

Ministry of Environment and Energy

Male’, Republic of Maldives



Supply and Delivery of Waste Management Equipment to Gn.Fuahmulah

Funded by

the Public Sector Investment Program

of the Government of the Republic of Maldives

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##### Supply and Delivery of Waste Management Equipment to Gn.Fuahmulah

###### 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 Gn.Fuahmulah.**

###### Background

The Republic of Maldives is a small island nation that is now well known across the world for its vulnerability to environmental impacts. Its population of about 300,000 people is thinly dispersed over 198 islands out of a total of 1192 islands, the remaining being uninhabited.

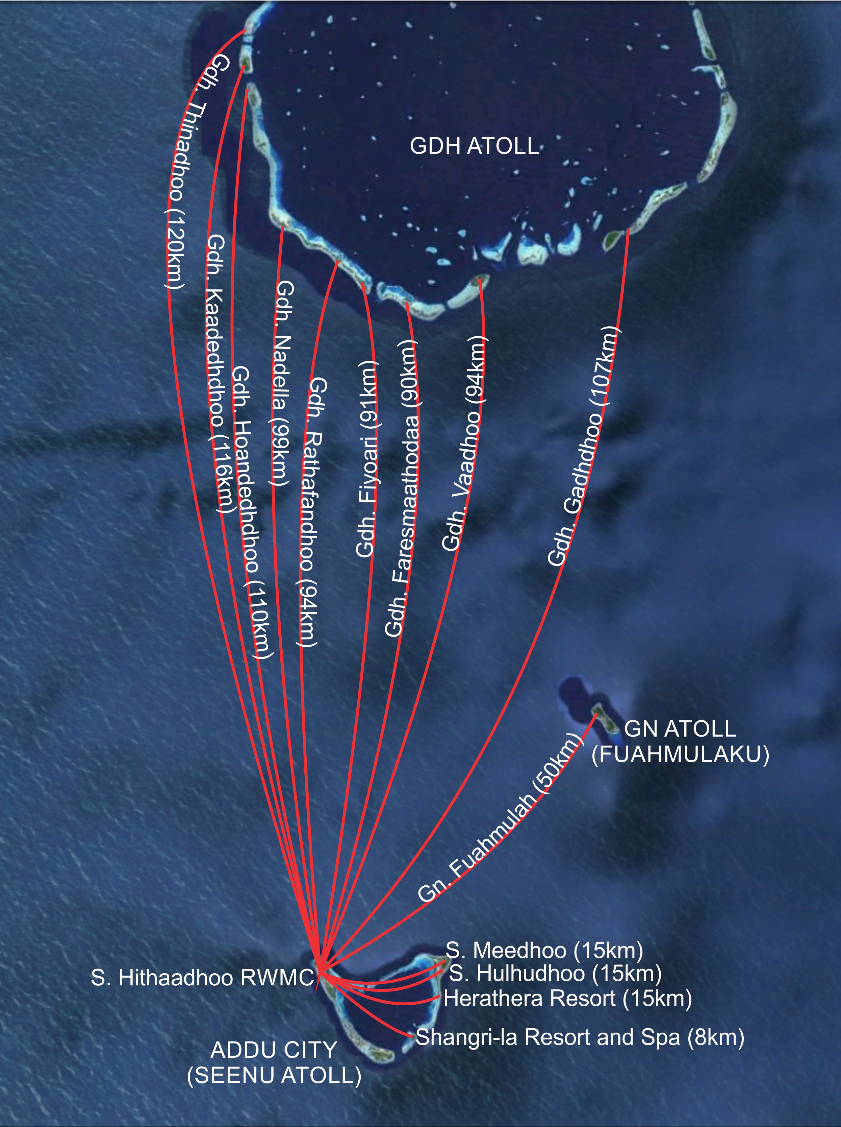
The largest percentage of the population on a single island is found at the capital city Male’, with over 133,000 people living in a small area of about 6 kilometer square. The second atoll with the largest percentage of the total population is the city that is included under the funds of this project, Addu City.

Addu City is the southernmost atoll that consists of four interconnected islands, 2 more inhabited islands and 2 resorts in close vicinity of each other. The total population of the city is estimated to be almost 22,000 people, which accounts for about 7% of the total population of the entire country. The plans for building the Regional Waste Management Centre at the capital of Addu City, Seenu Hithaadhoo, aims to provide a total solution to the problems in waste for the islands of Seenu Atoll, Gnaviyani Fuvahmulah and the nearby islands of Huvadhu Atoll. This means, the planned Regional Waste Management Centre at Addu City will manage the recyclable and non-biodegradable waste of about 18% of the entire population of the country.

The Addu City system consists of the transfer of non-biodegradable waste from the Island Waste Management Centres of all the islands in the catchment area (Seenu Atoll, Gnaviyani Fuvahmulah and Huvadhu Atoll) to the Regional Waste Management Centre, that is to be equipped with a Small Scale Waste to Energy System connected to the island power grid. The project aims to contribute about 4 megawatts of renewable energy inspired by the burning of waste to the electricity demand of the atoll.

###### Goals and Objectives

* Installation of a Waste to Energy system that can generate electricity and water at S.Hithaadhoo (Addu City capital).
* The generation of minimum 3 megawatts of renewable energy from the incineration of waste
* Establish a Regional Waste Management Centre at S. Hithaadhoo that manages waste generated at:
  1. S.Gan, S.Feydhoo, S.Hithadhoo, S.Maradhoo
  2. S.Hulhudhoo, S.Meedhoo
  3. Nearby resorts (Herathera and Shangri-La Villingili Resort and Spa)
  4. **Gn. Fuvahmulah**
  5. **All islands of Huvadhu Atoll**
* Establish a proper waste transfer system between the islands of Addu City (Seenu Atoll) and other Atolls in the vicinity (Huvadhu Atoll and Gnaviyani Fuvahmulah) with a minimum of two vessels (landing crafts).
* Construct/Upgrade Island Waste Management Centres at Gnaviyani Fuvahmulah and Huvadhu Atoll
* Provide composting and waste management equipment to the Island Waste Management Centres at Gnaviyani Fuvahmulah and Huvadhu Atoll
* Provide means of waste collection (pickups, burrows, wheelie dustbins etc.) to the Island Waste Management Centres at Gnaviyani Fuvahmulah and Huvadhu Atoll
* Create Island Waste Management Plans for the Island Waste Management Centres at Gnaviyani Fuvahmulah and Huvadhu Atoll and approve the plans through Environmental Protection Agency
* Provide waste management and composting training to the island councils that will be in charge of the waste management at the Island Waste Management Centres at Gnaviyani Atoll and Gaafu Dhaalu Atoll



###### Deliverables

The consultants’ reporting requirements will include (i) an inception report submitted within 3 weeks of commencement, (ii) monthly progress reports at the end of each month during implementation, (iii) Feasibility Study final reports for the Regional Solid Waste Management Project – Zone One.

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| **#** | **Type of Equipment** | **Quantity of Equipment Required** |
|  | **To be Delivered to Gn.Fuahmulah** | |
| 1 | Brand New Glass to Sand Crusher | 1 |
| 2 | Brand New Small Scrap Grinder / Shredder | 1 |
| 3 | Brand New Food Can and Textile Baler | 1 |
| 4 | Mechanical Rotary Compost Screen | 1 |

###### REQUIREMENTS - Specification of Equipment

*5.1. Glass to Sand Crusher*

*5.2. Small Scrap Grinder / Shredder*

*5.3. Food Can and Textile Baler*

*5.4. Mechanical Rotary Compost Screen*

\*All equipment provided must be brand new items.

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

5.1. Glass to Sand Crusher

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| **#** | **Feature** | **Requirement** |
| **General Information** | | |
| 1 | Crushing Time | 1.0 to 1.5 tonne/hour |
| 2 | Crushing Ratio | Maximum output grain less than 0.5mm in diameter (i.e. glass to sand crusher) |
| 3 | Motor | 3 HP |
| 4 | Standard Electrical Power | 3 Phase , 400V A.C |
| **Glass Crusher Dimensions and Weight** | | |
| 5 | Loading / Feed Door | Minimum 6” Diagonal Measurement |
| **Other Specifications** | | |
| 6 | Noise Level | The noise level of the Glass Crusher during operation should be below 80 decibels |
| 7 | Seal | Air tight seal when inserting the bottles into the machine and when transferring the crushed material to the holding container |
| **Parts and Documents** | | |
| 8 | Operating Manual | Operating manual for safe operations of the machine under normal operations. The operations manual must include trouble shooting and remedy guide table |
| 9 | 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 |
| 10 | Language of Documents | All literature in the English language |
| 11 | Free to customer parts | Free to customer motor and component manufacturers spare parts |
| 12 | Replacement Parts | Should be readily available in the Republic of Maldives or South East Asia |
| 13 | Warranty | Each unit supplied to carry a statement of warranty. Minimum **One year warranty** on motor and mechanical parts. |

5.2. Plastic Shredder

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| **#** | **Feature** | **Requirement** |
| **General Information** | | |
| 1 | Main Drive Motor | 3 Phase 4kW, 400VA.C, 50Hz motor with surge protection |
| 2 | Control | electrical control box with on and off push button switches and automatic cut out switch activated when the cutting blades are exposed; |
| 3 | Type of Plastic | **Can shred all types of plastic** |
| 4 | Minimum Input Size | Capable of achieving feed and cutting of multiple plastic bottle sizes up to 5 (five) litre PET bottles during continuous feed operations; |
| 5 | Output of Plastic Material | 200 – 350kg per hour |
| 6 | Hopper Volume | 44 to 88 cubic yards per hour |
| 7 | Ram Stroke | Minimum 300mm |
| **Other Specifications** | | |
| 8 | Safety Measures | “hands free” cutting operation for all plastics (particularly PET and other hard plastics) and  dust curtain fitted at the feed hopper and the discharge |
| 9 | Noise Level | The noise level of the plastic shredder during operation should be below 80 decibels |
| **Parts and Documents** | | |
| 10 | Operating Manual | Operating manual for safe operations of the machine under normal operations. The operations manual must include trouble shooting and remedy guide table |
| 11 | 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 |
| 12 | Language of Documents | All literature in the English language |
| 13 | Free to customer parts | Free to customer motor and component manufacturers spare parts |
| 14 | Replacement Parts | Should be readily available in the Republic of Maldives or South East Asia |
| 15 | Warranty | Each unit supplied to carry a statement of warranty. Minimum **One year warranty** on motor and mechanical parts. |

5.3. Food Can and Textile Baler

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| **#** | **Feature** | | **Requirement** | | |
| **Performance Information** | | | | | |
| 1 | Bale Volume | | 45 – 55 Cubic Feet | | |
| 2 | Main Motor | | 20 HP,– 3Phase | | |
| **Parts and Documents** | | | | | |
| 3 | Operating Manual | | Operating manual for safe operations of the machine under normal operations. The operations manual must include trouble shooting and remedy guide table | | |
| 4 | 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 | | |
| 5 | Language of Documents | | All literature in the English language | | |
| 6 | Free to customer parts | | Free to customer motor and component manufacturers spare parts | | |
| 7 | Replacement Parts | | Should be readily available in the Republic of Maldives or South East Asia | | |
| 8 | Warranty | | Each unit supplied to carry a statement of warranty. Minimum **One year warranty** on motor and mechanical parts. | | |
| **Bale Weight, Dimensions and Baling Speed** | | | | | |
|  | **Material** | **Bale Weight** | | **Compression %** | **Bales/Hr** |
| 9 | Food Cans (#10 Cans) | Up to 500kgs | | Minimum 80% | 1 to 2 |
| 10 | Clothes / Textiles | Up to 635kgs | | Minimum 80% | 2 to 3 |
| 11 | Cardboard | Up to 500kgs | | Minimum 85% | 1 to 2 |
| 12 | Paper | Up to 550kgs | | Minimum 85% | 1 to 2 |
| 13 | Aluminum Cans | Up to 230kgs | | Minimum 90% | 0.5 to 1 |
| 14 | Steel Cans | Up to 460kgs | | Minimum 80% | 0.5 to 1 |

5.4. Mechanical Rotary Compost Screen

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| **#** | **Specification** | **Requirement** |
| 2.1 | Power | 0.5HP, 230V AC Motor |
| 2.2 | Production | At least 2 cubic metres of earth in an hour |
| 2.3 | Drum Diameter | 1000 to 1500 mm |
| 2.4 | Screen Size | 10x10mm with 7x7mm suppled sieve insert |
| 2.5 | Rotations | 20 to 40 rotations per minute |
| 2.6 | Collection of Material | Allows collection of material at atleast one end of the drum |
| 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 | Should be readily available in the Republic of Maldives or South East Asia |
| 2.16 | Warranty | Each unit supplied to carry a statement of warranty. Minimum **One year warranty** on motor and mechanical parts. |