Waste Management / 3Rs Policy and Biomass

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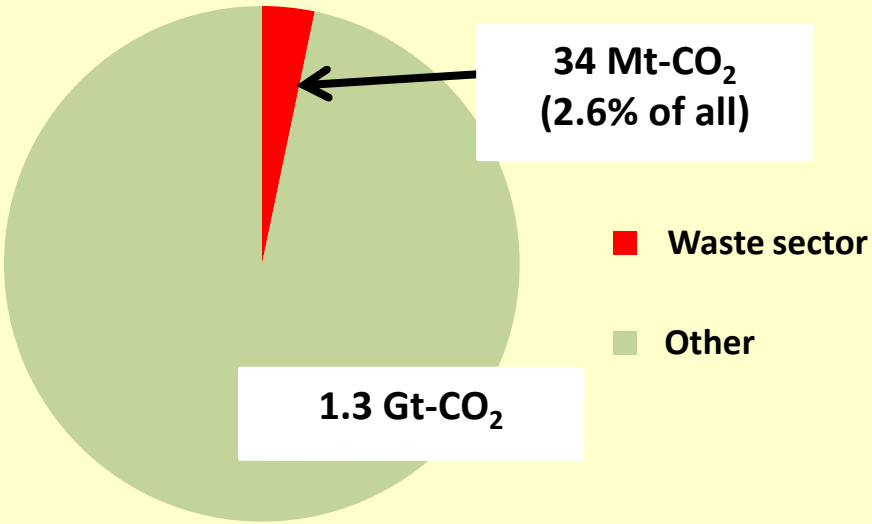
Climate Change and Waste Sector

Current State

GHG emissions from waste sector in Japan (FY2012)

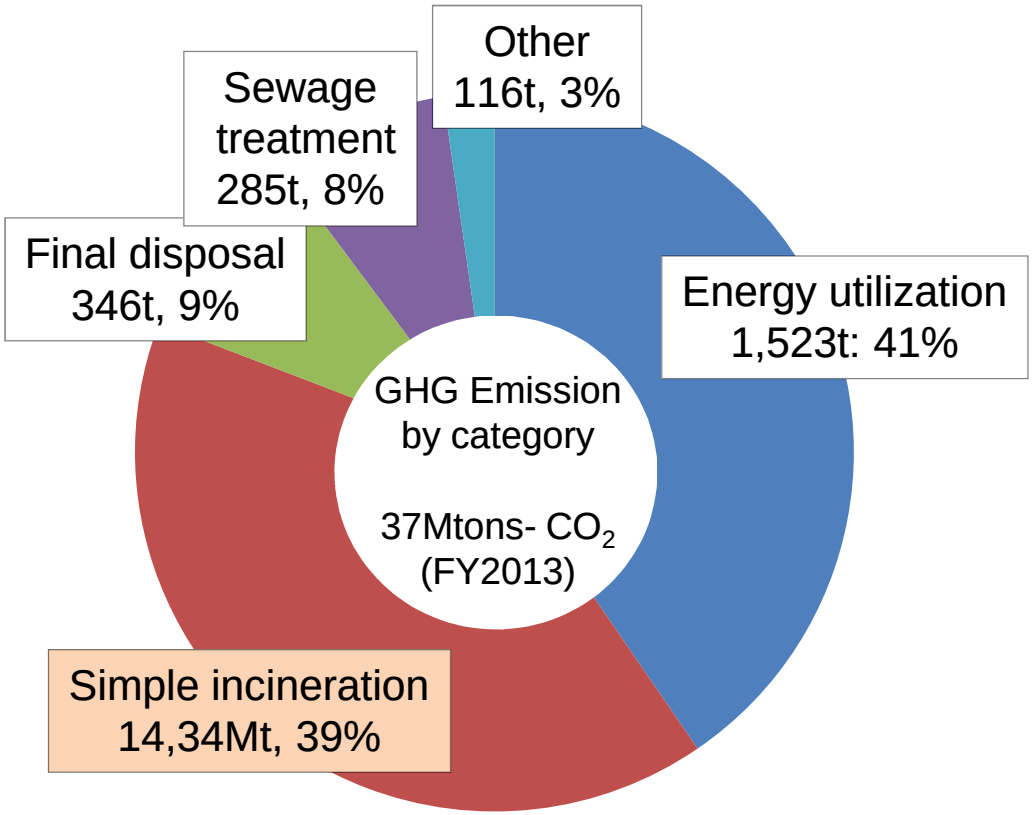


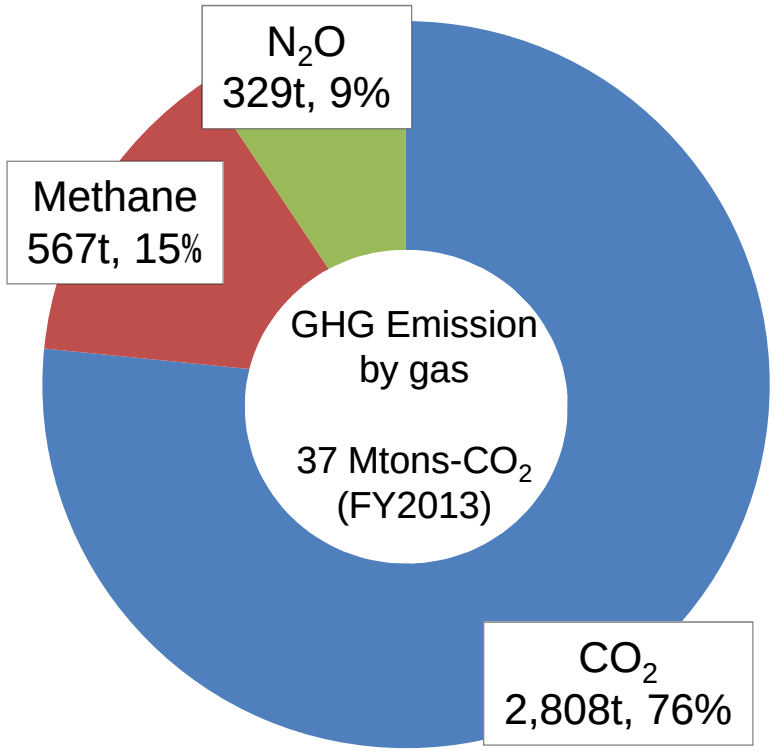
Rate of GHG emissions from waste sector among total GHG emission: 2.6%

Amount of GHG emissions from waste sector: - 2.9% / FY1990

***(-22.8% /FY1990 : excluding the emission from waste incineration processed with heat recovery.)**

GHG Emission from Waste Sector





Climate Change Mitigation Measures in Waste Management

Generator Side

- Waste prevention by charging of waste collection to control GHG emission.
- Thorough implementation of Sorted discharge and collection of waste, etc.

Promotion of Renewable Energy

- Waste-to-Energy and Biomass power generation
- To utilize heat from biomass.
- Other measures (to utilize solar heat , waste incineration heat, etc.)

Processor Side

- Promoting the 3R.
- Reducing final disposal amount of biodegradable waste.
- Promoting waste-to-energy

Realizing Low-Carbon Society & Sound Material-Cycle Society in an integrated manner

Basic Plan for Promotion of Biomass Utilization

- Adopted by the Cabinet in Dec 2010
- Set up the quantitative targets

[Target by FY2020]

1. Climate Change Mitigation

Utilize biomass of 26Mt-carbon

2. Creation of New Industry

JPY 500 billion biomass market

3. Revitalization of Rural Areas

600 municipalities develop their plans

(Note) : Letters in parentheses are annual generation amount. Black liquid, wood residues from sewing factories, forest cut-offs are in dry weight. Other biomass are in wet weight.

Category
Livestock excrement (88Mt)
Sewage sludge (78Mt)
Black liquor (14Mt)
Paper waste (27Mt)
Food Waste (19Mt)
Woody residues from sewing factory (3.4Mt)
Construction waste wood (4.1Mt)
Non-edible parts of Farming crops (14Mt)
Forest cut-offs (8Mt)
Energy crops

Promote energy recovery

-Ethanol conversion and bio-gasification of unrecyclable paper wastes

-Methane fermentation of food wastes that is unable to be used for feed or fertilizer

The Current Situation of Food Waste and Paper Waste

	Waste Generation Amount	Recycling and Energy Recovery Rate
Food Waste	19 million t/yr	25.3%
Paper Waste	34 million t/yr	67.8%

- Municipalities are using food waste for solid fuel (RDF) use most, and for composting second most.
- Most of the wasted paper is recycled as material.

Example: Nagaoka-City

Wet-type Methane Combined Gasification System

- Amount of processed waste: **65t/day**
- Power generation capacity: **12,300kWh/d (560kW)**
- Scheme: PFI
- Approach:

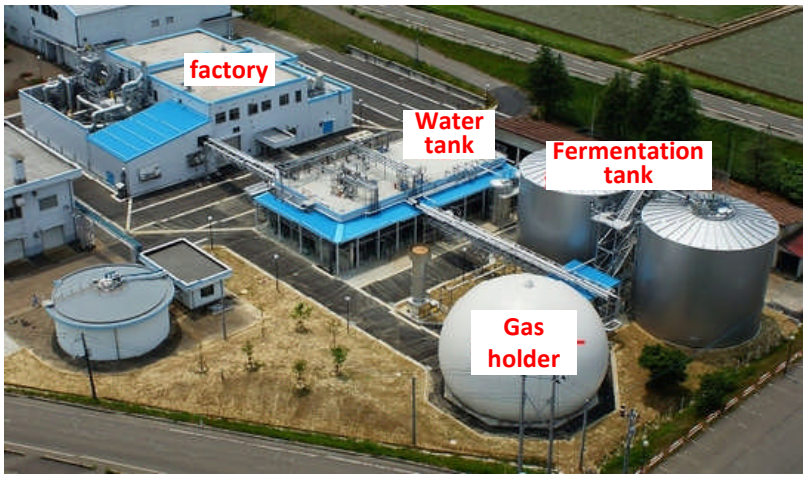
- Introduce a new garbage collection system (i.e. separating food waste)
- Process the food waste (from household (40t/d) and business (25t/d)) into bio gas for power generation
- Dry the residues to produce biomass fuel

Benefits

•Reduction of 2,000 t-CO2/y by power generation

•Saving of 3.5billion Yen by optimizing the number of incinerators and longer use of the landfill site

•Saving of 48 million Yen a year by reducing the electricity bill



(Source: Nagaoka City)

G7 Environment Ministers Meeting
15-16 May 2016, Toyama, Japan

G7 Summit, 26-27 May, Ise

Toyama International Conference Center

- G7 Alliance WS, February (tentative) 2016