Component 3: Training</u></p> <p>Outcome 3: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses</p>
3.1	Immediate distribution of the handbook on coastal adaptation that was developed for coastal communities to primary beneficiaries. Prior to dissemination it would be useful to establish a baseline of current level of understanding of coastal adaptation and then to assess changes in knowledge, attitudes and behaviour after distribution and use of the materials. This will allow institutional stakeholders, and UNDP, to understand the actual impact of the knowledge product.
3.2	Create a network of experts that have been trained in coastal engineering design and cost-benefit analysis for coastal adaptation measures, so that trained experts under the project can be easily sourced and used in future procurements. Ensure that institutional, private sector and multilateral actors have access to the network of trained national experts and are incentivized this expertise.
4	<p><u>Component 4: Policy Mainstreaming</u></p> <p>Outcome 4: Improved policies and regulations that promote and enforce resilience</p>
4.1	Ensure that the completion of the multi-criteria coastal vulnerability map, with the incorporation of socio-economic/community vulnerability. Ensure that the finalized map is incorporated into a GIS layer for national planning purposes and available to all relevant stakeholders. Use the coastal vulnerability map as the basis of site selection and prioritization for future projects related to coastal adaptation and disaster risk management.
4.2	Prioritize passing a Strategic Environmental Assessment (SEA) and Coastal Risk Management (CRM) law, as outlined in the National Coastal Zone Adaptation Strategy (NCZAS), in order to ensure that climate change adaptation concerns are actually considered when planning for coastal development and granting approvals for new infrastructure (such as hotels).

4.3	Formalize the implementation of the planning and advisory guidelines as outlined in the National Coastal Zone Adaptation Strategy (NCZAS) by incorporating into existing Environmental and Social Impact Assessment guidelines as well as broader Land Use Planning guidelines.
4.4	Introduce a new economic instrument for targeted corporate social responsibility / environmental and social investment funding that requires private sectors actors with developments (current and planned) to contribute 3% of revenues) towards coastal adaptation measures.
5	Component 5: Knowledge Management Outcome 5: Effective capturing and dissemination of lessons from the applied activities of the programme
5.1	Hand over the interpretive signs and small-scale models to the implementing partner Reef Conservation to optimize use of the materials developed, by the local NGO with the most experience with the use of the materials for community sensitization. Reef Conservation and/ or the institutional actors using these community sensitization materials in the future should also establish a baseline and undertake periodic assessments in regards to changes in knowledge, attitudes and behaviour at the community level.
5.2	Ensure that the prioritized ranking of vulnerable coastal sites, which takes into account community vulnerability, is used for the eventual replication of coastal adaptation measures that show a positive impact. Disseminate the final priority ranking of vulnerable coastal sites to future climate finance project development teams for use in site selection.

Summary of Lessons Learned

Lesson#1: Adequate attention to intervention design, pre-feasibility studies for coastal adaptation measures and careful budgeting are required to avoid significant delays on projects of high technical complexity.

Lesson #2: Special attention should be given to assessment of risks, inclusive of political, financial, operational, environmental and social. Risk assessment should iteratively inform project design and implementation. Risks should not be underestimated for the purposes of project approval.

Lesson #3: A clear understanding of donor requirements and adequate communication of priorities and constraints of various funds (what is allowable under both UNDP and donor policies) can save considerable time in the assessment of adaptation options funded under a specific project.

Lesson #4: It is essential to have a long-term monitoring strategy in place with clear roles and responsibilities assigned to the appropriate stakeholders as well as budget allocation. This allows an assessment of the actual impacts and results of the adaptation investment.

Lesson #5: Training and capacity-building activities should include an initial phase which determines specific training needs and establishes the baseline level of knowledge and awareness of the proposed topics and technical skills. This allows an assessment of whether participants have actually gained skills and knowledge when coupled with a post-training or capacity building assessment, rather than using metrics related to delivery (outcome rather than output focus).

Lesson #6: The Project Steering Committee meetings can be rendered more useful for key decision making by involving more subject-matter experts and sometimes a large range of stakeholders may actually decrease the efficiency and engagement within the meeting.

Lesson #7: Climate change adaptation (and other) project scope, in terms of design of project interventions and budget, should take into account the institutional capacity to absorb funding based on previous experience.

Lesson #8: It is useful to have a performance-based contracts, as well as clear reporting lines to UNDP for the Project Manager position, under the National Implementation Modality, in order to help ensure accountability and delivery.

Lesson #9: The outcomes of the project should be carefully aligned with the project objective, and the outputs aligned with outcomes. Realistic targets can be set when baseline conditions are determined prior to project implementation, and indicators should ideally link to on-going processes taking place independent of the project.

Lessons #10: A long-term monitoring plan for indicators established under the project should be developed, implemented and budgeted for by the executing agency to ensure sustainability of and learning from project interventions. This is particularly essential for adaptation interventions, whose utility is usually evident over longer timescales.

iii. ACRONYMS AND ABBREVIATIONS

APR	Annual Project Review
AFB	Adaptation Fund Board
AWP	Annual Work Plan
BD	Biodiversity
CB	Capacity Building
CD	Capacity Development
CBA	Cost Benefit Analysis
CBO	Community Based Organization
CC	Climate Change
CCA	Climate Change Adaptation
CO	Country Office
CP	Country Program
CPAP	Country Program Action Plan
CPD	Country Program Document
CTA	Chief Technical Advisor
CZA	Coastal Zone Adaptation
CCACZ	Climate Change Adaptation in Coastal Zone
DDR	Disaster Risk Reduction
EIA	Environmental Impact Assessment
EWS	Early Warning System
GCF	Green Climate Fund
GEF	Global Environment Facility
ICZM	Integrated Coastal Zone Management
KM	Knowledge Management
MMS	Mauritius Meteorological Services
M&E	Monitoring and Evaluation

MoESD	Ministry of Environment and Sustainable Development
MOI	Mauritius Oceanography Institute
MOU	Memorandum of Understanding
MTE	Mid-Term Evaluation
NCZAS	National Coastal Zone Adaptation Strategy
NDRRMC	National Disaster Risk Reduction and Management Centre
NGO	Non-governmental Organization
NPD	National Project Director
NPM	National Project Manager
NPMC	National Project Management Committee
NRM	Natural Resources Management
PB	Project Board
PMU	Project Management Unit
PPR	Project Progress Report
PSC	Project Steering Committee
RBM	Results Based Management
SEA	Strategic Environmental Assessment
SIDS	Small Island Developing State
TE	Terminal Evaluation
UoM	University of Mauritius
UNDP	United Nations Development Program

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1.Introduction

1.1 Purpose of the Evaluation

This Terminal Evaluation (TE) is commissioned jointly between Ministry of Environment and Sustainable Development of Mauritius (executing entity) and the United Nations Development Program (UNDP) Mauritius country office (CO), in the final year of the “Climate Change Adaptation Programme in the Coastal Zone of Mauritius” as a requirement of both UNDP and the project donor, the Adaptation Fund Board (AFB). The emphasis of the evaluation is on assessing the results and impact of the program, in regards to the intended outcomes, and more broadly in order to identify best practices and lessons learned which might inform relevant policies and programs in the coming years related to coastal adaptation. The TE provides a comprehensive set of recommendations to achieve the intended results of the project.

The purpose of the Terminal evaluation is to:

- Provide information to the Government of Mauritius (GoM) and UNDP, the Adaptation Fund, other potential donors and stakeholders about the project results/impacts and achievements of the key project deliverables;
- Ensure accountability of project expenditures and the delivery of outputs;
- Inform the implementation of potential next phases of the programme, and other projects developed with the assistance of the Adaptation Fund, and other funds under the Paris Agreement.

Further detail is given below in regards to the evaluation methodology according to UNDP Terminal Evaluation guidelines.

The Terminal Evaluation will assess progress towards the achievement of the project objectives and outcomes as specified in the Adaptation Fund Project Document, according to UNDP’s Terminal Evaluation (TE) guidelines. The specific objectives of the TE are to:

- Assess the results achieved by the key project deliverables and the potential impact of the project outcomes, with an emphasis on Outcome 1: on the increased adaptive capacity within relevant development and natural resource sectors, developed in a gender-sensitive way (as this comprises over 80% of the project budget);
- Assess the effectiveness and efficiency of the project’s performance and implementation management systems and procedures;
- Assess the extent to which the project results achieved are sustainable (including the national ownership/leadership and capacity to implement, coordinate, monitor and report on the effectiveness of coastal adaptation infrastructure.
- Identify key challenges and associated risks experienced during project implementation and assess the responses in addressing these;
- Identify lessons learned and good practice, which can be used in the design of future coastal adaptation projects in Mauritius and elsewhere;

1.2 Scope & Methodology

The objectives of the evaluation are to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP and AFB programming.

The TE has been conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects.

An overall approach and method¹ for conducting project terminal evaluations of UNDP supported GEF financed projects have been developed over time, and has been used for the current evaluation. That is the evaluation methodology included a mixed methodology of document review, interviews, and observations from project site visits, and the evaluators made an effort to triangulate information through multiple interviews and additional document analysis. The evaluation is framed using the criteria of **Relevance, Effectiveness, Efficiency, Sustainability, and Impact**, as defined and explained in the [UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects](#). It also assesses alignment with broader UNDP goals in the Mainstreaming section as well as provides and assessment of Country Ownership, the likelihood of Sustainability and the project's Impact.

The TE rests on an evidence base of extensive interviews covering a broad range of stakeholders, document analysis, and the assessment of secondary data (relevant literature and related reports) in addition to the extensive international and national experience of the evaluators in regards to climate change adaptation. The evaluation is framed in terms of UNDP's evaluation criteria, i.e., relevance, effectiveness, efficiency, gender sensitivity, and inclusiveness. These themes are covered across the scope of the project's results and activities.

Key documents that were reviewed for the TE included (but are not limited to):

- Project Document;
- Inception Report
- Project Performance Reports (PPRs);
- Quarterly progress reports and work plans;
- Audits reports
- Mid Term Evaluation Report
- Interviews with project staff, key project stakeholders, including Project Boards, and other partners
- Project budget and financial data
- The project M&E framework
- Project operational guidelines, manuals;
- Minutes of the Project Steering Committees;
- Maps: Project sites, highlighting suggested visits
- The UNDP Monitoring and Evaluation Frameworks
- National strategies, policies and laws
- Relevant literature, publications and other reports related to coastal adaptation

¹

Extensive key Informant Interviews were conducted in late November/early December of 2019. The Evaluation team leader, and National expert conducted extensive private interviews with key stakeholders identified by UNDP as well as additional interviews with community members at the project sites, and further interviews were conducted by Skype, and remotely as required for follow up. All project sites and interventions were verified directly through site visits by the evaluators.

Field Visits: The Evaluators undertook 14 days of fieldwork in Mauritius between November 26th and December 9th, 2019. The primary focus of the in-country mission and field visits was to undertake key informant interviews with Ministry of Environment and Sustainable Development staff, as well as with UNDP and other relevant stakeholders, as well as key informant interviews with community members and other stakeholders at project sites and surrounding communities. The Evaluators visited all three field sites, including Mon Choisy, Rivières de Galets, and Quatre Soeurs, including to verify coastal adaptation measures.

1.3 Structure of the Evaluation Report

The report has six main sections: 1. Introduction 2. The Project Description and Development Context 3. TE Findings, including Sections on 3.1. Project Design / Formulation 3.2. Project Implementation and 3.3. Project Results 4. Conclusion, Recommendations and Lessons Learned and; 6. Annexes.

2. Project Description and Development Context

2.1 Project Start and Duration

The Government of Mauritius (GoM) secured funding from the Adaptation Fund Board (AFB) for the implementation of the project “Climate Change Adaptation Programme in the Coastal Zone of Mauritius.” According to the original project document, the project would have been implemented in four years (2012–2016). Following extensive delays in initial procurement, the Adaptation Fund Board, following the submission of 2013 Project Performance Report (PPR), approved a one-year extension. Subsequent extensions were granted, leading to an overall project duration of 8 years, with the project end date set for May 2020.

2.2 Problems that the Project Sought to Address

The visible and measurable effects of climate change in the coastal zone of the Republic of Mauritius (hereby referred to as Mauritius) have become more apparent over the last ten years. There is a direct linkage between climate change effects on coastal ecosystem services (especially coral reefs and lagoons) and the integrity of the whole coastal zone of Mauritius. As coral reefs lose the race with sea level rise, it is imperative that the critical ecosystem function of wave attenuation be replaced in some manner. Adaptation therefore requires in situ changes in behaviour and site management and appropriate technical interventions as well as early warning systems that provide enough time for communities to move away from areas where the risk of storm surge and flooding is imminent. Storm surges and wave swells are expected to be aggravated through sea level rise and climate change effects on weather patterns. This will compound underlying trends of increasing coastal erosion and pressure on scarce land resources and increase physical vulnerability of island populations, infrastructure, and livelihood assets.

2.3 Immediate and Development Objectives of the Project

Mauritius is a group of islands in the southwest of the Indian Ocean, consisting of the main island of Mauritius, Rodrigues, and several outer islands located at distances greater than 350 km from the main island. As a Small Island Developing State (SID), Mauritius is particularly vulnerable to the adverse effects of climate change, especially in the coastal zone, where a convergence of accelerating sea level rise and increasing frequency and intensity of tropical cyclones (with more intense rainfall events and stronger winds) will result in considerable economic loss, humanitarian stresses, and environmental degradation. Accordingly, the Government of Mauritius (GoM) secured funding from the AFB for the implementation of the project “Climate Change Adaptation Programme in the Coastal Zone of Mauritius.” The objective of the program (becoming evident by the end of the program) will be increased climate resilience of communities and livelihoods in coastal areas in Mauritius (all islands).

2.4 Baseline Indicators Established

Project Objective: increased climate resilience of communities and livelihoods in coastal areas in Mauritius (all islands)

Outcome 1 – Increased adaptive capacity with relevant development and natural resources sectors

Baseline (2010): The beach at Mon Choisy is eroding at a rate of about 2 meters/year; Rivières des Galets is exposed to storm surges, with a failing seawall, openings in the wave overtopping wall, and an inadequate drainage system in the village; buildings in Quatre Soeurs frequently flood during high tides.

Outcome Target 1: No further erosion at Mon Choisy (beach accretion of 2 meters over 3 years); no surge flooding and no further shore erosion at Rivières des Galets; and, no flooding of coastal public buildings at Quatre Soeurs. The target for numbers of beneficiaries follows: Mon Choisy: 1,500-2000 people; Rivières des Galets: 300 people (based on actual survey); Quatre Soeurs: 1000 people.

Outcome 2 – Reduced exposure at national level to climate-related hazards and threats

Baseline (2010): MMS provides warnings to shipping based on perceived wave climate, and cyclone warnings for the general populace, but this system does not anticipate rogue swell conditions.

Outcome Target 2: By 2013, more than 3,400 people in current surge zones are able to safely evacuate prior to future storm surge events (There are no people left in the surge zone when the surge hits).

Outcome 3 – Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses

Baseline (2010): (2010) public agencies are unclear on their obligations regarding management of climate change effects in the coastal zone, and the private sector and general populace do not know what options there are for coastal adaptation, or how to initiate such measures in the most practical, cost-effective manner.

Outcome Target 3: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses

Outcome 4 – Improved policies and regulations promoting and enforcing resilience measures

Baseline (2010): Current policies and regulations are inconsistent with regard to management of climate change effects in the coastal zone (they do not envision the coastal zone in 2060) and do not provide clear guidance or incentives for practical implementation of adaptive measures.

Outcome Target 4: All relevant policies, strategies, plans, and regulations are consistent in 1. Having a clear vision statement for adaptation in the coastal zone, 2. Recognizing climate change impacts in the coastal zone over the next 50 years, and 3. Having clear government institutional responsibilities for adaptation in the coastal zone.

Outcome 5 - Knowledge Dissemination and Management

Baseline (2010): There is no consistent awareness nor understanding of the implications of climate change in the coastal zone; households, communities, and government organizations do not factor into their plans and activities the possible climate change effects 50 years from now.

Outcome Target 5: By 2016, effective capturing and dissemination of lessons from the applied activities in the programme.

2.5 Main Stakeholders

The key government stakeholders included the following:

- Ministry of Environment and Sustainable Development;
- Ministry of Finance and Economic Development;
- Ministry of Housing and Lands;
- Ministry of Blue Economy (previously known as Ministry of Fisheries);
- Ministry of Public Infrastructure;
- Beach Authority;
- Ministry of Tourism and Leisure;
- Ministry of Local Government and Outer Islands;
- District Councils;
- Mauritius Oceanography Institute;
- Mauritius Meteorological Services;
- University of Mauritius;
- Reef Conservation (NGO)
- Community Based Organizations
- Coastal communities at three projects sites (Mon Choisy, Rivières des Galets and Quatre Soeurs/ Grand Sable)
- Private sector

2.6 Expected Results

The project as designed was envisioned to support the acquisition of the best technical expertise to help implement, with the full involvement of a range of coastal stakeholders (institutional and community stakeholders, as well as the private sector), coastal adaptation/protection measures, as well as to support capacity development to guide all future coastal adaptation in Mauritius. The private

sector was seen as a key partner in the implementation, supervision and maintenance of works, and in the dissemination of good practice.

The design and construction of a range of coastal protection measures at three vulnerable coastal sites (Mon Choisy, Rivières de Galets and Quatre Soeurs), aimed to impart direct beneficiaries with full climate resilience, by the end of the project. The project also aimed to result in the development of the enabling environment for long-term climate change planning, including an: i) Early Warning System for incoming storm surge that provides an immediate social benefit in reducing risk caused by storm events; ii) Policy, fiscal and regulatory development, and iii) Stakeholder training to promote compliance with climate-proofed planning, design, and location guidelines.

Finally the project aimed to support the dissemination and management of lessons learned from the project, so that all Mauritians have a better understanding of climate change issues in the coastal zone and guidance on what practical solutions will suit each specific site. The three-pillar approach of the project (implementation of coastal protection measures; development of the enabling environment and public awareness) was seen as essential to the eventual full replication of coastal adaptation measures at all coastal sites in Mauritius in the future.

3. Findings

3.1 Project Design / Formulation

The programme design was comprehensive and integrated, however proved too ambitious for the original project timeframe, and resulted in several extensions resulting in a project implementation period of double the planned time (8 years rather than the originally allotted 5 years). The site selection and chosen interventions could have been optimized to enhance the resilience of communities and livelihoods, which was the stated objective of the project. Although a thorough risk analysis was completed at the project outset, it did not include a robust consideration of mitigation measures and design changes to account for the operational, technical and political risks, or the capacity of the Ministry of Environmental and Sustainable Development (the executing entity) to absorb the scale of funding received. Design flaws in the interventions proposed in the project document, as well as consideration of options, which were not viable under the project (such as community resettlement), also led to very long delays in implementation. This is discussed in further detail below.

3.1.1 Analysis of LFA/Results Framework (Project logic /strategy; Indicators)

The project's stated objective "*increased climate resilience of communities and livelihoods in coastal areas in Mauritius (all islands)*" was clear, necessary and extremely relevant, however the elements of the results framework (outcomes, outputs, indicators and targets) of the project could have been better aligned with the objective. An actual community vulnerability focus would have been achieved if the site selection took into account a multi-criteria community vulnerability mapping at the outset, and then prioritized the sites for investment / coastal adaptation measures accordingly. This is certainly a lesson of the project, and integrated into future work funded by the Adaptation Fund work to establish where along the coast the most climate change vulnerable communities are located.

It is also notable that there was little emphasis on the livelihood aspects of the community members for building of climate resilience. This was with the exception of assuming that stopping beach erosion

would protect tourism jobs at the Mon Choisy site, and limited livelihood support to a women's association and fishers association at the Quatre Soeurs/ Grand Sable site, which is discussed further in the sections on Mainstreaming and Stakeholder Participation, respectively. Based on the findings of the TE and the justification in the project document, the selection of Mon Choisy as a prioritized site for the project seemed to be more based on the protection of economic assets, given that the public beach is important for tourism, and the fact that no data at the community level on socio-economic impacts of coastal erosion had been gathered previous to site selection or since. Although, the beach at Mon Choisy has been confirmed subsequently by a JICA project to be one of the beaches in Mauritius experiencing one of the highest erosion rates, the problem of beach erosion, while a critical economic issue for Mauritius given that tourism accounts for a significant portion of the GDP, is perhaps not the most urgent in terms of community vulnerability.

Finally, the project's Monitoring and Evaluation framework, in regards to the chosen indicators, as well as issues in regards to the baseline, are further discussed in the section on Monitoring and Evaluation below.

3.1.2 Assumptions and Risks

Although many potential program risks were identified in the project document risk framework, along with proposed countermeasures (for the full list see risk matrix in the project document), the countermeasures proposed were at times inadequate and did not address the level of identified risk.

The key risks that manifested most strongly over the project lifespan are reproduced below with their proposed countermeasures.

- 1) Political risk: Government of Mauritius commitment to climate change management could wane as development priorities become more prominent and compete, especially in the run-up to elections.
Proposed countermeasure: Constant reiteration of the risks of climate change and the positive net benefits of adaptation investments is required.

This was indeed a key risk of the project and the fact that the previous Minister in charge of the MoESD had a greater emphasis on social security related priorities over climate change, had an impact on the project. Although this was well managed through advocacy, the development priorities of the government (for example in terms of permitting of new hotel developments along the coast) do in fact undermine the long-term goals of the project. Rather than being managed through reiteration of the benefits of adaptation, this risk should have been managed through an adequate emphasis on the implementation of the National Coastal Zone Adaptation Strategy (NCZAS) as well as on complementary policy such a Strategic Environmental Assessment (SEA) law and enforcement of regulations in regards to building in environmentally sensitive areas (such as wetlands, which play a critical role in regulating flood impacts).

- 2) Organizational risk: MoESD may have limited management capacity for programme activities to be undertaken, and for the eventual assumption of climate change management oversight and enforcement; conflicts between the CC Cell and the ICZM Division may become apparent.
Proposed countermeasure: UNDP will maintain a strong link with the programme, and the various programme activities that address institutional aspects will be guided by technical consultants, who will bring valid experiences from other countries, which should inform the situation in ROM.

This was also a key risk for the project, which became increasingly evident over the course of project implementation, and was clear at the MTE stage given the project was only at 6% delivery (due to both limited management capacity and other factors). The limited management capacity for the scale and technical complexity of the project, and more broadly the institutional capacity to absorb, was significantly underestimated. Again, assuming that guidance by external technical consultants was adequate to address this issue was somewhat naïve, given that even when presented with fleshed-out options for adaptation, the project manager felt ill-equipped to make final design decisions and UNDP provided delayed oversight regardless of significant lost time. A better solution may have been to scale the investment and project design to the institutional capacity, as well as to hire a Chief Technical Advisor with the necessary technical capacities, and finally to have a performance-based component in the project manager's contract.

- 3) Operational risk: Varying, possibly conflicting, perceptions of the climate change risks and coastal adaptation approaches may become apparent, based on previous experiences and technical expertise.

Proposed countermeasure: Frequent dialogue with programme partners and reinforcement of solid principles of climate change management and appropriate adaptation measures will be required; several other projects ...will help in this regard; the role of technical consultants will be important here.

This is one of the identified risks that had the greatest influence on project delivery. Specifically, after project start-up the option of resettlement at the Rivières de Galets site was reconsidered, regardless of the fact that the project was designed to provide an alternative to this costly and complicated option. Perhaps most pertinently, this was not an option that was actually fundable by the Adaptation Fund, and literally years of time, effort and project budget could have been saved by explaining the constraints of the multilateral fund to decision-makers within the MoESD. That is, in regards to environmental and social risks, issue of resettlement is a significant social risk, and is not in line with the guidelines of the Adaptation Fund, and could have been avoided with appropriate understanding and communication at an early phase regarding the what types of investments were allowable. Again, this is a significant lesson-learned as part of the project, and will be particularly relevant in future projects that may be funded by donors such as the Green Climate Fund which has particularly strict criteria in regards to environmental and social risk.

- 4) Financial Risk: Delays in fund transfers and procurement of technical services and equipment. Proposed countermeasure: Programme activities have been designed and paced to ensure a reasonable chance of completion over five years (a timeframe less than this would be too ambitious); the Programme Board will provide required oversight for management of programme inputs.

This is correctly identified financial risk, also had the single greatest influence in terms of the problems which manifested in regards to project delivery. One of the issues was that the project design was drafted in 2008 and then started in 2012, so the budget did not account for the escalation costs, for things such as the Early Warning System. The basic project assumption, as noted in the MTE, was that all project risks were "owned" by both UNDP, as the implementing entity, and the MoESD, as the executing entity. It was noted however that UNDP has the ultimate responsibility for all financial risks, and the right of cessation of activities or withdrawal of funding in the event of risks that cannot be otherwise managed. Again, this responsibility was not managed in a timely manner by UNDP, despite

obvious bottlenecks caused by the national procurements guidelines. Ultimately, an appropriate solution was found, by directing large procurements through UNDP, however this could have occurred at an earlier stage, avoiding further delays.

Finally, the issue of environmental risks was not adequately accounted for in the project document given that submerged offshore structures (which was originally proposed as a submerged rock mound, and finally decided to be an artificial reef structure) may have a significant impacts on marine biodiversity, as well as unanticipated biophysical impacts (changes to the seabed, and down drift erosion). This was particularly critical given that this intervention is located in an environmentally sensitive area, with the presence of critically endangered species such as the Hawksbill turtle. This was not adequately accounted for in the environmental monitoring plan post project and has been addressed at one of the key recommendations of the TE.

3.1.3 Lessons from other Relevant Projects (e.g., same focal area) Incorporated into Project Design

It is worth noting here that this coastal adaptation project was designed in 2008 and that it was one of the first of its kind, to be funded by the Adaptation Fund. In the face of limited experience internationally, with coastal adaptation measures, and as a new, innovative approach in Mauritius, it is perhaps understandable that the project did not draw in a more direct way on other relevant projects. The MTE notes that however, over the project implementation period, Mauritius received technical support, especially on cost effective coastal zone innovations, from Japan and other governments. The project team was also said to have observed the result of the Japanese collaboration at nearby Quatre Soeurs project sites. Regardless, drawing on the lessons from other relevant projects as project implementation progressed, could have been done much more thoroughly. Between project start-up in 2012 and project close in 2020, the experience with various types of coastal adaptation measures, both in terms of green and grey infrastructure, has exponentially increased. The project could have drawn on growing international experience on green infrastructure, particularly in regards to mangrove rehabilitation, which has been implemented with greater frequency globally. A more robust consideration eco-system based adaptation (EBA) approaches would have benefitted the project, given that one of goals identified in the project document was the ability of the government to compare the cost effectiveness of EBA with that of built infrastructure, to inform adaptation planning.

The project document states: “Millions of dollars have been spent in the last five years on beach remediation and wave-breaker structures (Government and private) that have failed. If future interventions are not properly designed, the total cost of inefficient, ineffective, or non-existent coastal protection measures will be the accumulated value of beach erosion, damaged coastal infrastructure, and relocation of coastal communities, equivalent to US\$ 3.362 billion over the next 50 years.” Regardless, the relocation of coastal communities was reconsidered during the project implementation, and a concrete-based wave-breaker structure was chosen as the main investment at two of the project sites (seawall at Rivières de Galets and an artificial reef at Mon Choisy). Although these may have indeed been the best options for adaptation at those sites, the project design did not allow for an “evidence-based assessment of the cost effectiveness of eco-system based approaches for coastal zone protection compared to built solutions” as was intended. Notably, coral reef restoration could have also been pursued as an option over the sloped rock mounds originally proposed at Mon Choisy. At the Rivières de Galets site, submerged concrete tetrapods would likely have provided a effective solution (as evidenced in Japan, and proposed in the design report for the site) to seawall fortification, which international experience has shown often has a limited life in comparison to its high capital cost.

3.1.4 Planned Stakeholder Participation

A range of stakeholder groups was consulted throughout project design and implementation, cementing the multi-stakeholder approach espoused in the project document. This included a wide range of institutional stakeholders, both from within the various departments of the Ministry of Environment and Sustainable Development (MoESD) as well the private sector. In fact, the private sector was rightly identified as a key actor, given that tourism represents the greatest portion of the country's GDP, and much of the coastal land in Mauritius taken up by the hotel industry, giving private sector actors a particularly large stake in beach erosion. Unfortunately, although engagement was planned, private sector actors were not as integrated in the project as they could have been, and were principally involved in the training courses delivered under Component 3 of the project.

Finally, Mauritian law requires community consultations take place when a new development is proposed, as part of the Environmental Impact Assessment (EIA) process, resulting in several community level consultations for the project's hard infrastructure. The project would have benefitted however from deeper community participation in terms of deciding interventions and collecting relevant socio-economic data in terms of livelihoods and quantification of impacts from past extreme weather events exacerbated by climate change. Consultations were rather focused on informing communities of planned interventions, and of course extensive consultations took place in regards to re-considering the option of resettlement at the Rivières de Galets site, which could have been avoided (as is discussed below on the section regarding Effectiveness and Efficiency). Finally, as part of Component 1 of the project, community based organizations were created/ incorporated into the project including the Grand Sable Fishermen Association (GSFA) Grand Sable Women Planters Farmers Entrepreneur Association (GSWPFEA) both at the level of the Quatre Soeurs site. The strengths and weakness of this primary stakeholder participation is discussed further below in the section on Effectiveness and Efficiency, as well as Mainstreaming.

3.1.5 Replication Approach

There was a strong emphasis on having replicable approaches to coastal adaptation identified by the project. Namely, the description of Component 3 in the project document is "This component will promote compliance with climate-proofed planning, design, and location guidelines. Activities will ensure that all Government interventions in the coastal zone, designed to reduce erosion or address storm surge effects, incorporate site-specific features and measurably reduce the risk of flooding or the rate of erosion, and will put in place the capacity for on-going replication of effective coastal adaptive measures by both the Government and private sector." The project document also states "The overall approach is to work from the level of technical solutions at specific coastal sites to the policy and regulatory level, such that future replication of coastal adaptation measures will be catalysed, supported by new policies, guidelines, and economic incentives."

Furthermore, the project document notes that, although sites in Rodrigues and Agalega have not been chosen for the project, replication is also planned on those islands with government and private sector funding. A key argument for the economic benefits of the project was also given in terms of coastal adaptation measures, such as those used to control beach erosion, being replicated fully in other sites effected by erosion. The TE mission also confirmed that the government is already planning to replicate various coastal protection measures used in this project, particularly the artificial reef structures to

other economically important beaches such as Flic-en-Flac.

Although this emphasis on potential replication is positive, it is important to note the major gap in terms of assessing the actual impact by project close of the coastal adaptation measures implemented. Given the project implementation timeline, the assessment of the efficacy of the interventions over time remains to be determined. Furthermore, it is essential to understand the integrated environmental impacts of the measures (particularly the artificial reef structure) before replicating to other sites. This has been addressed as a key recommendation of the TE.

3.1.6 UNDP Comparative Advantage

It was clear from the TE mission interviews that government stakeholders in Mauritius value working with UNDP, and that there is a demand for UNDP services. This is evidenced through the choice of UNDP as the implementing agency for several Global Environmental Facility (GEF) projects, the present investment by the Adaptation Fund Board (AFB), a project with the Green Climate Fund (GCF) as well as new projects in the pipeline with AFB and GCF. UNDP played a central role in developing the original idea for the project, as well as a catalytic role in resourcing, resolving issues with procurement and in the strategic management of the project. It should be noted that the context for execution of the project was unique, as it was the first AFB project in Mauritius, and one of its largest investments at the time. In this context, and as noted in the MTE, UNDP's experience in execution generally, GEF mechanisms, and the National Implementation Modality (NIM) has been crucial in assisting with unfamiliar project implementation processes and AFB modalities. UNDP has also added value by providing platforms for south-south cooperation and for the procurement of expertise through its networks. Perhaps most importantly, and as mentioned above, UNDP was essential in removing the significant procurement bottlenecks, by eventually using its own procurement process.

As noted in the MTE, it is important in the context of Mauritius, as is often the case of the context of Small Island Developing States (SIDS) where there is a limited number of professionals with the relevant environmental/technical expertise and experience, that projects are staffed by a combination of personnel from outside of the government as well as those on leave from government (civil servants). UNDP therefore also played an important role in identifying expertise for the project through its global network, and was also able to mobilize important visibility for the work. Overall, the partnership was productive, but given the issues with implementation would likely have benefitted project achievements at the outcome level with greater oversight and an emphasis on Results Based Management (RBM).

3.1.8 Management Arrangements

The National Implementation Modality (NIM) was chosen for the project, with UNDP supporting national implementation through the MoESD. In practical terms, this means that the government was ultimately responsible for project implementation, in an arrangement that is considered best for strengthening government capacity, while providing international experience, and expertise in technical and operational oversight as outlined above. Although the partnership arrangements were properly identified at project initiation, both between UNDP and the executing entity, MoESD (in addition to a range of other institutional partners critical to the success of the project) the NIM modality may not have been ideally suited to the Mauritian context. This became evident over

the course of project implementation, with critical bottlenecks such as the national procurements guidelines leading to significant delays. Furthermore, past and current project experience, and as confirmed by the recently completed GEF Small Island Developing States (SIDS) meta-evaluation, show consistent challenges with delivery and the institutional capacity to absorb large tranches of international funding. These issues are further discussed in sub-section 3.2.6 UNDP and Implementing Partner Implementation/Execution (*) Coordination, and Operational Issues, in the Project Implementation section below.

One further weakness in management arrangements identified during the TE mission was that due to long project delays, there were also some issues with continuity of management in the project, particularly in regards to the project manager, a civil servant with a maximum time for secondment of 5 years. This may have in fact been a blessing, as certain elements of the PM's management style likely contributed to project delays (such as an insistence on having signatures on hardcopy documents for all engineering design documents, rather than sending approvals by email). The length of the project also had implications on the continuity of personnel participating in Project Steering Committee and Project Technical Committee meetings.

Overall, although the National Implementation Modality is seen as positive in the sense of giving the necessary ownership of the project and being more hands off, it may have been advisable in this case to have greater oversight by UNDP. One practical way to achieve this would have been to ensure direct reporting lines to UNDP in the project manager contract as well as to have a performance-based contract.

3.2 Project Implementation

Given that 90% of the delivery of the project occurred in the last two years of project implementation, after several project extensions, and that most outputs under Component 1 (82% of project budget), were only completed in the last 6-9 months prior to project close, it is evident that there were significant shortcomings in project implementation. Major bottlenecks included an underestimation of budget, associated challenges with procurement (particularly the national procurement guideline limitations and the availability of appropriate technical expertise), as well as weaknesses in decision-making processes leading to significant detours in implementation. The project would have benefitted from project management continuity and a performance-based contract for the project manager, as well as a Chief Technical Advisor (CTA) and a dedicated monitoring and evaluation officer, and finally with greater oversight from UNDP at the country office and regional levels. Regardless, there are many valuable lessons learned through this ambitious project and putting certain sustainability measures in place past the project close can significantly improve project results. Learning from the challenges encountered with the implementation of this project also presents a valuable opportunity to improve the delivery of other climate finance projects. The factors contributing to the above in regards to Project Implementation are discussed further in the following sections.

3.2.1 Adaptive Management (Changes to the Project Design and Project Outputs during Implementation)

It was noted in the MTE that modalities for adaptive management were greatly limited by the rigidity of the funding arrangements with the Adaptation Fund Board. The AFB project modality was new at the time of project design, and the logical framework of the project could not be changed (as indicated through an interview with AFB colleagues and UNDP RTA and program officer during the MTE mission). This was a significant constraint given the flaws in the initial project design noted above. It is clear that

adaptive management and smart indicators can serve a critical role in guiding project teams and for developing the necessary strategies for the transformative changes required to achieve climate resilience.

Although there were several important changes to specific elements of the project design under Component 1 of the project, this did not lead to any actual change in the project outputs, nor in the outcome targets of the project. This is discussed further below in Section 3.2.3 Feedback from M&E Activities used for Adaptive Management. Several key recommendations in the MTE, which were not adopted, may have also improved project implementation, which is also discussed further below in the same section.

3.2.2 Partnership Arrangements (with Relevant Stakeholders Involved in the Country/Region)

Partnership arrangements were properly identified and robust. In an inherently cross—disciplinary project with high level of coordination necessary and the cooperation of actors at many levels of influence and different types of expertise (for example in training, policy, community-based interventions) a major strength of the project was that it drew on a large range of actors with a variety of expertise.

The participation of a wide range of institutional actors was operationalized through several Memoranda of Understanding (MOUs) and partnerships agreements, as well as present in the Project Steering Committee and Project Technical Committee. Furthermore, implementing partners included the NGO Reef Conservation, as well as the University of Mauritius (UoM). Additionally, several new government partnerships were developed with key Non-Governmental Organizations (NGOs) and Community Based Organizations (CBOs), which are further elaborated below.

Both the findings of the MTE and the TE confirm that the project team spent considerable efforts in developing working partnerships with a range of actors, both within the government and externally. That is, project partners were involved in project oversight through the Project Steering Committee (PSC), the inter-sectorial Project Technical Committee (PTC), and were also active in regards to site-level implementation. Several formal agreements were also signed in the form of Memoranda of Understanding (MOUs), including with the University of Mauritius (UoM), Mauritius Meteorological Services (MMS), and with NGOs including the fishermen’s and the women’s associations at Quatre Soeurs, as well as with Reef Conservation. A summary of the formal partnership agreements established is given below:

Partnerships: 3 Memorandum of Agreements (MOA) Signed

1. MOA with Grand Sable Fishermen Association
2. MOA with Grand Sable Women Planters Farmers Entrepreneur Association
3. MOA with University of Mauritius

Partnerships: 7 Memorandum of Understandings (MOU) signed

1. MOU with Mauritius Meteorological Services
2. MOU with University of Mauritius
3. MOU with Reef Conservation Mauritius
4. MOU with Rodrigues Regional Assembly
5. MOU with The Attitude Foundation
6. MOU with Stichting Deltares and UNESCO-IHE

7. MOU with Rogers Foundation and Reef Conservation

3.2.3 Feedback from M&E Activities used for Adaptive Management

The project would have benefitted from a more flexible adaptive management approach, with the logical framework as a basis for a rolling but more flexible management tool. During the MTE, at which point the project was only at 6% delivery, the MTE team helped the project team think through smarter indicators around the climate resilience outcomes of the project, in order to better guide strategies towards the intended end result, however these suggestions were not explicitly adopted. The MTE also suggested that an M&E officer be appointed to provide more attention to M&E for results and develop a local M&E plan for each site, however this suggestion was also not adopted. Again, a greater emphasis on results-based management would likely have improved the chance of achieving the outcomes of the project.

Regardless, in a limited sense, adaptive management was used as original designs were modified from those identified in the project document, which proved to be inappropriate for the context. For example, the originally proposed design for the refuge centre at Quatre Soeurs was placed in an extremely vulnerable, in the flood zone and would have isolated community members taking shelter from frontline workers, as well as exposed them to further death, injury and./ or waterborne illness. This was rightly identified as inappropriate and the necessary changes were made to re-commission a more appropriate design, which placed the shelter on high ground. Clearly this also led to project delays, particularly given that the site identified for the refuge centre was private land, which then had to be acquired by the government. Regardless, the necessary change was made for the output to achieve its intended outcome. Another design change that occurred, aligned with the spirit of the project in regards to assessing various adaptation measures, was the decision to replace the rock mound structure originally proposed at the Mon Choisy site with an artificial reef. Again, although this led to project delays, a solution, which more optimally fulfilled the range of criteria at the site, as well as the desire of local stakeholders (as identified through the EIA process), was chosen. Although these were not changes in the actual outputs as identified, true adaptive management would have resulted in consequential changes to the overall project structure to account for the project delays and changes in budget that came as a result of these design changes.

Finally, one attempt at adaptive management, which had a negative impact on project results (particular effectiveness and efficiency), was the exploration of the option of community resettlement at the Rivières de Galets site. This major detour in the project approach could have been avoided by ensuring a clear understanding of the constraints of AFB funding to the stakeholders with influence among government partners.

Regardless a clear opportunity however for adaptive management is to take on board the recommendations set forward in the MTE. Some of the key recommendations if implemented in a more robust way would have indeed improved project delivery and the attainment of outcomes. There was very little adoption of the recommendations in the MTE for the remainder of the implementation of the project. For example, as stated above the MTE suggested appointing an M&E officer in order to put emphasis on M&E for results and to develop a local M&E plan for each site. This certainly would have been an asset to the project and may have helped to ensure delivery, however was not implemented.

3.2.4 Project Finance

The project document, as in standard in UNDP project documents and as per UNDP procedures, contained financial controls, allowing project management to make informed decisions in regards to budget and time. Periodic monitoring of project finance was carried out through Project Performance Reports (PPRs), at the MTE stage, as well as through third-party (KPMG) financial audits carried out annually. Project finance audits reports show that project finances were spent in compliance with allocated budgets, and in conformity of regulations and guidelines. Although there was no weakness in this regard, it is notable that the protocols in financial reporting were not effective in terms of initiating project management action to increase financial delivery, including the fact the at the MTE stage the project was only at 6% delivery, until the very end of the project. This is demonstrated below in the Table showing expenditure by project year.

Unlike GEF and GCF projects, AFB project have no formal requirements for co-financing and hence this was not described in the project document. Regardless, the government of Mauritius provided human resources, office support and additional financial support at the project sites, not limited to the acquisition of private land for the construction of the Refuge Centre at Quatre Soeurs, indicating strong government commitment. A key recommendation in the MTE was that the government co-financing be recorded in an easy to use manner for purposes of the terminal evaluation. Although this was not completed, the indicative figures on government co-financing are below in the Table showing Co-financing expenditures.

Finally it is worth noting as highlighted in the MTE, that the project team launched two procurements of unprecedented scale in the context of UNDP Mauritius CO, for the implementation of Outcome 1 and Outcome 2. Due to the significant delays in procurement due to stringent government regulations, which prohibit a 25% increase in the budget from the original estimation, UNDP procurement processes were eventually used. The bidding process for the complex engineering design works required as part of the adaptation measures under Component 1, as well as the services required to establish the Early Warning system for storm surge under Component 2, was an important learning experience for both the MoESD, as well as the UNDP CO. This exercise provided valuable experience in regards to scoping costs for such measures and the availability of technical expertise. These procurement exercises provide a good benchmark for planning future climate change adaptation projects.

In regards to adaptive management and both the significant delays in delivery, as well as the significant changes in budget related to certain works (EWS), the project budget was difficult to reschedule and re-allocate, acting as another disincentive for true adaptive management. A lesson is that both UNDP and AFB procedures would ideally be flexible enough to enable adaptive management of the budget, particular for measures that have not yet been identified, given the project calls for a cost-benefit analysis of adaptation options. A fixed budget in this case provides an incentive to spend project budget on outputs up to a fixed amount, regardless of whether the final design calls for expenditures of the originally determined amount, leading to significant financial inefficiency.

TABLE 1: Co-Financing Expenditures

Outcome	Initial/planned allocation	Revised Budget Allocation (AFB) May 2014	Expenditures to January 2020 (USD)	Percentage expenditure
				Of the Proposed Financing amount
1	6,465,700	6,680,440	5,965,537	89.3 %
2	133,705	310,365	816,573	263.1%
3	394,025	394,025	313,191	79.49%

4	350,050	200,000	189,637	94.82%
5	561,350	320,000	213,103	66.59 %
Total-Project Implementation Cost	7,904,830	7,904,830	7,498,041	94.85 %
Execution Cost	500,000	500,000	693,934	138.79%
Total Program Cost	8,404,830	8,404,830	8,191,975	97.47%

TABLE 2: Expenditure by Project Year

Output / Activity	AMOUNT (USD)								
	2012	2013	2014	2015	2016	2017	2018	2019	TOTAL
Output 1.1, 1.2, 1.4, 1.5, 1.6	28,340	40,894	21,250	10,800	103,332	35,023	73,380	74,313	387,332
Output 1.3			40,893	327,142	488,956	713,971	1,045,210	2,962,033	5,578,205
Output 2.1, 2.2	8,756	2,130	26,353	224,189	8,983	-	-	546,162	816,573
Output 3.1, 3.2, 3.3	-	71,093	73,532	37,844	99,479	508	27,650	3,084	313,191
Output 4.2, 4.2, 4.3, 4.4	-	-	-	99	-	82,098	62,854	44,586	189,637
Output 5.1, 5.2, 5.3, 5.4, 5.5	-	-	20,510	19,605	23,528	46,605	27,317	75,538	213,103
Execution Costs	19,780	65,070	111,426	96,278	130,602	93,192	54,781	122,806	693,934
Unrealised Gain	(1,132)	(1,356)	(1,379)	(1,023)	(791)	(11,941)	(4,131)	(751)	(22,504)
Unrealised Loss	-	1,450	2,888	11,977	1,641	8,037	20,115	4,488	50,596
Realised Gain/Loss							(186.00)		(186)
TOTAL	55,744	179,282	295,473	726,911	855,729	967,493	1,306,990	3,832,259	8,219,882
(% of Total)	1%	3%	6%	15%	25%	37%	52%	98%	

TABLE 3: Total Expenditure by Outcome/Outputs

Output Targets	Expenditure USD
1.1 Detailed technical assessment of each site, with chronology of previous flood and erosion events and collection of near shore oceanographic data, during "quiet" periods and "active" periods (one month each) to inform the design of the technical interventions at each of the three sites.	387,332

Output Targets	Expenditure USD	
1.2 Technical design of coastal protection measures at each of three sites, with detailed costing, carried out in a gender sensitive way.		
1.4 Analysis of data and development of recommendations on how the interventions can be adjusted for other vulnerable coastal locations in ROM		
1.5 Monitoring program designed to include scoping of suitable parameters, including beach width and slope; depth of adjacent lagoon sediments; wave height, period, and run-up; direction of near shore currents, etc.		
1.6 A targeted coastal process/weather event monitoring system in place.		
1.3 Successful construction of physical interventions at each of the three sites.		5,578,205
2.1 Assessment of the current sea state monitoring systems (Mauritius Meteorological Services and Mauritius Oceanography Institute) and definition of required critical parameters and operational requirements for an early warning system		816,573
2.2 The early warning system installed and implemented (with links to early warning system for cyclones), with communication linkages established from level of National Coast Guard at Headquarters down to the level of coastal communities.		
3.1 "Handbook on Coastal Adaptation" packaged as training modules for coastal communities, relevant Government agencies, and private sector stakeholders (such as hotel operators); training sessions delivered on a regular basis over the course of the project (at least twice annually).	313,191	
3.2 Short course on Coastal Engineering designed and delivered (twice during program period).		
3.3 Specialized course on Cost-Benefit Analysis of coastal adaptation measures designed and delivered (annually, over four years).		
4.1 A National Coastal Zone Adaptation that addresses all perceived climate change risks in the coastal zone of ROM over at least the next 20 years, with recommendations for supporting policies and regulations	189,637	
4.2 A set of recommendations on best technical and institutional adaptation practices suitable for the coastal zone of ROM		
4.3 Definition of the required structure and processes for one "clearinghouse" for climate change oversight in the coastal zone of ROM (a unit or institution, or collection of individuals from various agencies which is able to make final decisions on the climate appropriateness of future development projects; also having a follow-up enforcement capacity)		
4.4 Recommendations for new economic instruments		
5.1 Handbook, training modules, and website content capturing best coastal adaptation practices for the Mauritius context	213,103	
5.2 Dissemination of lessons learned from the program with coastal stakeholders in other locations in the southern Indian Ocean		
5.3 Interpretive signs and small-scale models of coastal processes designed and installed at each site, explaining the science of climate change and coastal processes (in lay terms), so that the linkages between weather, stability of coastal features, and adaptation measures are clear.		
5.4 Public awareness campaigns on climate change in the coastal zone designed and delivered, involving the Mauritian media (TV, radio, Internet)		
5.5 Priority ranking of vulnerable coastal sites established, to guide the order of future investment by the Government of Mauritius and the private sector.		

Output Targets	Expenditure USD
EXECUTION COSTS	693,934
TOTAL	8,191,975

3.2.5 Monitoring and Evaluation: Design at Entry and Implementation (*)

Overall M&E Rating: Moderately Satisfactory (MS)

M&E at Design at Entry: Satisfactory (S)

M&E Implementation: Moderately Unsatisfactory (MS)

Best practice in the setting of outcomes (and associated indicators) aims for the following “SMART” characteristics:

- **Specific:** Outcomes must use change language, describing a specific future condition.
- **Measurable:** Results, whether quantitative or qualitative, must have measurable indicators, making it possible to assess whether they were achieved or not.
- **Achievable:** Results must be within the capacity of the partners to achieve.
- **Relevant:** Results must make a contribution to selected priorities of the national development framework.
- **Time-bound:** Results are never open-ended. There should be an expected date of accomplishment.

In regards to this there were significant improvements possible in the project’s logical framework. For example the target for Outcome 1 “Increased adaptive capacity within relevant development and natural resources sectors)” is “No further erosion at Mon Choisy, No surge flooding and no further shore erosion at Rivières des Galets; and, no flooding of coastal public buildings at Quatre Soeurs” are likely not achievable for a single adaptation measure at each site, and furthermore there is no long-term process in place to measure whether this has in fact been achieved (for example there was no provision to regularly monitor the flooding of beaches.

Perhaps even more pertinently, the bulk the investment at Quatre Soeurs is towards a measure that does not actually link to the flooding target. That is, although mangrove rehabilitation can certainly regulate coastal flooding by providing a physical barrier for storm surges, the refuge centre does not address the flooding target (but is rather a disaster risk management intervention). Furthermore, given the topography and infrastructure of the Quatre Soeurs area, it is clear that most of the flooding is due to poor drainage of coastal roads in the area, and that the bulk of the water from high rains comes from inland runoff rather than sea swell.

Similarly, the target for Outcome 2 “Reduced exposure at national level to climate-related hazards and threats” is “By 2013, more than 3,400 people in current surge zones are able to safely evacuate prior to future storm surge events.” Again, the Early Warning System related intervention is very relevant and necessary, but the output related to “communication linkages established from the level of National Coast Guard at Headquarters down to the level of coastal communities” was not emphasized, which would have made the attainment of the outcome possible. Again, this is a lesson from the project, and can be rectified by translating wave height information to flooding projections on the ground, and

then ensuring that the mechanisms are in place to notify the National Coast Guards and local authorities.

Finally, it is notable that often no pre-established baseline exists prior to project activities being implemented, for a range of projects and programmes. Best practice dictates that this baseline should be established prior to project implementation in the early design phase, or at the least as an early activity in the project. It may seem obvious, but in order to understand the concrete impacts of interventions it is essential to establish a quantitative baseline against which project interventions can be measured. In climate change adaptation projects, the issue of establishing the additionality of interventions, as well as determining counterfactual baselines in the face of possible multiple development scenarios, often further complicates this exercise. Regardless, more precise baseline data would have allowed a much-nuanced and precise understanding of the cost-benefit of the adaptation measures chosen. This is particularly true for the Outcome 1 baseline: “The beach at Mon Choisy is eroding at a rate of about 2 meters/year; Rivières des Galets is exposed to storm surges, with a failing seawall, openings in the wave overtopping wall, and an inadequate drainage system in the village; buildings in Quatre Soeurs frequently flood during high tides.” In this case, a historical assessment of the damages and/or injury and death at Rivières des Galets caused by storm surges would have allowed for a better assessment of whether the capital cost of the rehabilitating the seawall was worthwhile, given that it is also much more attainable to reduce damage/death/injury than to stop surge flooding completely. In fact, since the rehabilitation of the seawall at Rivières des Galets, there has been a flood which caused damage according to residents, somewhat undermining the results of this intervention, whose stated target was to ‘stop surge flooding’ at the site.

Establishment of a meaningful baseline is equally important for interventions in regards to capacity building and training. In order to actually determine the effectiveness of a training activity or program, it is inadequate to achieve a target in regards to the training being delivered. This shows that a pre-determined activity was delivered as planned, but does not correlate to how much practitioners or community members alike may have learned in regards to approaches to climate resilience.

Finally, as noted above, although the M&E design was adequate and budgeted for as required, the M&E processes proved in this context to be a sufficient condition for timely and efficient project delivery or the requisite emphasis on results. As outlined above, several key recommendations from the MTE were not implemented, several of which would have likely improved project results. This included the lack of a comprehensive community engagement plan at each site, which was a key recommendation of the MTE, as well as the appointment of a dedicated M&E officer.

3.2.6 UNDP and Implementing Partner Implementation/Execution (*) Coordination, and Operational Issues

Overall Quality of Project Implementation Rating: Moderately Satisfactory (MS)

Implementing Agency Execution Rating: Moderately Satisfactory (MS)

Executing Agency Execution Rating: Moderately Unsatisfactory (MU)

The project experienced significant issues in regards to achievement of results (although most outputs were achieved in over the last two years of project implementation, and the timeliness of delivery, given that the project was intended to be a 5 year project which had to be extended to eight years. Although the technical complexity and ambitiousness of project design had a role, as well as issues which were out of the control of the project team, the TE found that there were issues with the project management approach, primarily in regards to decision-making, as well as multiple inefficiencies in project management style. Some of the inefficiencies revealed in during TE interviews including an

emphasis by the original project manager on inefficient administrative processes (requiring 3 quotes for each budget line of even small purchases such as office supplies, as well as assisting on writing and receiving hard copy letters rather than writing emails for issues regarding engineering design) that greatly slowed things down. It was also noted that a weakness of the oversight relationship established between UNDP and the MoESD, was that it was difficult to enforce accountability in regards to results and timeliness of delivery, because the contract/TORs of the project manager did not have direct reporting line to UNDP. Finally, a gap worth noting, which may have played a role in project delays, was the lack of incentive for the project manager to stay on time when paid a salary uplift increased for every year on the project, but with no performance-based aspect to their contract and the granting of project extensions without direct consequence.

Another issue that is clear in retrospect, is that it would have been essential to have recruited a Chief Technical Advisor (CTA) for a project of this technical complexity; that is someone prepared to oversee technical decisions, supervise consultants as well as guide technical discussion on the adaptation measures and costs benefit analysis in the PSC and TC meetings. Although UNDP suggested that a CTA be hired in order to take on these functions, this was done very late in the project, and the suggestion was not acted upon.

Although the Project Steering Committee usually provides a forum for close coordination between UNDP and the government, the project delays speak to the fact that the PSC in this case was unable to make key decisions in order to adequately remove project bottlenecks in a timely manner. Interviews with key stakeholders suggest that the success of these meetings depends very much on the meeting chair, and although there was good participation in terms of presence the substantive participation of those present was sometimes lacking. The long project duration also meant turnover of participants and lack of continuity in project decision-making.

The UNDP CO wrote an official letter to the Minister of the executing ministry (MoESD) in December of 2018 in order to signal the delivery issues with the project. Although this was a significant motivation to improve delivery, this should have been done much earlier and ideally a project manager would have been hired at an earlier date. The project assistant, who effectively acted as project manager after the departure of the original (after the end of the 5 year secondment period for civil servants) should be given credit for ensuring over 60% of the project delivery over the last 18 months of the project.

It has been well established through interviews with UNDP and numerous government counterparts as well as through the recently-conducted SIDS evaluation by GEF, that the absorption capacity is typically low in SIDS, and is the case for Mauritius, as most projects receiving international funds has to be extended, in which case projects should be scaled accordingly accounting for these limitations.

There was also evidence that despite the integrated multi-stakeholder approach, there remains coordination issues between various government ministries, with dynamics of internal competition/rivalry for overlapping mandates and visibility, which also contributes to weak implementation, lack of information sharing or coordination in project development and implementation. A few concrete examples of this are given in the section on Sustainability in regards to monitoring of the artificial reef at Mon Choisy and the operation of the Refuge Centre at Quatre Soeurs.

Finally, it is worth noting that the long delays in project implementation also meant that there was turnover of the Resident Representative, the UNDP Regional Technical Advisor (RTA), as well as the project manager over the course of the project, which also led to challenges in oversight and continuity, compounding the delays. Overall it can be concluded that oversight at the UNDP CO level in regards to results based management could have been more stringent in order to avoid project delays, with some

responsibility also going to the regional level, given such a large project budget had only real delivery of the majority of the project budget in the last 18 months of a 5 year project, extended to 7 years.

3.3 Project Results

3.3.1 Overall Results (Attainment of Objectives) (*)

Overall Quality of Project Outcomes Rating: Moderately Unsatisfactory (MU)

The project results are the measurable development changes produced by the project, and pertain to the full scope of the Results-Based Management (RBM) chain, from direct project outputs, and with an emphasis on the short-to-medium term outcomes, as well as longer-term impacts. The project was able to achieve most of the intended project outputs by the very end of the project, with 63% of the delivery occurring in the last 18 months of project implementation after several extensions (from the originally intended 5 years to a total project duration of 8 years). Unfortunately, given the challenges in implementation, long-delays on completing many project outputs, the intended outcomes were in most part not achieved or remain impossible to assess with future monitoring. Given these results and the significant shortcoming in effectiveness and efficiency described below, the overall results rating for the project is Moderately Unsatisfactory.

It should be noted that the stated objective of the project was “to increase community and livelihood resilience in coastal areas of Mauritius” As the project stands, and with the data gathered by the end of project, there is no evidence that this has been achieved. The direct benefits on the targeted for now remains anecdotal or speculative, as there is no evidence that communities targeted are not more resilient nor that their livelihoods are more resilient. Perhaps most importantly, even when accounting for the considerable project delays, there is no adequate socio-economic baseline to actually monitor changes in community resilience. This is a lesson for future projects, which should clearly identify of beneficiaries, and then undertake a baseline socio-economic assessment and vulnerability analysis, before and after the project implementation at each site, in order to assess changes.

In light of this major shortcoming, the long-term impact of the project remains speculative and can only be adequately achieved and assessed through a combination of corrective actions, complementary initiatives and perhaps most importantly the on-going monitoring and assessment of the coastal adaptation measures after project close, as well as the assessment of the functioning of the EWS in actually reducing exposure to climate-related hazards, and the impacts of policy and knowledge management initiatives. Regardless, the project team, and in particularly the project assistant who oversaw and ensured financial delivery of more than half the entire project budget over the last year under significant pressure, functionally replacing the role of project manager, should receive special credit for a that difficult and significant achievement.

Although the objective of the project, which was framed in regards to “*increased climate resilience of communities and livelihoods in coastal areas in Mauritius (all islands)*” was only partially achieved, a range of lessons in regards to risk assessment and operational issues were certainly learned, and the foundation for achieving Outcome 1 of the project “Increased adaptive capacity within relevant development and natural resource sectors” was established. The results ratings of the project, with reference to the evaluation criteria of Relevance, Effectiveness & Efficiency, Project Results and Sustainability are proportionately influenced by the challenges experienced in achieving Outcome 1 of the project, given it represented over 80% of the project budget. Overall the impact of the project will be particularly dependent on the long-term implementation of a monitoring plan for the coastal adaptation interventions, in order to learn which coastal adaptation measures are in fact the best investment, and hence to actually complete a cost-benefit analysis of the various options considered and implemented. The results achieved by the Early Warning System (EWS), Training, Policy Mainstreaming and Knowledge Management and Dissemination components of the projects can also

be significantly improved by the implementation of key recommendations and corrective actions identified in the terminal evaluation.

Further details in regards to the achievement of results according to project Component/Outcome can be below in the section on Effectiveness and Efficiency.

3.3.2 Relevance (*)

Relevance Rating: Relevant (R)

This project is highly relevant to Mauritius and is given a 'Relevant' rating based on the country context and acute need for long-term climate adaptation planning, and coastal adaptation in particular. As noted in the project document, the visible and measurable effects of climate change in the coastal zone of Mauritius are apparent, reflecting changes in the coastal zone due to climate change, and an increase in the number of vulnerable sites, which directly impact coastal communities and the economy of Mauritius as a whole. Mauritius Meteorological Services (MMS) data has confirmed that the rate of sea level rise (SLR, measured in Port Louis) has averaged 3.8 mm/year in recent years; comparing to an average of 2.1 mm/year over the last 22 years. This SLR rate reflects a the compounded effects of real sea level rise (absolute water volume increase and more low pressure systems), as well as a higher frequency and height of waves, both of which have direct negative impacts on coastal areas in regards to surge flooding and erosion. The TE team learned that several extreme weather-related events have resulted in lives lost and property damage in the recent past, and there have been two Class 3 cyclone warnings in Mauritius during the period of the terminal evaluation itself.

Extensive interviews across the range of stakeholders involved in the project and with climate change adaptation in Mauritius more broadly, as well as those primary stakeholders residing in the coastal zones targeted by the project, confirm the relevance of efforts at increasing climate resilience of vulnerable coastal communities. Furthermore the project is embedded within a broader strategy on climate change adaptation in the coastal zone, which is under the purview of the climate change cell under the responsibility of the Integrated Coastal Zone Management (ICZM) division of the MoESD. It is complementary to the "National Climate Change Adaptation Policy Framework" developed under the Africa Adaptation Programme (AAP), whose key objective is to foster the development of policies, strategies, plans and processes to avoid, minimize and adapt to the negative impacts of climate change on key sectors, and also to avoid or reduce damage to human settlements and infrastructure and loss of lives caused by climate change.

Although it is clear that the project focus was very relevant to national priorities in regards to climate change adaptation, as well as more broadly in the context of the needs of Small Island Developing States (SIDS), where climate change presents important risks and hence is a priority focus, changes in the project design could have improved the relevance of the project in regards to the stated objective of enhancing community resilience. That is, at the level of the actual measures chosen and choice of sites under Component 1 of the project, a more explicit community vulnerability focus would have been achieved if the site selection took into account a multi-criteria community vulnerability mapping at the outset, and then prioritized the sites for investment / coastal adaptation measures accordingly (as noted above in the Section on Project Strategy). For example, the value of increasing resilience of the tourism sector, as a mean to improve community livelihoods through job creation, while logical in theory, is not justifiable without clear evidence that there is a direct link between the project's intervention (stopping beach erosion at Mon Choisy) and creation/maintenance of jobs within the sector. The project document notes that "the coastal zone is critically important to the economy country in terms of tourism" and that "the tourism link is the main concern in the coastal adaptation

strategy for the country, since so much revenue and so many jobs are at risk if beaches continue to erode.” Again, although a focus on an economically important sector is understandable from the national standpoint, a direct focus on the most vulnerable coastal communities faced with injury, loss of assets and livelihoods, and at worst death should be prioritized.

3.3.3 Effectiveness & Efficiency (*)

Effectiveness Rating: Moderately Unsatisfactory (MU)

Efficiency Rating: Moderately Unsatisfactory (MU)

The TE found the project had significant shortcomings in regards to both Effectiveness and Efficiency, and hence assigned a rating of Moderately Unsatisfactory to both evaluation criteria. Effectiveness refers to the extent to which the project’s objectives were achieved, or are expected to be achieved, taking into account their relative importance. It also measures the merit of individual activities, and considers whether the projects attained its objectives efficiently, in a sustainable manner and with a positive institutional development impact. Efficiency on the other hand is a measure of how economically the resources and inputs to the project (in the form of funds, expertise, time, etc.) were converted to results.

As mentioned above, the TE found that changes in project design and implementation would have greatly enhanced both effectiveness and efficiency in attaining the project’s stated objective and intended outcomes. Due to weaknesses in the initial design of the project, as well as challenges with decision-making (unnecessary detours), significant resources were spent on avoidable or unanticipated activities during project implementation, such as a reconsideration of resettlement of residents, funded by the project, which was not allowable under Adaptation Fund guidelines without 100% consent of residents, nor by UNDP’s own standards (although UNDP’s social and environmental standards were officially rolled out in 2015 during the project implementation timeframe). The outputs of the project were achieved in a rapid push mostly in the last two years of implementation (in 2018 the project was still at less than 50% delivery), also demonstrating a lack of both effectiveness and efficiency in achieving outcomes. Significantly, and as mentioned above, a better alignment of outputs with outcomes and the stated project objective was required. The procurement of goods and international expertise, as well as the technical design process were significantly underestimated, leading to significant project delays, also impacting project efficacy.

Finally, and perhaps most pertinently, changes to the design of the chosen coastal adaptation measures (a majority of the project budget) would have also rendered the project more effective and efficient in achieving its outcomes, as discussed in more detail below under each project outcome. To summarize, design changes such as a better planting protocol for dune stabilization in Mon Choisy, a higher seawall at Rivières de Galets, changes to mangrove planting methodology and a greater usable area for the refuge centre at Quatre Soeurs, would all have increased both the effectiveness and cost efficiency of the project interventions. It is also clear that a more rigorous approach to quantifying costs and benefits of coastal adaptation measures is essential to improve the effectiveness of current and future measures, given that a key objective of the first component was to support monitoring of the link between coastal processes and climate change, and to assess the effectiveness of the coastal protection measures over time.

The overall effectiveness of the project would have also been enhanced with a more careful site selection prioritizing both community vulnerability and livelihoods, and a better scoping of proposed coastal adaptation measures at the outset, through the completion of a Project Identification Form (P|IF, required by GEF, but not by the Adaptation Fund), and a realistic estimation of the technical

complexities of the project. It is also worth noting that the project document highlights some of the myriad anthropogenic factors compromising the state of the coastal zone, but there are no specific activities aimed at addressing these through parallel/ complementary government or private sector co-finance, which also decreases the effectiveness of the project.

In regards to cost efficiency, the TE found that government processes (such as the procurement process), political bottlenecks and inadequate scoping of the technical complexity of the project, as well as challenges in the executing partner's (MoESD) capacity to absorb that scale of funding, also led to significant shortcomings in the manner in which project money was spent. One example is that when the project's first TORs and expressions of interest were drafted in 2012, first undertaking a market survey and including the procurement policy office in Mauritius, as well as using the UNDP market place for the procurement of highly specialized international expertise, could have potentially avoided years of delays in project delivery. Also noteworthy is that for a project of significant technical complexity such as this one, it is essential to have a Chief Technical Advisor (CTA) overlooking the technical components of the project for the purposes of effectiveness. That is, a CTA would be pivotal in avoiding significant delays by not pursuing options that may not be appropriate, as well as to providing oversight for drafting and approving TORs for complex technical works, and making final decision on design. A CTA well versed in coastal adaptation as well as disaster risk management/ reduction, would have been key for determining that the original siting of the refuge centre was inappropriate from the outset, or for helping to determine the most appropriate measure at Mon Choisy, when an options analysis was presented by consultants. Further detail is given below in regards to the project outputs achieved, and the shortcomings per outcome in effectiveness and efficiency.

Project Objective: Increased climate resilience of communities and livelihoods in coastal areas in Mauritius (all islands)

Component 1: Application of adaptation measures for coastal protection

Outcome 1 – Increased adaptive capacity with relevant development and natural resources sectors

Outcome Target 1: *No further erosion at Mon Choisy (beach accretion of 2 meters over 3 years); no surge flooding and no further shore erosion at Rivières des Galets; and, no flooding of coastal public buildings at Quatre Soeurs. The target for numbers of beneficiaries follows: Mon Choisy: 1,500-2000 people; Rivières des Galets: 300 people (based on actual survey); Quatre Soeurs: 1000 people.*

Output Targets:

1.1 Detailed technical assessment of each site, with chronology of previous flood and erosion events and collection of near shore oceanographic data, during “quiet” periods and “active” periods (one month each) to inform the design of the technical interventions at each of the three sites.

1.2 Technical design of coastal protection measures at each of three sites, with detailed costing, carried out in a gender sensitive way.

1.3. Successful construction of physical interventions at each of the three sites.

1.4 Analysis of data and development of recommendations on how the interventions can be adjusted for other vulnerable coastal locations in ROM.

1.5 Monitoring program designed, to include scoping of suitable parameters, including beach width and slope; depth of adjacent lagoonal sediments; wave height, period, and run-up; direction of near shore currents, etc.

1.6 A targeted coastal process/weather event monitoring system in place.

Mon Choisy

The coastal adaptation works at Mon Choisy were the most challenging of the project with procurement eventually taken over by UNDP according to the procurement procedures of the organization, following an options analysis exercise undertaken by consultants, resulting in the design report for the artificial reef chosen as the most appropriate option. The Request for Proposal (RFP) for the supervision of the works was launched at the end of May 2018, and final works were still on going at the time of the Terminal Evaluation, although the reef moulds had been placed offshore. An Environmental Impact Assessment (EIA) was also completed including both onshore and offshore erosion control measures, and including public consultation, and an Environmental Monitoring Plan was submitted and approved by the contractor based on the guidelines in the EIA.

Onshore works – Dune stabilization

In terms of onshore measures for erosion control 200 filao trees were removed, as they were deemed inappropriate for retaining soil/sand and replanting was done with native species on the eroding dune face, with work commencing in May of 2019. Unfortunately, the TE team observed that the dune stabilization planting was done at too great a density (even though the species selection was all native species, as per the EIA) creating a situation where many of the plants will die off as they reach maturity. A change in methodology of the dune planting, as specified in the EIA would have greatly enhanced the effectiveness and efficiency of this measure. This is the type of issue that should have been addressed in the Technical Steering Committee meeting when reviewing the EIA.

Offshore works – Artificial reef

Artificial reef moulds had to be ordered from Australia and pre-casting occurred on-site. The artificial reef was placed offshore for attenuation of wave action, and the patch and fringing reef patterns created with the reef moulds as per the design report, were all placed in August to September of 2019. Given how recently the artificial reef was installed it is impossible to understand the impacts of the artificial reef on beach erosion. Notably however, the contractor indicated that they had by their own initiative established the baseline for monitoring of certain biophysical parameters as an addendum to the contract, such as bathymetry, which was not originally specified as part of the supervision contract. The contractor also indicated that any monitoring on their behalf would end with the completion of the works. Upon crosschecking with the Ministry of Blue Economy, the body responsible for offshore monitoring of coral reefs, as well as with the EIA monitoring division, the TE team found that there was no long-term plan for actual ecological monitoring of the site. Furthermore, although the Beach Authority is responsible for beach erosion monitoring at Mon Choisy beach itself, it would also be essential to check erosion in a broader swath of the landscape in case there is down drift erosion, or changes to the sea floor due to scouring. This monitoring the coastal adaptation measure is key to understanding the actual impact, as well as determining if there are negative impacts, particularly given that the measure is an area where despite significant degradation, there is still the presence of endangered species such as the hawksbill turtle. This provision for long-term monitoring is a key recommendation of the TE. Its inclusion in the project activities would have also been essential for the effectiveness of this output in achieving the stated outcome. It is also worth noting that originally additional eco-system based adaptation measures were planned, including sea grass restoration and the establishment of a Voluntary Marine Conservation Area. Given the delayed delivery timeline of the project, these measures were eliminated, and the budget put towards the expansion of the EWS component of the project.

Rivières des Galets

The site at Rivières de Galets, among the sites chosen for the project, was the site, which was the most effective for addressing the vulnerability of the local community, given their exposure to sea level rise and storm surge are acute and there have been multiple instances of flooding, resulting in damages, injury and death. This site was the most vulnerable and posed the greatest risk to human lives. Although the site selection itself contributed to the effectiveness and efficiency of the project, the approach to the coastal adaptation measure chosen at the site had significant shortcomings. Significant project delays were also incurred in determining the design option at Rivières de Galets, where the project manager, reconsidered the option of resettlement of the local population, which would have not been fundable by the adaptation fund board. Significant project resources and budget were spent on community consultations, which raised expectations of resettlement, and were ultimately deemed unfeasible, as many community members did not agree with the option. Again, this was an avoidable detour in project decision-making, which negatively affected the effectiveness and efficiency of the project.

As part of the coastal protection works at Rivières de Galets, a rock berm was placed as well as the construction of a rock revetment and finally a protective sea wall was built and solar panel street lighting placed along a walkway built behind the seawall. Although, as per the other measures, it remains to be determined with monitoring over time, the seawall itself was completed at a significant capital cost, with likely a relatively short-term impact, which did not actually address the adaptive capacity or livelihoods of the community. Notably, there was a flooding shortly after the wall was built, and the impression of the TE team and multiple community members was that the wall was not quite high enough to effectively protect the community from storm surges. The seawall will also require significant maintenance, which should be factored in to the overall cost benefit of the measure. Unfortunately, given that there was surge flooding shortly after the construction, it cannot be said that the intended outcome at the site was achieved. Regardless, it will be important to continue monitoring the site for flood incidents. As mentioned above, the effectiveness of the measure would also have been better understood if a quantitative baseline in regards to flooding damages, injury and loss of life was established prior, and a monitoring plan put in place to understand how the new measure impacted these parameters (in addition to stopping shore erosion, which will be monitored by the Beach Authority).

Quatre Soeurs

The coastal adaptation works at the Quatre Soeurs site consisted of planting of a mangrove for protection from storm surges, as well the construction of a Refuge Centre. The Mangrove planting was done in conjunction with the Grand Sable Fisherman Association (GSFA) and there was also a small scale livelihoods intervention completed with the Grand Sable Women Planters Farmers Entrepreneur Association (GSWPFEA), all of which are discussed further below.

Mangrove planting

At this project site, 20,00 Mangroves were planted in the lagoon areas of Quatre Soeurs, and the adjacent Grand Sable and Petit Sable. A Memorandum of Agreement (MOA) was signed between the GSFA (comprised of 51 fishers), and MoESD. Other key partners included the GEF Small Grants Programme (SGP), with additional involvement of the National Coast Guard, Ministry of Fisheries (now Ministry of Blue Economy), the Ministry of Housing and Lands, Forestry Services, and the local authorities. The fisher community involved earned an alternative livelihood during the project period, especially during the low catch period, which was one of the few project interventions that touched on

community livelihoods. Prior to mangrove planting, technical advice/training was provided to the fisherman in terms of planting and the distance to be kept between each plant. Unfortunately, at the time of the TE the survival rate of the mangrove was at around 5%. Interviews and site visits revealed that the planting zones chosen were inappropriate, and that those mangroves planted farther into the tidal zone had not survived, due to a combination of rough seas, cyclonic weather and currents causing uprooting of the young mangrove before the root systems were developed and the mangrove was more firmly established. Some of the mangrove plants were submerged completely during high tide for a longer period. Again, this weakness in the methodology of the mangrove planting also negatively impacted the effectiveness and efficiency of this measure. It is also notable that no long-term monitoring plan has been established for either the ecological health of the mangrove over time, nor its impact on storm surges and subsequent flooding. The National Coast Guard is involved in mangrove monitoring, but only from the point of view of enforcing the regulation which prohibits cutting if the mangrove. Regardless, this activity demonstrated that the involvement of the community enhances local ownership, awareness and acceptability of coastal adaptation interventions. Going forward, it would be important to continue to tie local communities to planting interventions if mangrove rehabilitation is replicated to other sites, but with greater oversight from the technical committee in regards to methodology of planting.

In regards to effectiveness of the chosen intervention, it was also found by the TE team that much of the coastal flooding experienced in the area, was also due to anthropogenic factors compounding the vulnerability of the site to storm surge. That is, it is recognized by the MoESD that fixing drainage of coastal roads and generally improving waste management (in urban areas and drainage routes) is required to deal with the flooding issues. This would likely have a much more significant impact on the flooding of coastal roads and communities in the Quatre Soeurs region, than does planting mangroves, given the geography of the site, where the communities are just below steep mountains from which there is rapid run-off after rains. Although planting mangroves is a great nature-based solution for long term sustainability when done correctly, the effectiveness of the measure would have been greatly enhanced by having a long-term plan for the maintenance of the mangrove, as well improving the planting methodology, and accounting for the drainage issues in the area.

Livelihood intervention – Grand Sable Fisherman’s Association and Grand Sable Women Planters Farmers Entrepreneur Association (GSWPFEA)

In addition to the mangrove planting done in conjunction with the fishers association mentioned above, the only other direct livelihood intervention was establishing and supporting the Grand Sable Women Planters Farmers Entrepreneur Association (GSWPFEA). Women from the community were trained to engage in community-level sensitization, in regards to the importance of mangrove to disaster risk reduction and livelihoods. This was intended to change attitudes and practices related to mangrove destruction and promote engaged stewardship over mangrove plantations. Although the community engagement aspect is good practice, and experience shows that it leads to a greater sense of community ownership of the intervention, actual changes would have been verifiable through a baseline survey prior to the intervention, followed by a survey post intervention to determine effectiveness. Women were also provided with two sewing machines and small seed funding in order to produce cloth bags, in addition to activities, which included making pickles from sea vegetables and planting medicinal plants. The TE site visit revealed however that GSWPFEA was no longer functioning by project close, indicating the structure and function of the association was not set-up in a sustainable manner, as interviews revealed the association dissolved almost immediately after the departure of the woman that was leading it. Overall effectiveness of the intervention would have been enhanced if the

livelihood intervention was more directly linked to the market for mangrove products and crafts, with a business model developed for mangrove-branded products, with linkages to private sector as suggested in the MTE. The gender mainstreaming aspects of the interventions are discussed further below in the section on mainstreaming.

Quatre Soeurs Refuge Centre

A Refuge Centre, with an approximate area of 1000 m² resilient to flooding and coastal inundation, was constructed at Quatre Soeurs, to serve as an emergency escape from frequent flooding in the area and to demonstrate an infrastructure alternative to minimize flood risks in the future. The original proposal for the location of the refuge centre was inappropriate, directly adjacent to the ocean where community members would have been in a situation of greater vulnerability to further cyclones and storm surges, as well as cut off from the coastal road and associated emergency infrastructure due to the flooding. This poor siting could easily have been avoided in an early project review or in the design phase of the project, however another 1.5 years was required to find a suitable site that was above sea level, and then a lengthy process was required to acquire the land for the new site, as it was privately owned, impacting the efficiency of using project time and resources (although the land acquisition was funded through government resources, demonstrating strong national commitment to achieving the outcome).

During the TE visit to the site, interviews with several community members revealed a poor awareness of the purpose and use of the Refuge Centre, with several community members thinking it was a tsunami evacuation centre. Furthermore, a visit to the Refuge Centre building also revealed that the shelter could have been designed in a more effective way, including using the whole roof surface area (equivalent in floor surface area as the main area inside) as a place where people could also take refuge (effectively doubling the useable space). Gains in effectiveness and efficiency would also be achieved through better cyclone resilience of the building, including better placement of the solar hot water heater, and generators (behind a protective wall), cyclone proofing of windows and increasing the gender-responsiveness of the useable areas (discussed in mainstreaming). Finally, the building was completed in May 2018, but at the time of the TE, it had not yet been handed over formally to the local authority, and was sitting unused. The TE provides several recommendations to increase the effectiveness and efficiency of the intervention as indicated.

Component 2: Early warning system for incoming storm surge

Outcome 2 – Reduced exposure at national level to climate-related hazards and threats

Outcome Target 2: By 2013, more than 3,400 people in current surge zones are able to safely evacuate prior to future storm surge events (There are no people left in the surge zone when the surge hits).

Output Targets:

2.1 Assessment report of the current sea state monitoring systems (Mauritius Meteorological Services (MET) and Mauritius Oceanographic Institute (MOI)) will include an estimate of the required critical parameter and operational requirements for an early warning system.

2.2 The early warning system installed and implemented (to link with existing early warning systems for cyclones) with communication established to the national coast guard at headquarters down to coastal communities.

This was one of the most successful components of the project with both outputs achieved in a relatively efficient manner, and support from Deltares in an expansion from the original scope of the intervention to include wave height simulation, which significantly impacted the effectiveness of the

intervention in achieving the outcome. This component also suffered from delays in regards to bottlenecks with the national procurement guidelines, given the cost estimation for the EWS in the project document was more than 25% under the actual cost at the time of project implementation. Furthermore, what remains to be done towards achieving the intended outcome, hereby improving effectiveness and efficiency of the intervention, is translating that wave height information to an actual simulation of inland flooding, so that the wave height modelling can be translated to action plans on the ground in terms of necessary warnings and evacuations. This calibration/ simulation can occur once the national high-resolution Digital Elevation Model (DEM) is completed in May 2020. Furthermore, to show the actual impact of this component they will need at least one summer season and one winter season and the next winter season to capture enough information to determine (once the model has been calibrated with the DEM) to know how the predictions translate to events on the ground. Finally, a greater emphasis is required to ensure that the information produced by the EWS enhanced functionality is communicated appropriate and effectively to the appropriate local authorities and subsequently to communities themselves, in order to safely evacuate.

Component 3: Training

Outcome 3 – Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses

Outcome Target 3: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses

Output Targets:

3.1 A handbook on coastal adaptation packaged as training modules for coastal communities, relevant government agencies, NGOs and CBOs, and private sector stakeholders (such as hotel operators) and training sessions delivered on a regular basis throughout the program (at least twice annually), supported with regular training-of-trainers sessions with NGOs and CBOs;

3.2 A short course on coastal engineering designed and delivered (twice during program period); four short courses have been delivered by Dec 2014 (i.e. ahead of schedule with training imparted to 265 staff from the public and private sector).

3.3 A specialized course on cost-benefit analysis of coastal adaptation measures designed and delivered (annually over four years). This outcome is essentially geared toward enhanced capacity, in the form of systems building, structures, processes, networking, and partnerships critical to sustainability with regard to policy dimensions of adaptation as a basis for integration, engagement, knowledge sharing and investments, the legal framework, and enhancement of coordination.

This component of the project resulted in the delivery of thirteen short Continuous Professional Development Courses, with more than 500 officers from the government trained. Furthermore, four training manuals were produced as well as ten research projects completed through the University of Mauritius, and further international networking developed through collaboration with six with international institutions. Although this component was successful in achieving most of the intended outputs, a determination of the strengthened institutional capacity, particularly in regards to carrying out cost-benefit analysis of coastal adaptation measures, will be demonstrated through the monitoring by institutional actors of the adaptation measures applied as part of the project to determine actual costs vs. benefits. This data, and the broader methodology can then be used for the determination of adaptation measures at other vulnerable sites. Overall, a measure to enhance the effectiveness and efficiency of this component is to ensure that mechanisms exist for those trained under the project to use their imparted knowledge and skills in future coastal adaptation projects.

Component 4: Policy Mainstreaming

Outcome 4 – Improved policies and regulations promoting and enforcing resilience measures

Outcome Target 4: All relevant policies, strategies, plans, and regulations are consistent in 1. Having a clear vision statement for adaptation in the coastal zone, 2. Recognizing climate change impacts in the coastal zone over the next 50 years, and 3. Having clear government institutional responsibilities for adaptation in the coastal zone.

Output Targets:

4.1 A National Coastal Zone Adaptation that addresses all perceived climate change risks in the coastal zone of ROM over at least the next 20 years, with recommendations for supporting policies and regulations.

4.2 A set of recommendations on best technical and institutional adaptation practices suitable for the coastal zone of ROM.

4.3 Definition of the required structure and processes for one “clearinghouse” for climate change oversight in the coastal zone of ROM (a unit or institution, or collection of individuals from various agencies which is able to make final decisions on the climate appropriateness of future development projects, also having a follow-up enforcement capacity).

4.4. Recommendations for new economic instruments.

As part of this component of the project, a National Coastal Zone Adaptation Strategy (NCZAS) was prepared with comprehensive recommendations on supporting policies and regulations. To enhance the effectiveness of this component in achieving the intended outcome, the GoM would have to subsequently ensure that the recommendation proposed for integrated coastal planning are indeed adopted. The outputs related to establishing a clearinghouse for climate change oversight, as well as the recommendations for new economic instruments, were not achieved by project close.

Component 5: Knowledge Dissemination and Management

Outcome 5 – Effective capturing and dissemination of lessons from the applied activities in the programme

Outcome Target 5: By 2016, effective capturing and dissemination of lessons from the applied activities in the programme.

Output Targets:

5.1 Handbook, training modules, and website content capturing best coastal adaptation practices for the Mauritius context.

5.2 Dissemination of lessons learned from the program with coastal stakeholders in other locations in the southern Indian Ocean.

5.3 Interpretive signs and small-scale models of coastal processes designed and installed at each site, explaining the science of climate change and coastal processes (in lay terms), so that the linkages between weather, stability of coastal features, and adaptation measures are clear.

5.4 Public awareness campaigns on climate change in the coastal zone designed and delivered, involving the Mauritian media (TV, radio, Internet).

5.5 Priority ranking of vulnerable coastal sites established, to guide the order of future investment by the Government of Mauritius and the private sector.

The output targets of this component of the project were achieved with approximately 15,000 people reached and the innovative Mobile Education Unit 'Bis Lamer' introduced by the NGO Reef Conservation. As with many of the other interventions, although the output targets were achieved by project close, a true estimation of the effectiveness of the intervention would have been achieved through the completion of a baseline survey of awareness, followed by an evaluation post-sensitization activities to assess the level of increased awareness. During the TE mission, it was also noted that although the handbook on best coastal adaptation practices had been well prepared with comprehensive and well-tailored content, the handbooks had yet to actually be distributed to coastal stakeholders and were still in the project office. Similarly, the models and booklets used for the community sensitization campaign were also in the project office. The effectiveness of this intervention would obviously be enhanced by the distribution of the handbook, and if the small-scale model and other materials produced continued to be used for community sensitization activities by the Reef Conservation. Finally, effectiveness of the intervention will also be enhanced if the priority ranking of vulnerable coastal sites is shared with future project development teams and used to determine intervention sites.

3.3.4 Country Ownership

Since the very early stages of the project, a multi-stakeholder approach was adopted, integrated a broad range of Government of Mauritius (GoM) stakeholders, beyond the executing entity, the Ministry of Environment and Sustainable Development (MoESD). There was clearly strong involvement of a range of government actors, driving implementation as well as involved in the Technical and Project Steering Committees, and the project was undeniably carefully aligned with and shaped by government priorities (see Relevance). Although the National Implementation Modality (NIM) used in this project contributed to good country ownership, some of the significant gaps in planning for project sustainability, particularly in terms of monitoring of the coastal adaptation interventions, point to room for improvement in regards to country ownership.

That is, the project document clearly outlines the need/ requirement for long-term monitoring of the coastal adaptation measures, stating under the description of Outcome 1 (p.13) "Environmental monitoring to help ascertain the extent to which the coastal protection measures enhance the development of new marine habitat (coral patches and seagrass beds) adjacent to the submerged structures and in the nearshore areas between the structures and the shore will also be undertaken. This monitoring should include transects adjacent to each structure, along which the development of seagrass and coral, and associated mollusks and fish, can be enumerated (perhaps 4x per year, over 3-4 years). The transect methodology is well-developed, and Mauritian institutions (Department of Fisheries and the University of Mauritius) have considerable experience using this methodology to establish the extent of marine habitat health and biodiversity in various research locations around Mauritius. The proposed transects would provide both temporal and spatial information indicating the influence of the submerged structures and associated coastal protection on the integrity of marine habitats in the project areas. In addition to the proposed transects, satellite images can be examined annually to determine changes in the whole lagoon system at Mon Choisy and in the nearshore areas at Rivières des Galets, to provide a broader understanding of nearshore ecosystem dynamics in each project location, and the influence of coastal protection on them." This coastal monitoring protocol is assumed in the project document (footnote on p.13) to "be part of an Environment Management Plan

(EMP), as required by local legislation. In conformity with the First Schedule (Part B) of the Environment Protection Act 2002, such integrated coastal protection works would require an EIA. Additionally, according to the Section 18 (2) (l) of the Environment Protection Act 2002, the EIA report shall contain an environmental monitoring plan (EMP). The EMP captures issues such as monitoring to be done in the project and neighboring areas in terms of physico-chemical, ecological, socio-economical, geomorphology of the beach, amongst others.”

Although the Environment Protection Act 2002 does indeed account for post-EIA monitoring, and comprehensive EIA reports were prepared for the coastal adaptation measures under the project, interviews with all relevant stakeholders (including the ICZM division, the EIA division, including EIA monitoring, and the Ministry of Blue Economy) the TE found the budget and responsibility for the comprehensive ecological monitoring of the coastal adaptation measures was not actually allocated. As it is critical that the intervention sites continue to be monitored after completion of the coastal adaptation works to track the recovery and changes in the ecosystem, this is a key recommendation of the TE.

3.3.5 Mainstreaming

This section assesses how successfully the project has mainstreamed other UNDP priorities, including poverty alleviation, improved governance, the prevention of recovery from natural disasters and gender.

Coherence with UNDP’s Country Programme Document (CPD), and/or Country Programme Action Plan, the Poverty/Environment Nexus and Sustainable Livelihoods

A stated goal in the UNDP Mauritius Country Programme Document (CPD) is “supporting poverty reduction, social inclusion and gender equality” as well as ensuring that “Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded.” Similarly, a goal of the Adaptation Fund is financing “projects and programmes that help vulnerable communities in developing countries adapt to climate change.” In light of this, and as discussed in the section on Analysis of the LFA and Relevance, a targeted community vulnerability focus, as was the case for the Rivières de Galets site, would have achieved greater alignment with both UNDP and AFB priorities. That is the site selection, as well as the project interventions could have had a better focus on livelihoods, and community level resilience in the most vulnerable (accounting for both vulnerability to climate change impact along the coast, overlaid with socio-economic vulnerability).

Crisis Prevention and Recovery

The project clearly supports crisis prevention and recovery, both through the interventions of Component 1 of the project, which include protection of a community from storm surge at Rivières des Galets, as well as through the construction of the Refuge Centre at Quatre Soeurs. The project also prioritizes crisis prevention through Component 2 of the project on the creation of an Early Warning System. By doing so, and through the coastal vulnerability mapping carried out under Component 5, the project also complements the goals of the national “Disaster Risk Reduction and Management Strategic Framework and Action Plan” which supports the creation of risk maps for inland flooding, landslide and coastal inundation in Mauritius under the African Adaptation Program (AAP).

Gender

Gender equality is a key focus area of UNDP programmes and projects globally, a focus area of the

UNDP Mauritius CO CPD, and an increasing priority for climate change funds, including the AFB, which adopted an updated gender policy and action plan in 2016, as part of its broader Environmental and Social Policy Update. Although the project was designed, approved and began implementation before the roll out of UNDP's own Social and Environmental Standards (SES), it should also be noted that gender mainstreaming is one of the key overarching principles of the SES (along with environmental sustainability and human rights). UNDP Social and Environmental Screening Procedure (SESP) now requires that all projects and programmes undertake a Gender Assessment, and create an associated Gender Action Plan. Completing a project Gender Assessment and Action Plan (GAAP) would have been a strong addition to the project, and likely would have helped achieve output target 1.2 "Technical design of coastal protection measures at each of three sites, with detailed costing, carried out *in a gender sensitive way*." As it stands there was very limited integration of gender considerations in the project design, and a more sophisticated approach to gender mainstreaming would have enhanced several of the project components. A robust gender analysis would have been particularly relevant to Component 1, given that it is well documented in the literature that women are often disproportionately impacted by climate change / extreme weather events due to structural marginalization, and experience increased vulnerability in the face of climate exacerbated disasters, including flooding. Understanding that women and girls may also face increased levels of gender-based violence when in shelters/refuge centres, would also have helped to shape the functional spaces in the Refuge Centre.

The only explicitly gender-related activity was the support to the Grand Sable Women Planters Farmers Entrepreneur Association (GSWPFEA) at the Quatre Soeurs site, which was rather ad hoc, rather than strategically integrated into the broader project, and proved to not be sustainable. The chosen livelihood activities, such as the provision of sewing machines, did not really address any underlying drivers or risks related to either coastal climate vulnerability, or link to longer term climate resilient livelihoods strategies. Interviews at the site revealed that women also would have liked to be involved in the mangrove planting, although this was relegated purely to the all-male fishers association. The MTE found value in the project's investment in women's business and recommended greater investment (over and above the training provided to make cloth bags) to help link the women to market mangrove products and crafts, so that a business model was developed with mangrove-branded products and linkages to private sector created. The MTE went on to suggest that the project continue investing in the women's ecological support organization in the three following ways 1) support to help them launch and develop a sustainable financing model for their products featuring mangroves, 2) Support to develop a sea grass nursery for inclusion in other sites 3) and support to do capacity building work with communities around ecological solutions as CCACZ champions. These suggestions, if implemented, would have served to significantly strengthen the gender-responsiveness of the project.

Overall the UNDP CO recognizes the missed opportunity of better understanding the gendered aspects of the climate change adaptation and vulnerability, as well as aspects related to natural resources management and livelihoods more broadly, prior to the design and implementation of the interventions of this project, and across its portfolio of projects. Accordingly, it has taken the initiative to hire and Gender expert in the CO, with expertise in environmental management that can help account for gender mainstreaming on on-going and future projects. Similarly, the MoESD would be well served to hire a gender expert that can account for the gendered aspects of sustainable development at the institutional and policy levels, but also in the implementation of donor-funded projects, helping to ensure adherence to increasing comprehensive gender requirements.

3.3.6 Sustainability (*)

Overall Likelihood of Risks to Sustainability: Moderately Likely (ML)

Sustainability of Financial Resources: Moderately Likely (ML)

Socio-Economic Sustainability: Moderately Likely (ML)

Institutional Framework and Governance Sustainability: Moderately Likely (ML)

Environmental Sustainability: Moderately Likely (ML)

Overall Risks to Sustainability

The overall likelihood of risks to sustainability was given a rating of Moderately Likely (moderate risks) rating. As mentioned throughout, the sustainability of the project, and the ultimate achievement of results/ impact depend largely on the establishment of national monitoring systems for the implemented coastal adaptation measures (and other future measures) past the life of the project. Although, the TE found that a plan for the long-term monitoring of the impacts of the adaptation measures was lacking, and that a budget and mandate for integrated monitoring was not adequately put in place, which is a significant risk, the risk is tempered by the fact that there was a clear understanding among all institutional stakeholders interviewed that a long-term monitoring plan was essential.

The other principal risk to project sustainability are the competing national priorities for coastal development, and while almost all components of the project address this to some extent (the coastal adaptation measures themselves, as well as the training, policy and knowledge management components of the project) given the implementation timeline and the recentness with which most interventions were completed, there remains significant uncertainty in the roll-out and/or internalization of policy and institutional processes. Finally, a greater degree of community participation, as well as participation from the private sector, would have also contributed significantly to the financial and socio-economic sustainability of the project. These aspects are further discussed below.

Sustainability of Financial Resources

The TE found moderate risks to the financial sustainability of project results, given a dedicated budget for long-term integrated monitoring of the coastal adaptation measures (such as for ecological monitoring at Mon Choisy of the artificial reef, or quantitative monitoring of the impacts of flooding at Rivières des Galets) was not earmarked at the time of the TE. It was assumed that this activity would be covered under the EIA's environmental monitoring plan, however a gap exists given that in most cases where monitoring is required after project construction, it is funded by the project proponent, which in most cases is the private sector. In this case the project proponent is the MoESD itself. Somewhat mitigating this risk is the fact that the Ministry of Planning and Finance has a dedicated budget for assessment and monitoring of national projects, which can be allocated for this purpose. Regardless, a clear mandate for long-term monitoring of coastal adaptation measures with responsibility assigned by the ICZM division to the relevant authorities (the Beach Authority, Ministry of Blue Economy and the EIA monitoring division) and a budget commitment as part of a comprehensive project exit strategy is required to ensure the sustainability of financial resources for this aspect.

Financial sustainability of broader efforts, which sustain the initiatives of the project, including maintenance of the coastal adaptation measures, and complementary adaptation efforts will also depend on resource mobilization, and partnership strategies. There are currently plans to mobilize further AFB funding, as well as funding from the Green Climate Fund (GCF). This should be done in parallel with sustained efforts to secure private sector commitment to adaptation efforts through new economic instruments, as identified as an output under Component 4 of the project. The GoM is

currently considering a targeted corporate social responsibility / environmental and social investment fund that requires private sectors actors with developments (current and planned) to contribute 3% of revenues) towards coastal adaptation measures. Such an initiative would be pivotal in ensuring the financial sustainability of future adaptation efforts.

Socio-Economic Sustainability

The TE found that there was seemed to be limited public/community awareness of the project's long-term goals, based on community interviews conducted at the project sites. Furthermore, the few community-focused efforts of the project, such as the involvement of the fisherman's association used to undertake the mangrove planting, are likely insufficient to sustain project benefits, given there is little mangrove left over which to show their stewardship. Similarly, the women's association supported at Quatre Soeurs also ceased to exist after the end of project support.

The TE findings support the suggestion of the MTE, to develop targeted community engagement strategies covering all sites to ensure the socio-economic sustainability of the project. Such a strategy should consider setting indicators for community resilience, sustainability and the development of local scale-up plans, which are linked to local planning processes. Actual community engagement in regards to coastal adaptation remains ad hoc and lacks consideration of changes required at the community-level in regards to coastal zone adaptation approaches. As suggested in the MTE, and supported by the findings to the TE, efforts to development adaptation strategies which empower communities in decision-making and planning processes concerning coastal zone adaptation measures, rather than only top-down adaptation based on infrastructure is fundamental to ensuring the socio-economic sustainability of the project investments.

Institutional Framework and Governance Sustainability

The institutional and governance sustainability of the project, given competing national priorities in the development in the coastal zone, is most directly related to the uptake of the policy initiatives developed under the project, particularly the implementation of the National Coastal Zone Adaptation Strategy (NCZAS). The implementation of the NCASZ will require broad cross-sectoral collaboration, supporting the implemented adaptation measures, and accounting for various other factors such as integrated land use planning, which have a direct impact on coastal resilience. That is, integrated coastal zone planning is essential for the effectiveness of results in terms of outcome indicators (rather than output) over time, as it is limited to just strictly measure the impact of an adaptation measure in isolation, when other coastal developments that counter the impact of that measure may be implemented within the spatial impact zone of the adaptation measure, cancelling out its efficacy (for example the construction of a big new hotel or the draining of a wetland may have just as significant of a negative impact on beach erosion or flooding as the positive impact of an adjacent coastal adaptation measure). Similarly, the lack of a Strategic Environmental Assessment (SEA) policy, which accounts for climate change impacts, as well unregulated development on private land, including in environmentally sensitive areas, poses an important risk to the achievement of project outcomes in the long-term. The guidelines for an SEA law are found in the NCZAS, and a key recommendation of the TE is that they be implemented as soon as possible.

A handbook on applying a Cost-Benefit Analysis methodology to adaptation decision-making was also produced as part of the project, and the uptake of this knowledge product by key institutional actors will also enhance the institutional/governance sustainability of the project.

Environmental Sustainability

As above, on going marine, coastal and in-land development and economic activities without sufficient coordination or landuse planning threaten possible environmental improvements that may be reaped by the project interventions. Furthermore, as discussed extensively in the TE, the monitoring of the integrated environmental impacts of the coastal adaptation measures over time is essential to understand exactly what those potential environmental improvements may be (for example, if the artificial reef at Mon Choisy is able to replace some of the ecosystem functions of a natural reef in addition to its physical wave attenuation function).

As discussed in the section on Country Ownership, the project document clearly outlines the need/ requirement for long-term monitoring of the coastal adaptation measures, stating under the description of Outcome 1 (p.13) “Environmental monitoring to help ascertain the extent to which the coastal protection measures enhance the development of new marine habitat (coral patches and seagrass beds) adjacent to the submerged structures and in the nearshore areas between the structures and the shore will also be undertaken.” Such monitoring should indeed be undertaken in order to quantify possible positive and negative environmental impacts of the coastal adaptation measures, and integrate this information into the cost-benefit analysis methodology used to decide future adaptation measures at other sites.

3.3.7 Impact

Overall Impact Rating: Minimal (M)

It is difficult to show any verifiable impact of the project interventions (particularly the coastal adaptation measures, but also impacts from training, policy and institutional efforts) given the delivery timeline of the project outputs and the fact that most of the project’s intended outcomes were not achieved (or in a position to be measured) by project close. The project’s overall impact (and over the longer term) can be considerably improved through the implementation of the recommendations presented in the TE, in regards to the interventions funded under the project by implementing the corrective actions listed per project outcome. Project impact can also be greatly enhanced by applying the lessons learned and broader recommendations for the design and implementation of future climate change adaptation projects, which support and extend the efforts of the current investment. Regardless of the fact that the verifiable impact at project close is deemed to be minimal, the project will likely have a catalytic impact on approaches to coastal adaptation in Mauritius, given the myriad lessons learned through the design and implementation of coastal adaptation measures, as well the use of the EWS, and the training, policy and knowledge management initiatives completed.

4. Conclusions, Recommendations & Lessons

The project was the first of its kind in Mauritius, and despite challenges in its design and implementation, and significant operational, political and technical challenges; the project was able to achieve many of its intended outputs by project close, albeit with significant delays. A broad range of stakeholders contributed to the achievement of project outputs with a significant push in the final year of implementation by the project team to ensure financial delivery. Although the achievement of project outcomes were largely not attained at the time of the TE, given the ambitious scope of the

project, the project's relevance in the national and regional context, and planned scale-up in climate finance in Mauritius, it is clear that project provides ample learning opportunities for both UNDP and the executing partner (MoESD), as well as other key stakeholders involved, in regards to approaches to the design and implementation climate change projects and more specifically coastal adaptation measures and supporting institutional and policy changes going forward.

Main Conclusions

Programme Design/ Formulation

The programme design was comprehensive and integrated, however proved too ambitious for the original project timeframe, and resulted in several extensions resulting in a project implementation period of significantly exceeding the planned time (7.5 years rather than the originally allotted 5 years). The site selection and chosen interventions could have been optimized to enhance the resilience of communities and livelihoods, which was the stated objective of the project. A disproportionate portion of the programme budget was put towards technical interventions, without a robust consideration of operational, technical and political risks and the capacity of the Ministry of Environmental and Sustainable Development (the executing entity) to absorb the scale of funding received. Design and implementation flaws in the interventions proposed in the project document, as well as consideration of adaptation options, which were not viable under the project (such as community resettlement at Rivières des Galets), also led to very long delays in implementation.

Programme Implementation

Given that 90% of the delivery of the project occurred in the last two years of project implementation, after two project extensions, and that most measures under Component 1 (82% of project budget), were only completed in the last 6-9 months prior to project close, it is evident that there were significant shortcomings in project implementation. Major bottlenecks included an underestimation of budget, associated challenges with procurement (particularly the national procurement guideline limitations and the availability of appropriate technical expertise), challenges in procurement of technical expertise, as well as weaknesses in decision-making processes leading to significant detours in implementation. The project would have benefitted from project management continuity and a performance-based contract for the project manager, as well as a Chief Technical Advisor (CTA) and a dedicated monitoring and evaluation officer, as well as greater oversight from UNDP at the country office and regional levels.

Programme Results

The project was able to achieve most of the intended project outputs by the very end of the project. Unfortunately, given the challenges in implementation and long-delays on many project outputs, the impact of the project, and the results from the various components remain speculative and can only be adequately assessed through on-going monitoring and assessment, as well as the implementation of corrective actions and recommendations found herein. Overall, most of the intended outcomes of the project were not achieved. However, the project provides ample learning opportunities for both UNDP and the MoESD and other key stakeholder involved, in regards to approaches to the design and implementing of coastal adaptation measures, as well as a range of lessons in regards to risk assessment and operational issues. Programme results in the long-term are particularly dependent on the long-term implementation of sustainable monitoring plan in order to learn which coastal adaptation measures are the best investment. Knowledge management, particularly dissemination of lessons learned should be emphasized going forward.

Relevance Rating - Relevant

Overall the project's objective was very relevant given the vulnerability of the Mauritius to the impacts of climate change and the necessity for strengthening the climate resilience of communities in coastal areas, at the frontline of sea level rise, storm surges and cyclones. The project design itself was also relevant in terms of building national expertise on approaches to coastal adaptation and cost-benefit analysis. The project would have been more relevant however by focusing on the most vulnerable sites/communities and choosing appropriate interventions accordingly, that is those, which prioritize the climate resilience and livelihoods of primary stakeholders; whereas the site selection and design of interventions leaned towards protection of economic assets (beach and tourism sector at Mon Choisy), and disaster risk reduction (Rivières des Galets) /management (Quatre Soeurs), rather than long-term adaptation. The relevance of the various components of the project however, is well understood by all institutional stakeholders.

Effectiveness Rating – Moderately Unsatisfactory

Changes in project design and implementation would have greatly enhanced effectiveness. The outputs of the project were achieved in a rapid push, mostly in the last year of implementation, although better alignment of outputs with outcomes and the stated project objective was required. The procurement of goods and international expertise, as well as the technical design process were significantly underestimated, leading to significant project delays. Project management processes and structures were not adequate in ensuring the achievement of project outcomes by project close. Unnecessary detours in the selections of coastal adaptation options (such as community resettlement) also undermined the effectiveness of the project in achieving its planned outcomes. Finally changes to the design of the chosen coastal adaptation measures would have also rendered the project more effective and efficient in achieving its outcomes as indicated below.

Efficiency Rating – Moderately Unsatisfactory

Efficiency is primarily related to the cost effectiveness of project design and implementation. Although the project was able to deliver on most of the indicated outputs, it was not designed or implemented in the most efficient manner to achieve the stated project outcomes. Large portions of the project budget went to consultation and design exercises which proved to be a dead end, were not allowable under the guidelines of the Adaptation Fund, and had already been eliminated as a considered option in the project document (such as the resettlement of the community of Rivières des Galets). Efficiency of the project would have been greatly enhanced by better design and identification of options at the outset (i.e. anticipating the breakwater structure at Mon Choisy would be considered an eyesore by the public, realizing that the site chosen for the refuge centre was inappropriate). Project efficiency and effectiveness would also have been greatly enhanced through design changes to the chosen coastal adaptation measures (better planting protocol for dune stabilization in Mon Choisy, higher seawall at Rivières de Galets, changes to mangrove planting methodology & greater usable area of refuge centre at Quatre Soeurs). Overall, although the consideration of options is part of the iterative learning process, it cannot be said that this was done efficiently. Finally cost efficiency of the training and knowledge management components of the project would have been enhanced by establishing a baseline to understand changes and uptake of new knowledge and capacities.

Sustainability Rating -Moderately Likely

The sustainability of the project depends largely on the establishment of a national monitoring systems and processes for the implemented of coastal adaptation measures (and other future measures) past the life of the project. Unfortunately, it was found that long-term monitoring of the several key impacts of the chosen adaptation measures was lacking, and that a budget and mandate for monitoring was not adequately put in place. A clear mandate for long-term monitoring of coastal adaptation measures will therefore greatly enhance project sustainability. The sustainability of the project is also related to the uptake the policy initiatives developed under the project (such as implementation of the National Coastal Zone Adaptation Strategy) cross-sectoral collaboration, and successful demonstration of the adaptation measures. A handbook on applying a Cost-Benefit Analysis methodology to adaptation decision-making was also produced, and the uptake of this knowledge product by key institutional actors will also enhance project sustainability. Finally project sustainability can be greatly enhanced through the implementation of a Strategic Environmental Impact Assessment law.

Impact - Minimal

It is difficult to show any verifiable impact of project interventions (particularly the coastal adaptation measures, but also impacts from the establishment of the EWS, training, policy and institutional efforts) given the delivery timeline of project outputs. The project's long-term impact can be considerably improved through the implementation of the corrective actions and recommendations presented in the TE, both directly in regards to the interventions funded under the project, and in terms of lessons learned for future climate change adaptation projects. Finally, project impact can be greatly enhanced through complementary efforts to address the anthropogenic factors that exacerbate the impacts of climate change

Lessons learned Overall Recommendations for Future Projects

1. Project Design and Monitoring

- **Recommendation:** Design future projects with a realistic scope that accounts for institutional capacity to deliver/absorb, accounts for lessons learned on past projects, particularly in regards to procurement delays and the procurement of technical expertise. Consider using UNDP procurement modalities and UNDP marketplace for international expertise from the outset given past experience.
- **Recommendation:** Future projects should give adequate attention to pre-feasibility, design and identification of measures before budgeting and costing given how extensive the delays were, and the limitations and bottlenecks in terms of procurement. Budgeting should be done particularly carefully for any future GCF projects, given strict requirements to meet pre-determined budgets for disbursements.
- **Recommendation:** Conduct a thorough risk assessment and apply the risk assessment to the design of the future projects, with a more robust consideration of risk mitigating strategies. Account for political, operational and financial risks based on previous experience. Develop capacity within the UNDP CO and well as with potential executing agencies in Mauritius on the evolving and stringent requirements of climate funds and UNDP in regards to environmental and social standards, stakeholder engagement and gender mainstreaming.
- **Recommendation:** In future projects of significant budget and/or technical complexity, hire a dedicated monitoring and evaluation officer, focused on results-based management, to

support day-to-day monitoring, and to develop plans and strategies, including site-level links and community engagement strategies.

2. *Project Implementation*

- Recommendation: In future projects of significant technical complexity hire an appropriately qualified Chief Technical Advisor (CTA), that is able to make key technical decisions and remove bottlenecks in technical decision-making, as well as draft Terms of Reference (TORs) for technical experts, engineers and firms hired under the project.
- Recommendation: In future project hire a Gender officer with Natural Resource Management (NRM) expertise that can help to implement the Gender Assessment and Action Plan (GAAP), prepared prior to project approval, as well as collect gender disaggregated baseline data, and check the validity of chosen indicators in the national context, and ensure progress towards targets.
- Recommendation: In future project's develop a Stakeholder Engagement Plan (SEP) with an emphasis on early community consultation that can inform project design, as well as ensure community engagement throughout project implementation. Future coastal adaptation projects should include community adaptation planning at each project site, including the establishment of a technical planning committee linked to local government structures as an on-going initiative, which includes monitoring of community-level impacts.
- Recommendation: Advocate with climate funds to out practical and flexible mechanisms in place for adaptive management. This is particularly important in project where all adaptation measures are not determined at the outset, but rather determined through a cost-benefit analysis process, or when a feasibility study needs to be carried out as part of the project, which will determine final cost allocations.
- Recommendation: In future project proposals, appoint one or two officers of the executing entity (the ministry responsible for implementation) that are attached to the project management team, so that their capacity is built in terms of hands on training, and that capacity is not just concentrated in the Project Manager (who may or may not remain involved in related activities after project close). The integration of ministry staff that are more intimately integrated in decision-making in regards to the project will help to mitigate losses in knowledge and institutional capacity.
- Recommendation: Develop a comprehensive project exit strategy based on the recommendations of the TE, particularly the Outcome-Level recommendations found below, with clear lines of responsibility between UNDP and MoESD.
- Recommendation: For future projects of significant technical complexity it is imperative to hire an appropriately qualified Chief Technical Advisor (CTA) with specialized technical knowledge of integrated coastal zone management, as well qualifications as an engineer to supervise the design and implementation of coastal adaptation measures.

- Recommendation: For future projects invest in careful selection of sites based on multi-criteria vulnerability mapping and on community vulnerability as supported by site-level socio-economic assessments.
- Recommendation: For future training and capacity building activities more broadly, including for professional actors, within the private sector and government, first establish a baseline prior to training in order to understand the level of expertise among participants. Following the training, administer a post-training assessment in order to assess actual changes in skills and knowledge, rather than using simple delivery targets (which are output rather than outcome focused).
- Recommendation: Ensure that future projects in regards to coastal climate change adaptation (Adaptation Fund, Global Environmental Facility and Green Climate Fund) make use of experts trained under the project.
- Recommendation: Establish a GIS database that can be used by all institutional stakeholders working on elements of climate change adaptation planning, which includes a layer of the communities targeted by the project and other priority sites (as per the coastal vulnerability map) and the baseline conditions and monitoring data from each site.

Summary of Lessons Learned

Lesson#1: Adequate attention to intervention design, pre-feasibility studies for coastal adaptation measures and careful budgeting are required to avoid significant delays on projects of high technical complexity.

Lesson #2: Special attention should be given to assessment of risks, inclusive of political, financial, operational, environmental and social. Risk assessment should iteratively inform project design and implementation. Risks should not be underestimated for the purposes of project approval.

Lesson #3: A clear understanding of donor requirements and adequate communication of priorities and constraints of various funds (what is allowable under both UNDP and donor policies) can save considerable time in the assessment of adaptation options funded under a specific project.

Lesson #4: It is essential to have a long-term monitoring strategy in place with clear roles and responsibilities assigned to the appropriate stakeholders as well as budget allocation. This allows an assessment of the actual impacts and results of the adaptation investment.

Lesson #5: Training and capacity-building activities should include an initial phase which determines specific training needs and establishes the baseline level of knowledge and awareness of the proposed topics and technical skills. This allows an assessment of whether participants have actually gained skills and knowledge when coupled with a post-training or capacity building assessment, rather than using metrics related to delivery (outcome rather than output focus).

Lesson #6: The Project Steering Committee meetings can be rendered more useful for key decision making by involving more subject-matter experts and sometimes a large range of stakeholders may actually decrease the efficiency and engagement within the meeting.

Lesson #7: Climate change adaptation (and other) project scope, in terms of design of project interventions and budget, should take into account the institutional capacity to absorb funding based on previous experience.

Lesson #8: It is useful to have a performance-based contracts, as well as clear reporting lines to UNDP for the Project Manager position, under the National Implementation Modality, in order to help ensure accountability and delivery.

Lesson #9: The outcomes of the project should be carefully aligned with the project objective, and the outputs aligned with outcomes. Realistic targets can be set when baseline conditions are determined prior to project implementation, and indicators should ideally link to on-going processes taking place independent of the project.

Lesson #10: A long-term monitoring plan for indicators established under the project should be developed, implemented and budgeted for by the executing agency to ensure sustainability of and learning from project interventions. This is particularly essential for adaptation interventions, whose utility is usually evident over longer timescales.

4.1 Corrective Actions for the Design, Implementation, Monitoring and Evaluation of the Project and Actions to Follow-up or Reinforce Initial Benefits from the Project

Recommendations: Outcome Level

Rec #	Recommendation
1	Component 1: Coastal Adaptation Measures Outcome 1: Increased adaptive capacity with relevant development and natural resources sectors
1.1	Develop and implement a long-term ecological monitoring plan to assess the biophysical impact of the artificial reef at the Mon Choisy site (including on marine biodiversity and changes to the sea bed and wave height) with an official mandate and requisite budget for offshore monitoring given to the Ministry of Blue Economy. Ensure that beach monitoring conducted by the Beach Authority does not just measure beach erosion rates of the facing beach, but also the possibility of down drift erosion by expanding the spatial extent of erosion monitoring to understand impacts.
1.2	Mon Choisy dune stabilization planting protocol should be adjusted to account for a reasonable density of planted vegetation to ensure survival rates, according to species. Given that most of the planting is already completed, the site should be monitored in the medium and long-term to understand which species survive at the planted density and the appropriate protocol disseminated for dune stabilization projects.

1.3	Rivières des Galets monitoring the efficacy of the seawall rehabilitation by recording storm surge events and the impacts on flooding in the community in regards to flooding damages, injury and/or death. If possible this should be compared to historical events to understand the value of the capital investment and to conduct a cost-benefit analysis.
1.4	Long-term mangrove monitoring should be undertaken at the Quatre Soeurs in regards to ecological parameters and survival rate in order to refine planting methodologies for replication at other sites. Flood and/ or storm surge attenuation monitoring should also be undertaken for the purposes of understanding the ecosystem function of the mangrove as a flood regulator, and for the purposes cost benefit analysis.
1.5	Develop and implement a handover plan for the Quatre Soeurs Refuge Centre site to the Ministry of Local government as previously agreed, so that the refuge centre is functional as soon as possible. Include a community sensitization plan, so that the purpose and protocols related to accessing the refuge centre are clear.
1.6	Implement measures for optimization of the Quatre Soeurs Refuge Centre, including cyclone proofing of windows by installing shutters, converting the roof space into useable shelter space (doubling shelter capacity/area), changing the location of the solar water heater to under the concrete side wall so that it is less exposed to damage in cyclone conditions.
1.7	Improve the gender-responsiveness of the Quatre Soeurs Refuge Centre by ensuring that there are functional spaces according to user groups (room for breastfeeding, rooms for women and children to change and/or sleep separately). Refuge centre staff should be given gender-based violence (GBV) in disasters sensitivity training. A female staff member should be trained and assigned to deal with any complaints or grievances in regards to GBV.
1.8	Gather and analyse data over a 5-year time horizon on the impacts of implemented coastal adaptation measures at the three project sites. Develop a simplified matrix for technical design criteria and cost benefit analysis with the lessons learned at each of the sites, which can be used to gauge the appropriateness of measures for coastal adaptation at sites for replication. The government of Mauritius should not attempt to replicate coastal adaptation measures (such as the artificial reef) at other sites without a data-based understanding of the impacts on ecological and biophysical parameters.
1.9	Ensure that donor-funded projects have a budget for the implementation of the Environmental and Social Management Plan (ESMP) past the life of such projects, and that the mandate and budget for long term monitoring according to the ESMP is given to the Environmental Impact Assessment (EIA) Division, the Beach Authority and the Ministry of Blue Economy as appropriate for the current project.
2	<u>Component 2: Early Warning System</u> Outcome 2.Reduced exposure at national level to climate-related hazards and threats
2.1	Once the Digital Elevation Model (DEM) is available in May 2020, complete the calibration of the model which correlates wave height with inland flooding and develop a protocol in collaboration with NDRMCC to notify local government counterparts and community members, once the flooding passes the determined threshold for evacuations.
2.2	Develop shared protocols for dissemination of EWS system information at the community level, using the most appropriate means of communication as identified through local

	stakeholder consultation (radio, television, community communication protocols). Ensure that information dissemination is inclusive and reaches the most vulnerable (i.e. women, youth, the elderly and the disabled).
2.3	Link the national EWS to the World Meteorological Organization's (WMO) Global Multi-Hazard Alert System (GMAS).
3	<u>Component 3: Training</u> Outcome 3: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses
3.1	Immediate distribution of the handbook on coastal adaptation that was developed for coastal communities to primary beneficiaries. Prior to dissemination it would be useful to establish a baseline of current level of understanding of coastal adaptation and then to assess changes in knowledge, attitudes and behaviour after distribution and use of the materials. This will allow institutional stakeholders, and UNDP, to understand the actual impact of the knowledge product.
3.2	Create a network of experts that have been trained in coastal engineering design and cost-benefit analysis for coastal adaptation measures, so that trained experts under the project can be easily sourced and used in future procurements. Ensure that institutional, private sector and multilateral actors have access to the network of trained national experts and are incentivized this expertise.
4	<u>Component 4: Policy Mainstreaming</u> Outcome 4: Improved policies and regulations that promote and enforce resilience
4.1	Ensure that the completion of the multi-criteria coastal vulnerability map, with the incorporation of socio-economic/community vulnerability. Ensure that the finalized map is incorporated into a GIS layer for national planning purposes and available to all relevant stakeholders. Use the coastal vulnerability map as the basis of site selection and prioritization for future projects related to coastal adaptation and disaster risk management.
4.2	Prioritize passing a Strategic Environmental Assessment (SEA) and Coastal Risk Management (CRM) law, as outlined in the National Coastal Zone Adaptation Strategy (NCZAS), in order to ensure that climate change adaptation concerns are actually considered when planning for coastal development and granting approvals for new infrastructure (such as hotels).
4.3	Formalize the implementation of the planning and advisory guidelines as outlined in the National Coastal Zone Adaptation Strategy (NCZAS) by incorporating into existing Environmental and Social Impact Assessment guidelines as well as broader Land Use Planning guidelines.
4.4	Introduce a new economic instrument for targeted corporate social responsibility / environmental and social investment funding that requires private sectors actors with developments (current and planned) to contribute 3% of revenues) towards coastal adaptation measures.
5	<u>Component 5: Knowledge Management</u> Outcome 5: Effective capturing and dissemination of lessons from the applied activities of the programme
5.1	Hand over the interpretive signs and small-scale models to the implementing partner Reef Conservation to optimize use of the materials developed, by the local NGO with the most

	experience with the use of the materials for community sensitization. Reef Conservation and/ or the institutional actors using these community sensitization materials in the future should also establish a baseline and undertake periodic assessments in regards to changes in knowledge, attitudes and behaviour at the community level.
5.2	Ensure that the prioritized ranking of vulnerable coastal sites, which takes into account community vulnerability, is used for the eventual replication of coastal adaptation measures that show a positive impact. Disseminate the final priority ranking of vulnerable coastal sites to future climate finance project development teams for use in site selection.

4.2 Proposals for Future Directions Underlining Main Objectives

Community vulnerability as a priority focus in future project design

— — —> A more strategic approach to site selection is required for future projects, that should start with a national level multi-criteria vulnerability mapping and that takes into both biophysical and socio-economic vulnerability

— — —> Undertake a Community vulnerability mapping, by undertaking detailed socio-economic surveys (including livelihood strategies) that can be overlaid with the mapping of vulnerable coastal sites undertaken as part of the project.

Emphasis on an integrated land use planning approach to adaptation

— — —> It is essential to include land use planning that accounts for private land develop as many of the issues in regards to adaptation come down to poor land use (including filling of wetlands, settlement along the coast and in vulnerable areas, poor agriculture practices upstream leading to bad drainage etc.), and most of the land on the island is privately owned, posing difficulties for regulations.

— — —> Future project should consider carefully the anthropogenic and climatic drivers at the site level. For example, waste management, land management, building in ecological sensitive areas may be the actual culprits in flooding and these aspects need to be taken seriously when considering where investments should be made so that relatively small investments are not then eclipsed by poor planning. For example, if coastal erosion is to be taken seriously, then a few million-dollar investments in offshore infrastructure should not be made in an area where new major hotel construction is planned

4.3 Best and Worst Practices in Addressing Issues Relating to Relevance, Performance and Success

Carrying out Pre-feasibility Studies, Establishing Baselines, Careful Budgeting

Future projects should give adequate attention to pre-feasibility and some design and identification of measures before budgeting and costing given how extensive the delays were and the limitations and bottlenecks in terms of procurement. For example if the breakwater design for Mon Choisy had been validated in an early stakeholder consultation time would have not been lost during implementation to iterating through various options. This means a very careful consideration of both environmental and

social risk, as well as budgeting, which is particularly critical for funds such as the Green Climate Fund.

Country Ownership and Sustainability

In future project proposals it would be advisable to have one or two officers of the executing entity (in this case the MoESD) attached to the project management team so their capacity is built in terms of hands on training, because most of time once the project manager and/or project assistant leaves the role on the project, or as a civil servant within the implementing unit, and if other Ministry staff are not more intimately integrated in project decision-making and implementation, then there is considerable loss in institutional capacity. On the UNDP side, sometimes the interns and trainees come and they learn but then they go so need better internal arrangement in the ministries.

Embedding a Gender/ Social inclusion expert in the Ministry of Environment and Sustainable Development and in UNDP Country Office

Consider embedding a gender/ social risk/ social inclusion expert in the Ministry of Environment and Sustainable Development that can also review these aspects of EIA/ SEAs as well as broader plans and policies to account for gender mainstreaming and social inclusion more broadly.

Robust Risk Analysis and Mitigation

It is very common within UNDP project developers and Regional Technical Advisors' to underestimate the level of risk for a project for the purposes of approval. With more stringent environmental and social standards both within UNDP, and by donor and multilateral funds, and given that projects with a higher level of risk carry more stringent and comprehensive requirements for environmental and social assessment and mitigation, a perverse incentive is created to underestimate and under report risks in the design stage. This is particularly true for risk that are hard to manage such as political or conflict risk, which are rarely adequately identified. Although this may facilitate project approval, risk analysis is a tool to be used to improve project performance and delivery, and to ensure a do no harm approach. In concrete terms, risk underestimation means significant reputation risks, delivery delays and problems in implementation that can be avoided with appropriate mitigation strategies and changes to design. In the worst case, underestimating environmental and social risks, as well as operational, technical and financial risks can mean the loss of lives or of millions of dollars with of investment.

Future project require the completion of an environmental and social risk screening and associated ESMP according to the risk categorisation, as well as a gender action plan and a stakeholder engagement plan. These elements will go a long way in mitigating risks, ensuring more inclusive project design and mainstreaming environmental sustainability, human rights and gender equality, as required by UNDP's SES. It should be noted however that currently the ESMP does not get budgeted for in the overall project budget, nor are key monitoring activities included in the project log frames. This should change, in order to ensure accountability and adherence to the standards.

Monitoring and Evaluation for Climate Change Adaptation

Future projects should adopt more sophisticated approaches to Monitoring and Evaluation including a constructing a Theory of Change, undertaking Outcome mapping in the project design stage, as well as applying best practice in M&E specifically for climate change adaptation. There are many excellent resources available that provide a starting point for understanding some of the particular challenges of M&E for adaptation projects were the timing of an MTE and TE will likely not capture required learning given the timescales necessary to see results. Furthermore, more nuanced analysis of the additionality of the investment is required, which means established counterfactual baselines at the outset of the intervention.

Annexes

Annex 1: Terms of Reference (TOR)

INTRODUCTION

In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP support GEF financed projects are required to undergo a terminal evaluation upon completion of implementation. These terms of reference (TOR) sets out the expectations for a Terminal Evaluation (TE) of the “**Climate Change Adaptation Programme in the Coastal Zone of Mauritius**” (*PIMS 4453*)

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

PROJECT SUMMARY TABLE

Project Title:	Climate Change Adaptation Programme in the Coastal Zone of Mauritius			
GEF Project ID:	AFB/MIE/Coastal/2010/2		<i>at endorsement</i> <i>(Million US\$)</i>	<i>at completion</i> <i>(Million US\$)</i>

UNDP Project ID:	00080227	GEF financing:		
Country:	Mauritius	IA/EA own:		
Region:	Africa	Government:		
Focal Area:	Climate Change	Other:		
FA Objectives, (OP/SP):		Total co-financing:		
Executing Agency:	Ministry of Social Security, National Solidarity, and Environment and Sustainable Development (Environment and Sustainable Development Division)	Total Project Cost:	8.404	8.404
Other Partners involved:	Ministry of Finance and Economic Development, Mauritius Meteorological Services, Ministry of Public Infrastructure and Land Transport, University of Mauritius, Forestry Service, Local Authorities, Ministry of Housing and Lands, National Coast Guard, Ministry of Local Government and Outer Islands, Ministry of Energy and Public Utilities, Ministry of Ocean Economy, Marine Resources, Fisheries, Shipping and Outer Islands, Beach Authority, MACOSS, Ministry of Tourism, Ministry of Social Integration and Economic Empowerment	Prodoc Signature:		18 July 2012
		(Operational) Closing Date:	Proposed: 30 August 2019	Actual: 30 August 2019

OBJECTIVE AND SCOPE

The Republic of Mauritius (ROM) is a group of islands in the South West of the Indian Ocean, consisting of the main island of Mauritius and several islands, namely, Rodrigues, St Brandon, Agalega, Chagos, Tromelin and a group of volcanic and coral islets located a short distance from their coasts. As a Small Island Developing State (SIDS), the ROM is particularly vulnerable to the adverse effects of climate change, especially in the coastal zone, where a convergence of accelerating sea level rise and increasing frequency and intensity of tropical cyclones (with more intense rainfall events and stronger winds) will result in considerable economic loss, humanitarian stresses, and environmental degradation.

The Government of Mauritius has secured a grant from the Adaptation Fund with the support of UNDP for the implementation of the project entitled “Climate Change Adaptation Programme in the Coastal Zone of Mauritius” since 2012. This fund, set up under the Kyoto Protocol of the United Nations Framework Convention on Climate Change, is targeted to assist developing-country parties to the above protocol that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation projects and actions that will limit the impacts on the party.

The objective of the project is to increase climate resilience of communities and livelihoods in coastal areas in Mauritius (all islands), through the following components/outcomes:

- application of adaptation measures to protect currently vulnerable coastal ecosystem and community features (at three priority sites on the island of Mauritius);
- development and implementation of an early warning system for incoming surge on ROM;
- training to promote compliance with climate-proofed planning, design, and location guidelines;
- policy mainstreaming; and,
- knowledge dissemination and management.

The TE will be conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects.

The objectives of the evaluation are to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming.

EVALUATION APPROACH AND METHOD

An overall approach and method² for conducting project terminal evaluations of UNDP supported GEF financed projects has developed over time. The evaluation should include a mixed methodology of document review, interviews, and observations from project site visits, at minimum, and the evaluators should make an effort to triangulate information. The evaluator is expected to frame the evaluation effort using the criteria of **relevance**, **effectiveness**,

² For additional information on methods, see the [Handbook on Planning, Monitoring and Evaluating for Development Results](#), Chapter 7, pg. 163

efficiency, sustainability, and impact, as defined and explained in the [UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects](#). A set of questions covering each of these criteria have been drafted and are included with this TOR (see [Annex C](#)). The evaluator is expected to amend, complete and submit this matrix as part of an evaluation inception report, and shall include it as an annex to the final report.

The evaluation must provide evidence-based information that is credible, reliable and useful. The evaluator is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, in particular the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders. The evaluator is expected to conduct a field mission to Mauritius, including implementation sites where works have been completed or nearing completion. Interviews will be held with the following organizations and individuals at a minimum, depending on availability of the officials at the time of evaluation:

- Ministry of Social Security, National Solidarity, and Environment and Sustainable Development (Environment and Sustainable Development Division)
- Mauritius Meteorological Services
- University of Mauritius
- Local Authorities
- Ministry of Ocean Economy, Marine Resources, Fisheries, Shipping and Outer Islands
- Beach Authority
- Ministry of Finance and Economic Development
- Local community

The evaluator will review all relevant sources of information, such as the project document, project reports – including Annual Project Performance Reports (PPRs), project budget revisions, midterm review, progress reports, project files, national strategic and legal documents, and any other materials that the evaluator considers useful for this evidence-based assessment. A list of documents that the project team will provide to the evaluator for review is included in [Annex B](#) of this Terms of Reference.

Functions and key results expected:

The International Consultant will be the team leader and will be responsible for the quality of the report and timely submission. The National Consultant will provide supportive roles in terms of professional inputs, knowledge of local policies, local navigation, translation/ language support, etc.

A. The review team is expected to prepare an Evaluation Report based on the outline listed in [Annex C](#) while specifically including the following aspects:

1. Adequacy of the overall project concept, design, implementation methodology, institutional structure, timelines, budgetary allocation or any other aspect of the project design that the evaluation team may want to comment upon.
2. Extent of progress achieved against the overall project objective disaggregated by each of the individual Outcomes, Outputs and Activities (including sub-activities); as against the Impact Indicators identified and listed in the project document. Extent of the incremental value added with project implementation.

3. Performance in terms of in-time achievement of individual project activities as well as overall project in terms of adherence to planned timelines.
4. Relevance and adequacy of mid-course changes in implementation strategy with PSC approval, if any and the consequent variations in achievements, if any.
5. Degree of effectiveness of the Project Management Unit to identify gaps, if any with lessons learned and alternative scenarios, if any
6. Evaluate the impact of the project activities on the various government and private institutions
7. Extent of effectiveness of awareness generation activities by way of quality of promotional packages/awareness material, number of Awareness Programmes, Trainings undertaken and level of awareness created. Quality of documentation, if any, produced under the project like, brochure, etc. should also be considered
8. Pattern, in which funds have been leveraged, budgeted, spent and accounted for in the project

B. The team should also focus their assessments on project impacts as listed:

1. Perceptions on the “Situation at the end of the Project” as it seems to the review team at the terminal review stage
2. Extent of effectiveness of capacity building initiatives undertaken under the aegis of the project
3. Appropriateness and effectiveness of the institutional arrangement deployed in the project with alternative scenarios, if any
4. Details of co-funding, if any, leveraged by the project and its impact on the project;
5. The effectiveness of monitoring and overseeing systems such as Project Steering Committee and suggestion on improvements if any
6. Potentials for replication of projects to other sites within the RoM

C. Terminal Evaluation and Knowledge Management Workshop

1. The International consultant will conduct a minimum one-day terminal evaluation and knowledge management workshop (during the evaluation mission) on monitoring and evaluation concepts and methodology for capacity development of relevant stakeholders. One of the aims of the workshop should be to enable the stakeholders to be capacitated to monitor and document project experiences, draw out lessons learned and envision how to implement the lessons learnt going forward. The program of the workshop must be included in this offer.

EVALUATION CRITERIA & RATINGS

An assessment of project performance will be carried out, against expectations set out in the Project Logical Framework/Results Framework (see [Annex A](#)), which provides performance and impact indicators for project implementation along with their corresponding means of verification. The evaluation will at a minimum cover the criteria of: **relevance, effectiveness, efficiency, sustainability and impact**. Ratings must be provided on the following performance criteria. The completed table must be included in the evaluation executive summary. The obligatory rating scales are included in [Annex D](#).

Evaluation Ratings:			
1. Monitoring and Evaluation	<i>rating</i>	2. IA& EA Execution	<i>Rating</i>
M&E design at entry		Quality of UNDP Implementation	
M&E Plan Implementation		Quality of Execution - Executing Agency	
Overall quality of M&E		Overall quality of Implementation / Execution	
3. Assessment of Outcomes	<i>rating</i>	4. Sustainability	<i>Rating</i>
Relevance		Financial resources:	
Effectiveness		Socio-political:	
Efficiency		Institutional framework and governance:	
Overall Project Outcome Rating		Environmental:	
		Overall likelihood of sustainability:	

PROJECT FINANCE / COFINANCE

The Evaluation will assess the key financial aspects of the project, including the extent of co-financing planned and realized. Project cost and funding data will be required, including annual expenditures. Variances between planned and actual expenditures will need to be assessed and explained. Results from recent financial audits, as available, should be taken into consideration.

The position of financing and co-financing as per the project document are listed in table below. However, it is to be noted that the budget was revised and approved by the Adaptation Fund Board on 22 May 2014 through the Board Decision B23-24/5.

Project Budget, Financing and Co-financing (Million USD)

Adaptation Fund			
	Budget	Actual	%
Outcome 1:	6,465,700.00		
Outcome 2:	133,705.00		
Outcome 3:	394,025		
Outcome 4:	350,050		
Outcome 5:	561,350		
Project Management Cost	500,000		
TOTAL	8,404,830		

The evaluator(s) will receive assistance from the Country Office (CO) and Project Team to obtain financial data in order to complete the co-financing table below, which will be included in the terminal evaluation report.

Co-financing (type/source)	UNDP own financing (mill. US\$)		Government (mill. US\$)		Partner Agency (mill. US\$)		Total (mill. US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Actual	Actual
Grants								
Loans/Concessions								
• In-kind support								
• Other								
Totals								

MAINSTREAMING

UNDP supported GEF financed projects are key components in UNDP country programming, as well as regional and global programmes. The evaluation will assess the extent to which the project was successfully mainstreamed with other UNDP priorities, including poverty alleviation, improved governance, the prevention and recovery from natural disasters, and gender.

IMPACT

The evaluators will assess the extent to which the project is achieving impacts or progressing towards the achievement of impacts. Key findings that should be brought out in the evaluations include whether the project has demonstrated: a) verifiable improvements in ecological status, b) verifiable reductions in stress on ecological systems, and/or c) demonstrated progress towards these impact achievements.³

CONCLUSIONS, RECOMMENDATIONS & LESSONS

The evaluation report must include a chapter providing a set of **conclusions, recommendations** and **lessons**. The evaluators will also follow and provide response according to the “management response template” at [Annex I](#). Conclusions should build on findings and be based on evidence. Recommendations should be prioritized, specific, relevant, and targeted, with suggested implementers of the recommendations. Lessons should have wider applicability to other initiatives across the region, the area of intervention, and for the future.

IMPLEMENTATION ARRANGEMENTS

The principal responsibility for managing this evaluation resides with the UNDP CO in Mauritius. The UNDP CO will contract the evaluators and ensure the timely provision of per

³ A useful tool for gauging progress to impact is the Review of Outcomes to Impacts (ROtI) method developed by the GEF Evaluation Office: [ROTI Handbook 2009](#)

diems and travel arrangements within the country for the evaluation team. The Project Team will be responsible for liaising with the Evaluators team to set up stakeholder interviews, arrange field visits, coordinate with the Government etc.

The Consultants shall comply strictly with comments made on any deliverable by the UNDP CO, the UNDP GEF Regional Technical Adviser and the UNDP Independent Evaluation office (IEO).

EVALUATION TIMEFRAME

The total duration of the evaluation will be 20 person days over a period of two months according to the following plan for the international consultant:

Activity	Timing	Completion Date
Preparation	5 days	15 September 2019
Evaluation Mission including workshop	8 days	15 October 2019
Draft Evaluation Report	4 days	31 October 2019
Final Report	3 days	15 November 2019

EVALUATION DELIVERABLES

The evaluation team is expected to deliver the following:

Deliverable	Content	Timing	Responsibilities
Inception Report	Evaluator provides clarifications on timing and method	No later than 2 weeks before the evaluation mission.	Evaluator submits to UNDP CO, IEO
Presentation	Initial Findings	End of evaluation mission	To project management, UNDP CO, Project Steering Committee, Key Stakeholders
Draft Final Report	Full report, (per annexed template) with annexes	Within 3 weeks of the evaluation mission	Sent to CO, reviewed by RTA, Project team, GEF OFPs
Final Report*	Revised report	Within 1 week of receiving UNDP comments on draft	Sent to CO for uploading to UNDP ERC.

*When submitting the final evaluation report, the evaluator is required also to provide an 'audit trail' (see [annex H](#)), detailing how all received comments have (and have not) been addressed in the final evaluation report.

The International Consultant will be allocated 20 person days input.

TEAM COMPOSITION

The evaluation team will be composed of two independent consultants - one international consultant and one national consultant. The consultants shall have prior experience in evaluating similar projects. Experience with GEF financed projects is an advantage. The evaluators selected should not have participated in the project preparation and/or implementation and should not have conflict of interest with project related activities. The

international consultant will serve as the team leader and will be responsible for the final deliverable of the TE inception report, draft report and final report.

The Team members must present the following qualifications:

International consultant:

Education:

- Postgraduate degree (Masters or PhD) in Coastal Engineering or Coastal Zone Management or Environmental Science or Natural Resources Management or Environmental Economics or related subjects with specific expertise in the area of Integrated Coastal Zones Management; PhD is considered an asset.

Work Experience:

- Excellent knowledge and a minimum of 10 years general experience in coastal engineering and project implementation, similar to those implemented in the project, especially artificial reefs and breakwaters and/or other relevant fields;
- At least 10 years specific experience at international level in coastal remedial works;
- Experience in Disaster Risk Reduction and specialized related activities would be an asset;
- Demonstrated experience with UNDP and other International Institutions safeguards policies in relation to coastal projects and climate change will be a distinct advantage;
- Specific experience in Small Islands Developing States would be an advantage
- Recent experience with result-based management evaluation methodologies, especially GEF funded project evaluations. Past experience as evaluator of GEF projects and knowledge of GEF M&E guidelines and tools (PPR, METT, Financial Score Card, etc.) is a strong asset;
- Experience with internationally funded climate change adaptation related projects;
- Project evaluation experiences within United Nations system will be considered an asset;
- Experience applying participatory monitoring approaches;
- Experience applying SMART indicators and reconstructing or validating baseline scenarios;
- Knowledge of the GEF Monitoring and Evaluation Policy;
- Demonstrable analytical skills;
- Excellent English communication skills, French would be an advantage;
- Fully computer literate with strong editing skills.

Corporate Competencies:

- Demonstrates integrity and ethical standards
- Creative and innovative
- Sound analytic capacities
- Ability to address complex concepts and to gather written materials in a clear, concise and meaningful manner with a high level of accuracy and attention to detail
- Highly organized, able to effectively develop and manage projects, ensuring that deadlines are met

Functional Competencies:

- Excellent writing, analytical and research skills
- Showing strong attention to details
- Excellent interpersonal skills
- Ability to work in a multicultural and international environment
- Ability to work under pressure and to meet tight deadlines

Language

- Excellent spoken, written English and French required

Criteria for Evaluation of Proposal:

Only those applications which are responsive and compliant will be evaluated. Offers will be evaluated according to the combined scoring method – where the educational background, experience on similar assignments and brief technical proposal will be weighted at 70% and the price proposal will weigh as 30% of the total scoring. The applicant receiving the Highest Combined Score that has also accepted UNDP's General Terms and Conditions will be awarded the contract.

The evaluation criteria will be as follows:

International Consultant

Criteria (Technical)	Weight (%)
Postgraduate degree (Masters or PhD) in Coastal Engineering or Coastal Zone Management or Environmental Science or Natural Resources Management or Environmental Economics or related subjects with specific expertise in the area of Integrated Coastal Zones Management	20
At least 10 years specific experience at international level in coastal remedial works and/or other relevant fields;	20
Experience in Disaster Risk Reduction and specialized related activities;	10
Recent experience with result-based management evaluation methodologies, especially GEF funded project evaluations. Past experience as evaluator of GEF projects and knowledge of GEF M&E guidelines and tools (PPR, METT, Financial Score Card, etc.) is a strong asset;	5
Experience with internationally funded Climate Change Adaptation related projects. Project evaluation experiences within United Nations system will be considered an asset;	5
Specific experience in Small Islands Developing States	5
Fully computer literate with strong editing skills.	5

Experience applying participatory monitoring approaches; Experience applying SMART indicators and reconstructing or validating baseline scenarios; Knowledge of the GEF Monitoring and Evaluation Policy;	5
Demonstrable analytical skills;	5
Excellent English communication skills, French;	5
Brief Technical Proposal mentioning both Evaluation method and Training on Knowledge management	15
Total points obtainable	100

Evaluator Ethics

Evaluation consultants will be held to the highest ethical standards and are required to sign a Code of Conduct ([Annex E](#)) upon acceptance of the assignment. UNDP evaluations are conducted in accordance with the principles outlined in the [UNEG 'Ethical Guidelines for Evaluations'](#)

PAYMENT MODALITIES AND SPECIFICATIONS

%	Milestone
20%	At submission and approval of work plan
30%	Following submission and approval of the draft terminal evaluation report
50%	Following submission and approval (UNDP-CO, UNDP RTA) of the final terminal evaluation report

APPLICATION PROCESS

Applicants are requested to apply online <http://jobs.undp.org> by **31 August 2019**. Individual consultants are invited to submit applications together with their CV for these positions. The application should contain the following document:

- a) Duly accomplished **Letter of Confirmation of interest and Availability** using the template provided by UNDP
- b) **Personal CV or P11**, indicating all past experience from similar projects, as well as the contact details (email and telephone number) of the candidate and at least three (3) professional references;
- c) **Brief description** of
 - why the individual considers him/herself as the most suitable for the assignment,
 - a brief methodology (technical proposal), on how the candidate will approach and complete the assignment; and
 - the programme for the Terminal Evaluation and Knowledge Management Workshop.
- d) **Financial Proposal** that indicates the contract price, supported by a breakdown of costs, as per template provided. If the Offeror is employed by an organization/company/institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the Offeror must indicate and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP

UNDP applies a fair and transparent selection process that will take into account the competencies/skills of the applicants as well as their financial proposals. Qualified women and members of social minorities are encouraged to apply.

Annex 2: Field Mission Itinerary

Day and date	Time	Activity	Location
Wednesday 27 November 2019	8.30 – 9.30	TE team working session	Port Louis
	10.00 – 10.15	Meeting with the Director of Environment	Ministry of Environment, Solid Waste Management and Climate Change, Port Louis
	10.15 – 12.00	Meeting/Interviews with ICZM Division team members	Ministry of Environment, Solid Waste Management and Climate Change, Port Louis
	13.30 – 14.00	Meeting/Interview with Mr S. Ramchurn, Head of Environment Unit	UNDP office, Port Louis
	14.30 – 15.00	Meeting/Interview with EIA director	Ministry of Environment, Solid Waste Management and Climate Change, Port Louis
Thursday 28 November 2019	10.30 – 11.00	Meeting/Interview with Mr Patrick Karani, national advisor on climate finance	Ministry of Environment, Solid Waste Management and Climate Change, Port Louis
	10.30 – 11.30	Meeting/Interview with Mr Satyanand Buskalawa Climate Change Division	Ministry of Environment, Solid Waste Management and Climate Change, Port Louis
	12.30 – 13.30	Meeting/Interview with Mr Bilal Anwar, Climate Finance Access Hub	Port Louis
	Afternoon	Meeting/Interview with Dr Ram Dhurmea, Mauritius Meteorological Services	Mauritius Meteorological Services, Vacoas
Friday 29 November 2019	09.30 – 10.30	Meeting/Interview with Mrs Doomun, Lead Analyst	Ministry of Finance, Economic Planning and Development Ground Floor
	11.00 – 12.30	Meeting/Interview with Mr Bolkah	Ministry of Environment, Solid Waste Management and Climate Change, Port Louis
	13.30 – 16.00	Meeting: UNDP team, GCF AND AF phase II consultants, NDRRMC, ICZM division	National Disaster Risk Reduction and Management Centre, Port Louis and Ministry of Environment, Solid Waste Management and Climate Change, Ministry, Port Louis
Saturday 30 November 2019	11.00 – 14.00	Site visit at Mon Choisy Beach-Artificial Reef Project: TE team, Mr Bolkah, Consultant: Desai & Associates Ltd, Contractor: Sotravic Ltee	Mon Choisy
Sunday 1 December 2019	10.00 – 14.00	TE team working session	NA
Monday	Whole day		Rivière des Galets

2 December 2019		Site visit at Riviere des Galets; Interview with community members	
Tuesday	11.00 – 12.00	Meeting/Interviews with team from Ministry of Blue Economy , Marine Resources, Fisheries and Shipping	Ministry of Blue Economy, Marine Resources, Fisheries and Shipping, Albion
	3 December 2019	Afternoon	TE team working session
Wednesday		Site visit at Quatre Sœurs and Grand Sable; Visit at Quatre Sœurs Refuge Centre; Visit at Mangrove plantation site; Interview with community members	
4 December 2019	Whole day		Quatre Sœurs and Grand Sable
Thursday	08.30 – 10.30	Meeting/Interview with Mr S. Ramchurn, Head of Environment Unit	UNDP office, Port Louis
	5 December 2019	13.00 – 14.30	Meeting/Interview with NDRRMC team
	15.30 – 16.30	Meeting/Interview with Mr S. Ramchurn, Head of Environment Unit	UNDP office, Port Louis
Friday	09.15 – 10.45	Meeting/Interview with EIA monitoring Division team members	Ministry of Environment, Solid Waste Management and Climate Change, Port Louis
	6 December 2019	11.00 – 12.00	Meeting with Ms. Amanda Serumaga Resident Representative for Mauritius and Seychelles
	13.00 – 14.00	Meeting/Interview with Beach Authority team (cancelled due to last minute scheduling conflict)	UNDP office, Port Louis
	15.00 – 16.00	Skype call with team from Reef Conservation	Beach Authority office, Ebene
			NA

Annex 3: List of Persons Interviewed

Name	Designation/Department	Interview method (s)
Mr S. Boolkah	Project assistant / Adaptation Fund Project / Ministry of Social Security, National Solidarity and Environment and Sustainable Development	Skype, Email and In person
Satyajeet Ramchurn	Head of Environment Unit/ UNDP Mauritius	Skype and In person
Ms. Amanda Serumaga	UNDP Resident Representative for Mauritius and Seychelles	In person
Mr Ram Seenauth	Divisional Environment Officer, ICZM Division, Ministry of Environment, Solid Waste Management and Climate Change	In person and email follow-up
Mrs Henna Ramdour	ICZM Division, Ministry of Environment, Solid Waste Management and Climate Change	In person
Mrs Nashreen Soogun	ICZM Division, Ministry of Environment, Solid Waste Management and Climate Change	In person
Mr Rajaram Luximon	ICZM Division, Ministry of Environment, Solid Waste Management and Climate Change	In person
Mr Dinkar Sharma Chamillal	EIA Director, Ministry of Environment, Solid Waste Management and Climate Change	In person
Mr Patrick Karani	National advisor on climate finance, The Climate Finance Access Hub	In person
Mr Bilal Anwar	General Manager, The Climate Finance Access Hub	In person
Dr Ram Dhurmea	Mauritius Meteorological Services	In person
Mrs Elahee Doomun	Lead analyst, Ministry of Finance, Economic Planning and Development	In person
Mrs Nabiihah Roomaldawo	Technical Officer, Ministry of Blue Economy, Marine Resources, Fisheries and Shipping	In person and email follow-up
Subhas chandra bauljeewon	Ag. Divisional Scientific Officer, Ministry of Blue Economy, Marine Resources, Fisheries and Shipping	In person and email follow-up
Ms. Dhanisha Gopaul	Scientific Officer, Ministry of Blue Economy, Marine Resources, Fisheries and Shipping	In person and email follow-up
Mrs Subashini cootapen	Scientific Officer, Ministry of Blue Economy, Marine Resources, Fisheries and Shipping	In person and email follow-up
Mr Khemraj Servansing	Officer-in-Charge, National Disaster Risk Reduction and Management Centre	In person
Mr Aneerood SOOKHAREEA	Superintendent of Police, National Disaster Risk Reduction and Management Centre	In person

Mr Dookharansing Seetohul	Senior Meteorologist, National Disaster Risk Reduction and Management Centre	In person
Mr Darmen Ellayah	Police Inspector, National Disaster Risk Reduction and Management Centre	In person
Mr Vithilingum Devarajen	EIA monitoring team, Ministry of Environment, Solid Waste Management and Climate Change	In person
Mr Ramkalawon Akhilesh Krishna	EIA monitoring team, Ministry of Environment, Solid Waste Management and Climate Change	In person
Dr Manta Nowbuth	University of Mauritius	Email
Mrs Kathy young	Reef Conservation	Skype
Mr Sameer Kaudeer	Reef Conservation	Skype
2 Anonymous men (boat operators)	Mon Choisy	In person
Mr J.C mangué	Community member, Riviere des Galets	In person
Mr Estellio Bawany	Community member, Riviere des Galets	In person
5 anonymous (4 women and 1 men)	Community members, Riviere des Galets	In person
Mr Jangi Kumar	Vice President, District Council of Grand Port	In person
3 anonymous (2 women and 1 man)	Quatre Soeurs	In person
2 anonymous (2 wpmen)	Grand Sable	In person
Mr Devanand Choowol	Grand Sable Fishermen Association	In person

Annex 4: Summary of Field Visits

Three visits were conducted at the project field sites namely Mon Choisy, Rivières des Galets and Quatre Soeurs/ Grand Sable. A summary of each field visit is provided below:

1. Mon Choisy, Saturday 30 November 2019:

Present: Sohinee Mazumdar and Fabiola Monty (TE Evaluation team), Mr Boolkah, Mr Jayesh Desai (Desai & Associates Ltd), Ms. Sheiland Malloo (Sotravic Limitée) and Mr Oliver Bhoyroo (Sotravic Limitée)

Visit highlights:

- Project activities at Mon Choisy include the installation of artificial reefs, beach planting and re-profiling to reduce beach erosion
- During the visit the planting areas were visited first with input from Mr Desai. Planting of the native plants was noted to have started in May 2019 and at the time of the visit, scheduled to be completed by end 2019 with the establishment of five planting areas (25 m² each)
- Mr Desai explained that public passage trails were left between each planting area and patches of grass as potential sitting areas were also added next to them to minimise disturbance of public activities. It was also claimed that they have encountered no opposition from the public regarding the activities implemented at the site.
- It was noted by the consultants that the planting areas had a high density of plants. Discussions with Mr Desai clarified that the planting protocol including the choice of species and the density is predetermined by the EIA. And as per design in the EIA, every Casuarina (filao) trees cut had to be replaced by three native trees.
- Regarding the monitoring of the plants, it was noted that the contract with Desai & Associates Ltd included an agreement for a two-year site maintenance.
- There were no signage at the planting areas but there are plans to add some.
- A temporary PR kiosk is present and operated by Sotravic Limitée for education purposes and inform the public of on-going activities. This is open Monday to Saturday.
- A short boat trip was done to the site where the artificial reefs have been installed. The consultants were informed that all the artificial reefs are in place since September 2019 and anchoring activities were being done. Navigation buoys were also in place and there are plans to add warning buoys.
- Mr Desai mentioned that they have conducted an ecological survey at the sites where the artificial reefs have been installed to have benchmarks for future monitoring but that this was not included in the original design.
- Discussions with two skippers revealed that they were aware of the artificial reefs but thought they were being implemented by nearby hotels. One of them noted that it is only during bad weather and cyclonic time that they will notice or not the benefits. One of the skipper also have a perception that there has been more waves on the other side of the beach without intervention measures since the reefs have been installed.

2. Rivières des Galets, Monday 2 December 2019:

Present: Sohinee Mazumdar and Fabiola Monty (TE Evaluation team), Mr Boolkah, Mr Kher Gokulsing (LUXCONSULT (Mtius) LTD), Mr J.C Mangue (Community Centre) and Mr Estellio Bawany

Visit highlights:

- During this trip, the site where the wall has been constructed was visited in conjunction with interviews and discussions with community members that live along the shoreline opposite of the wall. Emphasis was put on the latter given the clear threat that flooding pose to the community.
- Besides Mr J.C Mangue and Mr Estellio Bawany who were contacted beforehand to participate in the field visit, five more community members interviewed.
- Community members confirmed there have been several consultations regarding the activities at the site but not all of those interviewed attended.
- All of the community members interviewed expected and wanted the wall to be higher. They also expected the wall to have a curved top portion for increased protection against the waves.
- Mr Kher Gokulsing confirmed that the current height of the wall is what was originally planned.
- All community members interviewed have experienced flooding with varying level of impacts and property damages. They also noted that there was still flooding in some houses during the winter season of 2019 and the wall was already built then.
- One community member noted that the flooding would be worse without the wall but there was an expectation that it would stop all flooding.
- There is consensus among all those interviewed that the view was not important for them and if given the choice, they would have preferred a higher wall.
- The community members shared that big swells occur in June and July so they are unsure of how the wall will fare in the future.

3. Quatre Soeurs/ Grand Sable, Wednesday 4 December 2019

Present: Sohinee Mazumdar and Fabiola Monty (TE Evaluation team), Mr Bookah, Engineer from Best Construct Ltd, Mr Jangi Kumar (District Council of Grand Port)

Visit highlights:

- At Quatre Soeurs, a complete tour of the Refuge centre and the facilities was conducted
- The building was completed with remaining work remain outdoors e.g. parking
- The TE evaluation team was informed that the community area is around 360 m². It was noted that there was significant unused space on the roof which were confirmed to having the same capacity as the community area.
- Discussions with Mr Bookah and Mr Jangi Kuma from the District Council revealed that the handing over process for the centre is not sorted yet. The District Council is willing to manage the centre as it was originally planned and they can cover staff costs but would need funding for the maintenance of the facility. At the time of the visit, the Ministry of Environment remain in charge.
- When it comes to the actual process of evacuation, it was noted that once open the NDRRMC would be responsible for bringing people to the centre and that there have been two evacuation exercises in the locality and neighboring community of Grand Sable.
- Rationale to choose Quatre Soeur as one of the project site was linked to landslides and flooding.
- Further discussions with community members indicated that the last flood was in 2018 but that there has not been a recent evacuation due to it. The road in the area used to be flooded and now this issue has been resolved with better drainage system.
- Interviews with a man and a family living along the coast indicate that they were aware of the refuge centre and it is known as a Tsunami centre. They assume they will indeed head to the centre in case of emergency though they noted they have not needed to seek refuge in the past. The community centre and village hall have been used in the past as shelter by some families in the area.
- In Grand Sable where mangrove planting was done, The TE evaluation team had discussions with two women around their experience with flooding and awareness of the mangrove planting work. They shared that they experience flooding but that it not coastal inundation but run-off from the mountain. They are aware of the mangrove planting activities but have not been involved as it was only the men that were involved. They noted willingness to participate if given the opportunity. Regarding the importance of the mangrove planting for the community, protection from storm surges was not identified as a benefit.
- A final interview was conducted with a member of the Fisherman association at one of the planting sites. He had a positive attitude towards the project linking an increase in availability of fishing baits with the planting. Protection from storm surges was not identified as a benefit. He explained that the compensation provided for the planting activities have been an important complementary source of income particularly during bad weather when fishing activities are compromised.
- No interview was possible with someone from the Grand Sable Women Planters Farmers Entrepreneur Association. We were informed that the woman in charge no longer lived in the area.

Annex 5: List of Documents Reviewed

- Project Document;
- Inception Report
- Project Performance Reports (PPRs);
- Quarterly progress reports and work plans;
- Audits reports
- Mid Term Evaluation Report
- List and contact details for project staff, key project stakeholders, including Project Boards, and other partners to be consulted
- Project budget and financial data
- The project M&E framework
- Project operational guidelines, manuals;
- Minutes of the Project Steering Committees;
- Maps: Project sites, highlighting suggested visits
- The UNDP Monitoring and Evaluation Frameworks
- National strategies (for example Mauritius National Adaptation Plan)
- Relevant literature, publications and other reports related to coastal adaptation

Annex 6: Evaluation Question Matrix

Evaluative Criteria	Questions	Indicators	Sources	Methodology
Relevance: How does the project relate to the main objectives of the GEF focal area, and to the environment and development priorities at the local and national levels?				
<ul style="list-style-type: none"> Are the project objectives conforming to agreed priorities in the UNDP Country Programme Document (CPD)? 	<ul style="list-style-type: none"> How does the project support the environment and sustainable development objectives of the Republic of Mauritius? 	<ul style="list-style-type: none"> In line with the national priorities mentioned in the UNDP Country Programme Document 	<ul style="list-style-type: none"> UNDP Country Programme Document Project document 	<ul style="list-style-type: none"> Documents analyses Interviews with UNDP and project team
<ul style="list-style-type: none"> Is the project relevant to the Adaptation Fund climate change mitigation area? 	<ul style="list-style-type: none"> How does the project support the Adaptation Fund climate change mitigation area? 	<ul style="list-style-type: none"> Existence of a clear relationship between the project objectives and Adaptation Fund climate change mitigation area? 	<ul style="list-style-type: none"> Project documents Adaptation Fund focal areas strategies and documents 	<ul style="list-style-type: none"> Documents analyses Adaptation Fund website Interviews with UNDP and project team
<ul style="list-style-type: none"> Is the project relevant to the Republic of Mauritius environment and sustainable 	<ul style="list-style-type: none"> Is the project country-driven? 	<ul style="list-style-type: none"> Degree to which the project supports national environmental objectives 	<ul style="list-style-type: none"> Project documents National policies and strategies Key project partners 	<ul style="list-style-type: none"> Documents analyses Adaptation Fund website

<p>development objectives?</p>	<ul style="list-style-type: none"> ▪ What was the level of stakeholder participation in project design? ▪ What was the level of stakeholder ownership in implementation? ▪ Does the project adequately take into account the national realities, both in terms of institutional and policy framework in its design and its implementation? 	<ul style="list-style-type: none"> ▪ Degree of coherence between the project and national's priorities, policies and strategies ▪ Appreciation from national stakeholders with respect to adequacy of project design and implementation to national realities and existing capacities ▪ Level of involvement of government officials and other partners in the project design process ▪ Coherence between needs expressed by national stakeholders and UNDP-GEF criteria 		<ul style="list-style-type: none"> ▪ Interviews with UNDP and project team
<ul style="list-style-type: none"> ▪ Is the project addressing the needs of target beneficiaries at the local level? 	<ul style="list-style-type: none"> ▪ How does the project support the needs of relevant stakeholders? ▪ Has the implementation of the project been inclusive of all relevant stakeholders? ▪ Were local beneficiaries and stakeholders 	<ul style="list-style-type: none"> ▪ Strength of the link between expected results from the project and the needs of relevant stakeholders ▪ Degree of involvement and inclusiveness of stakeholders in project 	<ul style="list-style-type: none"> ▪ Project partners and stakeholders ▪ Project documents 	<ul style="list-style-type: none"> ▪ Document analysis ▪ Interviews with relevant stakeholders

	adequately involved in project design and implementation?	design and implementation		
<ul style="list-style-type: none"> ▪ Is the project internally coherent in its design? 	<ul style="list-style-type: none"> ▪ Are there logical linkages between expected results of the project (log frame) and the project design (in terms of project components, choice of partners, structure, delivery mechanism, scope, budget, use of resources etc.)? ▪ Is the length of the project sufficient to achieve Project outcomes? ▪ Whether gender issues had been taken into account in project design and implementation and in what way has the project contributed to greater consideration of gender aspects, (i.e. project team composition, gender-related aspects of pollution impacts, stakeholder outreach to 	<ul style="list-style-type: none"> ▪ Level of coherence between project expected results and project design internal logic ▪ Level of coherence between project design and project implementation approach 	<ul style="list-style-type: none"> ▪ Program and project documents ▪ Key project stakeholders 	<ul style="list-style-type: none"> ▪ Document analysis ▪ Key interviews

	women's groups, etc.). If so, indicate how			
<ul style="list-style-type: none"> How is the project relevant with respect to other donor-supported activities? 	<ul style="list-style-type: none"> Does the Adaptation Fund support activities and objectives not addressed by other donors? How do Adaptation Fund help to fill gaps (or give additional stimulus) that are necessary but are not covered by other donors? Is there coordination and complementarity between donors? 	<ul style="list-style-type: none"> Degree to which program was coherent and complementary to other donor programming nationally and regionally 	<ul style="list-style-type: none"> Documents from other donor supported activities Other donor representatives Project documents 	<ul style="list-style-type: none"> Documents analyses Interviews with project partners and relevant stakeholders
<ul style="list-style-type: none"> Does the project provide relevant lessons and experiences for other similar projects in the future? 	<ul style="list-style-type: none"> Has the experience of the project provided relevant lessons for other future projects targeted at similar objectives 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Data collected throughout evaluation 	<ul style="list-style-type: none"> Data analysis
Evaluative Criteria	Questions	Indicators	Sources	Methodology
Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?				
<ul style="list-style-type: none"> Has the project been effective in achieving the expected outcomes and objectives? 	<ul style="list-style-type: none"> Has the project been effective in achieving its expected outcomes? 	<ul style="list-style-type: none"> See indicators in project document results framework and log frame 	<ul style="list-style-type: none"> Project documents Project team and relevant stakeholders 	<ul style="list-style-type: none"> Documents analysis Interviews with project team

			<ul style="list-style-type: none"> Data reported in project annual and quarterly reports 	<ul style="list-style-type: none"> Interviews with relevant stakeholders
<ul style="list-style-type: none"> How is risk and risk mitigation being managed? 	<ul style="list-style-type: none"> How well are risks, assumptions and impact drivers being managed? What was the quality of risk mitigation strategies developed? Were these sufficient? Are there clear strategies for risk mitigation related with long-term sustainability of the project? 	<ul style="list-style-type: none"> Completeness of risk identification and assumptions during project planning and design Quality of existing information systems in place to identify emerging risks and other issues Quality of risk mitigations strategies developed and followed 	<ul style="list-style-type: none"> Project documents UNDP, project team, and relevant stakeholders 	<ul style="list-style-type: none"> Document analysis Interviews
<ul style="list-style-type: none"> What lessons can be drawn regarding effectiveness for other similar projects in the future? 	<ul style="list-style-type: none"> What lessons have been learned from the project regarding achievement of outcomes? What changes could have been made (if any) to the design of the project in order to improve the achievement of the project's expected results? 		<ul style="list-style-type: none"> Data collected Throughout evaluation 	<ul style="list-style-type: none"> Data analysis
Evaluative Criteria	Questions	Indicators	Sources	Methodology
Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?				

<ul style="list-style-type: none"> ▪ Was project support provided in an efficient way? 	<ul style="list-style-type: none"> ▪ Was adaptive management used or needed to ensure efficient resource use? ▪ Did the project logical framework and work plans and any changes made to them use as management tools during implementation? ▪ Were the accounting and financial systems in place adequate for project management and producing accurate and timely financial information? ▪ Were progress reports produced accurately, timely and responded to reporting requirements including adaptive management changes? ▪ Was project implementation as cost effective as originally proposed (planned vs. actual) ▪ Did the leveraging of funds (co-financing) if any, happen as planned? 	<ul style="list-style-type: none"> ▪ Availability and quality of financial and progress reports ▪ Timeliness and adequacy of reporting provided ▪ Level of discrepancy between planned and utilized financial expenditures ▪ Planned vs. actual funds leveraged ▪ Cost in view of results achieved compared to costs of similar projects from other organizations ▪ Adequacy of project choices in view of existing context, infrastructure and cost ▪ Quality of results-based management reporting (progress reporting, monitoring and evaluation) ▪ Occurrence of change in project design/ implementation approach (i.e. restructuring) when 	<ul style="list-style-type: none"> ▪ Project documents and evaluations ▪ UNDP ▪ Project team 	<ul style="list-style-type: none"> ▪ Document analysis ▪ Key interviews
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	<ul style="list-style-type: none"> ▪ Were financial resources utilized efficiently? Could financial resources have been used more efficiently? ▪ Was procurement carried out in a manner making efficient use of project resources? ▪ How was results-based management used during project implementation? 	<p>needed to improve project efficiency</p> <ul style="list-style-type: none"> ▪ Cost associated with delivery mechanism and management structure compared to alternatives 		
<ul style="list-style-type: none"> ▪ How efficient are partnership arrangements for the project? 	<ul style="list-style-type: none"> ▪ To what extent partnerships/ linkages between institutions/ organizations were encouraged and supported? ▪ Which partnerships/linkages were facilitated? Which ones can be considered sustainable? ▪ What was the level of efficiency of cooperation and collaboration arrangements? 	<ul style="list-style-type: none"> ▪ Specific activities conducted to support the development of cooperative arrangements between partners ▪ Examples of supported partnerships ▪ Evidence that particular partnerships/linkages will be sustained ▪ Types/quality of partnership cooperation methods utilized 	<ul style="list-style-type: none"> ▪ Project documents and evaluations ▪ Project partners and relevant stakeholders 	<ul style="list-style-type: none"> ▪ Document analysis ▪ Interviews

	<ul style="list-style-type: none"> Which methods were successful or not and why? 			
<ul style="list-style-type: none"> Did the project efficiently utilize local capacity in implementation? 	<ul style="list-style-type: none"> Was an appropriate balance struck between utilization of international expertise as well as local capacity? Did the project take into account local capacity in design and implementation of the project? Was there an effective collaboration between institutions responsible for implementing the project? 	<ul style="list-style-type: none"> Proportion of expertise utilized from international experts compared to national experts Number/quality of analyses done to assess local capacity potential and absorptive capacity 	<ul style="list-style-type: none"> Project documents and evaluations UNDP Beneficiaries 	<ul style="list-style-type: none"> Document analysis Interviews
<ul style="list-style-type: none"> What lessons can be drawn regarding efficiency for other similar projects in the future? 	<ul style="list-style-type: none"> What lessons can be learnt from the project regarding efficiency? How could the project have more efficiently carried out implementation (in terms of management structures and procedures, partnerships arrangements etc.)? What changes could have been made (if any) 		<ul style="list-style-type: none"> Data collected throughout evaluation 	<ul style="list-style-type: none"> Data analysis

	to the project in order to improve its efficiency?			
<ul style="list-style-type: none"> ▪ Has the project been effective in achieving the expected outcomes and objectives? 	<ul style="list-style-type: none"> ▪ Has the project been effective in achieving its expected outcomes? 	<ul style="list-style-type: none"> ▪ See indicators in project document results framework and log frame 	<ul style="list-style-type: none"> ▪ Project documents ▪ Project team and relevant stakeholders ▪ Data reported in project annual and quarterly reports 	<ul style="list-style-type: none"> ▪ Documents analysis ▪ Interviews with project team ▪ Interviews with relevant stakeholders
<ul style="list-style-type: none"> ▪ How is risk and risk mitigation being managed? 	<ul style="list-style-type: none"> ▪ How well are risks, assumptions and impact drivers being managed? ▪ What was the quality of risk mitigation strategies developed? Were these sufficient? ▪ Are there clear strategies for risk mitigation related with long-term sustainability of the project 	<ul style="list-style-type: none"> ▪ Completeness of risk identification and assumptions during project planning and design ▪ Quality of existing information systems in place to identify emerging risks and other issues ▪ Quality of risk mitigations strategies developed and followed 	<ul style="list-style-type: none"> ▪ Project documents ▪ UNDP, project team, and relevant stakeholders 	<ul style="list-style-type: none"> ▪ Document analysis ▪ Interviews
<ul style="list-style-type: none"> ▪ What lessons can be drawn regarding effectiveness for other similar projects in the future? 	<ul style="list-style-type: none"> ▪ What lessons have been learned from the project regarding achievement of outcomes? ▪ What changes could have been made (if any) to the design of the project in order to improve the 		<ul style="list-style-type: none"> ▪ Data collected throughout evaluation 	<ul style="list-style-type: none"> ▪ Data analysis

	achievement of the project's expected results?			
Evaluative Criteria	Questions	Indicators	Sources	Methodology
Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?				
<ul style="list-style-type: none"> ▪ Is the Project financially sustainable? 	<ul style="list-style-type: none"> ▪ Are there financial risks that may jeopardize the sustainability of project outcomes? ▪ What is the likelihood of financial and economic resources not being available once Adaptation Fund grant assistance ends? 	<ul style="list-style-type: none"> ▪ The likely ability of an intervention to continue to deliver benefits for an extended period of time after completion. 	<ul style="list-style-type: none"> ▪ UNDP, project team, and relevant stakeholders 	<ul style="list-style-type: none"> ▪ Document analysis ▪ Interviews
<ul style="list-style-type: none"> ▪ Is the Project environmentally and socially sustainable? 	<ul style="list-style-type: none"> ▪ Are there ongoing activities that may pose an environmental threat to the sustainability of project outcomes? 		<ul style="list-style-type: none"> ▪ UNDP, project team, and relevant stakeholders 	<ul style="list-style-type: none"> ▪ Document analysis ▪ Interviews
<ul style="list-style-type: none"> ▪ To what extent the stakeholders will sustain the project? 	<ul style="list-style-type: none"> ▪ Are there social or political risks that may threaten the sustainability of project outcomes? ▪ What is the risk for instance that the level of 		<ul style="list-style-type: none"> ▪ UNDP, project team, and relevant stakeholders 	<ul style="list-style-type: none"> ▪ Document analysis ▪ Interviews

	<p>stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained?</p> <ul style="list-style-type: none"> ▪ Do the various key stakeholders see that it is in their interest that project benefits continue to flow? ▪ Is there sufficient public/stakeholder awareness in support of the project's long-term objectives? 			
Evaluative Criteria	Questions	Indicators	Sources	Methodology
Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?				
<ul style="list-style-type: none"> ▪ Assess the likely permanence (long lasting nature) of the impacts 	<ul style="list-style-type: none"> ▪ Clarify based on extent: <ul style="list-style-type: none"> a) verifiable improvement in climate resilience; and/or b) through specified indicators that progress is being made towards 	<ul style="list-style-type: none"> ▪ The positive and negative, foreseen and unforeseen changes to and effects produced by a development intervention 	<ul style="list-style-type: none"> ▪ Project documents ▪ UNDP, project team, and relevant stakeholders 	<ul style="list-style-type: none"> ▪ Document analysis ▪ Interviews

	achievement of project objectives			
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Annex 7: Questionnaire used and Summary of Results

Questionnaire:

- **Relevance -- Exploratory questions:**
 - How does the project support the environment and sustainable development objectives of the Republic of Mauritius?
 - How does the project support the Adaptation Fund climate change mitigation area?
 - Is the project country-driven and aligned with the Mauritius National Adaptation Plan?
 - What was the level of stakeholder participation in project design?
 - What was the level of stakeholder ownership in implementation?
 - Does the project adequately take into account the national realities, both in terms of institutional and policy framework in its design and its implementation?
 - How does the project support the needs of relevant stakeholders (national and local governments? Local communities, tourism sector)
 - Has the implementation of the project been inclusive of all relevant stakeholders (including from a gender lens and for the most vulnerable)?
 - Were local beneficiaries and stakeholders adequately involved in project design and implementation?
 - Are there logical linkages between expected results of the project (log frame) and the project design (in terms of project components, choice of partners, structure, delivery mechanism, scope, budget, use of resources etc.)?
 - Is the length of the project sufficient to achieve Project outcomes?
 - Have gender issues adequately been taken into account in project design and implementation and in what way has the project contributed to greater consideration of gender aspects, (i.e. project team composition, gender-related aspects of climate change impacts and livelihoods, stakeholder outreach to women's groups, etc.). If so, indicate how
 - Does the Adaptation Fund support activities and objectives not addressed by other donors?
 - How does the Adaptation Fund help to fill gaps (or give additional stimulus) that are necessary but are not covered by other donors?
 - Is there coordination and complementarity between donors?
 - Has the experience of the project provided relevant lessons for other future projects targeted at similar objectives

- **Effectiveness -- Exploratory questions:**
 - Has the project been effective in achieving its expected outcomes?
 - Outcome 1: Increased adaptive capacity within relevant development and natural resource sectors developed in a gender sensitive way
 - Outcome 2: Reduced exposure at national level to climate related hazards and threats
 - Outcome 3: Strengthened institutional capacity to reduce risks associated with climate induced socio-economic and environmental losses
 - Outcome 4: Improved policies and regulations that promote and enforce resilience measures
 - How well are risks, assumptions and impact drivers being managed?
 - Were the impact drivers in the project log frame adequately addressed in the project design (choice of outputs and activities)
 - Were environmental and social risks adequately accounted for?

- What was the quality of risk mitigation strategies developed? Were these sufficient?
 - Did the detailed technical assessments of each site, as well as the Environmental and Social Impact Assessment adequately inform the choice of coastal protection measures?
 - Are there clear strategies for risk mitigation related with long-term sustainability of the project (including anthropogenic, environment/climate, institutional and financial factors)?
 - What lessons have been learned from the project regarding achievement of outcomes?
 - What changes could have been made (if any) to the design of the project in order to improve the achievement of the project's expected results?
 - How has the project contributed to the achievement of national development priorities, for example UNDP's country program outcome and outputs, and Strategic Plan?
 - How were the project's outputs achieved? What, if any, alternative strategies would have been more effective in achieving the project's objectives? Are the intended objectives likely to be achieved by the end of March 2020?
 - In which areas did the project have the greatest achievements? Why and what have been the supporting factors? How can the project build on or expand these achievements?
 - In which areas did the project have the fewest achievements? What have been the constraining factors and why? How could they be overcome in possible next phases or other adaptation interventions?
 - What were the major factors influencing the achievement or non-achievement of the objectives?
 - Were the approaches adopted by the project effective?
 - How has the project's institutional capacity building process been effective in helping the Ministry of Environment and Sustainable Development manage climate change adaptation challenges (particularly in the design and monitoring of future coastal adaptation interventions)?
 - How has the project's private sector engagement approach been appropriate and effective? How have stakeholders been involved in project implementation?
 - How were the project target groups engaged in the choice of coastal adaptation measures, and was there an appropriate focus on vulnerable groups such as poor households, women and female headed households, persons with disabilities, etc.?
 - Did any success stories from the project target group emerge from beneficiaries during the evaluation that are directly attributable to the project?
- **Efficiency – Exploratory questions:**
 - Was adaptive management used or needed to ensure efficient resource use?
 - If so, how were principles of adaptive management applied?
 - Were the project logical framework and work plans and any changes made to them used as management tools during implementation?
 - Were the accounting and financial systems in place adequate for project management and producing accurate and timely financial information?
 - Were progress reports produced accurately, timely and responded to reporting requirements including adaptive management changes?
 - Was project implementation as cost effective as originally proposed (planned vs. actual)
 - Did the leveraging of funds (co-financing) if any, happen as planned?

- Were financial resources utilized efficiently? Could financial resources have been used more efficiently?
 - Was procurement carried out in a manner making efficient use of project resources?
 - How was results-based management used during project implementation?
 - To what extent partnerships/ linkages between institutions/ organizations were encouraged and supported?
 - Which partnerships/linkages were facilitated? Which ones can be considered sustainable?
 - What was the level of efficiency of cooperation and collaboration arrangements?
 - Which methods were successful or not and why?
 - Did the project take into account local capacity in design and implementation of the project?
 - Was there an effective collaboration between institutions responsible for implementing the project?
 - What lessons can be learnt from the project regarding efficiency?
 - How could the project have more efficiently carried out implementation (in terms of management structures and procedures, partnerships arrangements etc.)?
 - What changes could have been made (if any) to the project in order to improve its efficiency?
 - Has the project been effective in achieving its expected outcomes?
 - How well are risks, assumptions and impact drivers being managed?
 - What was the quality of risk mitigation strategies developed? Were these sufficient?
 - Were risk mitigation strategies related with long-term sustainability of the project, applied during implementation?
 - What lessons have been learned from the project regarding achievement of outcomes?
 - What changes could have been made (if any) to the design of the project in order to improve the achievement of the project's expected results?
 - How did the project result in increased efficiency of the various ministries involved in climate change adaptation planning?
 - Was the project efficiently delivered? Were activities and funds timely?
 - How were the project outputs achieved with an efficient use of resources and partnerships?
 - How did UNDP practices, policies and procedures affect the achievement of the project outputs?
 - How was the project management and staffing structure as outlined in the project document efficient in generating the expected results?
 - How did the work plans and monitoring processes enable adaptive management of the project?
 - How suitable were the projects partnerships and coordination arrangements?
 - Was the project's procurement modality for international expertise and construction works efficient and cost-effective? If not, how can this be improved?
- **Impact (Results)– Exploratory questions:**
 - Overall is there indications that the project contributed to project objective, i.e.: *“increased climate resilience of communities and livelihoods in coastal areas in Mauritius”*
 - Clarify impact of project based on extent:
 - a) Verifiable improvement in climate resilience; and/or
 - b) Through specified indicators that progress is being made towards achievement of project objectives

- Changes in resilience of coastal communities and livelihood strategies.
- **Sustainability -- Exploratory questions:**
 - Are there financial risks that may jeopardize the sustainability of project outcomes?
 - What is the likelihood of financial and economic resources not being available once Adaptation Fund grant assistance ends?
 - Are there ongoing activities that may pose an environmental threat to the sustainability of project outcomes?
 - Are there social or political risks that may threaten the sustainability of project outcomes?
 - What is the risk for instance that the level of stakeholder ownership (including ownership by governments and other key stakeholders such as private sector) will be insufficient to allow for the project outcomes/benefits to be sustained?
 - Do the various key stakeholders see that it is in their interest that project benefits continue to flow?
 - Is there sufficient public/stakeholder awareness in support of the project's long-term objectives?
 - Will the results of the project be sustainable?
 - Why and how is this project sustainable?
 - How are policy and regulatory frameworks in place that will ensure sustainability of results?
 - Have other complementary or opposing policy and regulatory frameworks been accounted for (such as tourism development or Integrated Coastal Zone Management (ICZM))
 - How will partnerships exist with other national institutions, NGOs, United Nations agencies, the private sector and development partners sustain the attained results?
 - How will financial and economic resources be available to sustain the benefits achieved by the project?
 - Based on the results of the coastal adaptation programme, what should subsequent phases of the programme do to ensure the sustainability of results and national leadership?
- **Gender and Inclusion – Exploratory questions:**
 - How was adaptive capacity increased in a “gender-sensitive way”?
 - How were the outcomes and outputs gender-sensitive?
 - How has the project contributed to the positive change in gender equality and the empowerment of women?
 - How has the project promoted the participation of and benefited marginalized and disadvantaged groups, including those affected by coastal erosion and SLR, and to what did this participation contribute towards achievement of the project objectives?

Summary of results:

Interview with Project Management Team (Ministry of Environment, Solid Waste Management and Climate Change) and UNDP Mauritius

- Agreement that the project was generally well designed and innovative for Mauritius.
- The original plan for the refuge center may not have been well thought of. And the budget for the early warning system was largely underestimated.
- The project is considered as being very relevant to the country and it is aligned with the country programme including livelihood aspects
- given the challenges that faces with climate change as a SID. It is perceived that the choice of sites and challenges being addressed at each were all justified and linked to community resilience and potential livelihoods benefits including addressing beach erosion in Mon Choisy to support the tourism sector.
- Barriers to the implementation of the project as originally designed included:
 - The need for external expertise. The project was highly technical and Mauritius have a lack of local experts in coastal zone management and engineering
 - Time gap between project design and implementation. The project was initially drafted in 2008, launched in 2012 with most activities being completed towards the end.
 - The need for consistent technical support
 - Time lost in unplanned activities and unforeseen processes
 - Procurements issues and delay
- The important delays in project delivery are linked to the procurement process, time lost in discussing the relocation the community in Rivière des Galets, and the need to find a new location and acquire land for the refuge centre in Quatre Soeurs.
- The process to install the artificial reefs is noted to have been an important challenge. This measure was originally proposed in 2015 but there have been multiple disagreements and lengthy discussions on which measure to adopt before a final decision was made. Sea walls was also considered.
- In Rivière des Galets also, other measures were being considered e.g.
- Project management is also not considered to have been an important challenge and in the future performance-based indicators are needed in the contract for project manager.
- In terms of impact- the early warning systems is noted to be in place, there has been a lot of awareness raising and education activities with lamer, the community in Rivière des Galets is considered protected
- Regarding gender issues, gender mainstreaming action could have been better spelt out. UNDP working on the TOR for a gender and M&E officer

Interviews with Government stakeholders, research organisation, implementation partners, project steering committee, NGOs

- The relevance of the project for Mauritius is recognized with climate change identified as a priority issue to be addressed.
- The choice of site for Rivière des Galets was linked to past experiences of wave swells and inundation including one in 2007 that had a severe impact on the community. Mon Choisy is noted to have the greatest level of beach erosion as per a 2015 JICA report.
- Activities in Rivière des Galets were meant to stop flooding from coastal inundation
- It was planned to relocate the community but they were not willing to move
- For the mangrove planting activities in Grand Sable, the decision to engage the fisherman came during implementation based on previous experiences on other projects where mangroves were uprooted by fishermen
- The implementation phase for the project was long with multiple bottlenecks and unplanned issues coming. The need to acquire land for the refuge centre in Quatre Soeurs was mentioned.
- The government provided co-funding to buy land for the refuge centre.
- Project impact is noted to be limited and it should be need to scaled up.
- It is perceived that the community in Rivière des Galets now feels safer and that “they are protected for 50 years”
- Regarding the artificial reefs, its implementation was delayed as there was disagreement on the initial measures proposed. The technology also had to be imported from Australia
- Regarding the mangrove planting, it was noted that in some instances, they were planted during low tide and in the wrong zones.
- The value of the training conducted is recognized by those that participated and there is agreement that there was an uptake of technical knowledge. There were multiple training opportunities for different ministries and the private sector.

- A Training manual has been developed that can be used for future trainings. However, a planned MSc course-adaptation course- perception that the course has not materialised
- The early warning system has been operational since 2015 and field data collection is ongoing to be able to link thresholds to specific impacts on the ground.
- In terms of impacts, some questions that came up were: who were the actual beneficiaries of this project? How did beach erosion etc. benefitted the communities? Are there tangible results?
- Regarding gender issues, the women association in Grand Sable was mentioned and that the members were involved in education activities in school and with the communities
- In terms of awareness, the Bis lamer project is an original project developed by Reef conservation and funded by a local foundation. The NGO was involved in the development of education tools including a handbook and models that were used for sensitization in the bus. Currently the models are with the Ministry of Environment
- The preparation of booklets and handbooks was lengthy due to the involvement of multiple programmes and ministries. But the completed handbook was never launched.
- There is intention to repeat the installment of artificial reefs in other places and some sites have been identified for future projects. Flic en Flac mentioned
- The project was noted to being insightful on how to approach new projects. The importance of a multistakeholder approach, having multiple ministries working together, having a feasibility phase and consultation process was mentioned
- Regarding monitoring of the impacts of the intervention measures, the responsibility is presumably allocated to several ministries but no formal arrangement and protocol are in place.

Interview with community members

- Refer to Annex 4 and summary of field visits during which all community interviews and discussions were conducted.

Annex 8: Evaluation Consultant Agreement Form

UNEG Code of Conduct for Evaluators/Terminal Evaluation Consultants¹

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study limitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

TE Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Consultant: Ms. Sohinee Mazumdar and Miss Fabiola Monty

Name of Consultancy Organization (where relevant): Individual Consultants

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at *Calgary, AB, Canada*

(Place) on April 2020

Signature:



Annex 9: Evaluation Report Clearance Form (Separate File)

Annex 10: Audit Trail (Annexed in a Separate File)

ⁱ www.undp.org/unegcodeofconduct