

3Rs in the Philippines

Presented in the 8th Regional 3R Forum in Asia
and the Pacific,

Presented by:

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Outline of the presentation

- ▶ About the Philippines
- ▶ Legislations
- ▶ Ecological Solid Waste Management Act
- ▶ SWM Situation
- ▶ Collection Program
- ▶ Management of Solid Wastes
- ▶ Challenges to SWM



AMBISYON NATIN 2040

Realizing the Vision



Economic growth



Infrastructure



Competition



Innovation

Role of Government

Enabler



Economic growth



Investing in people

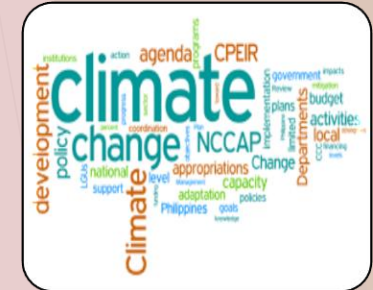
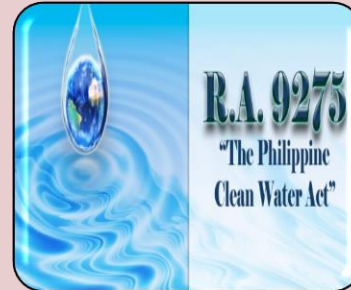
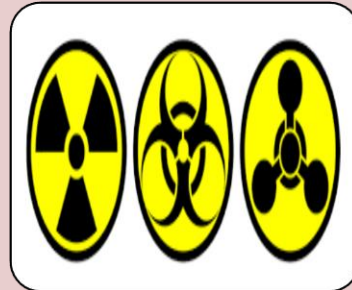


Protection against instability

*Strong Institutions:
Fair and Equal
application of rules*



Legislations



Republic Act
9003

Republic Act
8749

Republic Act
6969

Republic Act
9275

Republic Act
9513

Republic Act
9729

Ecological Solid
Waste
Management
Act of 2000

Philippine
Clean Air Act of
1999

Toxic
Substances and
Hazardous and
Nuclear Wastes
Control Act of
1990

Philippine
Clean Water
Act of 2004

Renewable
Energy Act of
2008

Climate
Change Act of
2009

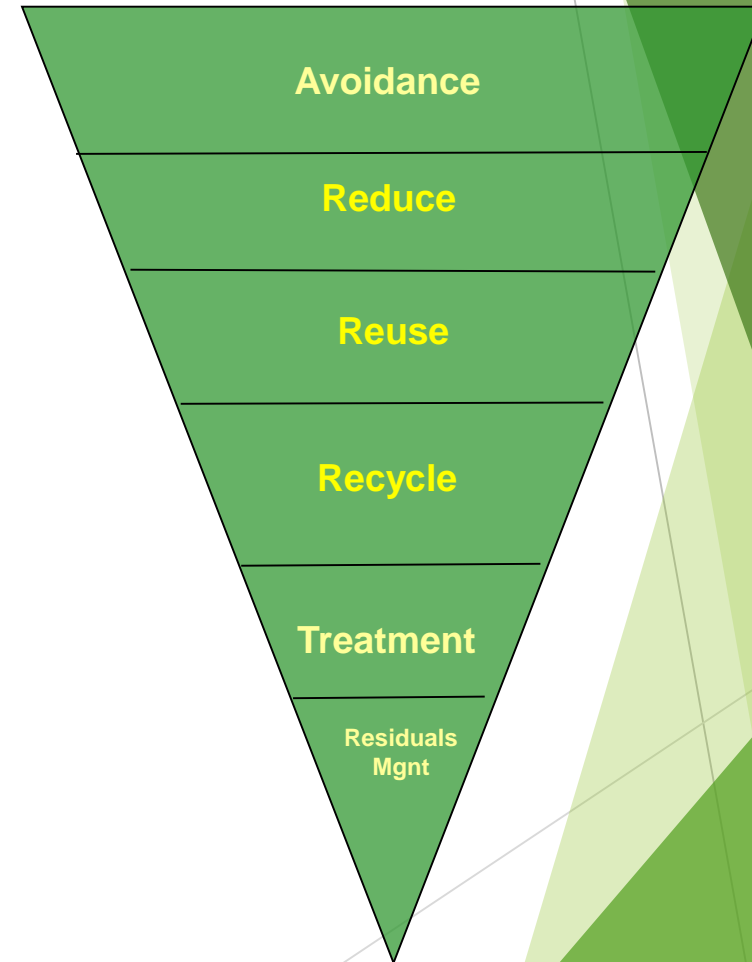
Ecological Solid Waste Management Act of 2000 (Republic Act 9003)

- ▶ Provides for the implementation of a systematic, comprehensive and ecologically sound management of solid waste.
- ▶ Mandatory segregation of solid waste at the source such as household, institutional, industrial, commercial and agricultural sources;
- ▶ Prohibition on non-environmentally acceptable products and packaging;
- ▶ Establishment of Materials Recovery Facility in every barangay or cluster of barangays;
- ▶ Prohibition against the use of open dumps;

Ecological Solid Waste Management Act of 2000 (RA9003)

The ESWM policy is based on the management of waste in the following **HIERARCHY**:

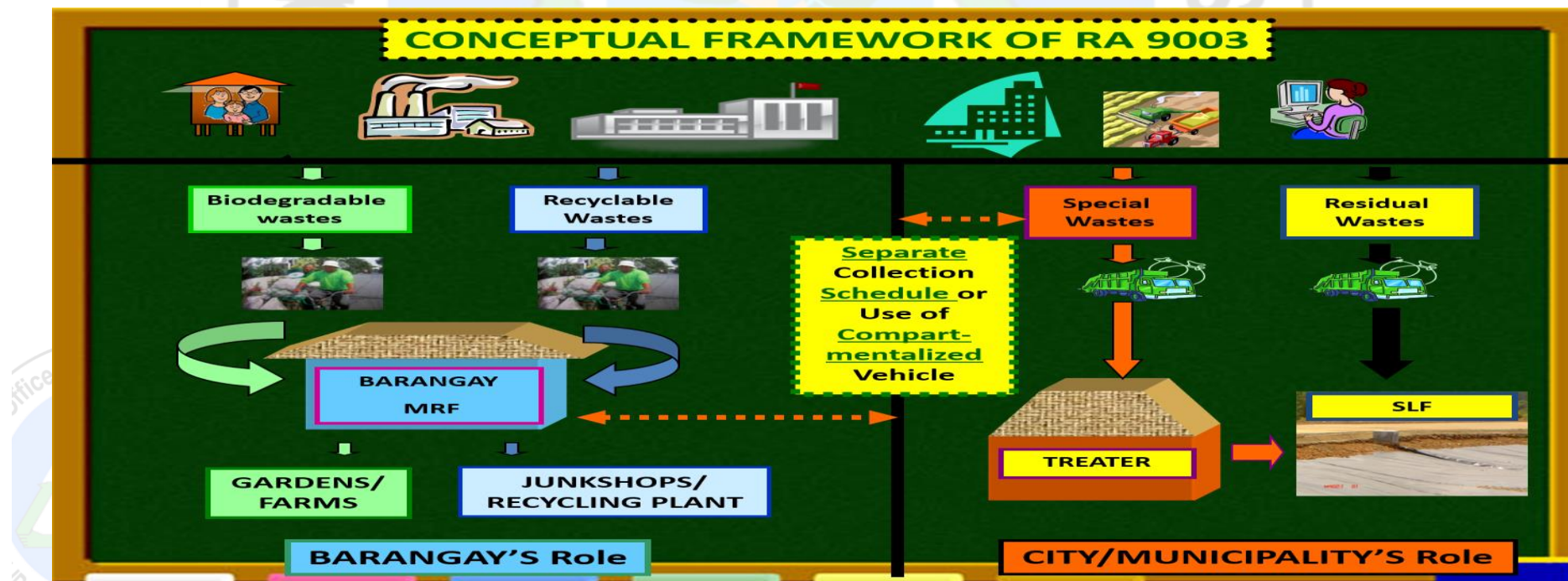
1. Source reduction (**avoidance**) & **minimization** of waste generated at source;
2. **Reuse, recycling & resource recovery** of waste at the barangay level. **Efficient collection, proper transfer & transport** of waste by the city/municipality;
3. **Efficient management of residuals & of final disposal sites** and/or any other related **technologies** for the destruction/reuse of residuals



INSTITUTIONAL MECHANISM

CONCEPTUAL FRAMEWORK

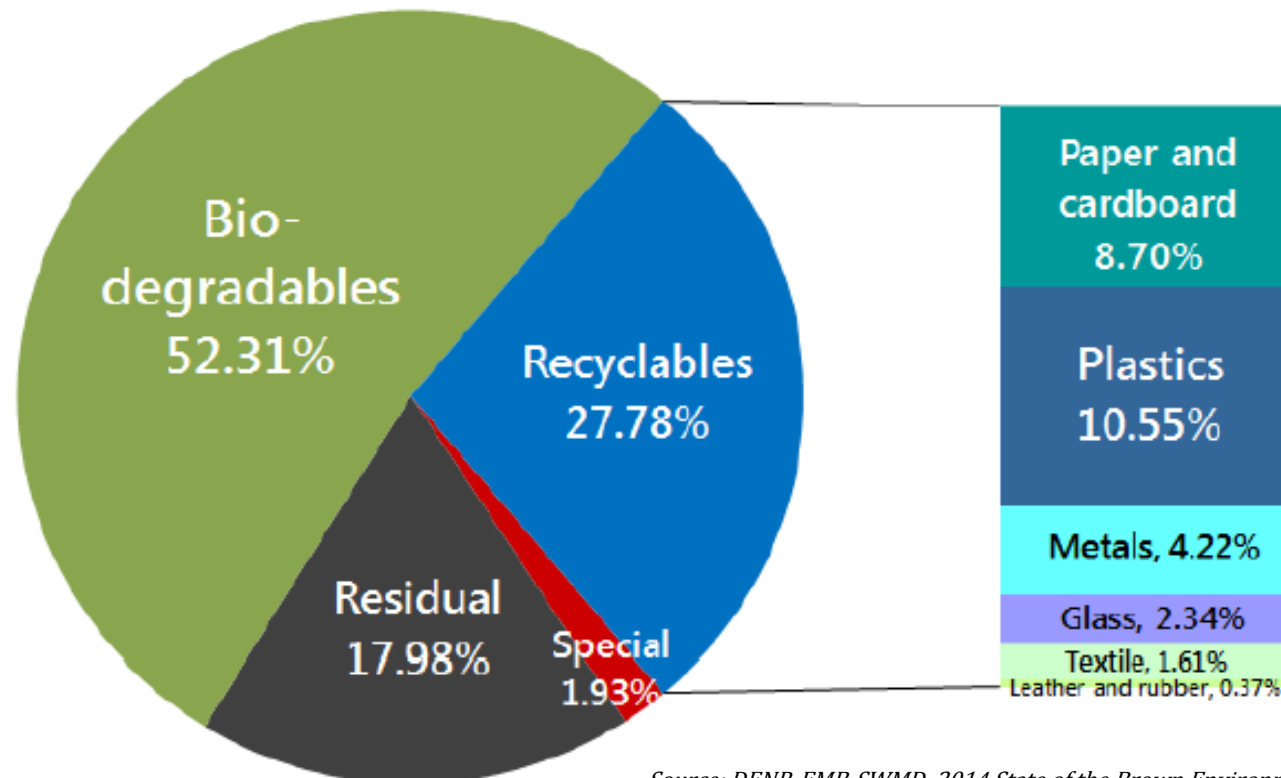
- Local Government Units (LGUs) – Cities & Municipalities are primarily responsible for Solid Waste Management in their respective localities
- Preparation of 10-year Solid Waste Management Plans
- Residual Waste: Hauling and Disposal
- Biodegradable and Recyclable Waste shall be collected and managed at the Barangay Level (smallest unit of government within a city or municipality)



Philippine Solid Waste Situation (RA9003)

Indicator	National	Metro Manila
Waste generation (per day)	40,000 tons/day	9,000 tons/day
Per capita	0.32 – 0.71	0.71

Percentage (%) by weight of MSW fractions in the Philippines



Philippine Solid Waste Situation (RA9003)

Table 8 Projected daily waste generation rates in Metro Manila and the entire Philippines

Coverage	Year					
	2008	2009	2010	2011	2012	2013
Philippines						
Population ^a	88,543,800	90,420,928	92,337,852 ^c	94,295,414	96,294,477	98,335,920
Tons/day ^b	35,418	36,168	36,935	37,718	38,518	39,334
Metro Manila						
Population ^a	11,391,125	11,621,226	11,855,975 ^c	12,095,466	12,339,794	12,589,058
<i>Actual</i> Tons/day ^c	7,600	7,886	8,194	8,751	9,094	9,468
Coverage	2014	2015	2016	2017	2018	2019
Philippines						
Population ^a	100,420,642	102,549,559	104,723,610	106,943,750	109,210,958	111,526,230
Tons/day ^b	40,168	41,020	41,889	42,778	43,684	44,610
Metro Manila						
Population ^a	12,843,357	13,102,793	13,367,469	13,637,492	13,912,969	14,194,011
<i>Projected</i> Tons/day ^d	9,119	9,303	9,491	9,683	9,878	10,078

National Solid Waste Management Status Report 2008-2013

Philippine Solid Waste Situation (RA9003)

Percentage (%) contribution of the various sources of MSW

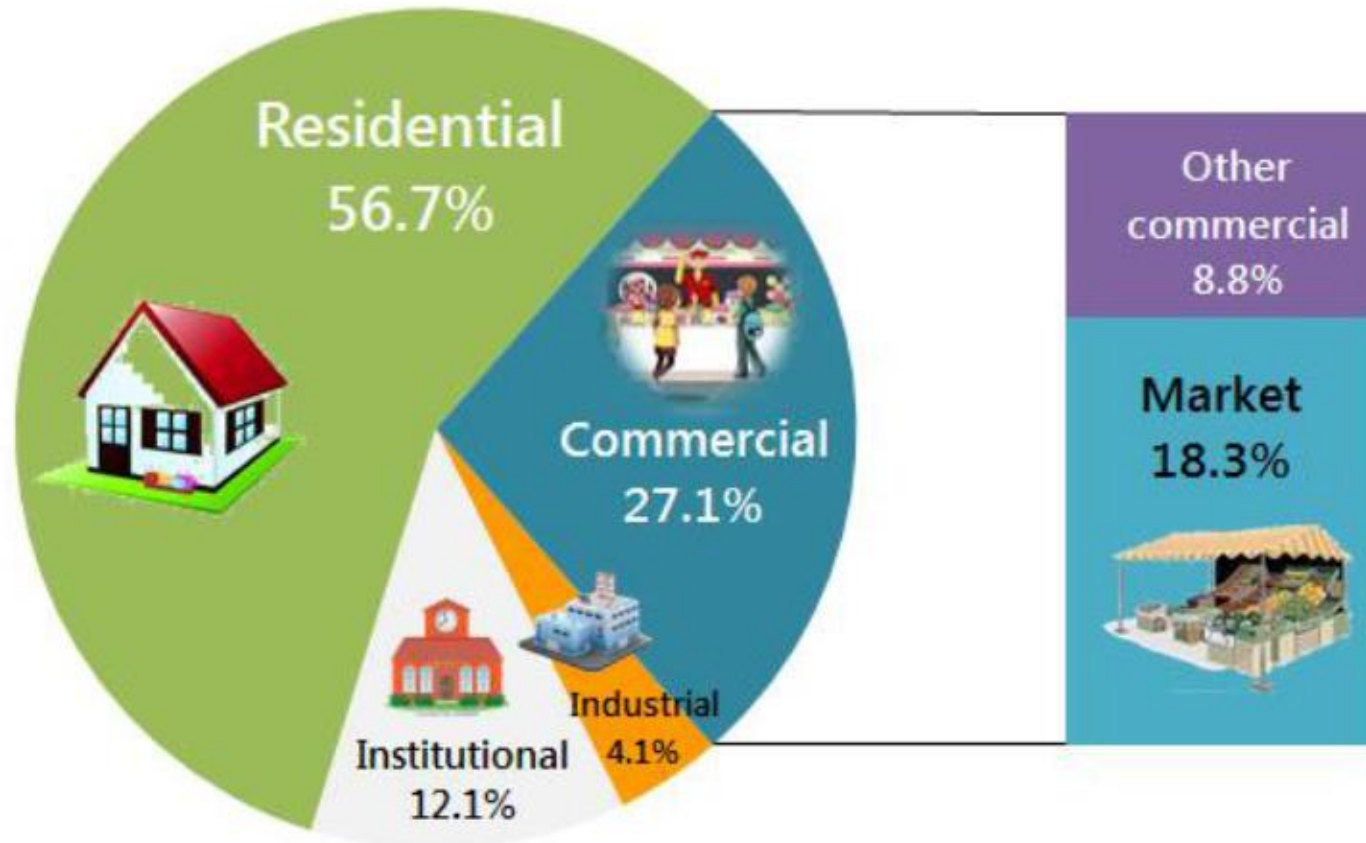


Figure 6. Sources of municipal solid waste (MSW) in the Philippines

LGU Compliance Updates (RA9003)



Collection Programs



Management of Biodegradables

Food Waste Management Program



Composting at Household & Institutional Level



Biodigesters



Padyak haulers will collect namamaho, kitchen waste in households daily



1000 L Portable Biogas digester with max. capacity of 50 kgs/day

For Waterfield 300 HH = 23 units

Management of Recyclables

Paper
Plastic
Glass
Steel/Aluminum



Working hand in hand to Establish Recycling Guidelines for Plastics developed by



PAG-RECYCLE NG PLASTIK (PET) (Polyethylene Terephthalate)

Ang mga sumusunod ay habibawala ng PET: mga bote na nakabitla ang laman, tubig ng softdrinks o mineral water, cold tea, o gampon ng peanut butter.

1. Tanggalin ang laman at label o etiketa
2. Tanggalin ang mga takip at pinagkakabitang takip (ito ay maaring ihalo sa right)
3. Hugasan ang mga bote, barilawan at patuyuin
4. Pisatin ang mga bote

PAG-RECYCLE NG PLASTIK (HDPE) (High Density Polyethylene)

Ang mga sumusunod ay habibawala ng "bakabak" na plastik: Bote ng shampoo, alcohol, mantikang pangluto, lantad at fluid ng mga sasakyan, drum, at plastic bag.

1. Tanggalin ang laman at label o etiketa
2. Hugasan ng maabul
3. Patuyuin *
4. Ipuntin at ibigay sa eco-ride, Brgy. MRF o recycler

PAG-RECYCLE NG PLASTIK (PVC) (Polyvinyl Chloride)

Ang mga sumusunod ay habibawala ng kapantong gasa sa PVC: Water / electrical / sanitary pipes, pinsuan, linoleum (flooring), at shower curtains.

1. Tanggalin ang mga label, plastik, papel at mga dumi
2. Hugasan ang mga tubo kung kinakailangan, tanggalin ang mga dumi
3. Patuyuin
4. balansan at limbak ayon sa sukat

PAG-RECYCLE NG LATA

Mayroong dalawang klase ng lata na maaaring i-recycle: Aluminum cans o lata ng softdrink at tin cans o lata ng sardinas, mantika atbp.

1. Kolektahin at ayusin ang mga lata ayon sa kategorya (de lata o lata ng softdrink)
2. Tanggalin ang mga label, plastik, papel at mga dumi
3. Hugasan ang lata at patuyuin
4. Pisatin ang lata ng softdrink kung ito ang patakaran ng inyong lokal na junkshop o MRF

MGA PAALALA:

- Ang mga latang pinaglagyan ng pintura, insecticide, hair spray at iba pang kemikal ay nasa kategorya na "special waste"
- Ang mga latang nasa kategorya ng "special waste" ay hindi na dapat linisin at hindi dapat hinahalo sa ibang recyclable o residual waste. Makipag-ugnay sa inyong barangay o munisipyo sa tamang pagtapon nito

PAG-RECYCLE NG PAPEL

Ang mga sumusunod ay ang mga iba't-ibang uri ng papel na maaring i-recycle:

1. Kolektahin at ayusin ang mga papel ayon sa kategorya at uri
2. Tanggalin ang mga pandikit, staple wires, plastik, spiral binding, ring binding
3. Ayusin ang papel ayon sa sukat
4. Tali nang maayos ang kumpol ng papel

MGA PAALALA:

- Huwag gumamit ng pandikit (glue o tape) sa pagtali ng mga papel
- Siguraduhing nakaayos ayon sa kategorya ang mga papel
- Huwag isama ang mga papel na nabahiran ng pagkain o langis
- Huwag isama ang mga sumusunod na uri ng papel: thermal papers, carbon paper, coated papers, dark-colored papers, used tissue papers, photos, plastic coated papers, aluminum coated papers

PAG-RECYCLE NG BABASAGIN NA BOTE

May tatlong uri ng bote na maaring i-recycle ayon sa kulay: amber (o brown), emerald green (berde) o flint (walang kulay).

1. Kolektahin at ayusin ang mga bote ayon sa kulay
2. Tanggalin ang mga label, plastik, papel at mga dumi
3. Tanggalin ang mga takip at tansan
4. Hugasan ang mga bote at patuyuin

MGA PAALALA:

- Ang mga basag na bote, bumbilya, fluorescent light at jalusi (bintana), at mga boteng pinaglagyan ng gasa o kemikal ay special waste. Huwag itong ihalo sa recyclable o residual na basura. Makipag-ugnay sa barangay para sa tamang pagtapon nito.
- Ibalot ang mga basag na bote sa papel upang hindi makasugat.

Paper

RECYCLED PRODUCTS



Doy Packs



Doy Packs



Various Recovery Programs for Residual Wastes

WASTE RECOVERY PROGRAM GSC (Greenhills) Cash for Scrap

CASH for SCRAP
A Recycler's Bazaar

Sunday, June 28, 2015
8 am - 12 nn
Greenhills Shopping Center

We will buy your recyclable items!

- Paper: Newspapers, cartons, magazines, notebooks, old books, brochure directories, others.
- Plastic Containers: PET bottles, caps, 1 liter and 2 liter plastic bottles, others.
- Used Aluminum Cans: Cans of soda and other beverages.
- Polyethylene Materials: Shopping bags, 5-gallon jugs including food packs.
- Electronic Waste: Non-working electronic & electrical appliances, CPUs & monitors, laptops, digital cameras, smartphones, fax machines, printers, scanners, laptops and other peripherals, others.
- Tetra Pak Cartons: Cartons of milk, juice, chocolate drinks, others.
- Dry Pinks: Shampoo bottles.
- Used Lead Acid Batteries: Batteries of generator set, motor, cars, trucks, UPS.
- Printer Ink Cartridges: HP, Canon & Epson.
- Used Cooking Oil: Items for disposal with heat.
- Refrigerators, Air Conditioners, TV sets, LCD monitors: Items for Proper Disposal Only.
- Tape and Household Batteries, carbon batteries & storage device, satellite, power source, cell, battery.
- Items for Donation: School supplies, newspapers, books, good shoes, others' wear, art materials, toys and games.

For more info, call Mona Lavana at 8311 1231 ext. 127 or 128 / 0988 844025 / 0927 422814 / 0927 780247 / 0928 22 0248



WASTE RECOVERY PROGRAM



TRASH TO CASH

SM SUPERMALLS
TRASH TO CRAFTS

TURN YOUR TRASH INTO CRAFT. A CELEBRATION OF CRAFT MAKING.

JOIN US WEDNESDAY, 24 JUNE 2015 FOR A CAUSE: CREATING AND RECYCLING.

NUVALI RECYCLABLES FAIR

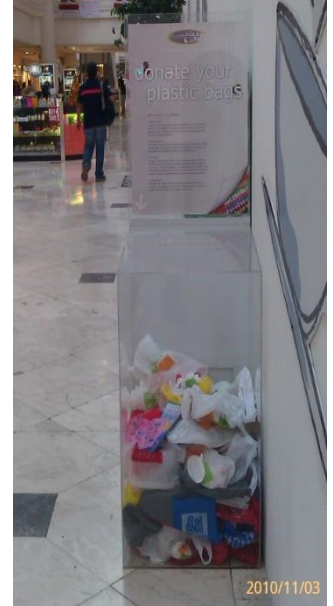
- 2 Recycled Plastics + 1 Metal Sheet = 1 FISH FEED
- 3 Plastic Spoon and Fork = 1 JERSEY RIDE
- 2 PET Bottle Caps + 1 Plastic Bottle = 1 WATER TAP RICE
- 1 Newspaper = 50 x 1 RICE
- 2000 = 1 MOBILE TICKET
- 1 Cup of Coffee = 1 CUP OF COFFEE
- 20 + 10 = 1 WHOLE CHICKEN

BASURA MO: KABUHAYAN KO

can replace with store bag

donate your plastic bags

creativity + waste + skills training = INVISIBLE



WASTE EXCHANGE PROGRAM Bigas Ko Plastik Mo Program



FREE 10 TEXTS SA BAWAT 5 SACHET!

Redeem at **Cebuana**

Redeem until May 15, 2015



Management of Wastes (Alternative Technologies)



- RESULTS OBTAINED**
- Specific gravity increased with modified asphalt content
 - High stability at 6.0% modified asphalt content
 - Flow increased with modified asphalt content
 - Air voids decreased as modified asphalt content increases



Management of Wastes (Alternative Technologies)



Management of Residual Wastes (Energy Recovery)

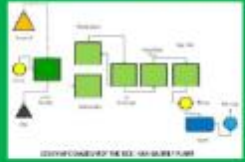


SUKI SMALL-SCALE GARBAGE GASIFIER PLANT

Introducing the latest development in the field of garbage gasification by converting garbage into a clean gas to produce heat, mechanical and electrical power.

Suki Trading Corporation now can customize the design of garbage gasifier plant on job-to-order basis, ranging from 10 – 100 kW using surplus spark-ignition or imported gas engine.

The Suki gasifier plant technology is a combination of the CRHET moving-bed downdraft reactor and the improved design of gas conditioning devices. This gasifier plant can provide clean gaseous fuel that is suitable for use in rice milling operation as well as in crop irrigation.



Applications:

- Power supply for irrigation pump, rice mill, and other farmstead equipments
- Barangay clinic for residential, community hall, and street lighting, including micro business enterprises, etc.

Model	4.0	10	30	100	150
Power Output (kW)	10	20	50	75	100
Rice Husk Consumption (kg/hr)	10	42	73	118	160
Engine / Generator	Surplus spark-ignition engine with synchronous generator or imported gas generator set		Generator set		
Floor Area (m x m x m)	3.0 x 3.0 x 4.0	5.3 x 5.5 x 4.5	6.2 x 6.0 x 5.0	8.5 x 8.5 x 5.5	8.5 x 7.0

For details, please contact: Engr. Vic Ocon, Suki Trading Corporation, Agua, Ibaan, Lapu-Lapu City, Philippines
 Mobile: +639176248119 Email: sukitradingcenter@yahoo.com website: www.sukitradingcorp.com

Cement Kiln Co-processing Operation

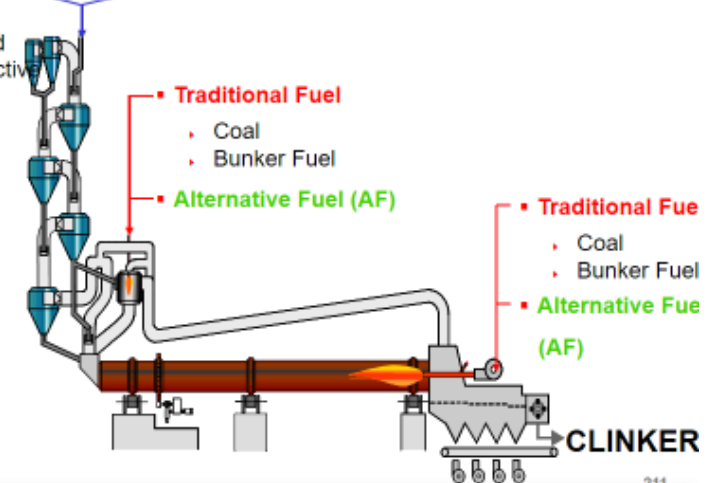
- Traditional Raw Materials
- Alternative Raw Materials (AR)

- Limestone
- Silica Sand
- Iron Corrective

- Traditional Fuel

- Coal
- Bunker Fuel

- Alternative Fuel (AF)



CLINKER

Other Alternatives

Plastic Waste to Fuel

TECHNOLOGY

The technology is modular in concept and may be deployed in 5, 10 and 20 ton/day capacities. With this design, operation can be carried out in smaller plants and processing may be situated wherever it is deemed necessary.

Assorted plastics are first shredded into evenly sized pieces and are entered into an agglomeration chamber; it then enters a feeding screw where it is melted and the polymers are mixed with a catalyst. The melted plastic goes to a specially designed pyrolysis chamber and depolymerization occurs, where hydrocarbon gases are being produced. It then passes through distillation to separate different hydrocarbon chains, filtration, and centrifuge to remove contaminants and impurities. The light gases produced are then purified, compressed and stored. Provision will be made as to make this light gas into liquefied petroleum gas (LPG).

The process is done entirely inside a vacuum, hence no resultant chemicals are released into the environment. The conversion efficiency rate is 75% to 80% depending on feedstock components.



Holcim Philippines

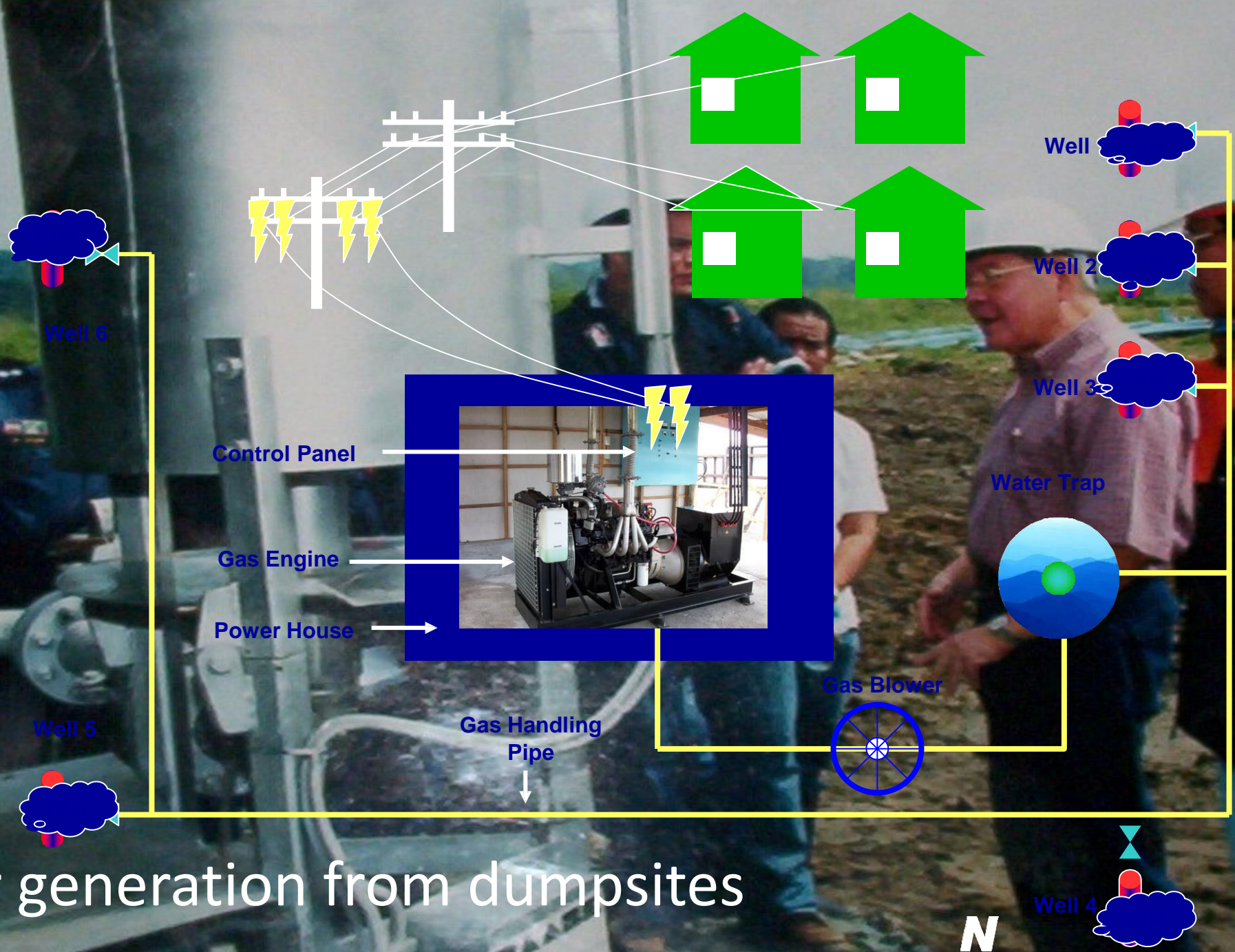
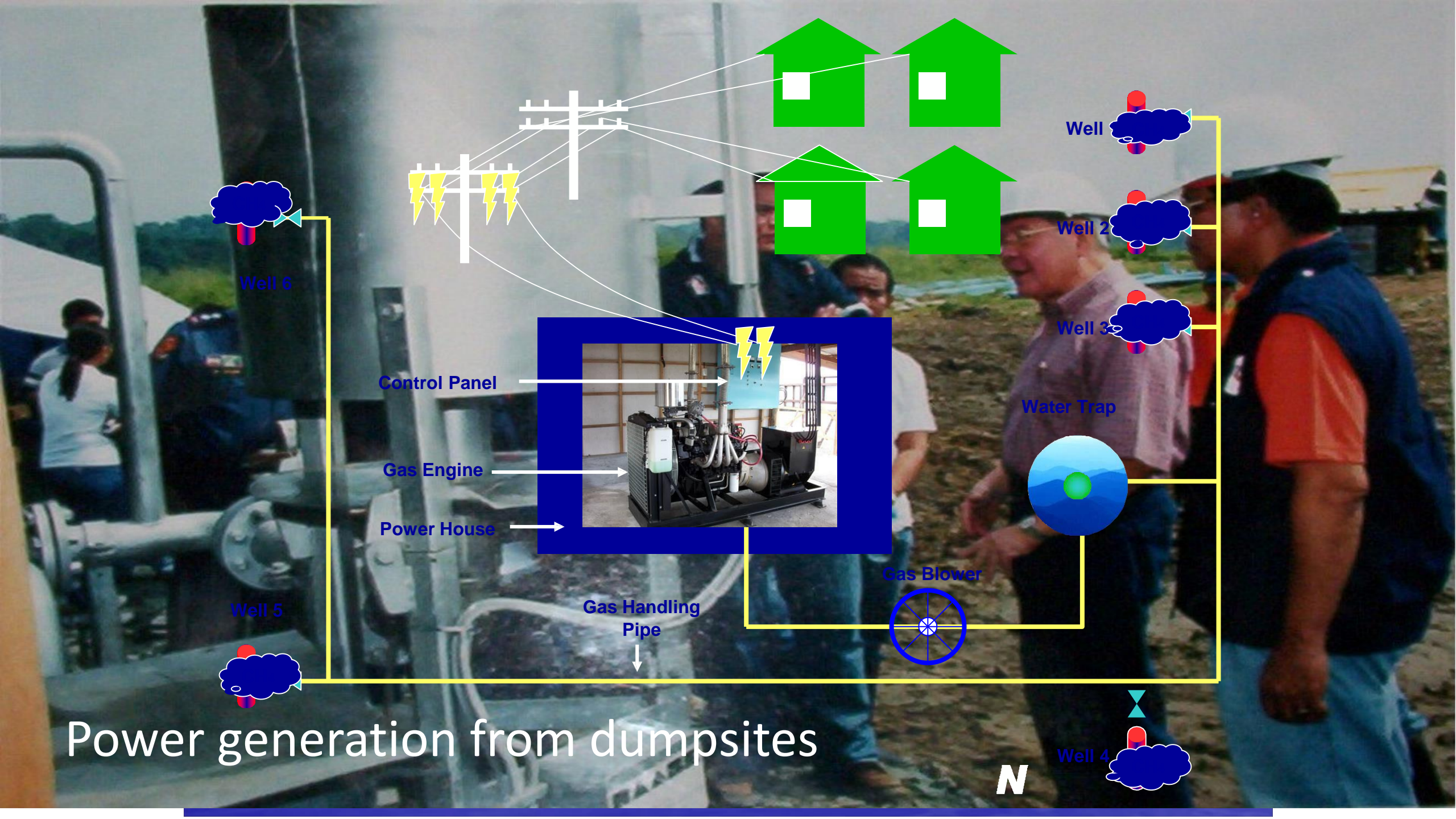
Strength. Performance. Passion



Prototype conversion plant in Bacolod



Diesel & Gasoline end products



Power generation from dumpsites

Challenges to SWM

- Lack of infrastructure to address Solid Waste
- High inter-island transport costs
- SWM low in the priority list of LGU
- Lack of Financial Capability to some if not most of LGUs
- Barriers to Private Sector Investments for Waste Treatment Technologies
- High dependence on single use packaging by low income class