Public Disclosure Authorized

Public Disclosure Authorized

INTEGRATED SAFEGUARDS DATA SHEET
ADDITIONAL FINANCING

Report No.: ISDSA1172

Date ISDS Prepared/Updated: 20-Feb-2015

Date ISDS Approved/Disclosed: 21-Feb-2015

I. BASIC INFORMATION

1. Basic Project Data

Country:	Maldives	**Project ID:**	P153958
		Parent Project ID:	P108078
Project Name:	Maldives Environmental Management Project Additional Financing (P153958)		
Parent Project Name:	Maldives Environmental Management Project (P108078)		
Task Team Leader(s):	Marinela E. Dado		
Estimated Appraisal Date:	25-Feb-2015	**Estimated Board Date:**	21-Apr-2015
Managing Unit:	GENDR	**Lending Instrument:**	Investment Project Financing
Sector(s):	Solid waste management (50%), Central government administration (50%)		
Theme(s):	Environmental policies and institutions (33%), Pollution management and environmental health (33%), Biodiversity (17%), Climate chan ge (17%)		
Is this project processed under OP 8.50 (Emergency Recovery) or OP 8.00 (Rapid Response to Crises and Emergencies)?	No		

Financing (In USD Million)

Total Project Cost:	3.48	Total Bank Financing:	3.30
Financing Gap:	0.00		

Financing Source	Amount
BORROWER/RECIPIENT	0.18
International Development Association (IDA)	3.30
Total	3.48

Environmental Category:	A - Full Assessment
Is this a Repeater project?	No

2. Project Development Objective(s)

A. Original Project Development Objectives – Parent

The main aim of the Project is to provide the Republic of Maldives with the capacity to effectively manage environmental risks and threats to fragile coral reefs as well as marine habitats resulting from tourism development, increased solid waste disposal, fisheries and global climate change. Accordingly, this Project has two development objectives. The first Project Development Objective is that a solid waste management system is established and that inhabitants on targeted islands use solid waste management facilities, reducing the risks of contamination associated with accumulated wastes and sea dumping. The second Project Development Objective is to build human and technical capacity for environmental management so that the environmental dimension is integrated in the planning process using information and expertise developed in the Project.

B. Current Project Development Objectives – Parent

C. Proposed Project Development Objectives – Additional Financing (AF)

3. Project Description

The (original) PDOs of the parent project will apply to the Additional Financing.

A description of the project's four components is provided below.

Component 1: Regional solid waste management program. This is the most significant component of the project as it comprises 60% of total costs. It was designed to achieve the PDO associated with the establishment of a regional solid waste management (RSWM) system and its use by the participating inhabited islands as well as by tourist resort islands in the North Central Region. The following activities have been carried out: (i) community participation and mobilization; (ii) formulation of the best practicable environmental option (BPEO) for site and technology selection; (iii) design and construction of island waste management centers (IWMCs) and of the regional waste management facility (RWMF) in the island of Vandhoo; (v) creation of a regional transfer system for transporting residual waste to the RWMF; and (vii) development of suitable institutional arrangements for operationalizing the RSWM system.

Component 2: Capacity building for environmental management. The component aimed to build a cadre of environmental specialists to help manage the country's environmental pressures. The activities were completed in 2013. Specifically, they included: (i) an undergraduate degree program in environmental management at the Maldives National University; (ii) targeted overseas scholarships at the post-graduate and undergraduate levels; and (iii) community training for solid waste management and marine monitoring.

Component 3: Technical assistance for strengthened environmental management and monitoring. This component is aimed at expanding the knowledge base regarding critical natural resources on which the country's ecosystem and economy depend and enhancing coordination among disparate agencies in addressing environmental pressures. It has supported the following: (i) training of community monitors on vegetation cover and coastal erosion; (ii) compilation, data analysis and reporting on erosion and the terrestrial environment; (iii) studies and monitoring of the coral reef ecosystem and bait fishery management; and (iv) development of spatial database and planning capacity in order to integrate the environmental dimension in the country's planning. Nearly all of

the activities were completed in 2013.

Component 4: Project Management and Communications. This component comprises support for the Project Management Unit (PMU) to carry out overall project management, coordination with other agencies and programs, financial management, procurement, monitoring and evaluation and project communications.

The project was restructured in February 2014 with no changes to the PDO. The restructuring allowed for: (i) a reallocation of project funds among existing disbursement categories; (ii) a one-year extension of the (original) closing date from June 30, 2014 to June 30, 2015; and (iii) related revisions to certain project activities. Specifically, they included the streamlining and discontinuation of some activities and the reallocation of the associated funds out of the IDA credit to Component 1 to enable the achievement of the relevant PDO. No significant changes to the components were introduced. Some revisions to the results framework were made to reflect revisions of some intermediate outcome indicators targets and target values related to the implementation of Components 1 and 3.

Project status: Since the parent project became effective in late 2008, considerable progress was made in meeting the PDO associated with capacity building for environmental management and monitoring. The activities under Components 2 and 3 were completed by 2013 and the related PDO was achieved. The Government is working to sustain the achievement through the continuation of the Bachelors of Environmental Management program at the Maldives National University, the monitoring of the coastal and terrestrial ecosystems and the use of the national geographic information system (NGIS) database by government agencies for planning.

As to the PDO associated with the establishment and use of the RSWM system, encouraging results have emerged. Waste segregation and composting is taking place in 20% of the participating islands compared to the target of 20% by FY14. The payment of user fees by households is occurring in 40% of participating islands compared to the FY14 target of 50%. That percentage is expected to increase following the completion of additional island waste management centers (IWMCs) in the coming months. As far as other physical achievements are concerned, the construction of the regional waste management facility (RWMF) in the island of Vandhoo – consisting of the engineered landfill for ash disposal, landing point for the waste transfer vessel and other facilities – was finished ahead of schedule. The installation and operationalization of the incinerator at the RWMF, completion of the IWMCs in the participating islands and delivery of the waste transfer vessel are expected in February 2015.

The proposed Additional Financing will fund cost overruns outside of the Government's control in order to pave the way for the achievement of the PDO related to the waste management program. Without the Additional Financing, the PDO will not be achieved. To allow for the completion of activities related to the integrated regional solid waste management (RSWM) system, the Government also requested an extension of the closing date to December 31, 2015.

At the time of the preparation of the parent project, information on the costs of an integrated RSWM system in Maldives was not available. The cost estimates in the Project Appraisal Document (PAD) were based on data for solid waste management in South Asian countries and other small island states. After the completion of the technical study and the selection of the technology that were carried out during the implementation of the parent project, the Government found that creating the RSWM system is much more expensive in Maldives than in other SAR countries or small island

states largely because of the challenges of its unique physical geography. With the country's population spread across numerous little islands, there is little scope for harnessing economies of scale. The high costs of sea transport and low volumes of waste raise the costs of service delivery. The scarce land area of any island in the archipelago puts a premium on the value of land and limits on the landfill method traditionally used in many parts of the world.

When the procurement of the infrastructure for the RWMF, IWMCs, incinerator and waste transfer vessel began in 2011, the bids came at a staggering 30% (on average) over the cost estimates at the time of appraisal. In addition, the Government faced a significant cumulative loss in the US dollar value of the International Development Association (IDA) credit that supported the parent project.

The additional IDA credit would finance: (i) the remaining civil works and operational support for the IWMCs; (ii) the remaining activities to complete the RWMF infrastructure; (iii) the construction of the foundation pad for the incinerator; (iv) the purchase of essential equipment for the RWMF and IWMCs; (v) the provision of operational support, including international TA to the Fenaka Corporation – the designated entity for the management and operation of the RSWM system; (vi) the acquisition of a second waste transfer vessel; and (vii) minor RSWM related costs.

4. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

Maldives is an island nation in the Indian Ocean formed by a double chain of twenty-six atolls oriented north-south off India's Lakshadweep Islands. The country's atolls encompass a territory spread over roughly 90,000 square kilometers, making it one of the world's most geographically dispersed countries. Its population of 328,536 (2012) inhabits 200 of its 1,192 islands. The average ground level is 1.5 meters above sea level.

The atolls are composed of live coral reefs and sand bars, situated atop a submarine ridge 960 kilometers long that rises abruptly from the depths of the Indian Ocean. The reefs are composed of coral debris and living coral. They act as natural barriers against the sea by forming lagoons. Other islands set at a distance and parallel to the reef have their own protective fringe of reef.

The islands are made of 15 cm thick layer of humus that forms the top layer of soil. Below the humus layer are 60 cm of sandstone, followed by sand and then fresh water. Due to the high levels of salt in the soil near the beach, vegetation is limited to a few plants such as shrubs, flowering plants, and small hedges. In the interior of the islands, more vegetation, such as mangrove and banyan grow. Coconut palms (the national tree) are able to grow almost everywhere on the islands and are integral to the lifestyle of the population. The ground water of almost all inhabited islands is polluted and the current supply of potable water is from rainwater harvesting and/or desalination of sea water.

The temperature ranges between 24 °C and 33 °C throughout the year. Although the humidity is relatively high, the constant cool sea breezes keep the air moving and mitigate the heat. The weather is affected by the large landmass of South Asia to the north which causes differential heating of land and water. These factors set off a rush of moisture-rich air from the Indian Ocean over South Asia, resulting in the southwest monsoon. Two seasons dominate the weather: the dry season associated with the winter northeastern monsoon and the rainy season which brings strong winds and storms. The shift from the moist southwest monsoon to the dry northeast monsoon occurs during April and May. During this period, the northeast winds contribute to the formation of the northeast monsoon which reaches Maldives at the beginning of June and lasts until the end of August. However, the weather patterns do not always conform to the monsoon patterns of South Asia. The annual rainfall

averages 254 cm in the north and 381 cm in the south.

The target area of the RSWM component is the North Central Region. The RWMF is located on the eastern end of the uninhabited island of Vandhoo which is located in Raa Atoll (Maalhosmadulu). The island has a total area of 0.38km². A land area of 0.15km² was set aside for the RWMF site and necessary supporting infrastructure. One half of that area (or 0.0764km²) required for the site. Based on the findings of the ESIA, the majority of biodiversity in Vandhoo are nationally common and not protected. They are not considered globally threatened species. Some parts of the island are known to provide refuge to breeding hawksbill turtles.

5. Environmental and Social Safeguards Specialists

6. Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	This policy remains triggered to ensure that the impacts related to the regional solid waste management program are mitigated through the agreed actions under the ESMF and other site-specific environmental and social instruments.
Natural Habitats OP/BP 4.04	Yes	This policy remains triggered because all of the country's islands are surrounded by coral reefs which are significant natural habitats. Also, with this policy, negative impacts on the island vegetation especially at the RWMF are reduced. The site-specific environmental instruments (IEEs, EIAs and EMPs) include adequate measures to reduce the impacts to the coral reefs, island vegetation and associated fauna and flora.
Forests OP/BP 4.36	No	There are no areas classified as forests in Maldives. Any potential impacts on island vegetation are covered through OP/BP 4.04.
Pest Management OP 4.09	No	It is possible that some activities may create mosquito breeding sites due to unmanaged waste. The risk is mitigated by the establishment of the RSWM system with island based and regional disposal facilities. Under the recently concluded solid waste management pilot project administered by the Bank and funded under the Maldives Climate Change Trust Fund, it was confirmed that Maldives does not face the problems of other types of pests (e. g. rodents) at waste sites. Thus, the policy is not triggered. However, as part of the monitoring of the site during operations, possible movement of pests will be also monitored and recorded for potential invasions.
Physical Cultural Resources OP/BP 4.11	No	There are no PCRs at the project sites. Hence the policy is not triggered.

Indigenous Peoples OP/BP 4.10	No	There are no indigenous peoples in Maldives.
Involuntary Resettlement OP/ BP 4.12	No	IWMCs are built for the purpose of waste management only and they are always located away from human habitation. Because the state provides housing for all, the country does not have squatter issues. The RWMF was established in an uninhabited island. In addition,the project activities have not caused and will not give rise to any impacts to island community assets. Hence, this policy is not applicable.
Safety of Dams OP/BP 4.37	No	The country does not have dams and the project does not support water retention structures so this policy does not apply.
Projects on International Waterways OP/BP 7.50	No	The project activities are implemented on land. The construction of the landing site for the RWMF does not have any impact on international waters. Therefore, this policy is not applicable.
Projects in Disputed Areas OP/ BP 7.60	No	The policy is not applicable because there are no disputed areas in Maldives.

II. Key Safeguard Policy Issues and Their Management

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The Additional Financing does not entail any changes to the safeguards category or the originally triggered.

Overall, the project activities would result in improved environmental management in Maldives. However, the project was classified as safeguards category "A" as it was envisaged that the implementation of the regional solid waste management (RSWM) component – involving community-based waste recycling, island based resource recovery and composting facilities in the islands (island waste management centers) and establishment of a regional waste management facility (RWMF) for the disposal of residual municipal solid waste and medical wastes – could have potential adverse environmental impacts.

Island waste management centers (IWMCs): The construction and operation of the IWMCs have some environmental impacts. Most IWMCs were existing facilities that required expansion/ renovation and improvement to allow for the composting of the organic fraction of the waste and to improve waste handling at the centers. The lessons from experience of the IWMCs built prior to this project pointed to the importance of community participation for the effective operation and long-term sustainability of the IWMCs. Therefore, extensive community consultations and involvement in the selection of recycling and resource recovery activities at the IWMCs were undertaken during implementation. Hence, the specific activities at the IWMCs were decided by the relevant communities.

Initial environmental examinations (IEEs) and environmental impact assessments (EIAs) were conducted for the IWMCs and environmental and social management plans (ESMPs) were prepared for implementation. The assessments identified that organized solid waste collection systems do not exist in many islands, resulting in the disposal of waste by some community members in the foreshore or coastal areas and uncontrolled open burning of waste. These practices were due to the lack of proper recycling, waste treatment, or other disposal methods at the IWMCs. Overfilled IWMCs were periodically cleared by transporting waste being transported to the island of Thilafushi (the only functioning landfill in the country). However, disposal at Thilafushi is carried out through uncontrolled open dumping and open burning. When waste transfer to Thilafushi is not possible, island communities tend to bury the residual waste or let it spill over into the lagoon, reef or sea.

The IEEs and EIAs of project-supported IWMCs indicate that the island based waste management system under the project – segregation of wastes into recyclables, composting the organic fraction of the waste at the IWMCs and transport of the non-degradable residue and recyclables to the RWMF – would generate minimal adverse environmental effects and no irreversible impacts. Island level waste recycling and resource recovery combined with composting of the organic fraction of the waste would lead to the discontinuation of disposal of wastes from the islands into the ocean. Additionally, the regular removal of the residual waste from the islands to the RWMF would eliminate the need for open burning of waste on the islands. The operation of the RSWM system will prevent significant environmental damage and destruction to the coral reefs particularly by reducing the amount of plastics and lubricants in the waste stream that often end up contaminating sensitive reef systems as well as by eliminating the large quantities of food waste that are currently dumped in the ocean that lead to the change in the nutrient levels of the water and to algal growths that suffocate the live corals.

With the operationalization of the IWMCs, it is planned that the recyclable material will be segregated at the IWMCs and stored temporarily for transport to the RWMF. The residual waste and medical wastes generated in the islands will be stored securely for transport and disposal at the RWMF. The largest component in the waste stream is the organic fraction which exceeds two-thirds of the total waste stream and it will be composted at the IWMC using a low cost, low technology composting system already operational in one island in Maldives. This model organic waste composting facility – supported under the Ari Atoll Solid Waste Management Project which was funded by the European Union and administered by the World Bank – has been operating for almost two years. It is also being used to train IWMC staff and island communities on composting. In addition, Island Council members and IWMC in most of the participating islands received training in composting at the Weligama Composting Facility in Sri Lanka which has been functioning since 2006. The residue to be sent to the RWMF will be non-recyclable and non-degradable waste and they will be transferred on a regular basis so that there will be no significant waste accumulation in the IWMCs. Hence, there will be no ocean spills or ad hoc disposal of waste once the integrated RSWM system is operational.

Regional Waste Management Facility: The site selection and the identification of the technology for the RWMF were carried out through a vigorous and consultative process by using the best practicable environmental option (BPEO) methodology. The BPEO aimed to reduce the environmental and social impacts of the RWMF to the extent possible within the Maldivian context while ensuring technical and economical soundness. Specifically, the island selection applied the following criteria:
(a) Island is on a known navigable inter/intra atoll maritime transport route

(b) Island is near/ accessible to a population center (urban area)
(c) Island has a defined land mass and a large internal lagoon area
(d) Island has no obvious significant residential settlement (approved or unapproved)
(e) Island where other land use is compatible with solid waste management activities (agricultural islands may be considered at this time)
(f) Island is not designated for future land use which may be incompatible with solid waste management activities (islands on a reef system designated for a future resort, or an island designated for future population relocation should not be considered but islands that are designated for industrial activity may be considered)
(g) Island is not protected, or designated as an environmentally significant/ sensitive site (terrestrial); and
(h) Island should not be part of or adjacent to a protected reef system or designated as an environmentally significant/ sensitive site (marine)

Based on this process, the uninhabited island of Vandhoo in Raa Atoll was identified as the most suitable site for the proposed RWMF. An environmental and social impact assessment (ESIA) for Vandhoo and the RWMF site was conducted in accordance with OP/BP 4.01 to identify and propose mitigation measures for any potential adverse environmental impacts. The ESIA identified potential impacts and specified the mitigation and enhancement measures to be put in place during the construction of the RWMF and its operations.

Vandhoo is an uninhabited island identified for economic activities (such as manufacturing, etc.) by the Government. Vandhoo has been intermittently used by the communities of the nearby islands for recreation and agriculture activities. The evidence collected by ESIA indicated that there appeared to be significant continuous disturbance to the coral reef around the boat access sites used by people in the past, remnants of fire wood cooking, disturbed nature of the land with agricultural perennial plants and sparse secondary growth undergrowth.

The assessment indicated that the island flora was typical of Maldivian poor soil, secondary and dis-climax vegetation. Beach and rocky coast vegetation was found to be lacking significance in species diversity and common in the Maldives. Typical climax forest plant species was absent. Out of the 19 plant species on the island, six were found to be invasive and only one was identified as native while no information, both nationally and globally, is available for the rest. The designated area of the RWMF (approximately 1/3rd of the island land mass) includes an unmanaged coconut grove in disuse with sparse ground vegetation. The ground vegetation consists of Ocrosia oppositifolia with no record of its status both locally, nationally or globally. This area was not identified as a natural habitat. There is also a small (less than 0.5m high) immature mangrove plants of the species Bruguira cylindrica outside the land area identified for the RWMF which was proposed to be demarcated and protected together with the existing vegetation of about 7.6 ha of land around the facility in recognition of the possible ecosystem service it may produce through protection. There are no mature mangroves found on the island and this particular strand may have grown from seeds transported by currents from another island in the vicinity. The fauna associated with terrestrial vegetation was found to be common to Maldives and not globally threatened. The post vegetation cleared survey indicated that 7.1 ha were cleared (less than the designed area of 7.6 ha as given in ESIA). A buffer of vegetation belt established at the seas-side periphery of 15 ha area has been protected. This buffer area under protection also includes the small section of a wetland. Natural regeneration between the protected buffer zone and various structures of the RWMF has already taken place. The project also plans undertake additional replanting with native plant species in the southern and eastern ends of the site.

Some parts of the beach were found to be nesting sites for hawksbill turtles (Eretmochelys imbricata) which are common to Maldives but are considered globally to be critically endangered. While the RWMF will not directly impact the turtle nesting sites (as there are possibilities of indirect impacts), the ESIA identified the need to introduce necessary measures to reduce the disturbances and protect such sites. Based on the data collected on the likely sites used by the turtles for nesting, it was proposed that those beach areas (eastern side of the facility) will be demarcated and put under protection with the agreement of the Ministry of Fisheries and Agriculture who has the mandate to protect turtles in Maldives.

Following the ESIA's completion in 2013, three monitoring visits took place in 2014 to monitor the implementation of the ESMP. According to the findings of the monitoring visits and evidence provided by the contractor staff of the RWMF, there have been occasional indications of turtle movements on the beach but there has not been any evidence of nesting. The north western boundary of the facility is already fenced and the project will put up signage to restrict movement in that part of the island. During the most recent monitoring visit in October 2014 when Bank staff participated, it was observed that the beach areas where the turtle movements are noted are polluted due to waste that are being washed to the beach from other islands, making the site unsuitable for turtle nesting. Based on the discussions with the technical staff, the waste accumulation from the waste dumped by other islands is seasonal due to changing currents. This further emphasized the need to get the RWMF operationalized as soon as possible to curtail the illegal waste dumping by inhabited islands into the sea.

Since long-term continuous monitoring that has taken place confirmed that Vandoo may not be a significant turtle nesting habitat, it will not be necessary to formally protect the site. The current protection status as part of the existing moratorium prohibits collection of turtle eggs from Vandoo and therefore assessed to be adequate to ensure protection even if there will be nesting in the future.

Since the long-term continuous monitoring that has taken place confirmed that Vandoo may not be a significant turtle nesting habitat, it will not be necessary to formally protect the site.
The coral reef biodiversity was found to be common to Maldives with no site endemics and globally significant species. The landing site which was already used by island communities to access the island was found to be highly disturbed with low level of regeneration due to continuous disturbances in the past. The permanent loss of more than 3000 m2 (0.3 ha) of coral reef on the north side of the island due to the necessary dredging for an access channel which goes over the already disturbed site and for waste-carrying boats to enter the Vandhoo lagoon were found to be unavoidable. Compensation was proposed as a mitigation measure where at least one third of the reefs surrounding the entire island are set aside as a protected area and no-take fishery zone to compensate for the dredged reef. The protected area will also help re-establish some of the predatory fishes eliminated from Vandhoo and many of the other islands due to ongoing fishing activities while also compensating for loss of biodiversity in the landing area. However, formal protection agreed for the coral reef habitat as per the approved ESIA has not yet been declared and specific milestones will be included in the ESMP to ensure that the declaration takes place before project closure.

The post-monitoring reports indicate that the health of the reef system improved significantly compared to the 2012 baseline. The reef community structure changed significantly over the two-year period since the EIA baseline in February 2012. Live coral cover has increased on both sites

where the baseline was established but a more significant increase was found in the site close to the harbor, despite the harbor construction and deepening of the entrance channel to the harbor basin. There is also a significant increase in coralline algae cover in parallel with a decrease in rock, rubble and sand. This is mainly due to the deposit of coralline algae on rock and rubble surfaces. The increase in coralline algae is an indicator of the health of the reef where coralline algae potentially provide suitable substrate for newly settling corals.

The impact of sedimentation from the dredging related work appears to have caused little negative impact to the coral community except for the direct removal of coral in the path of entrance channel. Sedimentation has not caused significant damage to the coral community due to the nature of the coral community at the site as Porites dominated it. The coral is known to be relatively more tolerant than Acropora corals and hence to persistent sedimentation. In addition, the ambient environmental condition, timing of excavation and duration of excavation played a positive role in the positive outcomes of the coral community at the reef. It was noted that there was no significant difference between the fish diversity and composition of the fish community. Reef grazers, browsers and scrapers that play an important ecological function in the coral reef by producing reef sediments and controlling algae and encrusting sponge growth that might otherwise blanket the corals are also at a healthy level.

Seawater samples from two sites were taken and analyzed to compare with the same parameters tested for water quality during the baseline data collected as part of ESIA. The seawater surrounding the site is currently free from contamination. Large amounts of sand deposition were observed on the eastern side of the harbor basin which is spilling over the quay wall into the harbor basin as if sediment movement is obstructed by the construction of the harbor across the beach. Typically, without significant obstruction, beach sediment moves towards either end of the island associated with prevailing long shore current aided with waves. Significant erosion was also recorded in the 2014 survey (high tideline) at the shoreline on the west side of harbor basin. The influence of the harbor basin on sediment movement along the northern shoreline of the island needs to be monitored periodically. Protection to the harbor basin was provided through the construction of 50-meter long revetments on either side of the harbor.

Air pollution from waste incineration activities could increase ambient levels of greenhouse gases and heavy metals unless the chimney and the equipment used to remove these pollutants were properly designed. However, the net effect – due to the operations of the RWMF when compared to the current practices in the inhabited and resort islands – would be a significant improvement. The literature shows that the proposed incineration system when used with the quality and quantity of waste sent to the RWMF would meet the emissions standards that are acceptable to the World Health Organization (WHO) and IFC-World Bank standards for all the compounds involved in this study (NO2, SO2, TSP, PM10 and dioxins/furans) if the smokestack is kept at a height of 22.5 m with a good pollutant removal equipment which was included in the incinerator design. In doing so, the impact on the closest inhabited island will be lower than the WHO standards for all parameters with the concentration of dioxins/furans expected to be below the thresholds established by international guidelines. The incinerator was procured in accordance with the mentioned standards and its installation commenced in January 2015.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

Since the project would result in the establishment and operation of an effective RSWM system in the North Central Region, its long-term impact would be environmentally beneficial. The

Government awarded leases for several new resorts in the target region and the improved RSWM system would reduce sea dumping of waste and contamination of reef ecosystems which draw tourists to the country. Reef monitoring and other environmental monitoring programs supported under the project are guiding the land use planning process to help ensure better management of the environment and natural resources. As previously mentioned, the site selection and the identification of the technology for the RWMF were conducted through a rigorous BPEO study in order to reduce environmental and social impacts of the RWMF to the extent possible within the Maldivian context.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

The BPEO exercise led to the selection of eight different options for the RSWM system.

A1: Collection and transportation of waste from the islands and land filling with gas management system
A2: Collection and transportation of waste from the islands, compostingof organic waste and land filling of compost rejects
A3: Collection and transportation of waste from the islands, incineration of waste and disposal of rejects in landfill/land reclamation
Processing at island level
A4: Composting of organic waste at the island, transportation of rejects to RWMF for landfill
A5: Composting of organic waste at the island, incineration of balance waste through waste to energy (WTE) and land filling of rejects at RWMF
A6: Composting of organic waste at the island, incineration of remaining waste through WTE and land reclamation of rejects at RWMF
A7: Composting of organic waste at the island level, simple incineration of remaining waste and land filling of rejects at RWMF
A8: Composting of organic waste at the island level, simple incineration of remaining waste and land reclamation with rejects at RWMF

A7 was identified as the best option.

An incinerator which complies with the standards recommended was procured and installation is underway and will be completed in early 2015.

The choice of Vandhoo as the site for the RWMF was made after a long screening process. Because of its central location vis-á-vis other islands in the region and its proximity to an island dedicated for shipbuilding yards, Vandhoo was recommended as the best option. The ESIA also found Vandhoo to be the most suitable location for the RWMF. The island is large enough to accommodate both waste management and boat construction while two thirds of the island (with somewhat nutrient-rich soils for vegetation and wildlife) is left untouched. Boat building is a specialty of Raa Atoll which is well known for its carpenters. Fiberglass vessels are currently being constructed in nearby inhabited islands. The islanders of Innamaadhoo, In'guraidhoo and Rasmaadhoo expressed their interest to use Vandhoo for boat building and preliminary slipway initiatives were undertaken. The slipway was granted as a concession to a private contractor. The island of Alifushi is too far to the north to benefit from boat building.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

The location of the RWMF, catchment area, participating islands and technology for the RWMF

were not determined during project preparation because of the need to conduct thorough investigations, detailed assessments and studies. Hence, the environmental assessment (EA) for the RWMF could not be carried out during project preparation. Therefore, an Environmental and Social Assessment Framework (ESMF) was prepared by the Government in lieu of a project-specific EA. The ESMF served as a template for undertaking project-specific EAs after specific works were identified. The framework is: (i) comprehensive, (ii) highly detailed and (iii) contains precise time-bound action plans to assure compliance. After the identification of the technology and the selection of the IWMCs and the RWMF site, initial environmental examinations/ environmental impacts assessments, a social impact assessment for IWMCs and an environmental and social impact assessment for RWMF were undertaken to identify safeguard impacts and mitigation measures. The Bank cleared the assessments in 2013. Since the due diligence required by the Maldives regulations is more stringent than that proposed under the ESMF, the construction, upgrading and operation of the IWMCs financed by the Government in the target region will meet the Bank's safeguard requirements. The IWMCs and RWMF will be operational in 2015.

Maldives has a sound track record of implementing the Environmental Impact Assessment process. The technical capacity of the Environmental Protection Agency (EPA) is reasonably good. However, the Government agreed to hire a qualified consultant to help EPA undertake the regular monitoring of the system during project implementation, i.e., when the IWMCs are operational and the RWMF is completed. In addition, EPA assumed the responsibility for monitoring the implementation of the clearance conditions of the environmental assessments associated with the project. A consultant was hired in early 2014 to undertake the regular monitoring of the RWMF. Three monitoring visits and reporting were carried out in 2014. The consultant's work will continue until the end of the project and the responsibility will be handed over to EPA for continuity in accordance with national regulations.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

The main stakeholders of the regional solid waste management program are the island communities in the North Central Region (i.e., the atolls of Raa, Baa, Noonu and Lahviyani). The primary social issues relate to the need for strong community participation in and ownership of the project. Public participation in waste management issues is critical, especially in the less populated islands where the participation by the local population in the separation, collection, management and disposition of wastes is essential. Past experience in Maldives pointed to the significance of community participation in successful waste management in outlying islands with small populations. This would depend not only on effective communication but also on providing the right incentives which were carried out during project implementation. In addition, the resorts are key stakeholders because they would benefit from improved solid waste management. Other stakeholders are the island officials, atoll administrations and the Ministry of Environment and Energy (MEE).

The project is implemented with a strong participatory approach. As part of the social impact assessment, extensive consultations were undertaken with communities of 46 islands in the four atolls. Subsequently, as part of the BPEO, a number of consultations were held to identify the suitable technology and site for RWMF. The ESIA also entailed consultations with stakeholders in islands close to Vandhoo and other stakeholders. The RWMF operator, Atoll Offices, MEE and EPA made reasonable efforts to consult relevant stakeholders in the implementation of the RWMF activities during the construction phase. The consultations were carried out in a way that takes

into account cultural, gender based and other differences among stakeholders. The public consultation process continues to be carried out during implementation.

The ESMF of the parent project which continues to be applicable under the Additional Financing was disclosed to the public in 2008. The subsequent safeguard documents prepared during implementation period to date were also disclosed to the public. The Additional Financing does not require any further instruments because it is intended to support cost overruns and no new activities.

B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other	
Date of receipt by the Bank	16-Dec-2008
Date of submission to InfoShop	20-Mar-2008
For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors	25-Feb-2008
"In country" Disclosure	
Maldives	17-Mar-2008
Comments:	
If the project triggers the Pest Management and/or Physical Cultural Resources policies, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/ Audit/or EMP.	
If in-country disclosure of any of the above documents is not expected, please explain why:	

C. Compliance Monitoring Indicators at the Corporate Level

OP/BP/GP 4.01 - Environment Assessment	
Does the project require a stand-alone EA (including EMP) report?	Yes [×] No [ ] NA [ ]
If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?	Yes [×] No [ ] NA [ ]
Are the cost and the accountabilities for the EMP incorporated in the credit/loan?	Yes [×] No [ ] NA [ ]
OP/BP 4.04 - Natural Habitats	
Would the project result in any significant conversion or degradation of critical natural habitats?	Yes [×] No [ ] NA [ ]
If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?	Yes [×] No [ ] NA [ ]
The World Bank Policy on Disclosure of Information	
Have relevant safeguard policies documents been sent to the World Bank's Infoshop?	Yes [×] No [ ] NA [ ]
Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?	Yes [×] No [ ] NA [ ]

All Safeguard Policies	
Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?	Yes [×] No [ ] NA [ ]
Have costs related to safeguard policy measures been included in the project cost?	Yes [×] No [ ] NA [ ]
Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?	Yes [×] No [ ] NA [ ]
Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?	Yes [×] No [ ] NA [ ]

III. APPROVALS

Task Team Leader(s):	Name: Marinela E. Dado	
Approved By		
Regional Safeguards Advisor:	Name: Francis V. Fragano (RSA)	Date: 21-Feb-2015
Practice Manager/ Manager:	Name: Herbert Acquay (PMGR)	Date: 21-Feb-2015