Solid Waste Management in Mauritius

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Solid Waste Management Division
Ministry of Local Government and Outer Islands, Mauritius

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Outline

- Previous Practice and Studies - Where We Were?
- Current System – Where We Are?
- Strategy for the Future
Previous Practice and Studies - Where We Were?
In the 60’s, 70’s and 80’s

- All municipal, commercial and industrial disposed of by open dumping at 10 dumping sites at various regions of the island
- Some dumps were located near lagoons or watercourses
- Fires at dumps were frequent
- Sites were infested by vermins and rats
- Debris were blown away by winds
- Sites managed by Local Authorities themselves
Previous Practice and Studies


- Dissociation of collection from disposal
- Collection by Local Authorities (LAs)
- Setting up of Solid Waste Management Division within the Ministry of Local Government to take over responsibility for all solid waste disposal
- Improvement of waste collection service
- Landfill be adopted as the method of disposal in the medium-term
Previous Practice and Studies

- Local team set up to carry out selection exercise for landfill siting
- Ten locations identified as potential sites (location, zoning, topography)
- Geotechnical investigations carried out only on five sites
- Two sites recommended for development as landfill (Mare Chicose and Mare d’Australia)
- EIA Studies for the two sites
Previous Practice and Studies

- Coming into operation of two small compactor transfer stations in early 1990’s
- Quantities of wastes collected per day estimated to be around 800 tonnes
- First National Solid Waste Management Plan - 1993

Phasing:
- Immediate design of Mare Chicose landfill
- Opening of Mare Chicose - mid 1994
- Opening of Mare D’Australia – end of 1995
Previous Practice and Studies

Phasing (Cont’d):

- Distribution of bins and purchase of collection vehicles end of 1996/1997
- Ongoing commitment to environmental publicity, education, recycling

- Construction of Mare Chicose landfill 1995-1996 that came into operation in November 1997
Current System – Where We Are?
Institutional Framework

Ministry of Local Government and Outer Islands (Solid Waste Management Division)

Local Authorities
(4 District Councils + 5 Municipalities)
Solid Waste Management Infrastructure

**SOLID WASTE COLLECTION**
(Local Authorities + Private Contractors)

**TRANSFER STATIONS (TS)**
(La Laura, Roche Bois, La Chaumiere, Poudre D’Or and La Brasserie)

**MARE CHICOSE LANDFILL**

- Large-Scale Composting Plant Operational since October 2011
- Designed to process around 180,000 tonnes of MSW annually
<table>
<thead>
<tr>
<th>Solid Waste Facilities</th>
<th>Date Built</th>
<th>Design Capacity (tons/day)</th>
<th>Average Quantity Transferred (tons/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transfer Stations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La Brasserie</td>
<td>Jan-91</td>
<td>150 - 300</td>
<td>6,552</td>
</tr>
<tr>
<td>Roche Bois</td>
<td>Jul-92</td>
<td>300 - 400</td>
<td>6,308</td>
</tr>
<tr>
<td>Poudre D'Or</td>
<td>Apr-00</td>
<td>150 – 180</td>
<td>4,426</td>
</tr>
<tr>
<td>La Laura</td>
<td>Jun-05</td>
<td>100 - 150</td>
<td>3,276</td>
</tr>
<tr>
<td>La Chaumiere</td>
<td>Feb-11</td>
<td>150 - 300</td>
<td>10,000</td>
</tr>
<tr>
<td><strong>Landfill</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mare Chicose</td>
<td>Jan-97</td>
<td>-</td>
<td>35,600 received</td>
</tr>
</tbody>
</table>
Around 414,440 tonnes of wastes disposed of at Mare Chicose landfill in 2011
<table>
<thead>
<tr>
<th><strong>Geographical Location</strong></th>
<th>South, Mare Chicose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size</strong></td>
<td>45 Ha</td>
</tr>
<tr>
<td><strong>Year of Construction</strong></td>
<td>1997</td>
</tr>
<tr>
<td><strong>Start of Operation</strong></td>
<td>Nov-97</td>
</tr>
<tr>
<td><strong>Present Contractor</strong></td>
<td>JV Sotravic Ltée /Eneotech</td>
</tr>
<tr>
<td><strong>No of Cells</strong></td>
<td>6</td>
</tr>
<tr>
<td><strong>Total Surface Area of 6 cells</strong></td>
<td>224,990 m²</td>
</tr>
<tr>
<td><strong>Maximum height of waste mass</strong></td>
<td>30 m</td>
</tr>
<tr>
<td><strong>Cumulative amount of waste received as at Dec 2011</strong></td>
<td>4,751,160 Tons</td>
</tr>
<tr>
<td><strong>Monthly average waste input</strong></td>
<td>35,600 Tons</td>
</tr>
</tbody>
</table>
Compost Facility at La Chaumiere

Start of Operation: October 2011

Processing Capacity: 180,000 tonnes of MSW annually
Hazardous Waste Management in Mauritius

- Inventory of hazardous wastes in Mauritius carried out from August to December 2011
- Around 16,800 tonnes and 252 m³ of hazardous wastes are estimated to be generated annually
- Infrastructure for disposal of hazardous wastes limited to a hazardous waste cell at the Mare Chicose Landfill, where only certain types of solid hazardous wastes are accepted
Key Achievements

- Closure of open dumps
- Construction of sanitary landfill
- Construction of additional transfer stations
- Increase in collection coverage and frequency
- Disposal of specific types of solid hazardous waste in specially designed cells
- Increased public awareness on solid waste management
Improvements to be brought to Present Solid Waste Management System

- To render waste collection more effective & efficient with the objective of a better service and a lower ‘per tonne’ cost

- To recognize that certain waste streams have economic values (resource) and to deviate these wastes from the conventional channel that end up in their disposal
Improvements to be brought to Present Solid Waste Management System

- To reduce the overall public expenditure on solid waste management on the basis of (i) economic value of certain waste streams and (ii) payment of fees by businesses

- To set up a structure system for receiving, treating and/or exportation of hazardous wastes, also to be sustained by fees from generators
Capacity In View To Meet Challenges

- To Improve Institutional Capacity, particularly at central level to act as a Think Tank and to support programs in LA’s

- To capacitate Enforcement at Central and Local levels with more technical skills

- To update databases as support of effective strategic decisions
Projected Annual Waste Generation
2012 - 2015

If waste continues to grow at the present rate (2%), the total amount of waste to be managed by 2015 ~ 460,000 tonnes
Strategy for the Future
Strategy

To significantly reduce our reliance on the only landfill on the island through increased recycling and composting and increasing resource recovery from waste

The target for resource recovery is 55% and that for disposal is a maximum of 45% in 2015
Strategic Areas

- Improvements in Waste Collection
  - Improvements in Hazardous Waste Management
  - Broader Community Involvement
- Waste Recovery
  - Provision of adequate disposal infrastructure & selection of appropriate treatment technologies
Interim storage facility where hazardous wastes would be received, sorted, labeled, pre-treated if possible, and prepared for exportation.
Mare Chicoise Landfill Gas to Energy Project (CDM Registered)

LFGTE Generating Sets

ACTUAL CAPACITY
Two generating sets producing an actual total capacity of 2.2 MW

FUTURE CAPACITY
Third generator to be installed and operational by mid of January 2013 for a total capacity of 3.3 MW
**Mare Chicose Landfill Gas to Energy Project (CDM Registered)**

**LFGTE Degassing Plant**

**DEGASSING PLANT**
Extraction of gas from landfill by applying a negative pressure on gas well heads via a blower system

**DEGASSING PLANT**
Filtration and condensate removal system
Mare Chicose Landfill Gas to Energy Project (CDM Registered)

Gas Wells

**GAS WELL HEAD**
Extraction of approximately 25–30 Nm³/hr per gas well head for a 50 – 55% methane(CH₄) content

**MANIFOLD CONNECTION**
Gas well connections to manifolds
# Mare Chicose Landfill Gas to Energy Project (CDM Registered)

## LFGTE and CDM Timeline

<table>
<thead>
<tr>
<th>STEP</th>
<th>DESCRIPTION</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host Country Approval</td>
<td>Agreement for CDM and LFGTE between Sotravic Ltee and MoLG</td>
<td>May 2009</td>
</tr>
<tr>
<td>PDD(Design), DOE(Validation) and Registration</td>
<td>Preparation of PDD, validation and CDM registration by UNFCCC</td>
<td>2009-2012</td>
</tr>
<tr>
<td>Construction of LFGTE power plant</td>
<td>Start construction of LFGTE power plant</td>
<td>March 2011</td>
</tr>
<tr>
<td>Energy Supply and Purchase Agreement</td>
<td>ESPA signed between CEB and Sotravic Ltee</td>
<td>July 2011</td>
</tr>
</tbody>
</table>
## Mare Chicose Landfill Gas to Energy Project (CDM Registered)

### LFGTE and CDM Timeline

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</tr>
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<tbody>
<tr>
<td>Construction of LFGTE power plant</td>
<td>Completion of LFGTE power plant</td>
<td>August 2011</td>
</tr>
<tr>
<td>Energy Export</td>
<td>Authorisation to export electricity to the National Grid</td>
<td>Nov 2011</td>
</tr>
<tr>
<td>CDM registration</td>
<td>LFGTE project registered as a CDM project. Target to reduce approximately 400,000 tons of CO2 (tCO2e)</td>
<td>March 2012</td>
</tr>
<tr>
<td>CDM implementation</td>
<td>Implementation of project</td>
<td>As from April 2012</td>
</tr>
</tbody>
</table>
Waste Management Project

Aim: To effectively monitor quantities of wastes collected, transported and landfilled

Objectives:

• Harmonizing the waste collection process
• Integrate Waste Carrier License Operations
• Consolidate & synchronize data at stations with a central server
• Improve day to day waste collection activities
• Assess & monitor Waste collected over periods, locations and waste types to effectively manage waste operation

Project Kick-Off: 04 April 2012

Number of Sites in Operation: 5
Waste Management Project
Project Infrastructure

Office (MOLG)

Waste Statistics and Reports
Waste Collection Study

Aim: Recommendations for improving waste collection frequency and optimising use of resources

Project Duration: 3 months ending November 2012

Methodology:

• Review actual waste collection system in terms of frequency of collection and types of waste collected
• Time motion study for waste collection service
• Identification of labour plant equipment and vehicle shortage
Thank you ...

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