



Ministry of Environment and Energy  
Male', Republic of Maldives



# SUPPLY AND DELIVERY OF WASTE MANAGEMENT EQUIPMENT TO ZONE 1 ISLANDS (SH. MILANDHOO AND SH.KOMANDOO)

*Project Name: Saafu Raajje –Regional Waste Management Project in Zone*

*Funded by*

*The Government of the Republic of Maldives*

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## SUPPLY AND DELIVERY OF WASTE MANAGEMENT EQUIPMENT TO ZONE 1 ISLANDS (SH. MILANDHOO AND SH.KOMANDOO)

### 1. INTRODUCTION

Ministry of Environment and Energy (MEE) on behalf of the Government of Maldives is seeking the assistance of a qualified and competent company/firm for the **Supply and Delivery of Waste Management Equipment to Zone 1 islands (Sh. Milandhoo and Sh.Komandoo)**.

### 2. BACKGROUND

The Republic of Maldives is a small island nation located in the Indian Ocean, southwest of Sri Lanka. It consists of some 26 geographical atolls, divided into 20 atolls for administrative purposes. Of the total 1192 islands, only 33 have an area greater than one square kilometer (km<sup>2</sup>). The total land area is less than 235 km<sup>2</sup>. The population of Maldives is 350,759<sup>1</sup> and is highly concentrated on a few islands. The atolls are ringed by coral reefs that are the seventh largest in the world and among the richest in terms of marine diversity and aesthetic appeal.

An estimated 322,400 tons of solid waste was generated in the country in the year 2013. Current arrangements for solid waste management on inhabited islands are inadequate. Mostly, waste is dumped onto the island foreshore and burned at low combustion temperatures. In addition, approximately 510 tons per year of medical waste are estimated to be produced in the Maldives, whilst uncontrolled disposal of solid wastes threatens the coastal, marine and coral reef ecosystems. The inadequate management of waste thus not only presents a significant environmental challenge, but also results in a blemish on the pristine marine environment expected by tourists. Furthermore, the lack of an integrated and holistic waste management system also hinders the successful realization of government laws and regulations towards waste management.

In this regard, solid waste is the most visible environmental threat to the tourism industry. In a recent survey, solid waste was identified as the most important environmental issue by 24% percent of respondents. The management of solid waste is especially challenging in the Maldives, even more so than other small island states. With a population spread across numerous islands, there is little scope for harnessing economies of scale. Thus, the costs of service delivery are high. With restricted land endowments, the space available for waste disposal is limited, calling for the waste stream to be minimized through such means as recycling and composting. The country's fragile marine ecosystem requires that special attention be given to the choice of technology and system design to mitigate adverse impacts, particularly those that could damage the Maldives' primary asset: its relatively unspoiled marine environment. This combination of risks and challenges are unique to the Maldives and demands specifically tailored solutions to develop a sustainable solid waste management system with stringent criteria applied for site selection, engineering, technology choice and management.



### *3. GOALS AND OBJECTIVES*

This project seeks to improve and develop a socially and environmentally sustainable system of solid waste management in the Upper North Region, which reduces the associated environmental and public health risks.

The project is aligned with the National Solid Waste Management Policy to extend services to all inhabited islands, support regional development and encourage private sector participation in waste management service delivery. This project contributes towards maintaining a high level of environmental integrity and sound environmental management in the islands. By improving the manner in which inhabited islands manage their wastes, the project would also support sustainable tourism development objectives.



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#### 4. DELIVERABLES (SH.MILANDHOO AND SH.KOMANDOO)

4.5	Type of Equipment	Quantity of Equipment Required
<b>To be Delivered to Sh.Milandhoo</b>		
1	Glass to Sand Grinder	1
2	Bottle and Can Baler (Vertical)	1
3	Vegetation shredder/chipper	1
4	Manual Rotary Compost Screen	1

4.6	Type of Equipment	Quantity of Equipment Required
<b>To be Delivered to Sh.Komandoo</b>		
1	Glass to Sand Grinder	1
2	Bottle and Can Baler (Vertical)	1
3	Vegetation shredder/chipper	1
4	Manual Rotary Compost Screen	1

#### 5. REQUIREMENTS - SPECIFICATION OF EQUIPMENT

5.1. Glass to Sand Grinder

5.2. Bottle and Can Baler (Vertical)

5.3. Vegetation Shredder / Chipper

5.4. Manual Rotary Compost Screen

\*All equipment provided must be brand new items.

\* The supplied and installed equipment must carry out full capacity test run with the presence of a personal from Island council.

##### 5.1. Glass to Sand Grinder

#	Feature	Requirement
<b>General Information</b>		
1	Standard Container Sizes	20 litres to 40 litres
2	Crushing Time	0.5 to 1.0 tonne /hour
4	Motor	3 HP Minimum
5	Standard Electrical Power	220 - 240V , 50Hz



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<b>Glass Crusher Dimensions and Weight</b>		
6	Loading / Feed Door	Minimum 6” Diagonal Measurement
7	Operating Area	Not exceeding 6 square feet
8	Options	3 Phase Electrical, 400V,50Hz
9	Operating Manual	Operating manual for safe operations of the machine under normal operations. The operations manual must include trouble shooting and remedy guide table
10	Maintenance Manual	Maintenance manual covering routine service requirements for machine and motor, and service overhaul of machine. The maintenance manual must include a labelled wiring and component diagram
11	Language	All literature in the English language
12	Free to customer parts	Free to customer motor and component manufacturers spare parts
13	Replacement Parts	Should be readily available in the Republic of Maldives or South East Asia
14	Warranty	Each unit supplied to carry a statement of warranty. Minimum <b>One year warranty</b> on motor and mechanical parts.

### 5.2. Bottle and Can Baler (Vertical)

#	Feature	Requirement
<b>General Information</b>		
1	Bale Size	24” x 16” x up to 24”
2	Bale Weights	120 pounds (for aluminum cans) 230 pounds (for plastic bottles)
3	Ram Pressure	25 kg to 50kg
5	Motor	10-20 HP
8	Electrical Power	400V, 3Phase, 50Hz
9	Bale Ejection	Hydraulic Chain
10	Bale Tying	Wire or Polyethylene Twine
<b>Dimensions and Weight</b>		
11	Chute Door Opening	Minimum 24” x 21”
9	Operating Manual	Operating manual for safe operations of the machine under normal operations. The operations manual must include trouble shooting and remedy guide table
10	Maintenance Manual	Maintenance manual covering routine service requirements for machine and motor, and service overhaul of machine. The maintenance manual must include a labelled wiring and component diagram
11	Language	All literature in the English language
12	Free to customer parts	Free to customer motor and component manufacturers spare parts
13	Replacement Parts	Should be readily available in the Republic of Maldives or South East Asia
14	Warranty	Each unit supplied to carry a statement of warranty. Minimum <b>One year warranty</b> on motor and mechanical parts.



### 5.3. Vegetation Shredder / Chipper

Specification	Required
Make	-
Model	-
Country of Origin	Yes
Manufacturers Literature and specification supplied	Yes

#### General

Specification	Required
Supplied new. Petrol/diesel driven mobile multi vegetation shredder/chipper (leaf and wood etc.) similar to that offered by Hansa (C21), Ducar 15HP, Echo bearcat (SC5720b) etc. Similar products offered by other manufactures will be considered without prejudice.	Yes
15 -20 HP 4 stroke air cooled petrol engine (Brigs and Stratton/ Kolher/Honda etc or similar) with Manual- or Electric-Start. Diesel equivalent maybe offered.	Yes
16 - 20 Ft. Lbs. Torque (approx.)	Yes
100-130mm chipping capacity (approx.)	Yes
Blade or disc with hammer operating action	Yes
Belt or shaft drive	Yes
heavy duty welded structural steel frame, steel plate cowlings/ body panels	Yes
Self-mounted or trailer mounted with inflatable tyres (12" approx.)	Yes

#### Other requirements

Specification	Required
Painted with primers and powder / epoxy finish to all exposed surfaces in manufactures colours.	yes
Operating manual for safe operations of the machine under normal operations. The operations manual must include trouble shooting and remedy guide table	Yes
Maintenance manual covering routine service requirements for machine and motor, and service overhaul of machine. The maintenance manual must include a labelled wiring and component diagram	Yes
All literature in the English language	Yes
Free to customer motor and component manufacturers spare parts	Yes
Each unit supplied to carry a statement of warranty. Minimum <b>One year warranty</b> on motor and mechanical parts.	Yes

### 5.4 Manual Rotary Compost Screen

#	Feature	Requirement
1.1	Drum Diameter	1000 to 1500 mm
1.2	Screen Size	10x10mm with 7x7mm supplied sieve insert
2.3	Rotation	Manual rotation using a handle at one end of the drum
2.6	Collection of Material	Allows collection of material at one end of the drum or in a removable tray below the drum, the collection area should be properly covered to not release loose particles
2.7	Body and Structure	heavy duty welded structural steel frame, steel plate cowlings/ body panels
2.8	Mount	Self-mounted



2.9	Paint and Finish	Painted with primers and powder / epoxy finish to all exposed surfaces in manufactures colours
2.10	Noise Level	The noise level of the screen during operation should be below 80 decibels
2.11	Operating Manual	Operating manual for safe operations of the machine under normal operations. The operations manual must include trouble shooting and remedy guide table
2.12	Maintenance Manual	Maintenance manual covering routine service requirements for machine and motor, and service overhaul of machine. The maintenance manual must include a labelled wiring and component diagram
2.13	Language of Documents	All literature in the English language
2.14	Free to customer parts	Free to customer motor and component manufacturers spare parts
2.15	Replacement Parts	4 sets of non-standard routine service replacement parts ("o" rings, gaskets, seals, belts etc.) and 1 set of wearing parts for service overhaul (bearings etc.). Liquids excluded.
2.16	Warranty	Each unit supplied to carry a statement of warranty. Minimum <b>One year warranty</b> on motor and mechanical parts.

