



February ,2023

# Waste management solution towards Carbon neutrality and Circular economy



**JFE Engineering Corporation**

# JFE for sustainable cities and communities

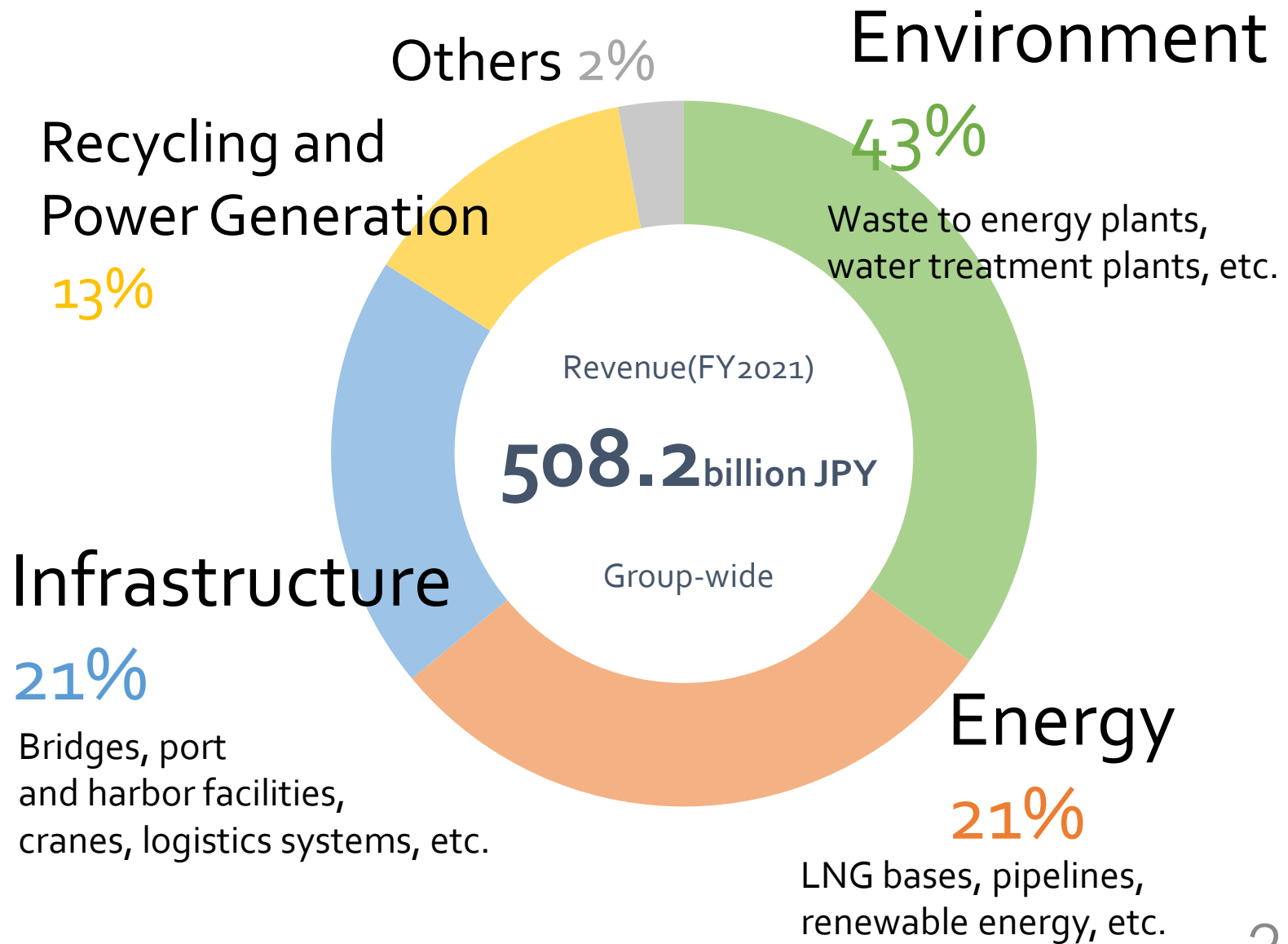
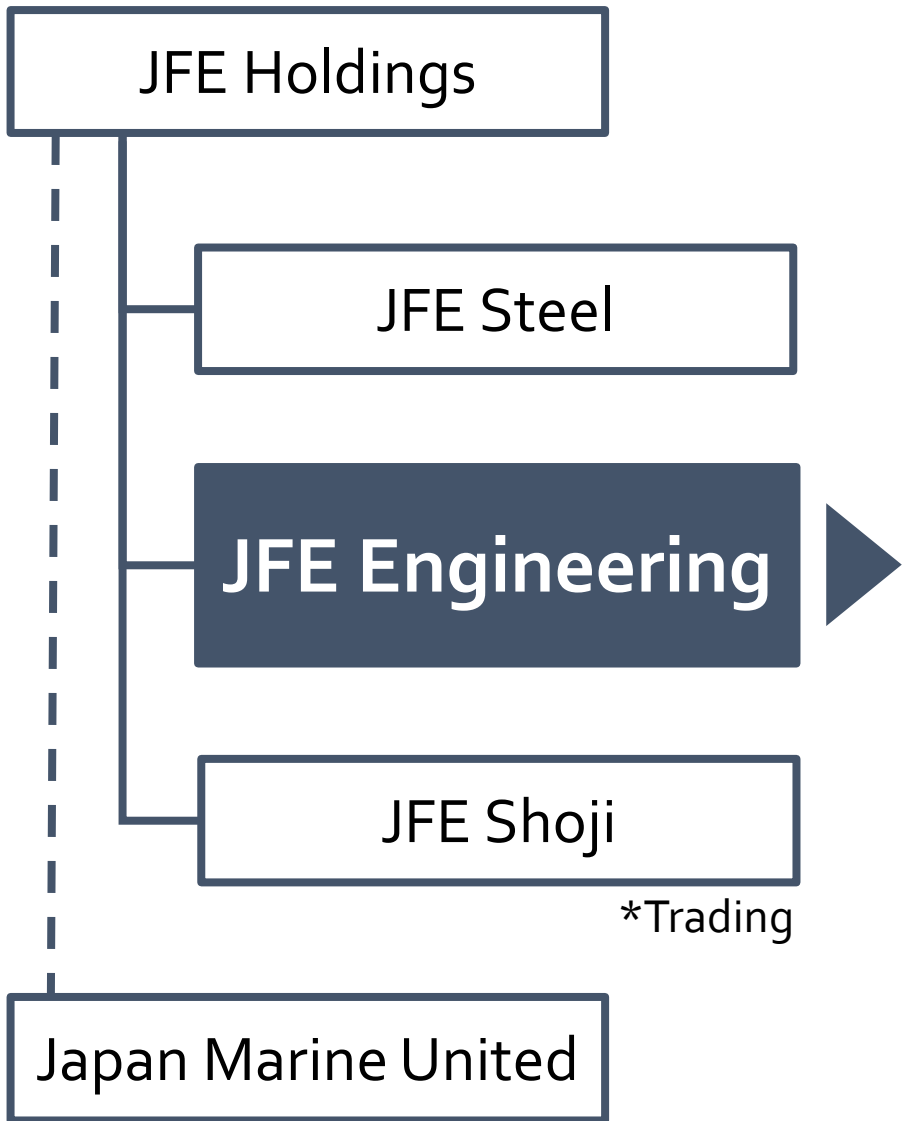






Photo : Maruhashi



**CH4 Emission**

**Pest, Odor, Fire, Water & Air Contamination**

**Global Warming**

**Pollution**

**Hazardous situations  
for the communities  
and local economies**

**Land Availability**

**Difficult to secure new  
Landfill space**

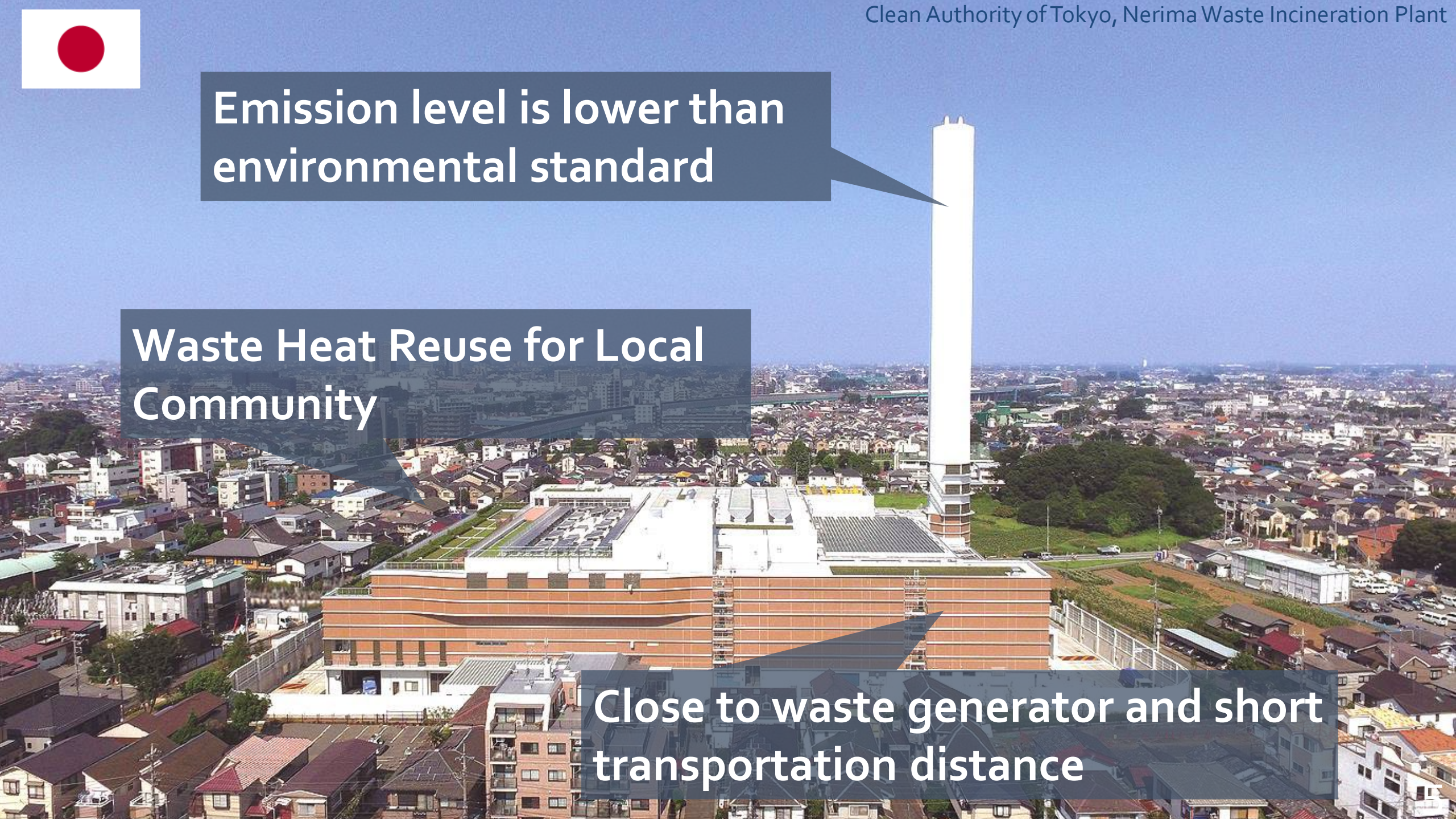




Emission level is lower than environmental standard

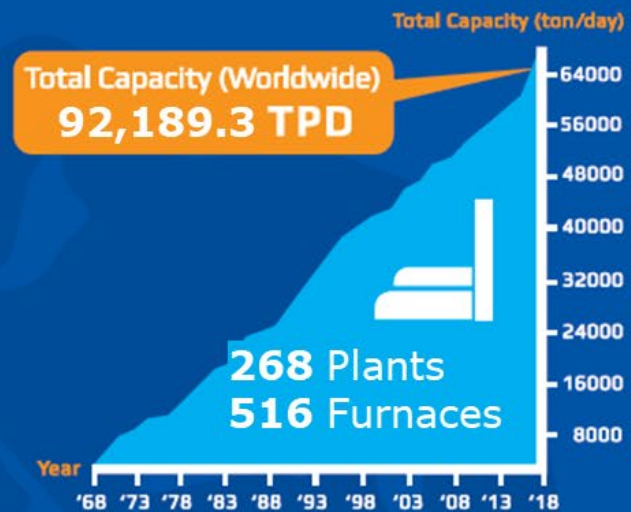
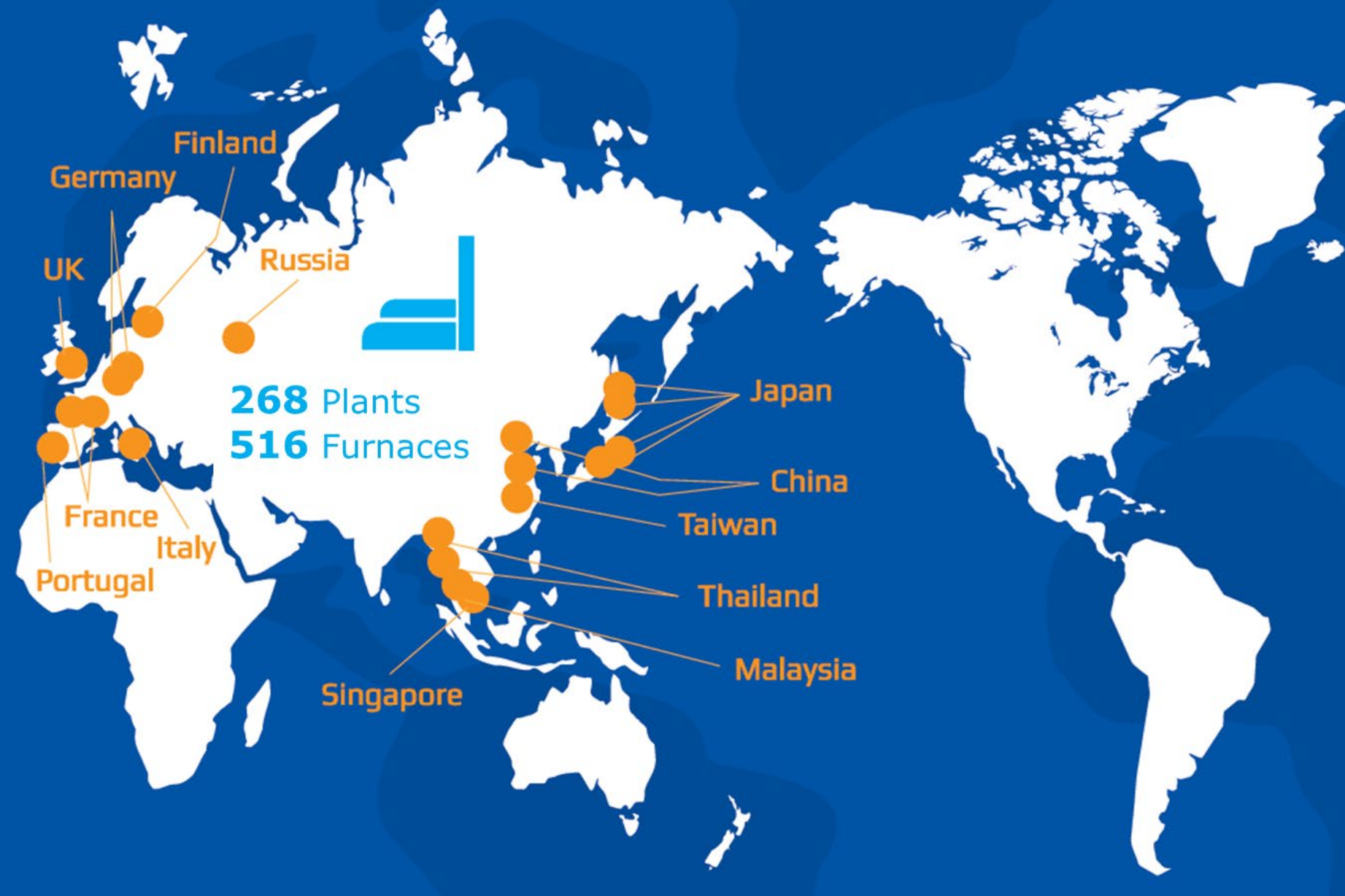
Waste Heat Reuse for Local Community

Close to waste generator and short transportation distance





# Global track record of Waste-to-Energy







Image



## Waste to Energy project in Bac Ninh Province

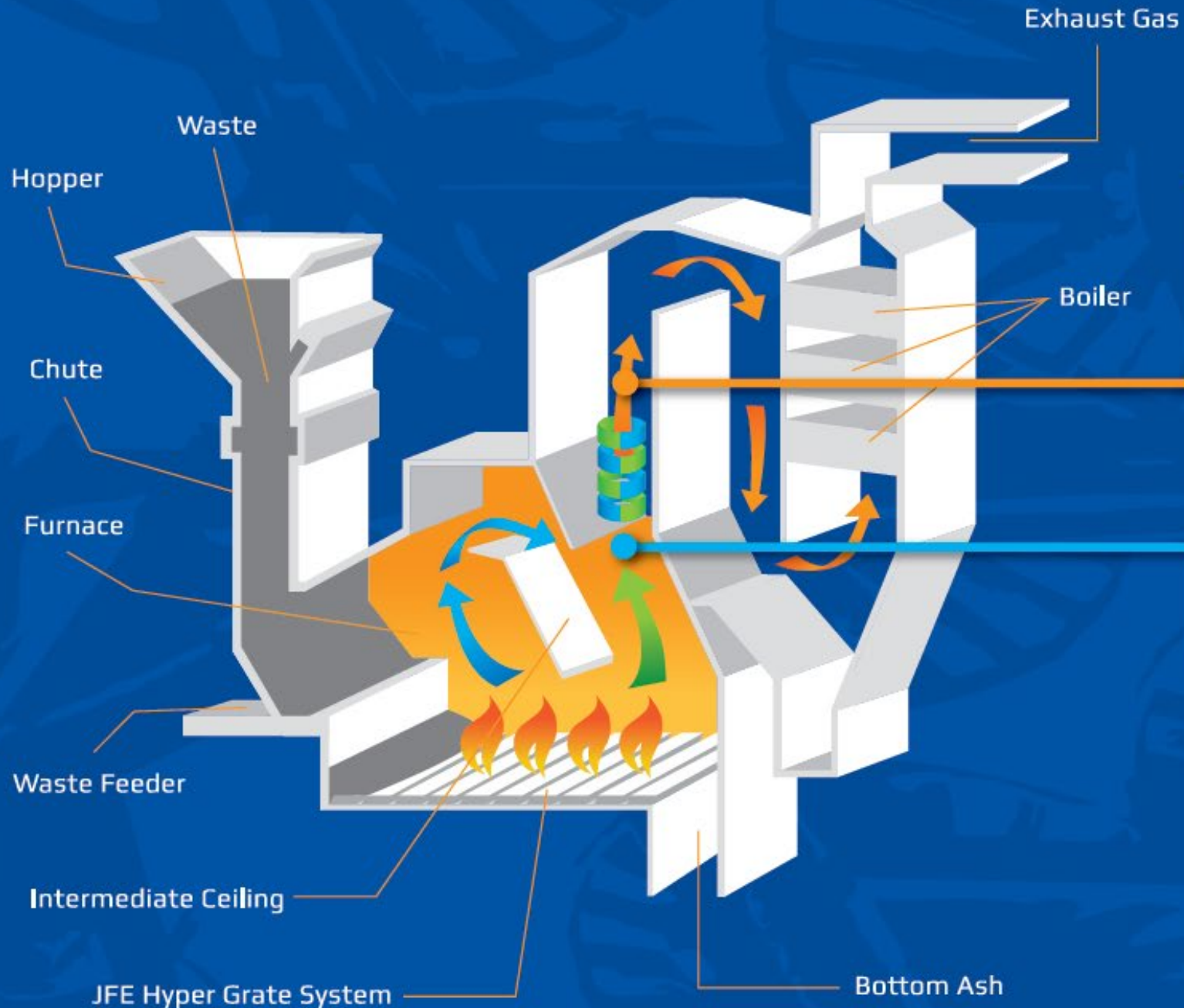
[Capacity] 500 ton/day (MSW+ISW), 11.6 MW

[Expected GHG Emission Reductions] 41,805 tCO<sub>2</sub>/year (average)

[COD] 1Q/2024 (Expected)



# Moving Grate Furnace by JFE



Efficient Combustion Achieved.

↪ ↓NO<sub>x</sub> & ↓CO → ↓DXN

The combustion gas mixture caused by this collision promotes the following oxidation/reduction chemical reactions:

↪ Unburned Gas Contents :  
CO, H<sub>2</sub>, NH<sub>3</sub>

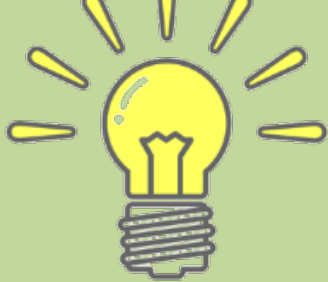
↪ Combustion Gas Contents :  
O<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>



Unburned Gas Reaction :  
 $2CO + O_2 \rightarrow 2CO_2$

Combustion Gas Reaction :  
 $NO_x + NH_3 \rightarrow N_2 + H_2O$





Green Electricity

Hygiene life



Minimize Landfilled waste



Ash



$CH_4$

Greenhouse Gas Effect

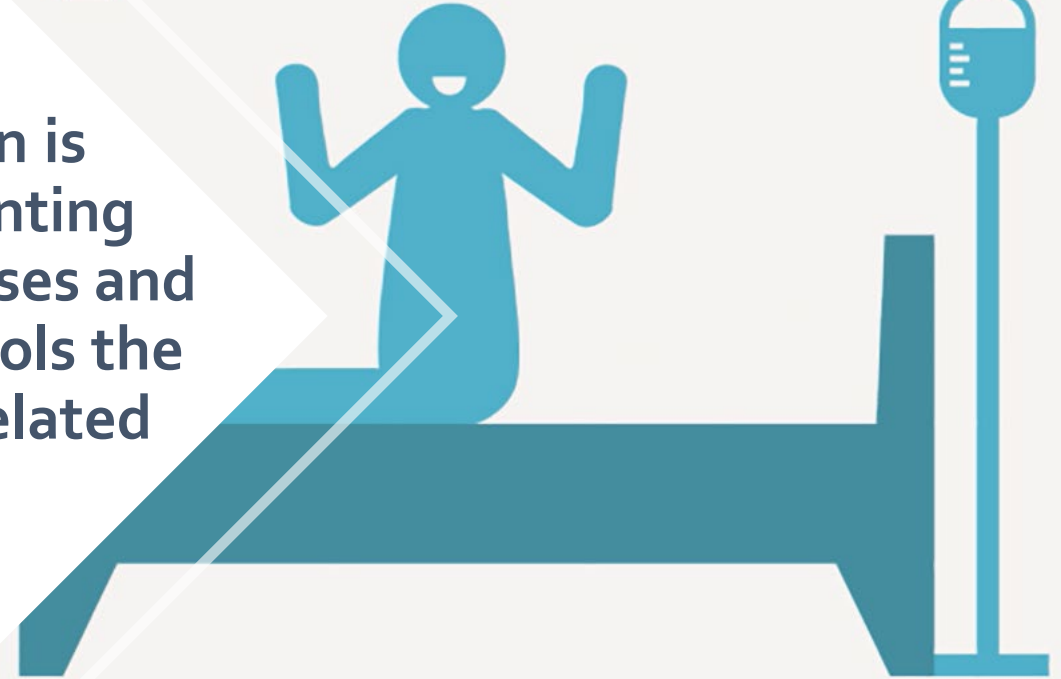
Odor







**WtE incineration is effective in preventing infections from viruses and microbes and controls the spread of waste-related infections.**



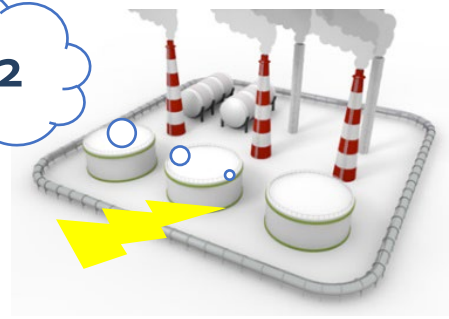




CH<sub>4</sub>

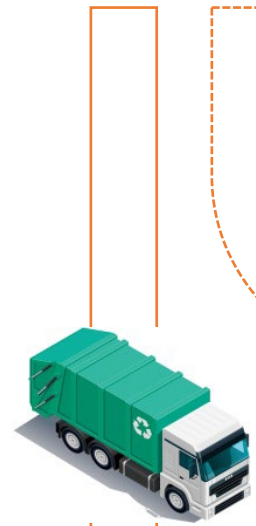


CO<sub>2</sub>



## Reference emissions

## Project emissions



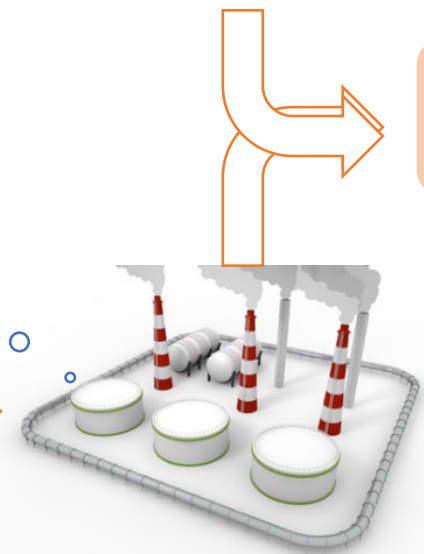
~~CH<sub>4</sub>~~



CO<sub>2</sub> ↑

CO<sub>2</sub> ↓

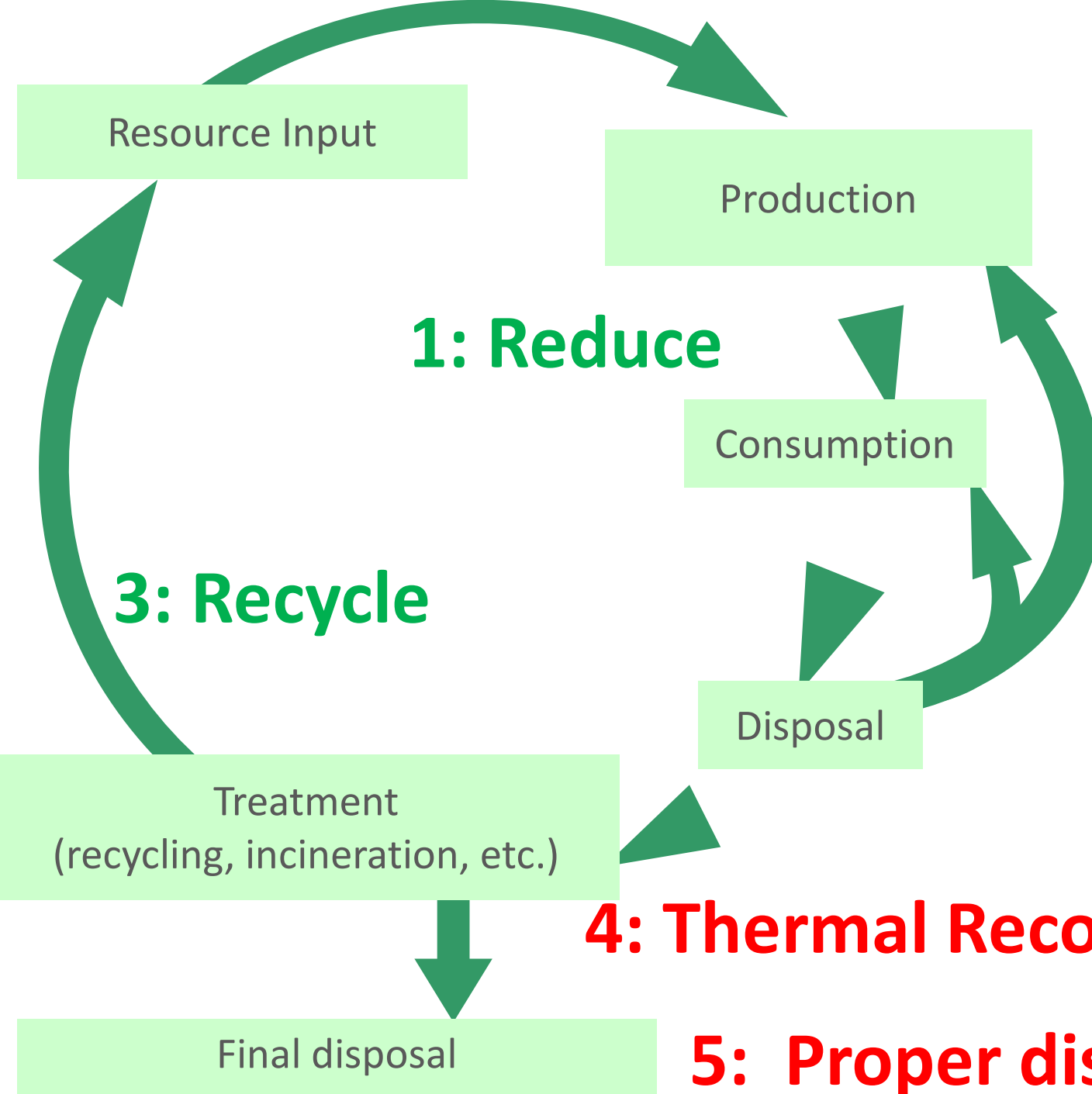
Power generation  
(exported to the grid)



**GHG Emission Reduction**

Reduction of CO<sub>2</sub> emission from fossil fuel consumption at power plant







# Contributions to SDGs



Generating electricity from solid waste leads to reduce fossil fuel consumption and contributes to air pollution reduction. Treating solid waste can contribute to soil contamination reduction in the surrounding area. Therefore, the project reduces negative environmental impacts by improving waste management.



JFE Engineering Corporation provides technical capacity training for local engineers and employees to operate the treatment plant.



Engaging in advanced waste management and reducing hazards from solid waste can prevent ground water pollution. The project can reduce the volume of solid waste by around 90-95%.

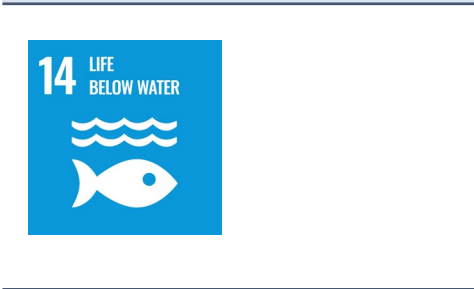


The project reduces GHG emissions by replacing electricity generated by fossil fuel and avoiding methane release from the solid waste. A part of generated electricity is used by the treatment plant itself, and the rest is sold to the grid system.





Introducing high-efficiency technologies in solid waste treatment leads to enhance sustainable public infrastructure development. The plant has a separate recycling process which collects recyclable materials such as bottles and plastics. These activities contribute to reducing the landfill waste. Strengthening this kind of technological upgrade would help the Country to move towards more sustainable production.



Contributing to marine pollution reduction through appropriate solid waste management.



Participating in JCM and collaborating with different stakeholders ensure the diffusion of low-carbon and decarbonization technologies and improve the partnership between the government and private sector in both countries.





# Just For the Earth