Annex 4: Detailed Project Description

MALDIVES: Maldives Environmental Management Project

1. The proposed Project will have four components which are described next in detail.

Component 1: Regional Solid Waste Management Program (US$5.96 million)

2. As described in annex 1, solid waste remains among the most visible environmental threats to the tourism industry. With a highly dispersed population spread across numerous islands the scope for harnessing scale economies is limited and the costs of delivering services are high. In addition, with restricted endowments of land, the space available for disposing waste is limited, calling for the waste stream to be minimized through incentives for recycling and composting. Finally, a fragile marine ecosystem requires that special attention be given to the choice of technology and system design to mitigate adverse impacts, with further cost implications. To address these risks and challenges stringent criteria need to be applied for site selection, engineering, technology choice and management.

3. Reflecting the Maldives' uniquely challenging geography and fragile ecology, the program would operate at multiple levels: The construction of Island Waste Management Centers (IWMCs) would provide facilities for island communities to sort, recycle, compost and store their residual waste in a safe and environmentally responsible manner. One or more Regional Waste Management Facility (-ies) (RWMF), built on an uninhabited island, would serve as the destination for residual waste from the islands. These would be supported by allied services such as transportation facilities, technical assistance, community programs, financial systems all of which would be guided by stringent environmental criteria. The facilities would be designed and built to the highest appropriate standards to reduce the risk of contamination from solid wastes. Special attention would be paid to medical wastes and toxic wastes which would require special handling and management.

4. The Project would support a regional solid waste management program in the North Central Region, which is currently under-served by waste management facilities. The following criteria were decisive in determining the region for priority investment in waste management: (i) the absence of any Regional Waste Management Facility; (ii) the existence of a collective mass of resort developments; and (iii) a population distribution sufficient to create the economies of scale necessary to sustain a regional collection and disposal system. In the North Central Region of the archipelago, there are four administrative atolls which are all relatively closely configured, although the inhabited islands (44) within the atolls themselves are somewhat dispersed. The Atolls are: Raa, Baa, Lhaviyani, and Noonu. Raa and Baa atolls sit to the west of the archipelago and Lahaviyani and Noonu atolls sit predominantly to the east of the archipelago (see map in annex 15). The population in the North Central Region is 42,000. The following criteria were decisive in determining the region for priority investment in waste management: (i) the absence of a Regional Waste Management Facility; (ii) the existence of a significant number of resort developments and future developments in the pipeline; and (iii) a population distribution sufficient to create the economies of scale necessary to sustain a regional collection and disposal system.

5. There are currently 11 tourist resorts operating in the North Central Region with the greatest concentration being within Baa Atoll (6 resorts) and Lhaviyani Atoll (4 resorts), with Raa Atoll having 1 resort. A total of 2,900 beds are available within this region at present but with new resort developments planned, it is anticipated that the bed stock will increase by 4,500 by 2020.

6. The SMW program would be undertaken in one or more atoll groups in the North Central Region of the country (see map in Annex 15) and will be defined during project implementation. The factors that would influence the choice of catchment include economies of scale required for the delivery of viable

waste management services, the distribution of population, the geography and environment of the archipelago, and the distribution of (current and planned) resort development. Once the catchment has been identified, there will be detailed assessments of current and future needs, technological choices for waste management and a thorough environmental and social impact assessment.

7. Environmental factors would be given high priority over economic considerations in determining catchment size and treatment and disposal technology. This component specifically contributes towards the 7thNDP by developing infrastructure for the purpose of improving sanitation and maintaining the environmental integrity of inhabited islands outside of Malé.

8. There are six sub-components in this component. These are described next.

Sub-component 1.1: Technical Assistance for Feasibility Studies, Technical Designs, Environmental Impact Assessment Studies and Capacity Building

9. Maldives confronts distinct problems in the safe management and disposal of wastes that are not encountered elsewhere so that experiences from other countries are of limited relevance in developing a safe and environmentally sustainable solid waste management system. Accordingly this sub-component would assess options to address the technical, economic and environmental challenges.

10. Under this sub-component ERC would support an assessment that would identify the catchment area, location of the RWMF and the waste management system (technology) that would be used for final disposal. A technical and financial feasibility study would be initiated to select the most suitable waste management option and location for the RWMF. The study would be conducted using a screening and selection process known as Best Practical Environmental Option (BPEO)[52]. This process involves a continuous interplay between the environmental dimension and the technical/financial dimension. It would begin with the presentation of a long list of potential sites to be prepared by the Ministry of Planning and National Development, the area of government responsible for all land-use planning in the Maldives.

11. The political economy of the Maldives is closely linked to the rapidly developing tourism sector. Like tourism everywhere, there are conflicts between good environmental stewardship and thus preservation of the natural assets on which tourism is based and the desire to get a good return on investments. Many national policies have been adopted favoring tourism development such as, for example, the development of an international airport capable of handling all sizes of aircraft. A fixed-bed tax is levied on every occupied tourist bed, and there are import duties on many products imported for consumption by tourists, but there are relatively few other taxes or fees levied on tourism and there is great reluctant to impose additional fees. Tourism enterprises are required to file environmental impact statements based on EA studies and there is some enforcement of the environmental regulations. However, it is fair to say that tourism occupies a special position in the Maldives and therefore concerns of long-term sustainability must be introduced carefully in order to avoid negative outcomes.

12. Then, the study would be carried out in three phases: the first phase would generate a short list of potential RWMF sites together with an assessment of suitable waste management system options for each of these. This phase would include sensitivity analyses to determine the robustness of the assessments. A

[52] A BPEO analysis involves a process of identifying viable scenarios for waste management, followed by a process of performance assessment against a number of decision criteria such as environment, feasibility and cost, in order to determine which scenario is the preferred option. The final site selection will be undertaken as part of the regional environmental assessment process, which will provide the strategic framework and environmental data inputs which will ultimately integrate the BPEO and site selection processes.

scoping procedure, that would use information from other components of this Project as well as alternative sources, would identify environmental features that could affect the outcome. The scoping would also involve anticipating any potential environmental risks that could arise, the range of technical solutions that might be applied and their cost.

13. The second phase of the BPEO would be selection of the preferred regional waste management system option and a detailed technical and financial feasibility study. The trigger for moving from Phase I to Phase II would be the identification of one or more suitable location(s) and corresponding waste management system(s). Inputs from the Technical Assistance Component 3 would inform and complement this process.

14. Once the appropriate technology and location have been determined, a social and environmental impact assessment would commence, with conceptual and detailed engineering designs of the RWMF (Phase III). The outcome of this phase would be a detailed social and environmental impact analysis, and an environmental management plan.[53] Technical assistance would be provided to key agencies (ERC and Atolls Offices) to build capacity for environmental monitoring and evaluation and also facilitate public-private partnerships for the transfer of waste and the operation of the RWMF.

15. The Environmental Impact Assessments (EIA) for the RWMF and Environmental Management Plans for the IWMCs would be prepared in accordance with the Environmental and Social Assessment Framework that has been prepared for the Project. A program for systematic environmental monitoring would be established to allow for greater emphasis to be placed on assuring compliance and vigorous environmental monitoring programs. The science- and evidence-based approach in this Project, and the detailed attention given to environmental factors, are unprecedented in the Maldives and their implementation is expected to serve as a model for the future development of infrastructure in the country.

Sub-component 1.2: Community Consultation and the Development of Island Waste Management Plans

16. This component will finance the preparation of island waste management plans (IWMPs). Experience in the Maldives and elsewhere consistently shows that community participation is an essential element of solid waste management at the island level to assure sustainability of the system. The aim of this sub-component is to engage communities to lead and participate in developing IWMPs. Preliminary activities would use Participatory Rural Appraisal (PRA) techniques to understand the social structure and physical layout of communities, patterns of leadership, formal and informal island networks, economic activities, transportation, patterns of waste disposal, willingness to pay for improved SWM, entry points for community mobilization, and the kinds of incentives to which individuals and communities are likely to respond. Community-based recycling and resource recovery would be promoted at IWMCs in order to reduce the volume and pollution potential of the residual waste requiring transport to RWMFs. Since approximately 70% of the waste is organic in nature, composting either at household level or at the IWMC could significantly reduce the amount of residue requiring final disposal at the RWMF. The compost produced can be used within the islands for improving soil conditions for agriculture or in home

[53] An environmental management plan (EMP) constitutes the actions required to mitigate any adverse environmental impacts as well as a monitoring plan designed to detect deviations from expected ranges of key variables. In the case of IWMCs, for example, the EMP would monitor the frequency of dumping, the proportion of waste undergoing selection and separation, the amount of waste composted, the frequency of transport of residual waste off the island, etc.). Indicators for the RWMF(s) would focus on the correct operation of the site, separation of recyclable wastes for sale, the proper treatment of leachate, etc.

gardens. Since the soil in most islands is largely coral sand, soil fertility is poor. Amending the soil with compost over the longer term will result in enhancing soil fertility.

17. Alternatives to the current systems of waste collection within the island and transport to the IWMC would be examined to develop a sustainable system with the right incentives for community participation.

Sub-component 1.3: Construction of Island Waste Management Centers

18. This component will finance the construction of IWMCs as a focal point for island waste management activities, based on the extent and type of community based recycling and resource recovery programs in the Island Waste Management Plans. The community would be involved in managing, operating and maintaining the IWMCs. The number and exact location of centers to be built will be determined in the feasibility study under sub-component 1.1. The final footprint of the individual IWMCs would depend on the population size, commercial and industrial activities on the island and expectations of the local community. Solid waste brought to the IWMC would be separated into organic wastes, recyclables, hazardous (including medical) wastes and residuals requiring final disposal and treated appropriately. The predominant component of the waste stream (70%) is organic and would most likely be composted locally, thereby reducing the volume of waste requiring ultimate disposal and the transport and disposal cost for the island community. This sub-component would also include funding for equipment and transport facilities for waste to be brought to the IWMCs. Communities would retain ownership and responsibility for maintenance and replacement.

Sub-component 1.4: Waste Transfer System to the Regional Management Facility

19. Regular transfer of residual waste to the regional waste disposal facility and recyclable material to markets would be necessary. This sub-component would finance the procurement of barges for sea transfer of waste to RWMFs and of recyclables to markets. Island communities would be expected to contribute some fraction of the costs, with cross subsidies from participating tourist resorts or other local enterprises to render the system economically sustainable.[54] In keeping with the National SWM Policy, private-sector participation in the operation of the waste transfer service would be explored.

Sub-component 1.5: Construction and Operation of the Regional Waste Management Facility

20. This sub-component would finance the construction of one or more RWMF(s) on uninhabited islands, or islands with compatible land use, taking account of environmental risks. Land is scarce in the Maldives and most uninhabited islands are surrounded by contiguous coral reefs with limited harbor access. Recognizing this constraint, the waste management system would give priority to environmental impacts in the choice of technology. The options to be considered would include properly engineered-controlled landfills, incineration for combustible residues and viable waste-to-energy options. Regardless of the option selected, a disposal site for residue or ash will be required and would be engineered to mimize the risk of contamination. The majority of waste will be municipal, with the organic fraction removed for composting. Consequently, the disposal of the residue or ash in an engineered-controlled site is unlikely to pose serious management problems. A section of the RWMF site would be secured and fully contained for disposal of the small amount of medical and toxic wastes generated. The RWMF will

[54] The team encountered resistance to the institution of new taxes or fees on resorts from the Ministry of Tourism and Civil Aviation. Currently resorts transport their residual waste at their own expense to the Malé landfill on Thilafushi. However, they are often able to take advantage of vessels returning to Malé after delivering supplies so that the savings to resorts. It is likely that a contribution by resorts to a reliable pick-up and transfer service would be welcomed and would possibly even yield a net saving for the resorts.

be operated by the private sector through a public-private partnership, in accordance with the National Policy on SWM. Additionally, the Project supports a rigorous monitoring program to assure compliance.

Sub-component 1.6: Biodiversity Offsets to Compensate for Possible Impacts of the RWMF

21. Recognizing the primacy of the environment for economic growth, the Project would specify measures to offset the loss of biodiversity and island habitat, should this occur. This would be done either through the creation of a new protected area, or the improved protection of an existing protected area. This approach is expected to have important demonstration effects that would serve as a model for the future development of infrastructure.

Component 2: Capacity Building for Environmental Management: (US$3.55 million)

22. The environmental agencies and regulators in the Maldives have a broad mandate, but their capacity to manage growing environmental pressures does not match the needs of a fragile environment on which the economy depends. At present, the environment section of the Ministry of Environment, Energy,and Water (MEEW) has a total professional staff of about 35, of whom only 5 have post-secondary degrees or the equivalent. ERC has 32 staff of which 5 have undergraduate degree and only 1 has a post-graduate degree. Likewise, MRC, with 55 staff, only has 5 with tertiary qualifications of which 4 have pursued post-graduate studies. It is clear that these agencies are both understaffed and underskilled.

23. The proposed Project is designed to at least partly fill staffing gaps and capacity needs areas relating to the project itself. It is apparent that it would be next to impossible to build a large, permanent cadre of environmental specialists with a reach extending over the entire archipelago and across all sectors. The stress would therefore be on developing (i) a core of competent specialists and generalists in MEEW, other relevant ministries (Planning, Fisheries and Agriculture, Tourism, Atoll Administration and Construction) and in the private sector (particularly NGOs and the tourism sector) to guide the environmental assessment and decision-making process; (ii) a cadre of service providers to carry out monitoring and field surveillance activities making full use of modern technology, and (iii) a network of private citizens and stakeholders (e.g. fishermen, hotel and dive operators, boat operators and others) with the training needed to serve as the "eyes" and "ears" of the Ministry. Priority would be given to training existing government staff and to others for whom there is a reasonable expectation that their skills could be utilized in the near or medium term.

24. Capacity building would be highly targeted at the environmental management skills and priorities defined in the project objectives and components. There is an acute need for qualified professionals in the environmental area. At the same time, it is necessary to take special care to use the scarce resources that are available efficiently. Capacity building activities would be carried out in five different modalities described below:

a. ***Community Training:*** Community training of islanders in such areas as solid waste management (composting, recycling), reef quality monitoring, community mobilization and other similar work. Such training can be carried out in the field, close to the home villages of the trainees, and it would be linked to other project activities;
b. ***Specialized Training leading to a certificate for roles <u>not</u> requiring academic credentials:*** Specialized training would be carried out in-country for those people able and willing to take up work involving environmental monitoring, and operation of IWMCs, including monitoring and evaluation activities. It would be carried out in Malé or Atoll Administrations, and it would lead to the award of a certificate. Certificate holders would be available for certain paid positions.

c. ***Specialized Training leading to an academic award such as a Diploma for roles requiring academic credentials:*** This modality would lead to an award such as an advanced certificate or a diploma for para-professionals[55] in specific areas of environmental control, environmental education, community mobilization, solid waste management, etc. It would be carried out in-country by specialized trainers. This modality would prepare human resources for roles in environmental monitoring, environmental education, community mobilization and environmental enforcement, among others. Such training would be designed for individuals with appropriate qualifications and toward a career in environmental protection. Preference would be given to candidates who reside on atolls outside of Malé. It is expected that persons receiving such training would be required to pledge to serve on atolls, other than Malé.

d. ***Undergraduate training:*** This would be carried out in-country by local and foreign experts. Training would be conducted by the Maldives College of Higher Education, the only tertiary level institution in the country. The Project would support development of either diploma- or degree-level programs in Environmental Management with a focus on areas of need. There would be multiple and phased exit points providing options for either a 2-year diploma, or a full 4-year program leading to a degree in Environmental Management. The program would also be available as a supplement to other degree programs in management or teaching and, eventually, it could prepare Maldivians in specific disciplines for specialist and management roles.

e. ***Formal degree programs abroad (undergraduate and post-graduate)***: This refers to formal degree programs abroad. It would be reserved for the highest priority areas of study having a direct application to problems of environmental management in the Maldives and where a particular job function requires a high level of professional skill that could not easily be acquired in the Maldives. In view of the high cost of such training, this modality would be limited to a relatively small number of individuals, competitively selected using objective criteria. Financing of this modality would be limited to the cost of university-level training in non-OECD countries. Students who earn admission to universities in other countries with substantially higher costs could receive support provided they supplement these scholarships with other resources. Exceptions would be considered for highly specialized skill needs especially those relating to coral reef ecology that are taught selectively at particular institutions in OECD countries.

25. The Project supports the Government's preference for in-country training, whenever possible, which is a more efficient and cost effective. It opens access to advanced training and career opportunities to Maldivians at all income levels and can also yield more human resources than training abroad. In-country training would also partially alleviate the problem of attrition by increasing the sheer numbers of individuals trained. Experience in the Maldives has shown that to assure quality, only qualified trainers representing priority disciplines should be selected, and training should be done in depth over a substantial period. The in-country tertiary training programs would be evaluated by experts from overseas. Shorter workshops and seminars would be used sparingly, and mainly as refresher courses. The issue of proper incentives to encourage people taking in-country training would be considered.

26. Project support would also include the training of staff members in other pertinent ministries including Planning, Fisheries and Agriculture, Tourism, Construction and Atoll Development as well as in specific atoll governments. Selected professionals and para-professionals from NGOs and the private

[55] Para-professionals are defined as specialists in fields that do not require extensive formal education. Typically, para-professionals carry out their activities in field situation, coming into direct contact with the citizens. They would correspond roughly to "agricultural technicians" who support extension activities in the rural zones.

sector (e.g. resorts, dive schools) would also be eligible for training. The training program would need to be implemented with great care to avoid conflicts and imbalance. First, priorities would be set among training areas. Second, there needs to be a balance between university-level skills and non-university-level skill levels.

27. Finally, the proposed Project would not be the sole source of support for training. Among project activities would be the search for additional funding sources among the many national and multilateral programs available. The PMU would serve as a clearing-house for such opportunities, help recruit candidates for these awards, assist applicants with their paperwork, and identify appropriate programs related to MEEW's work to which Maldivians would be encouraged to apply.

Component 3: Technical Assistance for Strengthening Environmental Management and Monitoring and Pilot Regional Strategic Environmental Assessment (US$2.48 Million)**

28. Sparse information and the absence of baseline data remain one of the key impediments to improved environmental management in the Maldives. Evidence on the magnitude and causes of these problems would allow an opportunity to adopt policies to arrest or reverse degradation of the country's key natural assets. The primary objective of this component is to expand the knowledge base regarding critical natural resources on which the Maldives ecosystem depends for stability and the Maldives economy depends for continued growth. Recognizing that there are insufficient resources in the project envelope to fill all the information gaps, this component selectively targets issues where assistance is most urgently needed. In addition to filling major data gaps this component will also promote activities designed to stimulate discussions and policy deliberations that would lead to greater community awareness and better decision making.

29. Among the many environmental problems that affect the Maldives, coastal erosion has been identified as a threat to over 90 percent of inhabited islands and is expected to intensify with climate change. Yet there is little information on the magnitude of the problem, or understanding of the complex processes of accretion and erosion and their links to wave dynamics, terrestrial ecosystems (mangroves) and coral reef health. There is growing evidence that even a moderate rise in sea level would have a large impact on the wave energy reaching islands. This is because the orbital diameter of a wave decreases (increases) exponentially with depth (height). The implication is that a small rise in sea level has a disproportionately large impact on wave energy. Destruction of reefs leads to a lowering of the reef crest, increased wave energy reaching the shore and greater erosion. A major focus of this component will be on addressing the issue of building climate resilience by improved management and stewardship of the country's coastal resources (marine and terrestrial).

30. It is worth noting that while climate change poses a major threat to reef health and sustainability in the Maldives and elsewhere (through coral bleaching, ocean acidification, disease, etc**),** reducing stress on reefs from local development and human pressures can go a long way to enhancing the natural resilience of reefs to climate change. Probably the two most important forms of such stress are from over-fishing (which alters reef community structure and the function of key ecosystem processes) and pollution (which affects water quality and in the ability of corals to grow, reproduce and compete effectively with algae for space). Loss of reef habitat from coastal development and of associated mangroves and seagrass beds-- is an important third factor. In terms of managing for resilient coral reefs reducing these kinds of pressures and monitoring and reporting on the results will be extremely important

31. A second major concern on many islands is the productivity of the tuna fishery, which is the second largest export industry and the primary source of livelihoods in the country. Tuna harvests depend on the availability of adequate bait which is sourced from the coral reefs. Anecdotal reports from the industry suggest that the bait fishery may be in long term decline in several atolls. There is evidence that reef

health and recovery is linked to fish stocks. This component will explore the status of the bait fishery, the interactions between coral recovery (health) and fish stocks as well as provide inputs for the development of a bait-fishery management plan.

32. The geographical scope of this component would be the North Central Region composed of Raa, Baa, Lhaviyani and Noonu[56] atolls (see Map). This region is comprised of a total of 224 islands of which 44 are inhabited and 11 are undergoing resort development. The total population is an estimated 42,000.

33. The Project would support monitoring by communities and professional scientists. Community monitoring is supported since it is an effective way of creating awareness and also collecting basic data in a systematic fashion from a large number of sites. The second kind of monitoring would be conducted on a more intensive basis by professional scientists from the small Maldives research community led by ERC and MRC. The capacity to monitor and acquire data would be enhanced by the acquisition of a research vessel appropriately outfitted with and other necessary research instruments. The following is a brief outline of the sub-components:

Sub-component 3.1: Erosion and the Terrestrial Environment

34. This sub-component would be led by ERC and would help train community monitors[57] on two related themes: mangroves; and coastal erosion. Mangrove cover and other vegetation are especially important to stabilizing the soil, providing a cost-effective response to coastal erosion. As climate change advances, storm surges are likely to grow in intensity and with them the power to transport sediments which is the basis for erosion. Another priority topic that would be investigated is the impact of harbor construction on erosion. Harbor construction, supported by the Government, is accelerating rapidly through the inhabited islands. There is anecdotal evidence that once constructed (dredging and filling, breaching the island reef, and using dredged materials for landfills) the harbors greatly accelerate erosion, leading to the loss of substantial areas of land and occasionally infrastructure on inhabited islands. The design of harbors and the allocation of living space on islands may require some adjustments to deal with this reality. This sub-component would support monitoring and technical reports to address the issue of erosion, harbor impacts and design to minimize erosion, land-use alternatives and soft engineering solutions such as mangrove protection to arrest erosion.

Sub-component 3.2: Marine Environmental Monitoring and Coral Reefs

35. This sub-component would be led by MRC and would train community monitors[58] and professional research focused on two major themes: coral reef status, and bait fisheries. The focus of the community monitoring would be on the health of coral reefs closest to each inhabited island or resort island. Simple reporting formats would be provided. Data from these surveys would be complemented, processed and analyzed by MRC and consultants (as needed) and reports written. The data will also inform the process of island selection for the RWMF. However, the main focus of this component would be on addressing the risks of climate change and enhancing natural adaptive capacity. This would include an assessment of coral tolerance to temperature increases, "reef connectivity", critical climate resilient reef areas and refugia. The aim is to inform management actions needed to increase adaptive capacity by reducing direct stresses and identifying key resources that would need to be protected.

[56] Noonu atoll is only partially covered due to its division by an administrative boundary to the north
[57] Training would also be provided under component 2 by the Ministries of Education and Higher Education.
[58] Training would also be provided under component 2 by the Ministries of Education and Higher Education.

36. Related to coral health is the productivity of the bait fishery which is critical for the Maldives tuna fishing industry[59]. Bait fish are caught in lagoons and reefs close to shore. Community monitoring combined with technical assistance would feed directly into the formulation of a national bait fishery management plan that is currently under development in the Ministry of Fisheries, Marine Resources and Agriculture. This would identify the ecological status of the bait fishery in the North Central Region and suggest alternative management strategies, drawing on relevant experience in other countries. There would be an examination of sustainable bait fishing alternatives.

Sub-component 3.3: Spatial Planning

37. Parallel to these, the Ministry of Planning and National Development would take the lead in developing its spatial database and planning capacity with the aim of integrating the environmental dimension in planning. The project would support acquisition of software, hardware and satellite imagery in digital form and the training of specialists in the interpretation of remotely sensed data. The floor of shallow seas would be explored using particular applications that allow observations such issues as reef conditions, erosion, reef damage, etc. This would allow the Ministry of Planning to extend its view into the subsurface marine environment for the first time and to take both coastal and marine variables into account in planning. These are pertinent to developing appropriate adaptive strategies to climate change. The database would be made available to other government agencies. This has the potential of raising the quality of land-use planning to a new and higher level in the Maldives, and to facilitate the integration of environmental concerns in land-use planning as well as facilitating adaptation to climate change, including benefit/cost analyses of alternatives.

Sub-component 3.4: Integration of Findings: Reports and a pilot Regional Strategic Environmental Assessment

38. Integration and use of information would proceed at two levels. As data and analyses become available, and reports are issued, workshops or seminars would be convened by the appropriate agency to disseminate the results and to examine the implications of studies for planning, climate-change adaptation, environmental conservation and enhancement of the quality of life for Maldivians. Information from this component will also be used for creating the short list of islands for the location of a potential RWMF.

39. Second, to bring together these activities, this sub-component would support a pilot Regional Strategic Environmental Assessment (RSEA) to (i) integrate and synthesize the assessments in ways that would inform policy and (ii) demonstrate the utility of incorporating environmental parameters in development decisions. An RSEA is an environmental assessment tool that examines how factors cumulatively affect ecological and human living conditions within a prescribed area. Recognizing the need to incorporate environmental considerations into policies and plans, the Government has placed a high priority on conducting a pilot RSEA in the North Central Regions that could serve as a model to guide development in other regions. ERC would serve as the implementing agency of the RSEA, with coordinated inputs from other relevant agencies. It would oversee work carried out by all participants and would provide a forum for evaluating scenarios.

[59] The causal links here are ambiguous. Observations suggest that reef recovery from bleaching is higher in areas with low fishing effort. It is not known whether high fish stocks promote reef recovery, or damage from fishing impairs recovery, or both.

Component 4: Project Management and Communications: (US$1,29 Million)

40. The Project Management unit (PMU) with members and qualifications as described in the OM would manage the Project in accordance with the guidelines set forth in the OM. The PMU would carry out the following functions: Overall Project Management, Component Management, Liaison/Coordination with other agencies and programs, financial management, procurement, monitoring and evaluation and project communications. Implementations arrangements for this component are discussed more in detail in Annex 6.