# Municipal Solid Waste Update PHILIPPINES

NONILO PENA & RACHEL HABANA GMI Municipal Solid Waste Subcommittee Meeting Vancouver, Canada, 13 March 2013



- Regulatory Update
  - Ecological Solid Waste Management
    Act of 2000
    - LGU ensures implementation & enforcement of the Act
    - Prohibits new open dumpsite, conversion of open dumpsites into controlled disposal and later on replaced with sanitary landfill



- Regulatory Update
  - Clean Air Act of 1999
    - Incinerator Ban
  - Renewable Energy Act of 2008
    - Fiscal & Non-Fiscal Incentives
      Incl. Waste-To-Energy Project
      Feed-In-Tariff = P 6.63/kWh (US\$0.16)
  - Climate Change Act of 2009
    - GHG Mitigation & Adaptation Strategies
    - LGU CC Action Plan

- Implementation of national solid waste plans/directives
  - National SWM Strategy
  - LGU 10 year SWM Plan
  - 25% waste diversion reuse, recycle & composting & others
  - Material Recovery Facility



- Project update (landfill gas energy, AD, composting)
  - Existing Landfill Gas Power Plants
    - Three landfill sites with total installed capacity = 13.9 MWe
  - Anaerobic Digestion
    - No installed power plant yet
    - Technology search, assessment & pre-FS
  - Composting
    - Number of composting facilities, like bioreactors, vermi-composting

- Summary: Goals
  - Improve methane reduction
  - Recover methane from sanitary landfills, controlled disposal facilities and open dumpsites
  - Establish institutional capacities on methane avoidance, recovery and utilization
  - Build linkage mechanisms among stakeholders
  - Create environment-friendly enterprise and livelihood opportunities

- Activities to promote mitigation/abatement
  - Capacity Building
  - GIS Database Landfill Inventory
  - Landfill Gas Estimation Model





- Drivers to advance project development
  - Awareness Campaigns
  - Pre-feasibility Study for LGU
  - Project Profitability
  - Financing
  - Best Practices
    - Business models
    - Technology Options & Providers



- Challenges to mitigation/abatement
  - Awareness
  - Technological
    - Techno-economic viability
  - Political Local Government
    - Financing
    - More resources for CC Adaptation



- Public and private sector involvement
  - LGU mandated to manage or outsource SWM
  - All existing Landfill Gas Power Plants are operated by private sector



- Barriers / Assistance needed / Information needed
  - High investment cost & long pay-back period
  - Inadequate technical service & equipment providers
    - Pre-feasibility & detailed project design
    - Business models



# Nationally Appropriate Mitigation Action (NAMA)

- NAMA Update
  - Formulation Stage
  - Capacity Building
    - NAMA & LEDS
  - Institutional Arrangements
    - Framework Mechanisms



# Nationally Appropriate Mitigation Action (NAMA)

- Cooperating agencies: NGOs, development agencies, or assisting countries
  - Climate Change Commission
    - Sectoral Delineation
      - Waste, Energy, Agriculture, Transport, Industry, Forestry
      - Lead Government Agencies Designated
  - Official Development Assistance

# Nationally Appropriate Mitigation Action (NAMA)

- Waste sector
  - GHG Inventory for MSW: MRV
  - Methane Avoidance
    - Waste Diversion (Reuse, Recycle)
    - Composting
  - Landfill Gas Utilization & Flaring
  - Anaerobic Digestion
  - Thermal Processing



# Bacavalley, San Pedro, Laguna – 4.0 MW



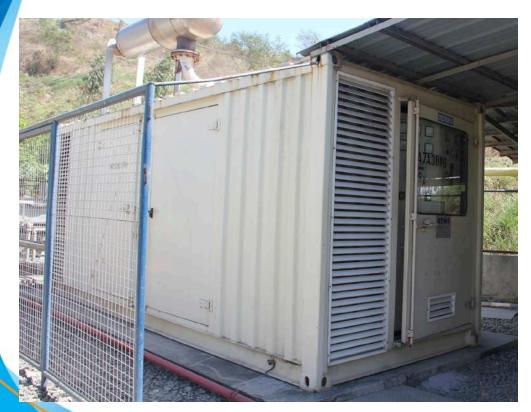


# Montalban Methane Power Corporation – 9 MW





### 0.9 MW Pangea Green Energy Philippines Inc. (Payatas, Quezon City)





## **THANK YOU**

