

Reduce construction and maintenance costs by centralized sludge treatment

Effectively utilize recycled energy and resources from sludge treatment

Monitor the facility 24 hours to ensure that operations are safe

Set up environmentally friendly facilities

### Effective Use of Digestion Gas

In the digestion tank, microorganisms decompose the organic matters in sewage sludge. Digestion gas generated in this process is effectively utilized.

### For Gas Engines

Gas engines generate most of the electricity consumed at sludge treatment plants. At the same time, the heat generated by these engines warm up the digestion tank.

### As Fuel Source

Digestion gas is used as fuel to burn sludge in the incinerator and also as fuel for refuse incineration plant of the Resources and Waste Recycling Bureau.

### Effective Use of Ash

Incinerated Ash is utilized 100%.

### Improved Soil (Hokubu Sludge Treatment Plant)

Incinerator ash is improved by mixing into the soil generated by construction, and then the ash is used for filling material at construction sites.

### Construction Material

Incinerator ash is used as construction material and contributes to a recycling-based society.

### Project to Convert Sludge to Fuel

To prevent global warming, sludge is converted to alternative fuel and used for electricity generation.

Sewage Sludge is resourceful! Use it effectively!



Electricity

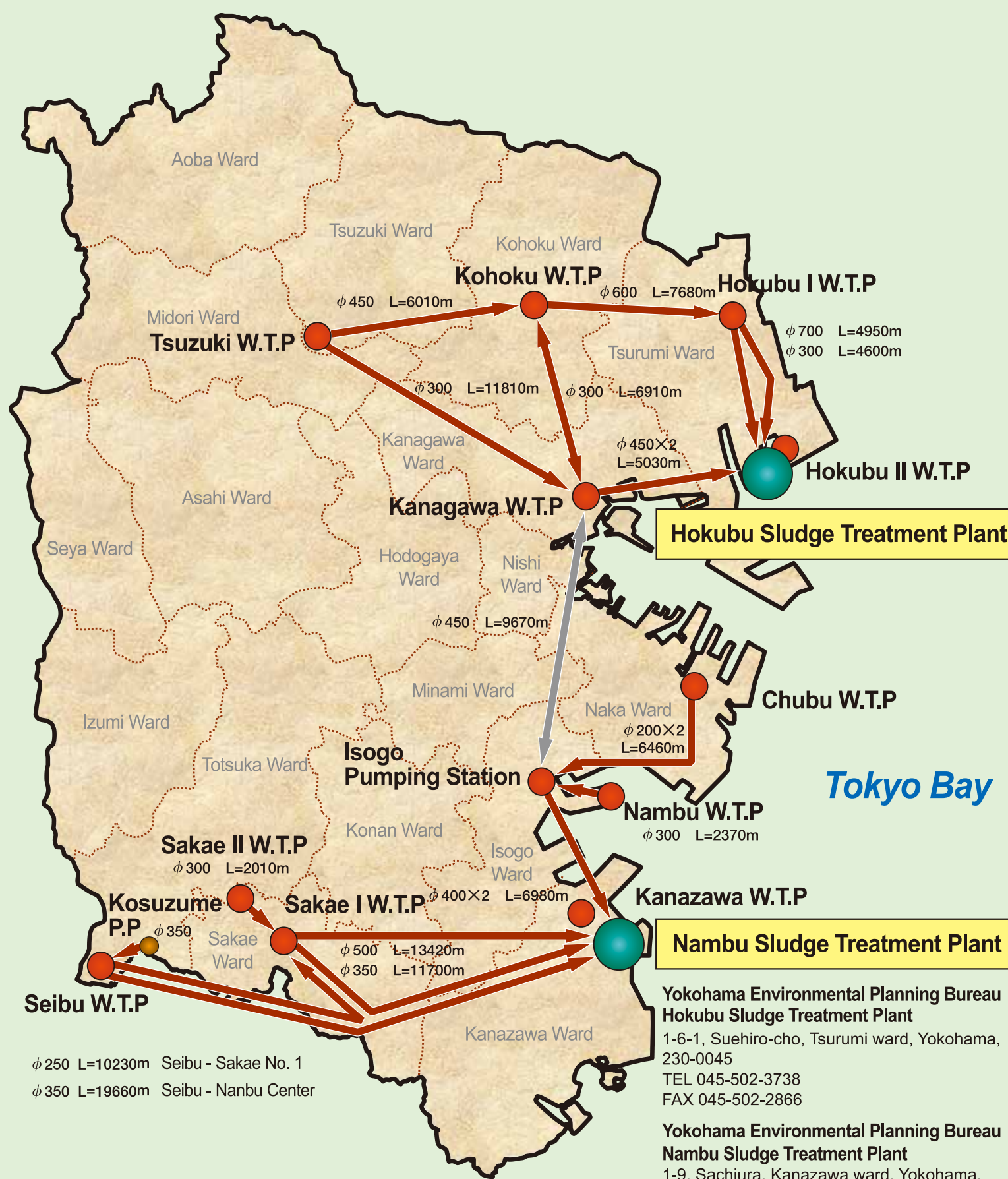
Fuel

Improved Soil

Construction Material

Alternative Fuel to Fossil Fuel

# Map of Sludge Transportation Route



Example :

- Operating Sludge Transportation Pipes
- Sludge Transportation Pipes Under Construction

# The Wealth of Resources in Sewage Sludge

## Sludge Treatment Plant



# Yokohama Environmental Planning Bureau

## Providing a Sustainable Environment for the Future



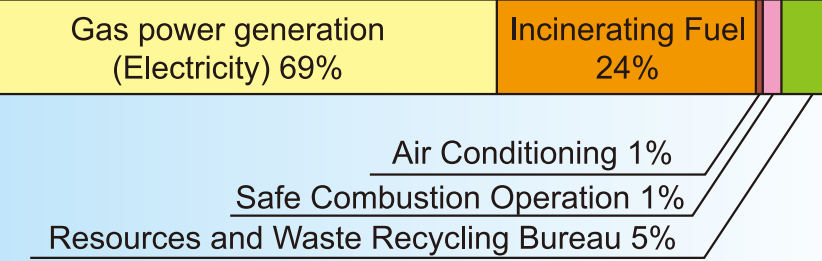
### About the Sludge Treatment Plant

**Actions Towards a Sustainable Society**  
Sludge produces several recyclable resources including digestion gas and ashes after sludge incineration. Sludge Treatment Plant is utilizing these resources effectively to build a sustainable society.

**Actions To Prevent Environmental Pollution**  
Monitors the level of air pollutants emitted from the incineration of sewage sludge for 24 hours.

### Effective Use of Sewerage Resources

#### Effective Use of Digestion Gas



The annual amount of Sludge processed by Hokubu and Nambu Sludge Treatment Plant approximates 5,580,000m<sup>3</sup>.

### Yokohama Soil Improvement Center



### Sewerage Resources

### Sludge

Digestion Gas

Incinerator Ash

Sludge Fuelization

### Ash Exporting Facility (For Construction Material)



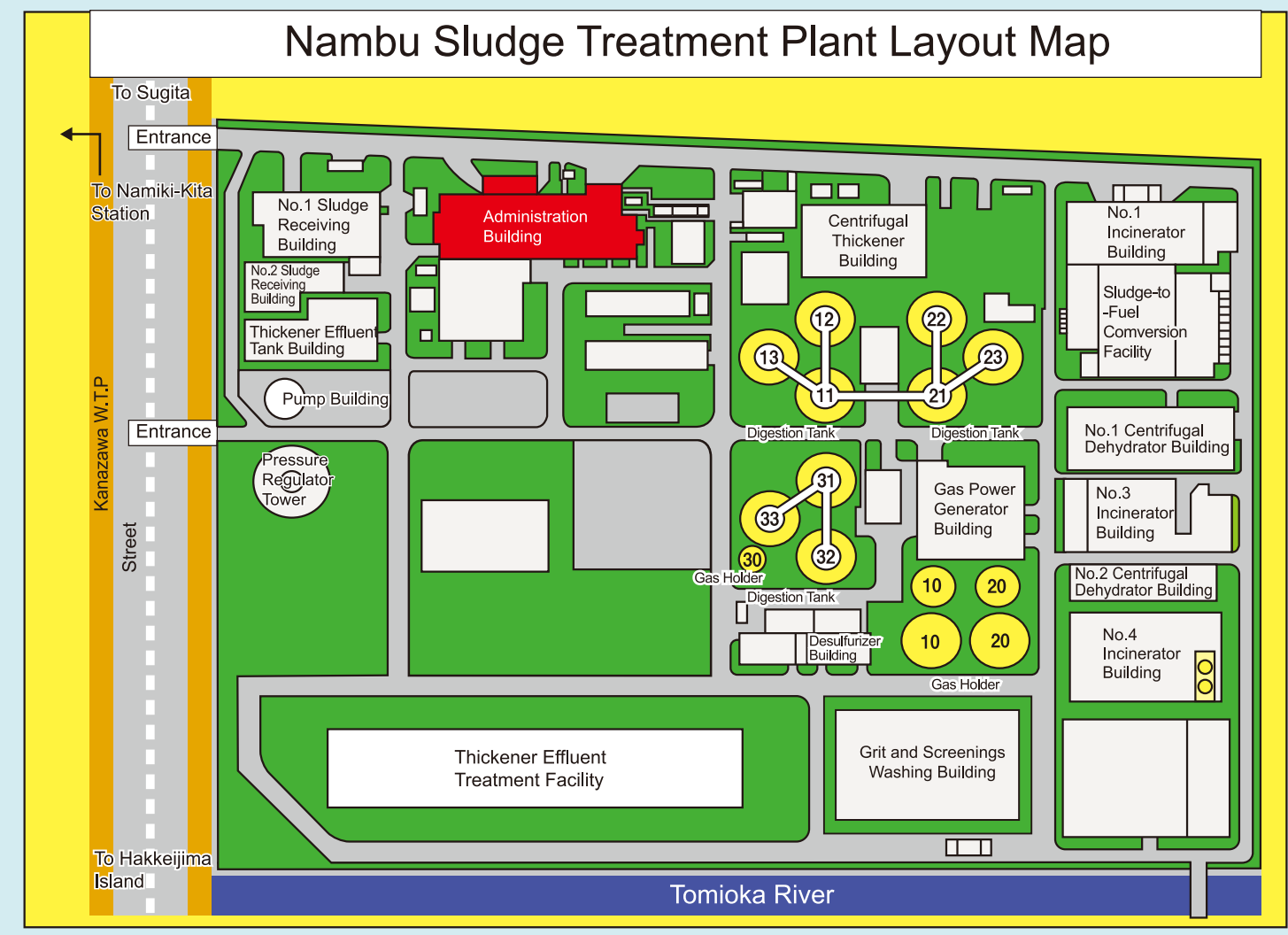
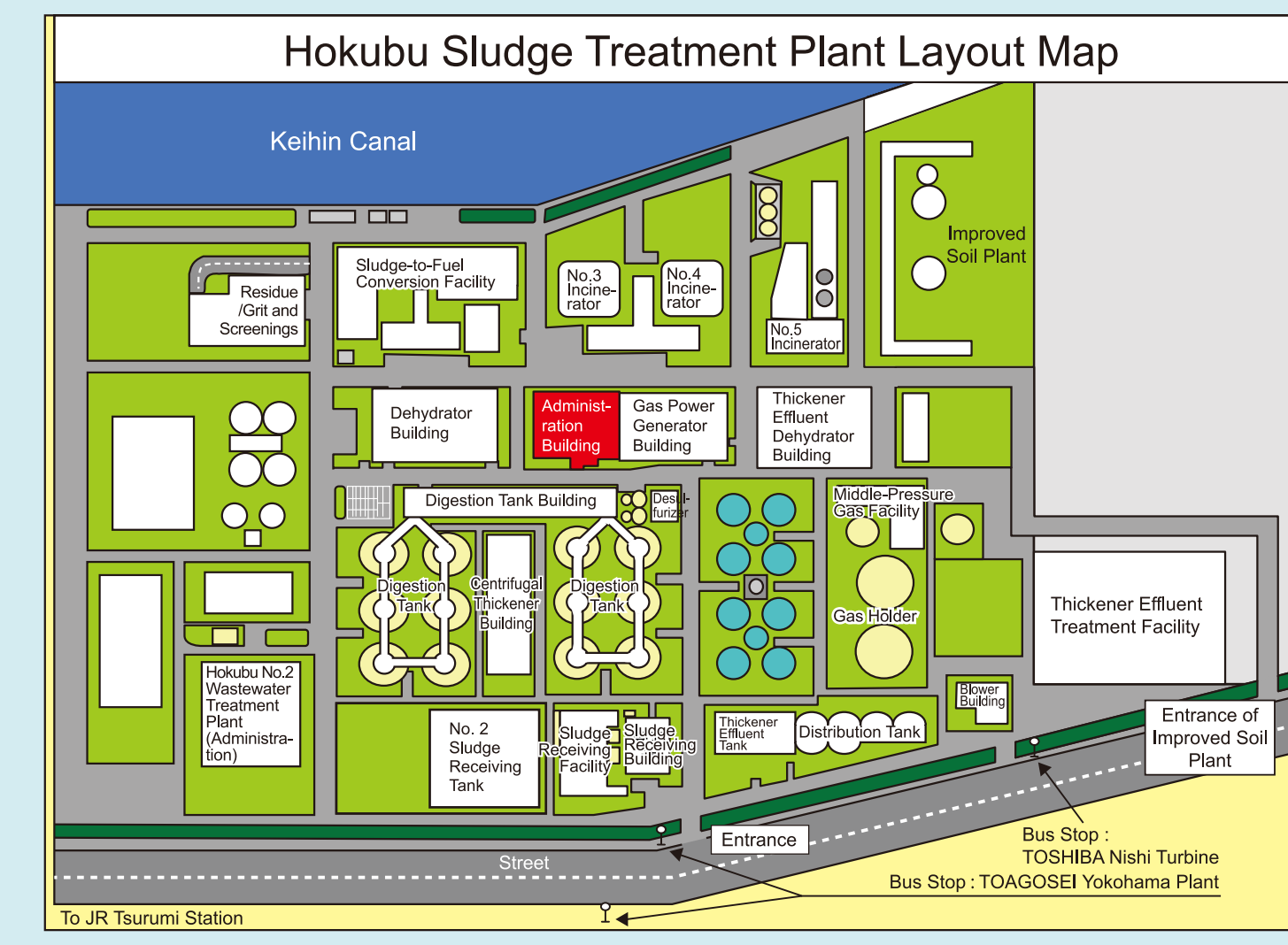
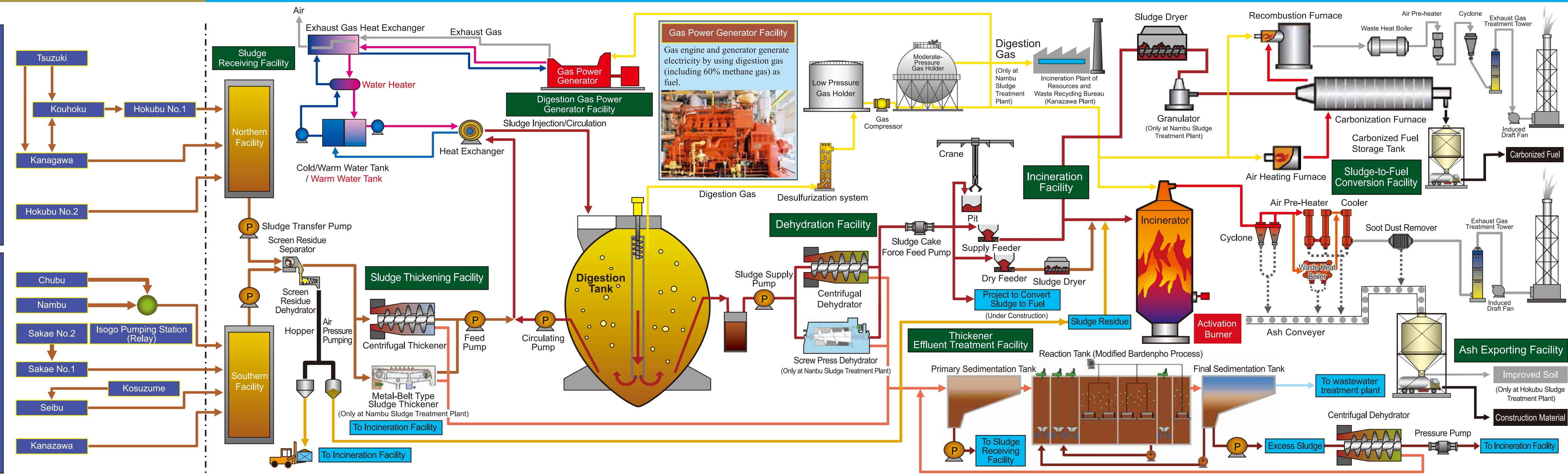
There is nothing to waste!



# Flow of Sludge Treatment Process

Districts of Hokubu Plant

Districts of Nanbu Plant



**Sludge Transport Facility**

This facility transports the sludge produced at wastewater treatment plants to sludge treatment plants by transport pumps.

**Sludge Receiving Facility**

This facility receives the sludge sent from wastewater treatment plants, separates the sludge from screen residues and transports the sludge to the thickening facility.

**Sludge Thickening Facility**

This facility mechanically thickens the sludge and transports it to the digestion tanks.

**Digestion Tank Facility**

Decomposes the organic matters in sludge and reduces the volume. At the same time, stabilizes the sludge's states.

**Dehydration Facility**

Adds chemicals to the reduced sludge from digestion tank, produces sludge cake and sends it to incineration facility by pressure pumps.

**Incineration Facility**

Sludge cake is incinerated by the incinerator, and the ash is utilized as improved soil and construction material.

**Sludge-to-Fuel Conversion Facility**

Sewage sludge is converted into fuel in the low-temperature carbonization system. Carbonized fuel replaces fossil fuel and contributes to the reduction of greenhouse gas emissions.

**Thickener Effluent Treatment Facility**

This facility treats the effluent produced in thickening and dehydrating facilities, and transports the effluent to wastewater treatment plants.

**Ash Exporting Facility**

This facility transports the ash from the incinerator as construction material.