

Waste Plastic Recycling Project in Tayud, Consolacion, Cebu, Philippines

adopted as

*“Advanced Low-Carbon Technology Innovation for
Further Deployment in Developing Countries”*

by Ministry of the Environment in Japan

through Global Environment Centre Foundation(GEC)

for the mitigation of global climate change



GUUN Co., Ltd. (GUUN)

(formerly Mansei Recycle Systems Co., Ltd.)

Company overview-1 (GUUN Co., Ltd.)



- **Foundation: Mar. 14, 2001**
- **Capital :JPY85,000,000
(USD 773,000 ※JPY110/US\$)**
- **No. of employees :**
88 in GUUN, including subsidiaries
- **Head Office and plant :**
17-3 Torihamacho Kanazawaku Yokohama, Japan
- **Minato Office :**
**10 Fl. Industry & Trade Center Building, 2
Yamashitacho, Nakaku, Yokohama, Japan**
- **Philippine Branch :**
Sitio Sun-ok, Tayud, Consolacion, Cebu, Philippines

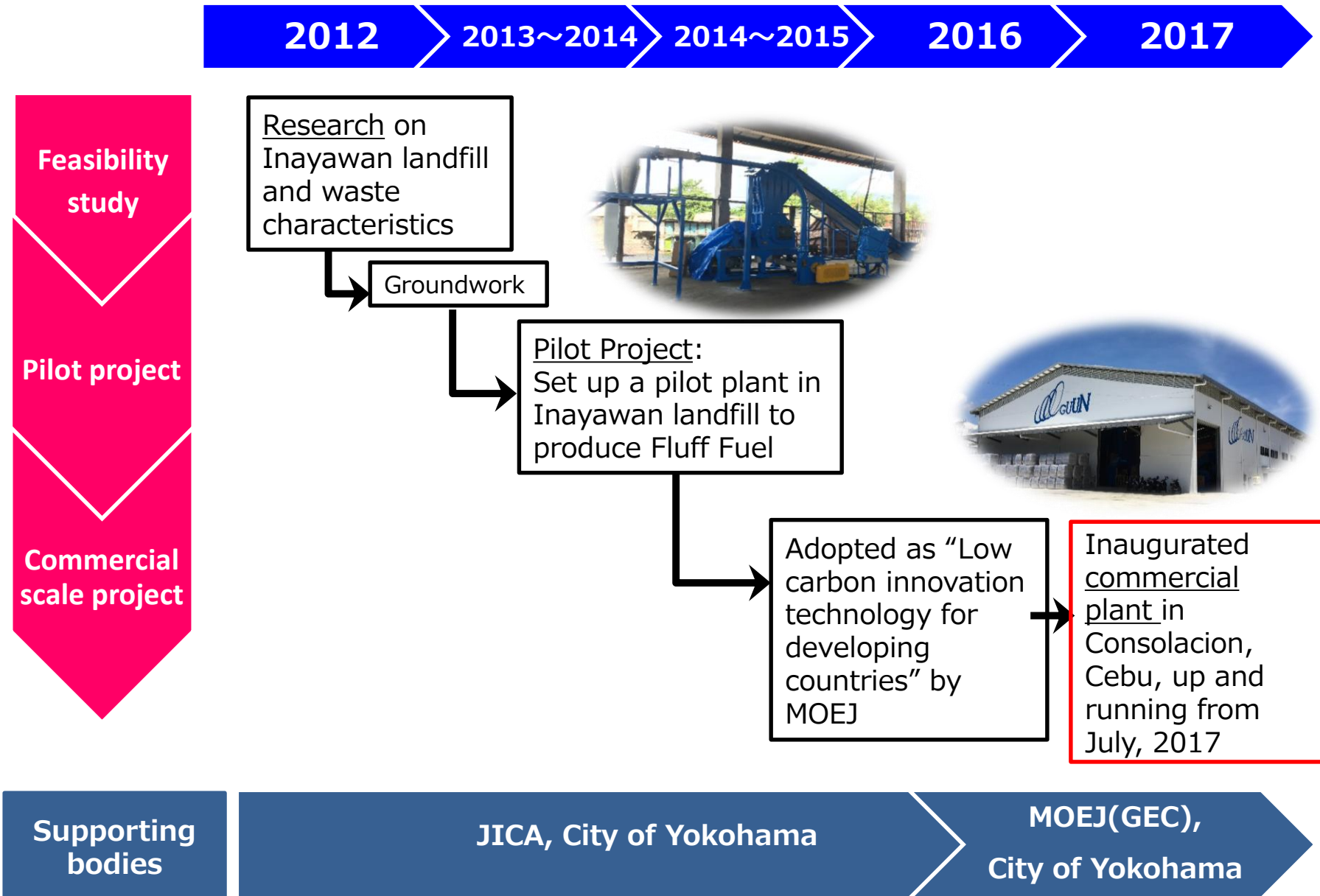


■ Business line:

- ① Production of Fluff fuel from waste plastic
- ② Biomass fuel & Ind. raw material from wood chip
- ③ Consultation
- ④ PCB (polychlorinated biphenyl) waste disposal

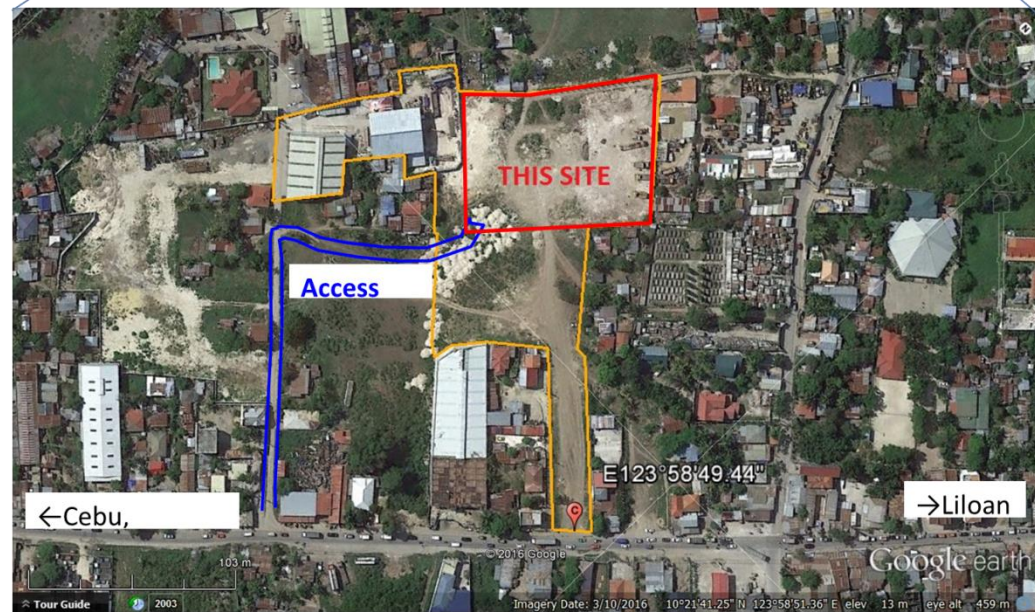
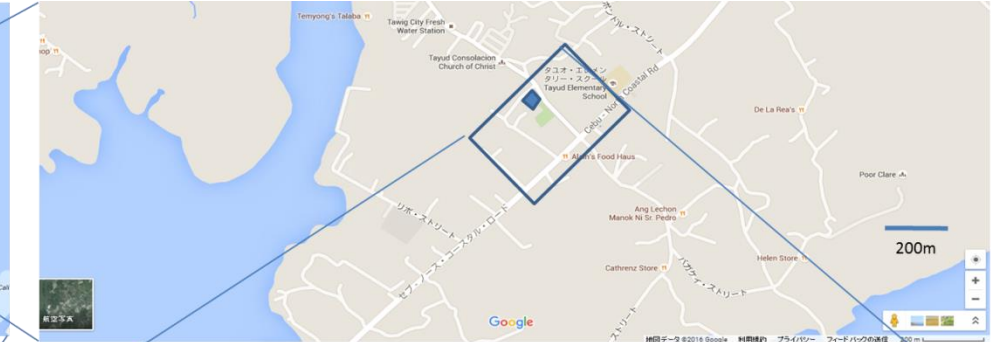
■ ISO Registration ISO14001 (JSAE1247)

History of our activities in Cebu



Location of the plastic recycling facility

Sitio, Sun-ok, Tayud, Consolacion, Cebu, Philippines



Overview of the facility



Acceptable materials and each process



Plastic



Paper



Carton



Styrofoam



Fabric



Sack



Floor segregation



Segregation & Shredding



Pressing & Packing

Final output: Fluff Fuel



| Factors | Fluff Fuel vs. Coal |
|--------------------------|---------------------|
| CO ₂ Emission | 17% reduction |
| Calorific value | > 6,000 kcal/kg |
| Price | Approx. 40% lower |

Acceptable materials

Plastic (e.g. snack packs, plastic-based packaging)



Acceptable materials

Paper



Mandaue City's waste segregation rule



Notice to the Public

MANDAUE CITY SYNCHRONIZED WASTE SEGREGATION PROGRAM

Executive Order No. 27



| For Composting (BIODEGRADABLE) | For Recycling (RECYCLABLES) | For Residual Containment (RESIDUAL WASTE) | For Special Collection (SPECIAL WASTE) |
|---|--|--|---|
|  Agricultural Waste  Animal Carcasses  Yard Waste  Fruit & Vegetable Waste  Fish Waste  Food & Kitchen |  Plastic Cups & Straw  Plastic Twine (Straw)  Old Tires  Old Newspaper  Aluminum Cans  Pet Bottles  Used Glass Bottles  Broken Plastics  Broken Glass  Used Styrofoam |  Plastic Sando Bags  Used Rags  Broken Ceramic  Biscuit & Candy Wrappers  Textile Trimmings  Shampoo Sachets  Diaper & Sanitary Napkins  Worn out Shoes  Worn out Bags |  Wet Cell Batteries  Containers from Engine Oils, Grease, Cement, Roof, Contact Cement, Paint/Thinner & Disinfectant  Worn out Appliance  Health Care Wastes  Expired Medicines  Busted Bulbs  Asbestos Materials |

| | | | |
|-----------------------------|---------------------------|------------------------------|-----------------------------|
| MWF BIODEGRADABLE | SAT RECYCLABLES | TTH RESIDUAL WASTE | SAT SPECIAL WASTE |
|-----------------------------|---------------------------|------------------------------|-----------------------------|

For large waste generators please follow the above waste code
 Please bring out your trash/garbage ONLY WHEN THE GARBAGE TRUCK IS WITHIN YOUR AREA

Penalties base on City Ordinance No. 10-2006-372

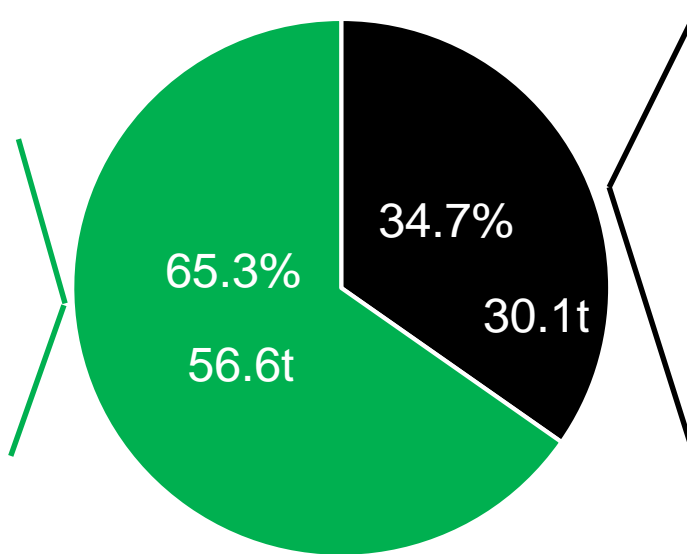
- Disposal of wastes that have not been segregated according to the following waste classification **P1,000.00**
- Hazardous and Special - waste
- Disposal of hazardous/special wastes, bulky wastes and white goods together with other classified wastes **P1,000.00**
- Disposal of waste outside the schedule time of collection **P1,000.00**
- Disposal of waste beyond the schedule time of collection **P1,000.00**
- Mixing of source-separated wastes **P1,000.00**
- Tinkering with the Segregation Bins or mutilating parts thereof **P5,000.00**
- Penalties from other pertinent laws may also apply*



Mandaue City's current quality of plastic waste as of Sep., 2018



Typical household plastic waste



- Backload Contaminants
- Recycled Materials



Food waste



Soil

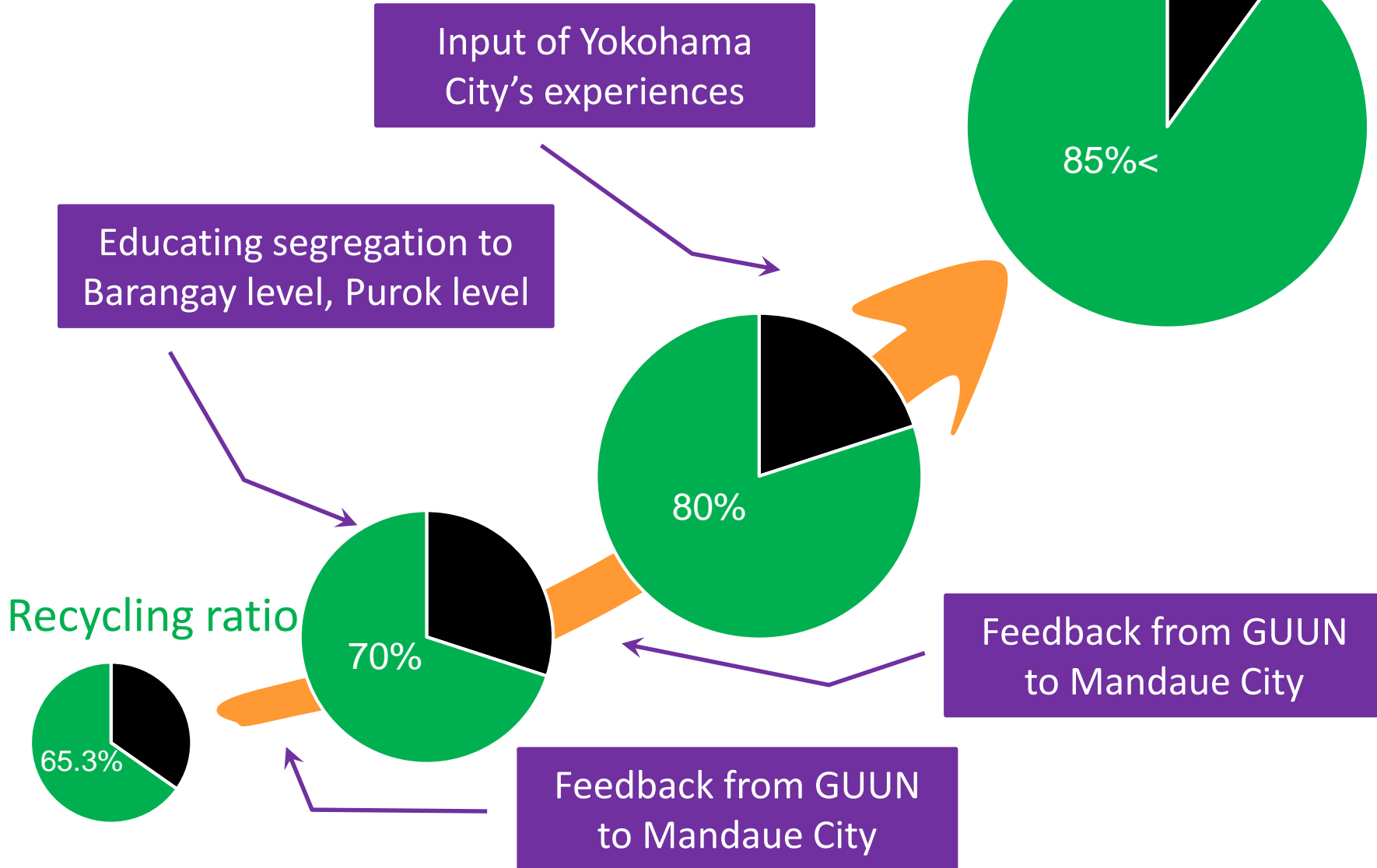
What we are now doing



*Segregating
at
households,
companies*

*Shifting from
landfilling to
“Processing”
for
“Fluff Fuel”
alternative to
coal*

What we are going to do for improvement



What we can do in developing countries

| | Current situation | Difficulties / Pro points | What we can do |
|--|---|--|---|
| Raw materials | <ul style="list-style-type: none"> ▪ Started with private sectors ▪ Promoting enhancement of CSR through our project ▪ <u>Started recycling of LGU's (household) waste</u> | <ul style="list-style-type: none"> ▪ (D) Competition to cheap landfilling fee ▪ <u>(P) Concept of tipping fee has been already become common ground</u> | <ul style="list-style-type: none"> ▪ Widening of acceptable materials ▪ Proposal on waste volume reduction at generators, e.g. hotels, shopping malls, factories etc. |
| Products | <ul style="list-style-type: none"> ▪ <u>Started Fluff Fuel delivery to local cement plants</u> | <ul style="list-style-type: none"> ▪ (D) Severe negotiation with global clients on price, supply volume, EHS audit etc. ▪ (P) International market prices of products already recognized | <ul style="list-style-type: none"> ▪ <u>Supply satisfied quality, stable volume of products to clients</u> |
| Surrounding social environment / system | <ul style="list-style-type: none"> ▪ <u>Getting attention by environmental, CRS and SDG's conscious businesses, LGU's</u> | <ul style="list-style-type: none"> ▪ <u>(D) Insufficient system of securing budget in LGU's for shifting to recycling</u> | <ul style="list-style-type: none"> ▪ <u>Assistance for how to secure the budget (new tax system etc.) for shifting to 3R society</u> ▪ <u>Comprehensive solution on waste management (e.g. MRF, WtE, Controlled landfill)</u> |

Comprehensive solution

on waste management: Metro Cebu's case



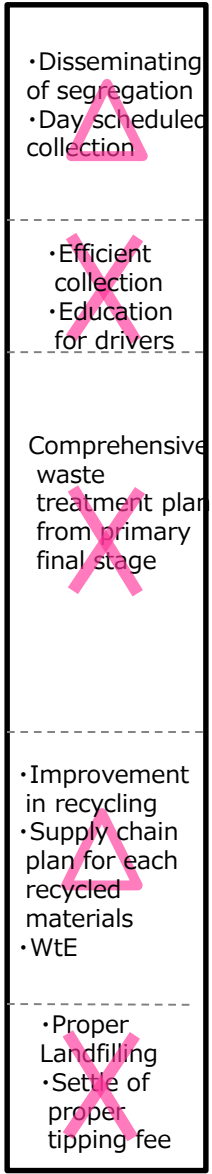
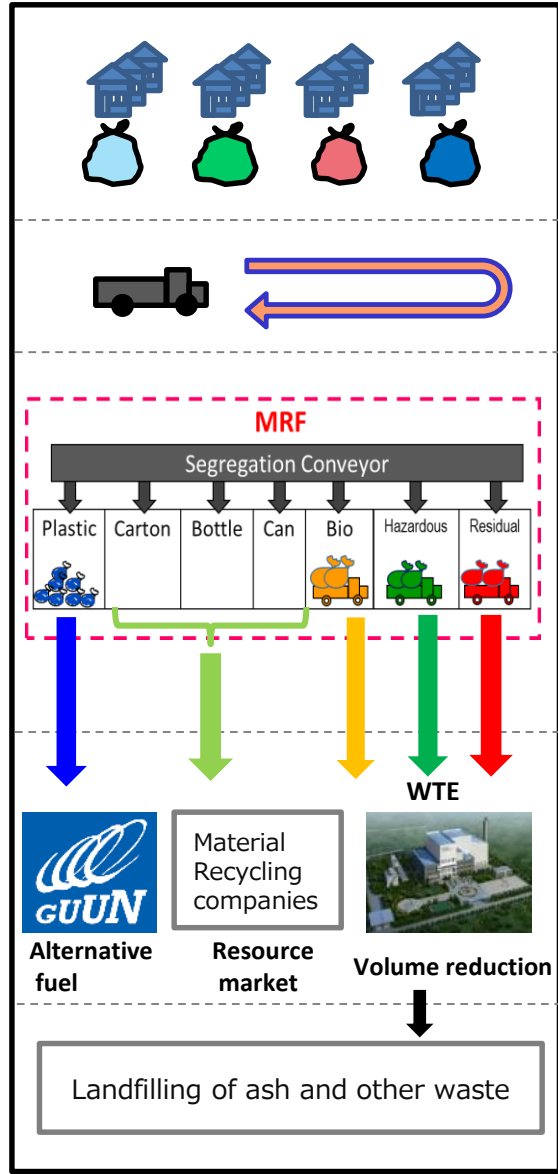
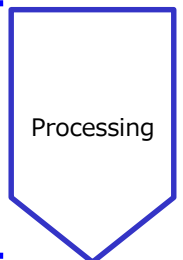
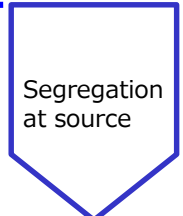
[Potential supporters]

Resource Recycling Div., Yokohama City

GUUN/ Local entities/ Waste management companies

Engineering companies/ Waste management companies

Waste management companies



[Mega Cebu 2050 Roadmap]

Short term plan (picked up)

- Community based 3R
- Guideline for collection
- Study and construct upgrading city-wide MRF
- Effective management system of medical and hazardous waste
- Closure of Inayawan Landfill

Middle term plan (picked up)

- FS for WTE
- Construct city-wide MRF
- Construct two sanitary landfills

Corporate Social Responsibility

**Shift to sustainable
waste management
system**



Reduce waste plastics in landfill leads to site life extension due to volume reduction and restore self resolution.

Preventing Flood

: caused by clogged waste plastics in drainage or plumbing



Creating job opportunity and enhancement of education to children



Contracting waste plastic recycling to GUUN



Low Value Plastic which has been landfilled



Fluff fuel

Utilized as an alternative fuel (for mainly cement)

Promote
CSR
activities
through the
recycling



**Ministry of the Environment
Government of Japan**

**Financing Programme to
Demonstrate Advanced Low-
Carbon Technology Innovation
for Further Deployment in
Developing Countries (2016)**

We can be your
partner in your quest
for
Sustainable Solution .



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