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BIO-CANCÚN PROJECT Waste-to-Energy Plant Cancun, México

M2M GMI
Side Event COP 16

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BACKGROUND



- In 2009, Canada and Mexico decided to work together to implement a waste-to-energy project to divert organic matter from landfill sites.
- 2010, SEMARNAT and EC held an introductory workshop in Cancun to present the project to local authorities: the State of Quintana Roo and the City of Benito Juarez



OBJECTIVES

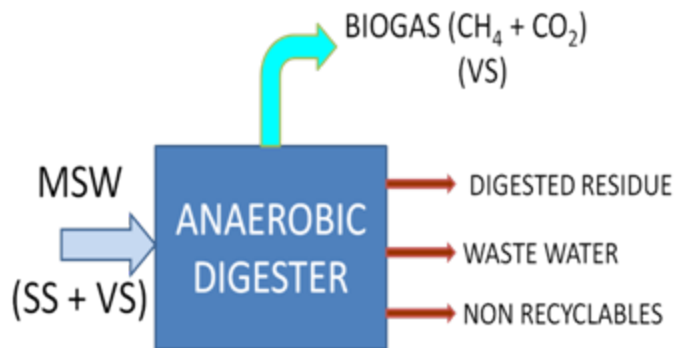
- Build a bio-digester for treatment and use of OFMSW
- Implement a continuous process to divert OFMSW from landfill
- Generate power from biogas and fertilizers as a by-product.
- Serve as a test for similar Waste-to-energy systems to be implemented throughout Mexico (Acapulco, Puerto Vallarta..)
- Support technology transfer and deployment of clean technologies

RATIONALE FOR BIO-DIGESTION

- **Guaranteed Supply:**
OM available from all-inclusive resorts
- **Capacity:**
2 existing landfills sites at capacity
- **Land-use:**
Development of a new site would require 45-65 ha of land. 4-5 for a bio-digester.
- **Water contamination:**
Water table is high and huge threat of contamination by leachates
- **Complementary Energy supply:**
Power to run the Bio-digester would come from its own operation. Excess will be send back to the power grid.
- **Sustainable Waste Management:**
Local Authorities will implement a sorting/recycling program to separate OM from other SW.



ANAEROBIC DIGESTION PROCESS



SS - Suspended solids

VS - Volatile Solids

- Anaerobic digestion is a natural process by which bacteria breaks down OM in the complete absence of oxygen. The process releases:

1. A biogas (~ 60% CH₄ and 40% CO₂)
2. slurry made of stabilized OM in a liquid fraction. Further separation can lead to a solid component (used as a soil conditioner or compost and a liquid effluent which can be sprayed as a bio-fertilizer.

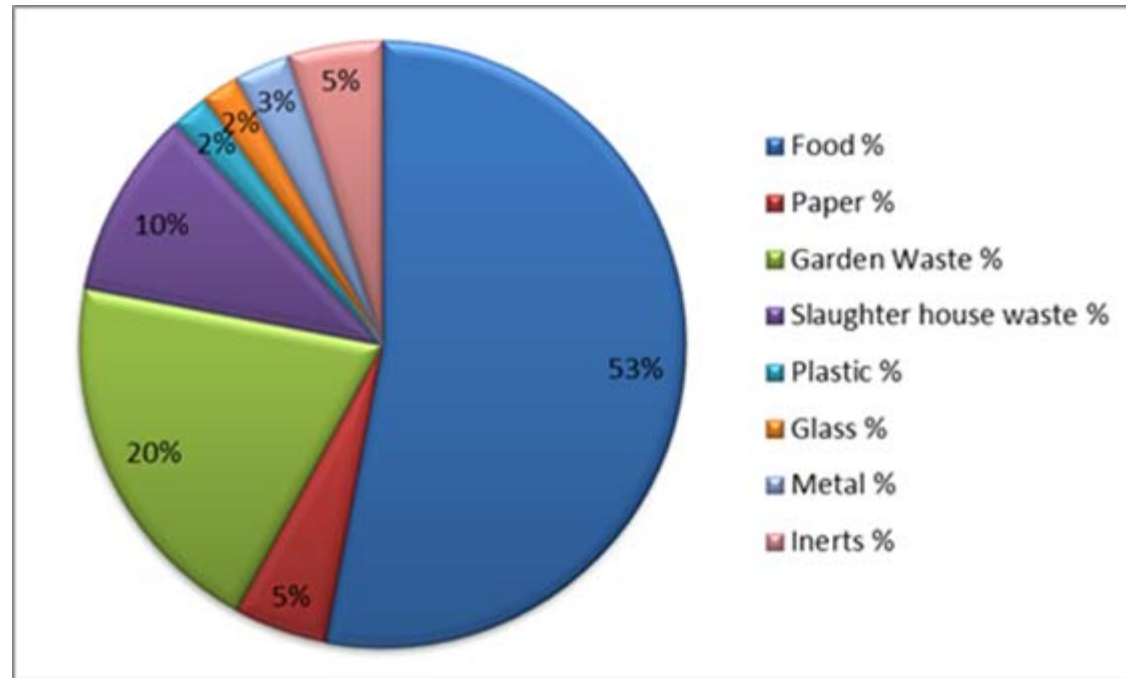
INNOVATIVE USE OF ANAEROBIC DIGESTION

- Anaerobic digestion (AD) is a decades-old process used all over the world to handle organic waste.
- Primary applications have been in:
 - Sewage and wastewater treatment plants
 - Treatment of animal manures and:
 - at a smaller scale, household and community digesters to provide biogas for cooking and lighting.
- The use of Organic Fraction of Municipal Solid Waste (OFMSW) for biogas is very recent. Only 2 plants in North America (in Canada)

PROJECT DETAILS

Plant Location	Cancun - Mexico
Population	700 000 hts
Plant Capacity	200 tonnes per day
Waste composition	88% Organic Matter
Sources	All-inclusive resorts
Technology	Anaerobic Digestion
Project life	20 years
Area Requirements	1ha + 5 ha for compost
Biogas Generated	10,500 m3/day
Organic Compost Produced	3 tonnes/day
Proj. Electricity Production	29200 kWh per day
On-site consumption (10%)	2920 KWh per day
Proj. Electricity to the Grid	26280 kWh per day

WASTE COMPOSITION



PROJECT MANAGEMENT MODEL

- Semarnat/Environment Canada: Project Coordinators
- Canadian industry: Project Manager

Project Management Team

- Local authorities: Facilitators of the project
- Mexican Industry: Operator and Plant Owner
- Mexican Tourism Industry: Supplier

RESPONSIBILITIES and WORKPLAN

- **CANADA - Technical Support**
 - Feasibility studies.
 - Conceptual, basic and detail engineering.
 - Economic and financial analysis.
 - Procurement and construction.
 - Testing, startup and stabilization.
 - Training
- **MEXICO – Administrative and Operational**
 - National and legal instruments, local procedures (concession)
 - Environmental impact study
 - CDM registration
 - Contracts, agreements and building of the plan

TIMELINE

- Contribution Agreements July 2010
- Feasibility Studies Oct. 2010
- Detail engineering and project Design Jan. 2011
- Construction project June 2011
- Testing Jan. 2012
- Operations May 2012





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