

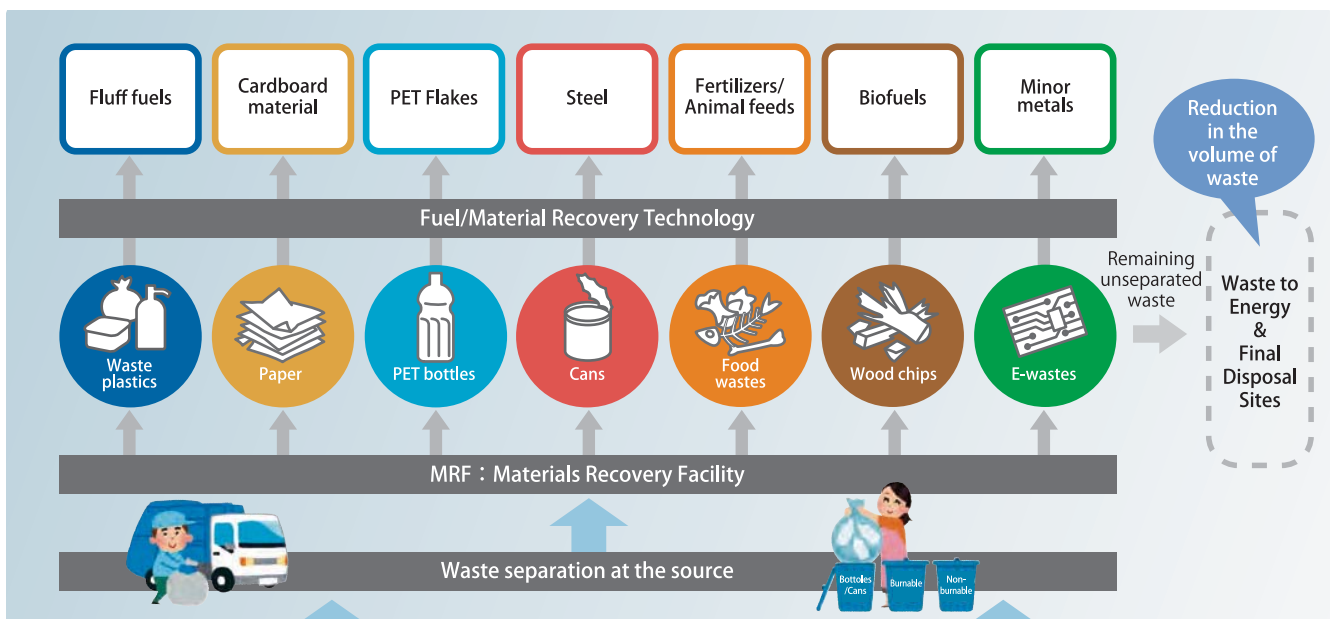
Waste Separation and Recycling Promotion

Urban Issues

In many cities in emerging economies, waste is being disposed of in final disposal sites with minimum separation, which leads to short life span of sites. Fostering consensus among local authorities and citizens concerning waste separation is an important first step and citizens' awareness towards environment causes and waste reduction through separation at the source need to be raised.

Materials Recovery Facility (MRF)

Promoting waste separation at the source, recovering valuable materials through recycling, and producing fuel from waste in intermediate treatment facilities will lead into establishing vein industries in the solid waste management sector.



Technologies / Products / Service of Private Firms in Yokohama

Target	Examples of Technologies/Products/Service
Waste plastics	Crushers, conveyors, washers, wastewater treatment equipment
Paper/Cardboards	Pulpers, screens, mixers, flotators, papermaking machines
PETs	Bale breakers, conveyors, crushers, washers, dehydrators
Bottles/Cans	Crushers, conveyors, magnetic separators, pressing machines
Food wastes	Biomass boilers/energy generators, methane fermentation systems/energy generators, biodiesel generators, composts
Wood chips	Incinerators (stoker, fluidised bed, gasification and melting furnaces), dioxin thermal decompositions, energy generators, heat recovery systems
Medical wastes	Sterilizers (high-pressure steam, dry-heat), incinerators (vertical, kiln, gasification furnaces)
Home appliances	Crushers, classification machines, fluorocarbon recovery machines

Expertise of the City of Yokohama

- Yokohama is constantly improving its waste reduction schemes by working together with its citizens and business sector. Through the "Yokohama G30 Plan", substantial waste reduction was achieved. The following scheme, the "Yokohama 3R Dream Plan", focuses on reducing production of waste.
- Yokohama's 4 Recyclable Resources Separation Centers not only separate recyclable waste, but also offer citizens facility tours as well as classes on recycling and activities to raise awareness on the importance of recycling.
- Waste that cannot be recycled is treated at the Waste to Energy (WtE) incineration plant, where waste is used to efficiently produce energy and further reduce waste volume with minimum emissions.



Midori Recycle Resources Separation Center



Kanazawa Incineration plant

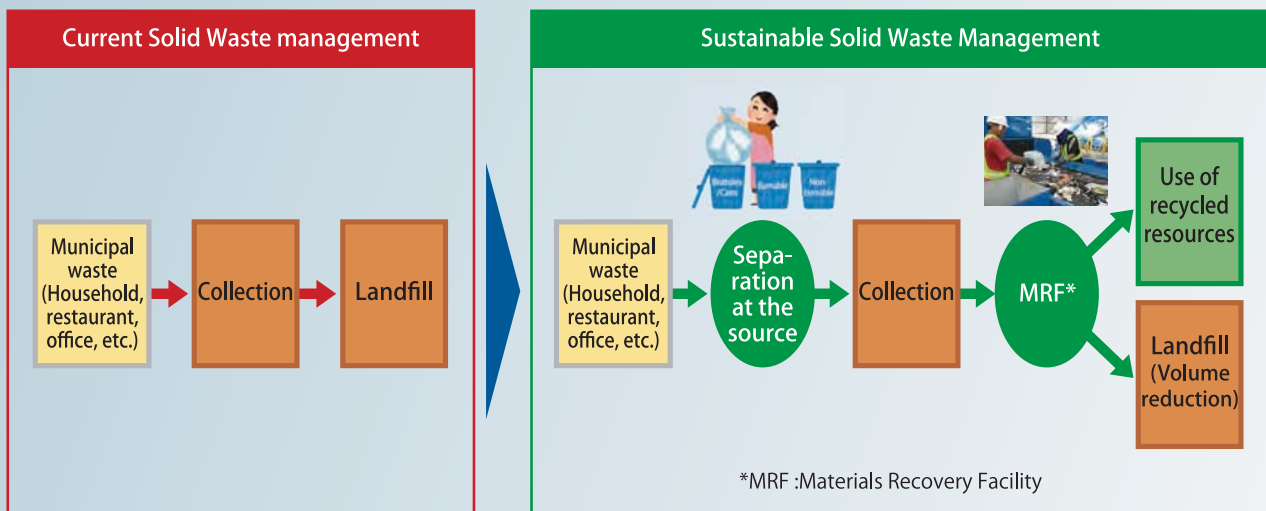
Concept for Waste Management Projects

Transition to sustainable waste management

Urban Issues and Proposed Solutions



The local governments of Metro Cebu, the Philippines are invoking a slogan "Let's dispose the way of thinking of landfilling garbage into landfill sites". The City of Yokohama has responded urban issues through international cooperation with the local governments and by integrating technologies of private sector firms and City's expertise towards promotion of sustainable solid waste management.



Yokohama Urban Solutions

Policy Measures

- Clear goal setting and planning for sustainable waste management
- Proper budgeting and staffing arrangement
- Local community involvement for segregation at the source

Technical Solutions

- Introducing recycling technologies (refer to the column below)
- Management system for efficient waste collection
- Introducing Waste to Energy plants

Case

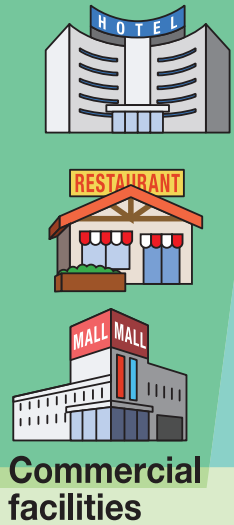
Waste Plastics Recycling Plant in Metro Cebu, Philippines

GUUN Co., Ltd. (based in Yokohama) conducted feasibility studies and demonstration projects (JICA projects) since 2012 in collaboration with the City of Yokohama, and opened a waste plastic recycling plant in May 2017. This plant manufactures fluff fuel from collected waste plastic, which is mainly used by cement companies. By accepting household waste plastic in addition to industrial waste, the plant contributes to further reducing the amount of solid wastes delivered to landfill. The City is proposing to municipalities to co-create and to establish efficient institutional framework towards this end.

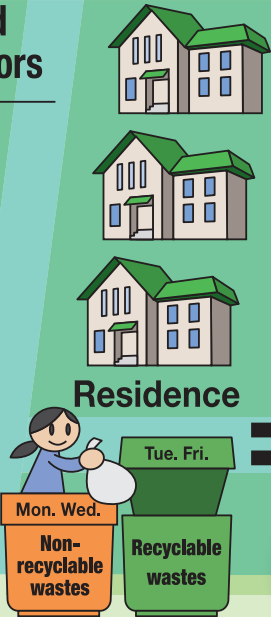


Yokohama-based solid waste management solutions

Municipal solid waste generators



Commercial facilities

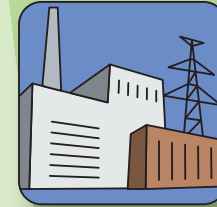


Residence

Collection & transport



Waste incineration and power generation (WTE) facilities

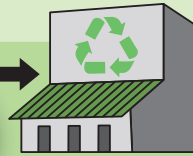


Incineration & power generation

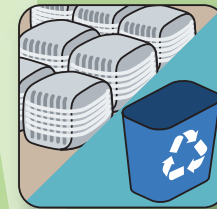


Non-recyclables wastes

Recycling facilities



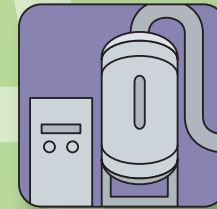
Fluff fuel/
plastic material
recycle



Manufacturing of fluff fuel with waste plastics

Recyclable wastes

Liquid fuel



Plastic-to-oil



Hospital

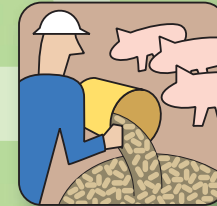
Hazardous wastes



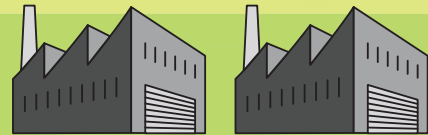
Hazardous waste treatment facilities



Production of livestock feed from food residue



Animal feed



Hazardous waste generators



Hazardous wastes



Factories

Hazardous waste treatment

Glass cullets
Recycled pulp
Metal scrap



Recycling of cans, glass, paper, and plastic

Residues

Treated wastes

Residues (ash)



Landfill site