A private sector contribution to sustainable solid waste management in the Philippines.



FDR INTEGRATED RESOURCE RECOVERY MANAGEMENT, INC.

"Nature does not waste. So do we."



Our Vision

A greener Philippines where waste is put in the right place under the right process.

Landslide in Baguio dumpsite in August 2011



Our Core Business

Maximize material and energy recovery and conversion.



Source: https://wasteadvantagemag.com/evolution-of-integrated-solid-waste-management-systems-enhanced-with-municipal-utilities-and-green-energy-production/

Technical Partnership with IUT Group Austria





Innovation Umwelt Technologie (IUT GmbH) Pitten, Austria

Signing of partnership in 2011: Mr. Fulgencio Revalde and Mr. Reinhard Goeschl, *"The Father of Waste Segregation"*



www.theiutgroup.com

Our Service Model



Central Processing Facility



General Contract Terms

- ✓ 20-25 years service agreement.
- Exclusive collection, processing & treatment for nonhazardous solid waste from households, commercial & industrial sectors.

Facility Location



- ✓ Located in Barangay Pangdan, City of Naga, Cebu (25kms from Cebu City)
- ✓ Located in a seven (7) hectare private property
- ✓ A total of 120 employees



Mechanical-Biological Treatment @ Naga Ecology Center

Material Recovery Refuse Derived Facility **Fuel Facility** Conveyor **Ballistic Separator Drum Screen Bag Breaker Magnetic Separator** Shredder Magnet DAD **Biogas** Plant Recyclables Electricity Manual sorting & Heat **Refuse Derived Fuel** (RDF) Composting **Facility FDR-IRRMI**

Compost Turner

Mobile Screen

Compost



As of May2017



AREA



Bag Breaker to loosen waste materials

Conveyor

Drum Screen primary sorting by size

Ballistic Separator to further sort by weight







Manual sorting



Refuse Derived Fuel (RDF) Processing Facility

since 2011

Registered Project under the Department of Energy (DOE) Biomass Renewable Energy Operating Contract BREOC NO. 2015-09-058





RDF consists largely of combustible components of municipal waste to be used as alternative fuel by cement plants.



RDF-fired Power Plant

A reference project of IUT Group in 1999:

Design of a RDF treatment plant (225,000 Mg/year) with mechanical preparation for feeding a 110 MW FB boiler plant.

Plant Description:

- Fluidized bed incinerator for RDF and sewage sludge
- Production of electrical energy and process steam





Philippines' First Waste-to-Energy hybrid design of its kind.
Launched last June 2, 2017
Winner of the ADFIAP Sustainable Merit Award – Environment Category







Registered Project under the Department of Energy (DOE) Renewable Energy Program <u>Registration No: RE-B2015-05-098</u>



Electricity for Onsite Use:

80 tpd pure organics

Installed Capacity: 380kw x 2 = 760 kW

Thermal capacity: 388 kW

Gas Holder Op. Capacity: 655 m3

DRY ANAEROBIC DIGESTION (DAD) BIOGAS

The organic or "malata" fraction of municipal solid waste is converted into biogas which will generate electricity and heat.



Segregated biodegradable waste collected by trucks or sorted organic waste from the MRF will be loaded to our DAD Digester Boxes and sealed for 28-30 days for anaerobic activity. Finally, to be electronically monitored for biogas generation.



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4

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Inspection by Mr. Reinhard Goeschl of IUT Group

Electronic Monitoring System - temperature, pH, biogas, pressure etc.





Laboratory for Chemical Monitoring





Compost for Sustainable Agriculture

From garbage to compost!

Aerobic decomposition turns waste or "basurang malata" to <u>compost</u>, rich in organic matter.





From Kitchen & Garden Waste













Dumpsite Closure

Closure should be done in a proper manner with environmental protection and safeguards in place. Under **DENR Administrative Order No. 09.**





Old Bairan Dumpsite, City of Naga

Plant regeneration in 2012

2011



The IuT Group is a pioneer in landfill clean-up with successful projects in most major cities in the world.



Services and Solutions

1. Collection Services

- Mixed or Segregated (preferred)
- Direct from source or collection points
- Transfer station management

2. Sorting Technology

- Semi or fully automated Sorting & Recovery (MRFs)
- Alternative fuel technology from plastics (RDFs)

3. Biological Treatment & Power

- Anaerobic treatment (biogas & electricity production)
- Aerobic treatment (composting)

4. Landfill Technology

- Landfill design & construction
- Landfill-to-Gas (LFG) plants with cogeneration
- Sustainable landfill remediation & clean-up
- Landfill aeration (SMELL-WELL System)

5. Engineering Services

- Engineering, Procurement & Construction
- Operation & Maintenance
- Consultancy & Design
- Access to Financial Aid & Closure



Collection fleet - Naga, Cebu.

Automated MRF, Sulai, Riyadh, Saudi Arabia



DAD Biogas Plant- Naga, Cebu.



Sorting Facility- Naga, Cebu.



Landfill Construction w/ Gas Capture.



Landfill Remediation in Czech Republic.

"Waste solutions and technologies are here, let's work together to implement them for our children's future."



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