

# Conversion of sewage sludge into solid fuel project in the City of Osaka

– For creation of a recycling-oriented society  
and prevention of global warming –

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Osaka, JAPAN

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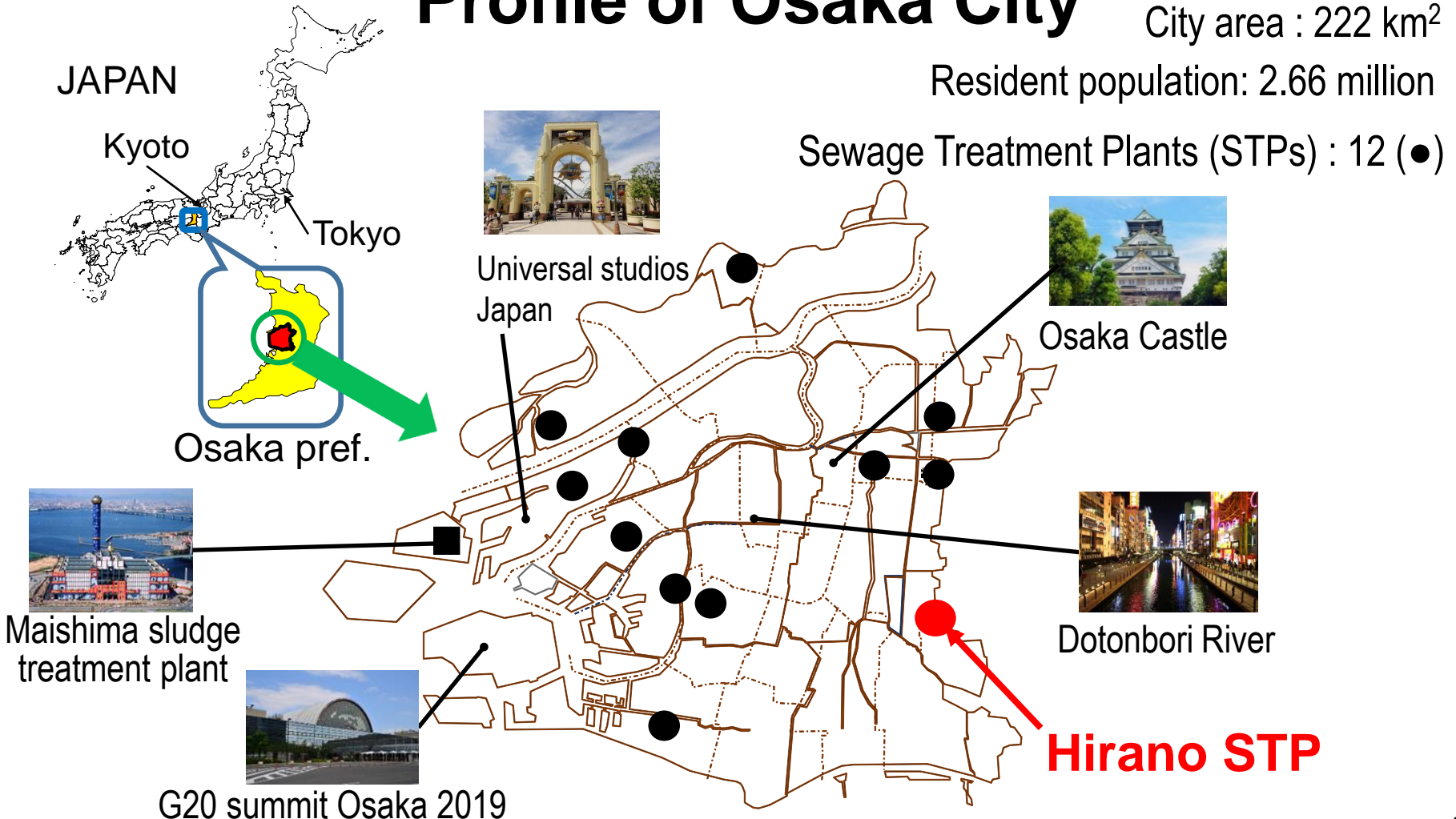
- Background
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# Profile of Osaka City

City area : 222 km<sup>2</sup>

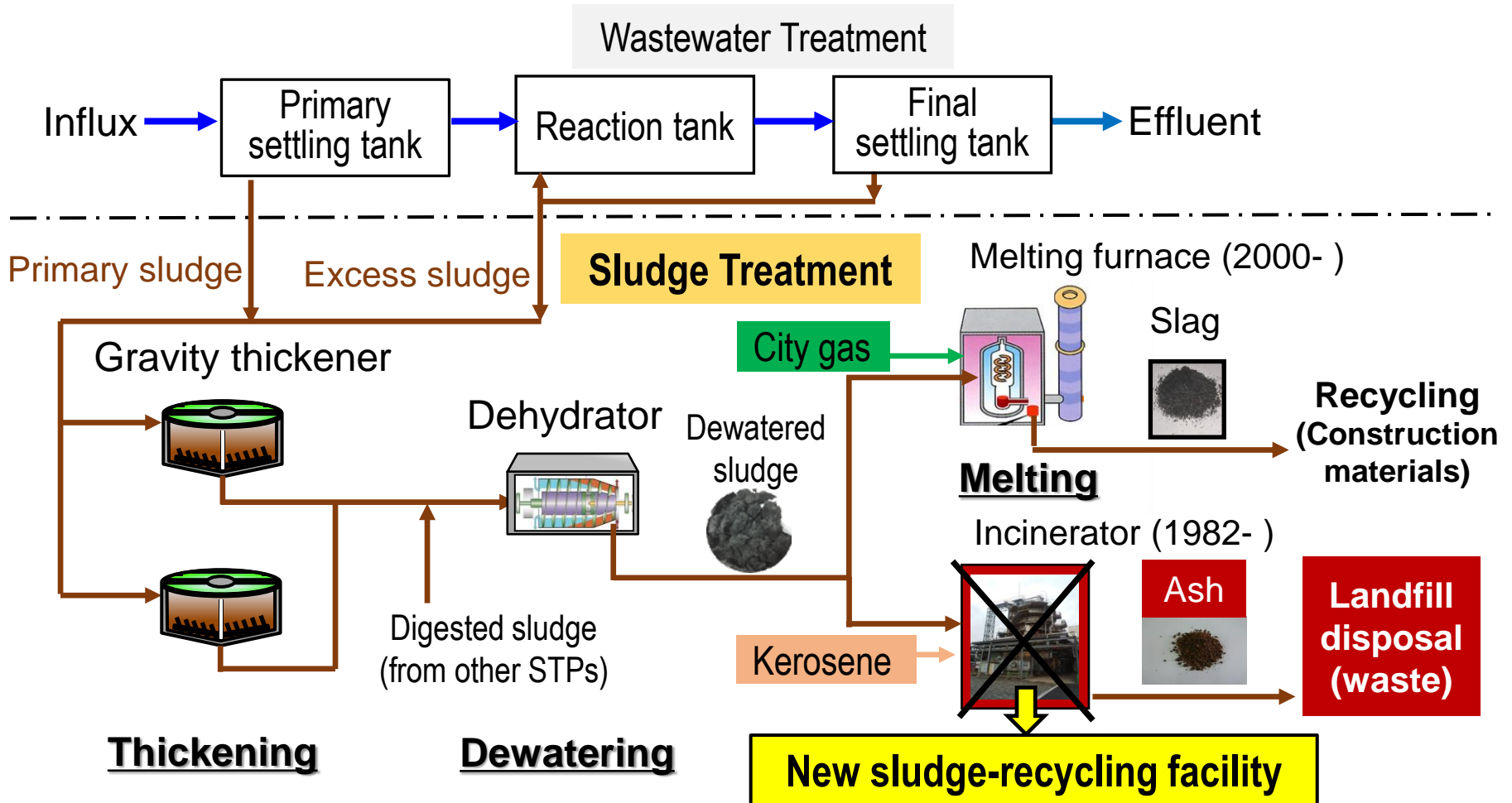
Resident population: 2.66 million

Sewage Treatment Plants (STPs) : 12 (●)

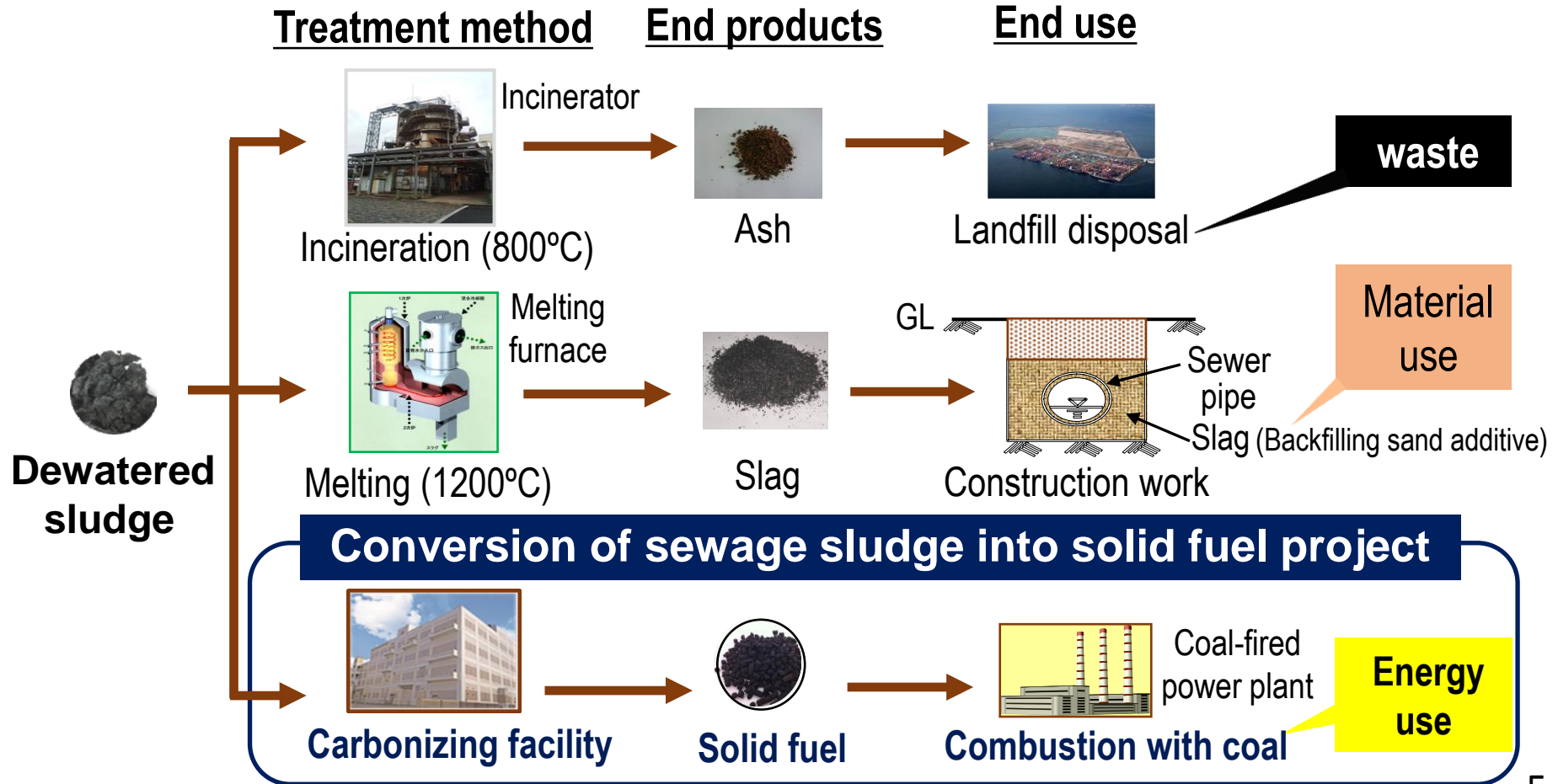


G20 summit Osaka 2019

# Sludge Treatment in Hirano STP (2013)



# New approach for sludge recycling



## Three key points of the Project

### 1 Treatment method : **Low-temperature Carbonization**

- Creation of solid fuel (carbon neutral energy source)

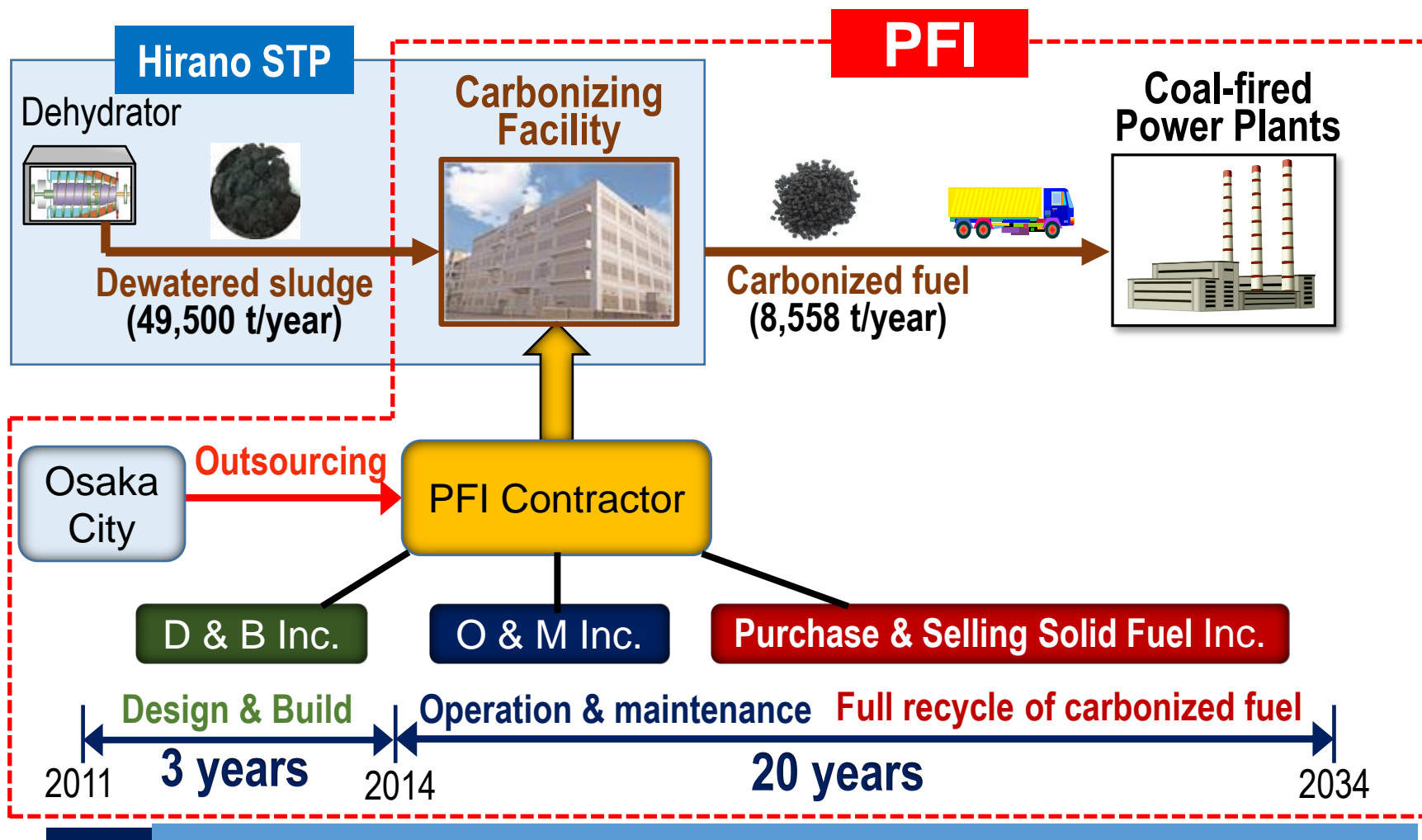
### 2 End users : **Coal-fired power plants**

- Reduction of coal consumption
- Stable use of solid fuel (full recycling of sewage sludge)

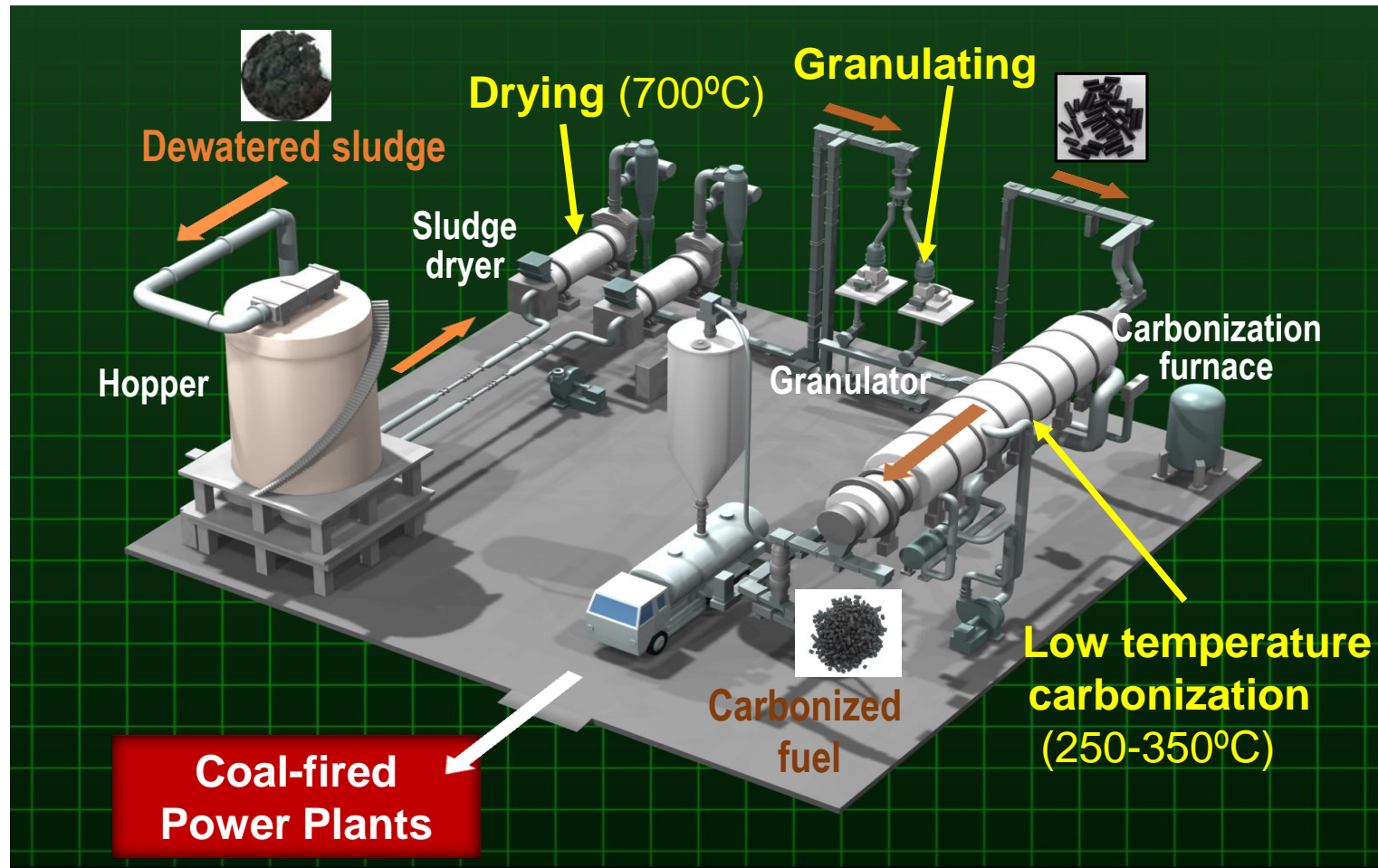
### 3 Implementation scheme : **PFI**

- Utilization of a private sector's strength
- Outsourcing of the project implementation to a private company

## Project Overview

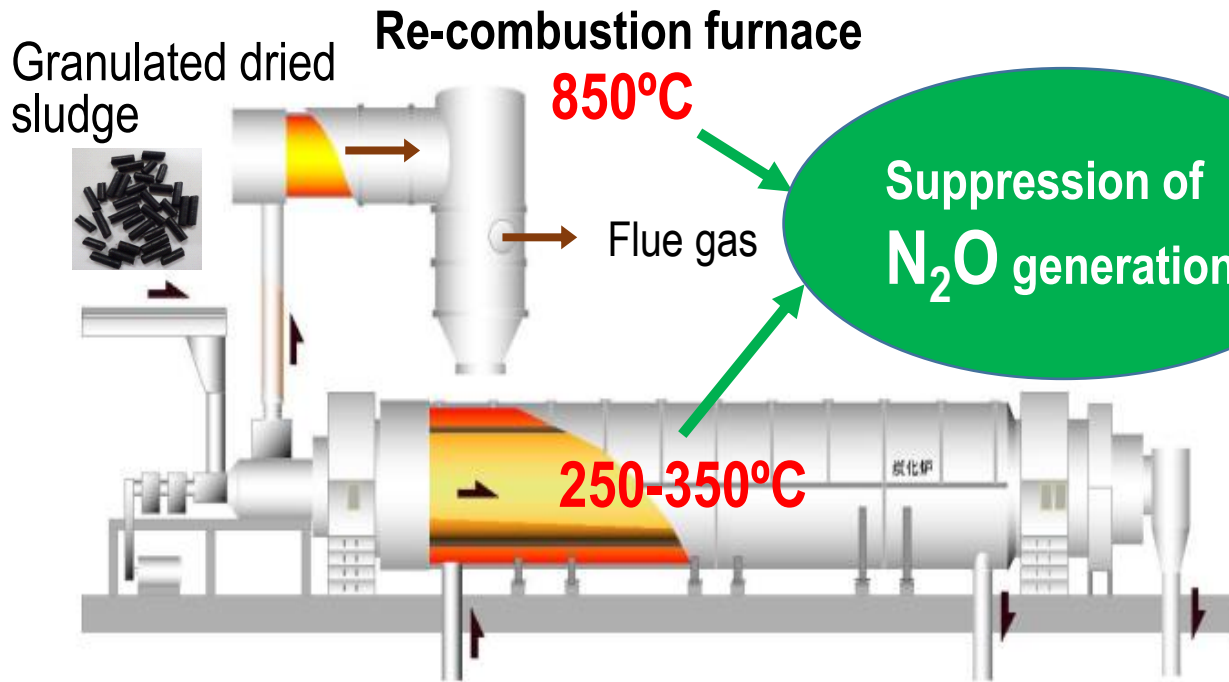


# Production process of Carbonized fuel





# Low-temperature carbonization technique



## Carbonization furnace

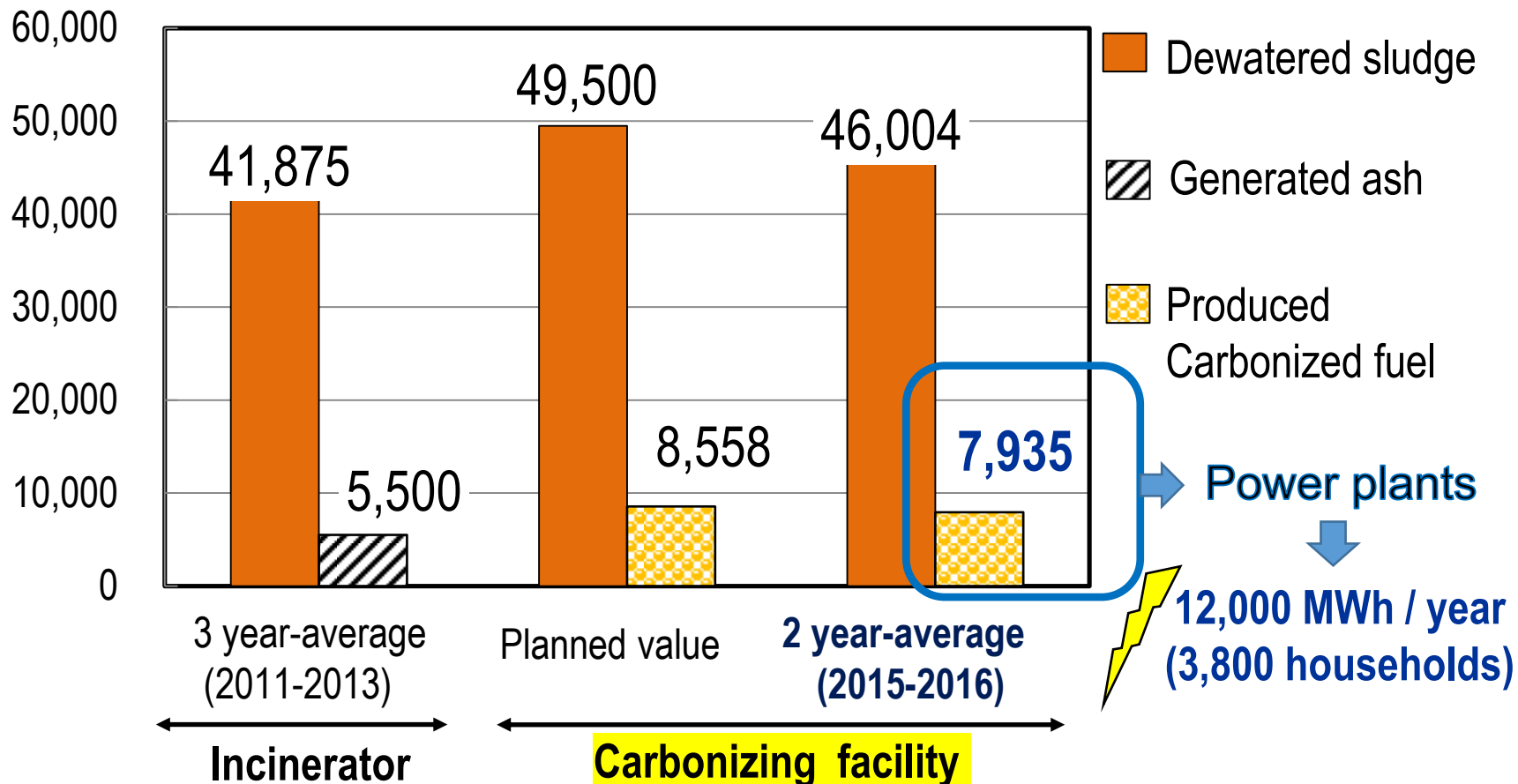
- Rotary kiln
- 150t (33t-DS)/day



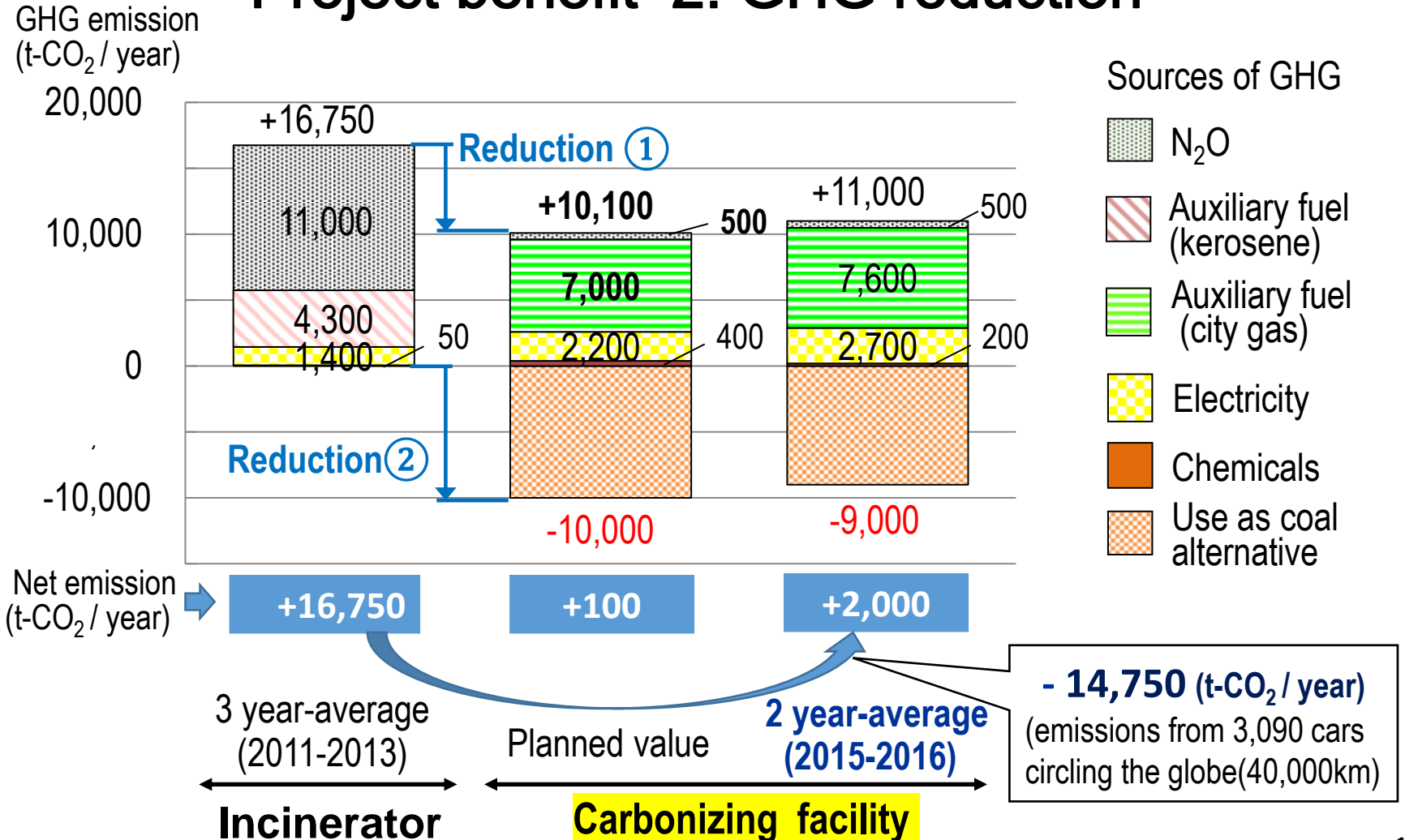
**Carbonized fuel**  
13.0 MJ/kg (half of coal)  
Φ 5-10 X 15 mm

# Project benefit 1: Full recycling of Carbonized Fuel

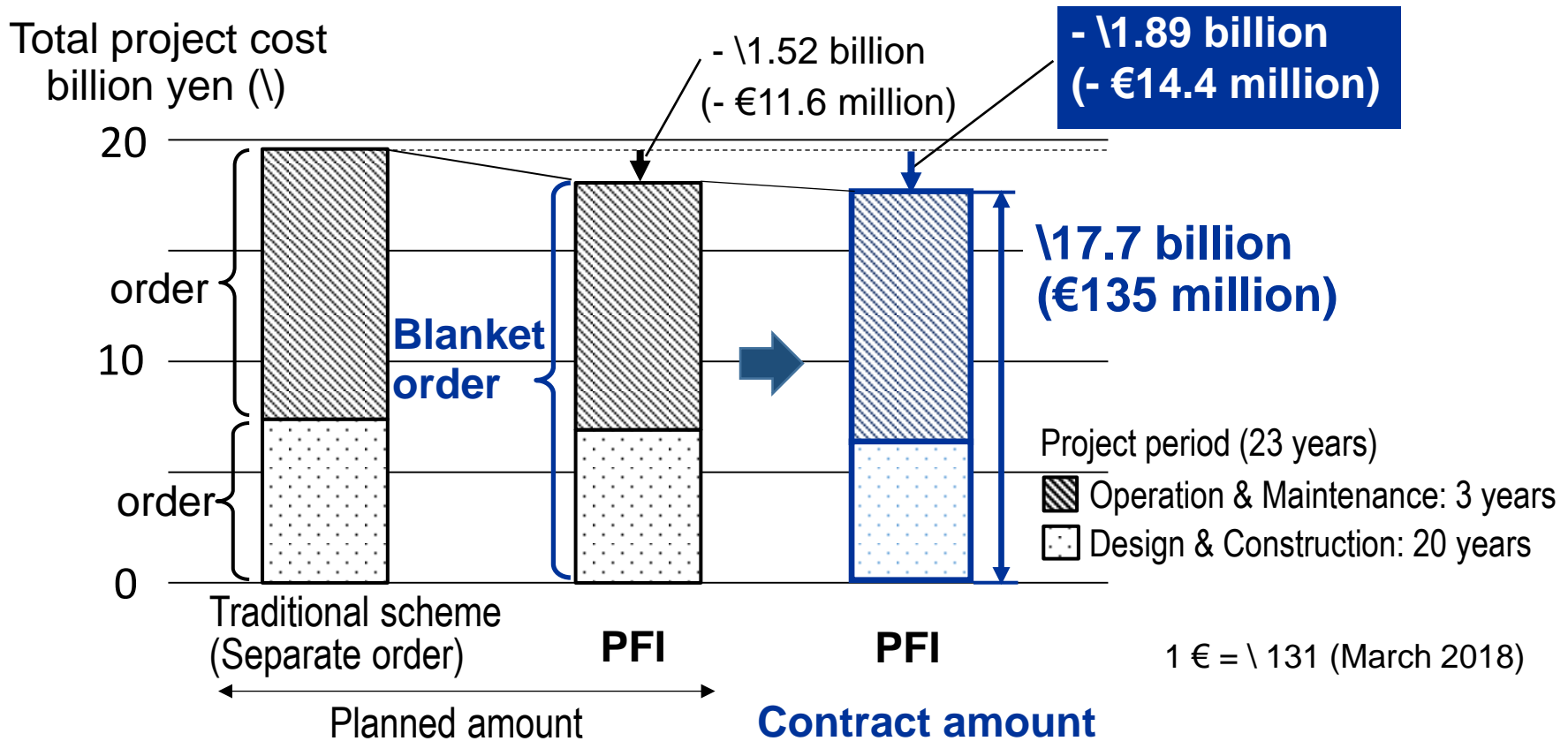
Amount (t/year)



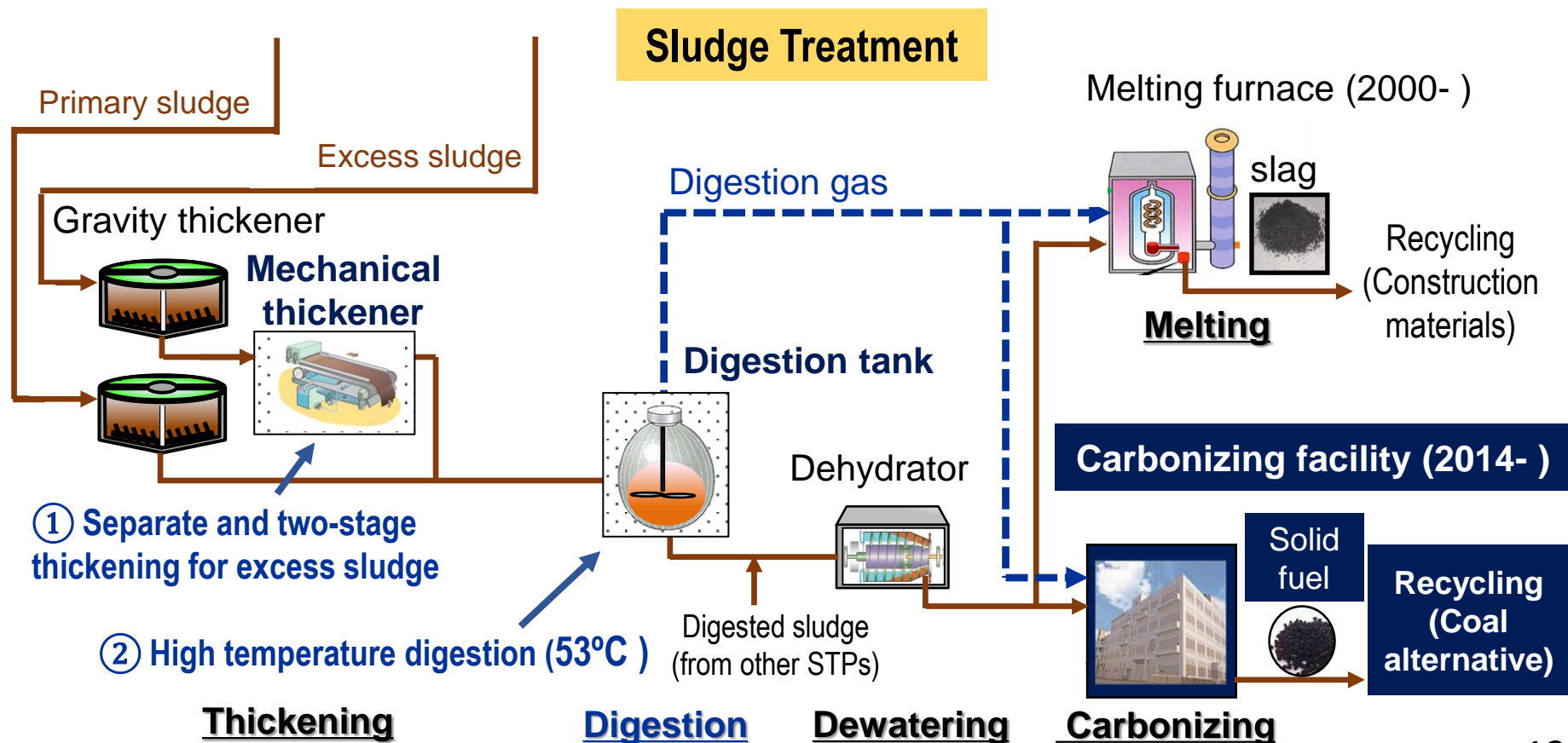
## Project benefit 2: GHG reduction



## Project benefit 3: Life cycle cost reduction under PFI



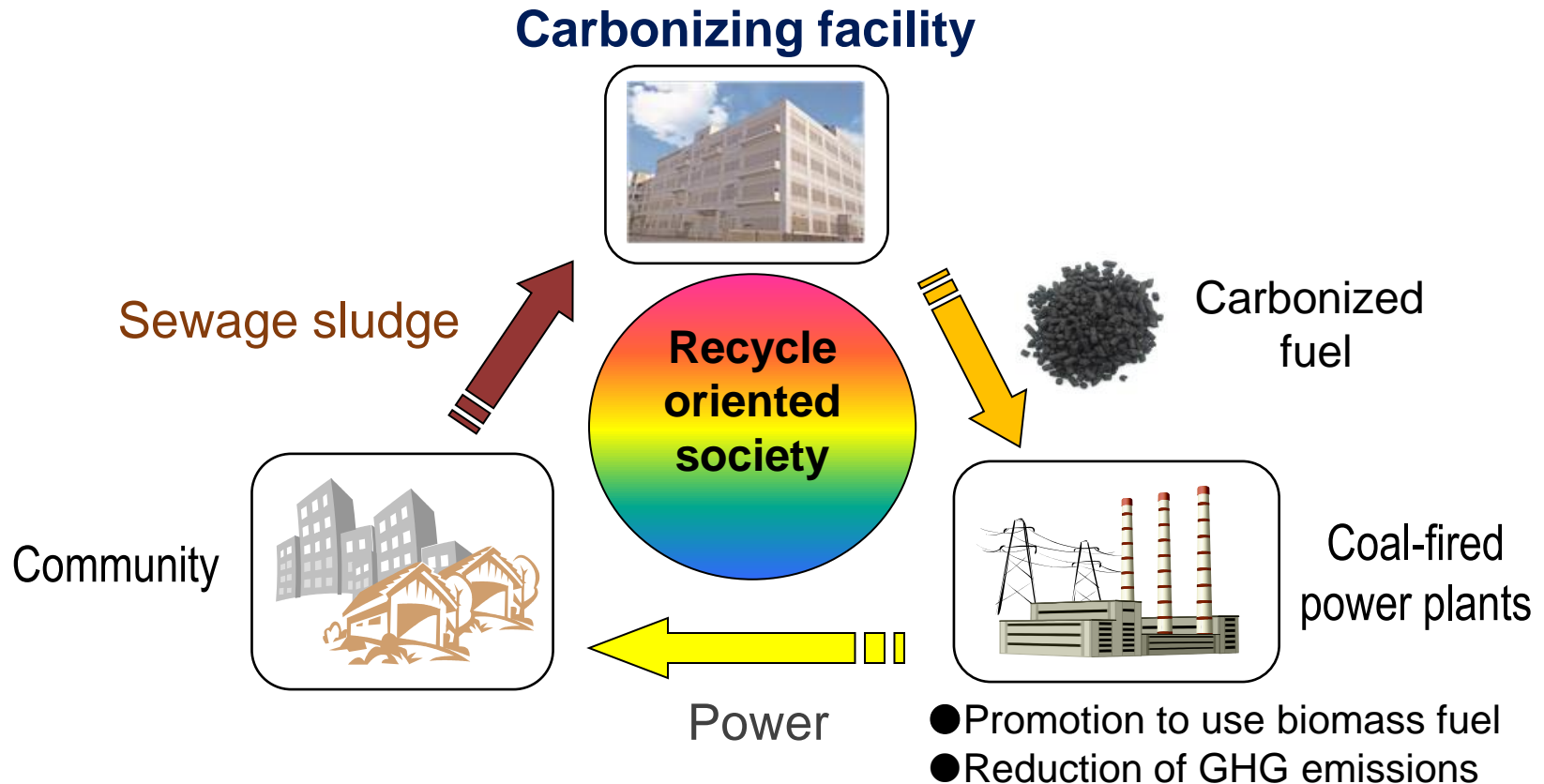
# Future plan for further utilization of biomass energy in Hirano STP



## Conclusions

- Low-temperature carbonization technique converts sewage sludge into solid fuel as energy source.
- Utilizing carbon-neutral carbonized fuel leads to GHG reduction.
- By using PFI, the 23-year project implementation including full recycling of solid fuel becomes more efficient, economical, and stable.

# Building a Recycle oriented society and Preventing global warming



# Thank you for your attention



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