Handa Biomass Power Plant Summary

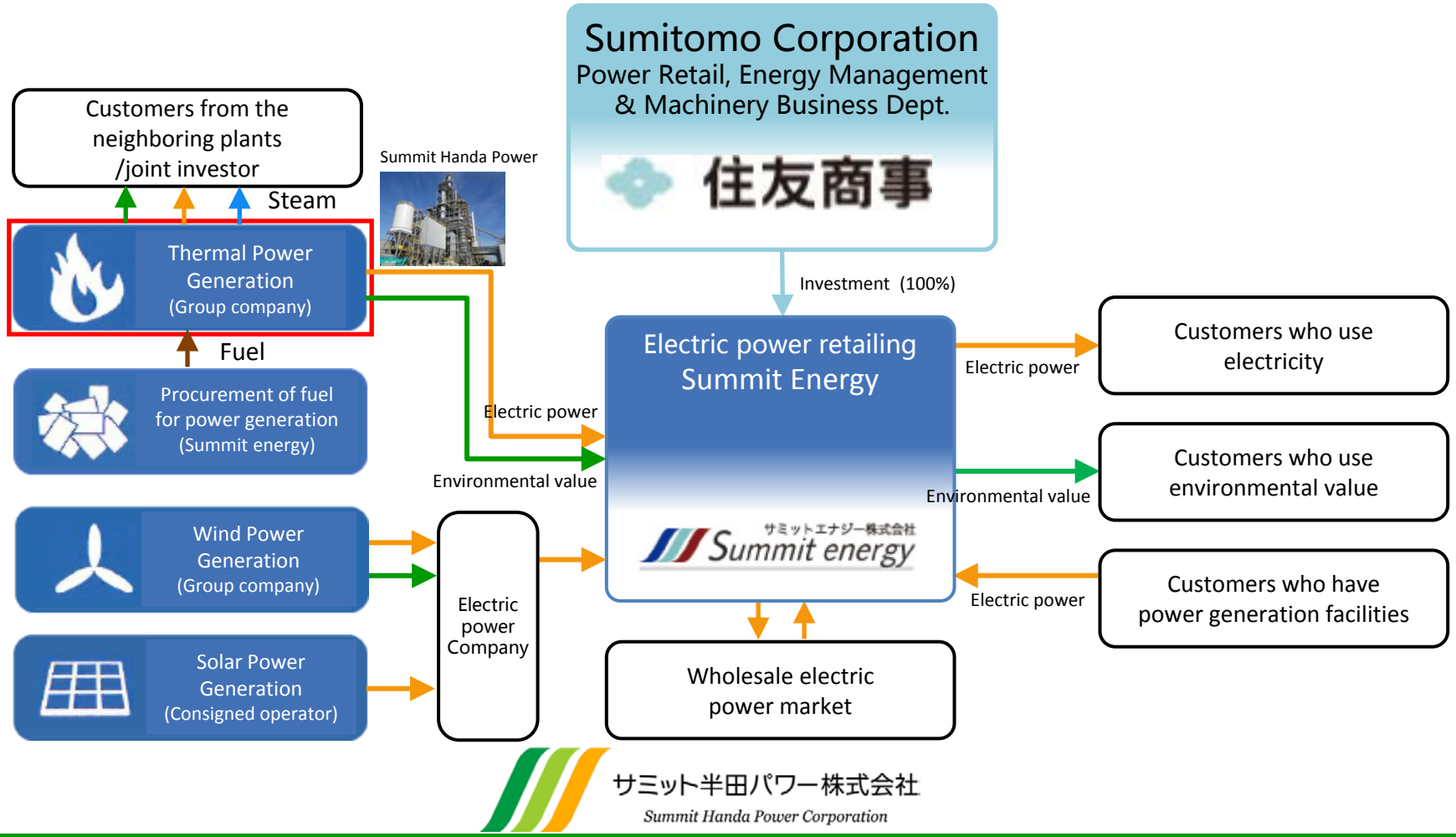
April 5, 2019

サミット半田パワー株式会社

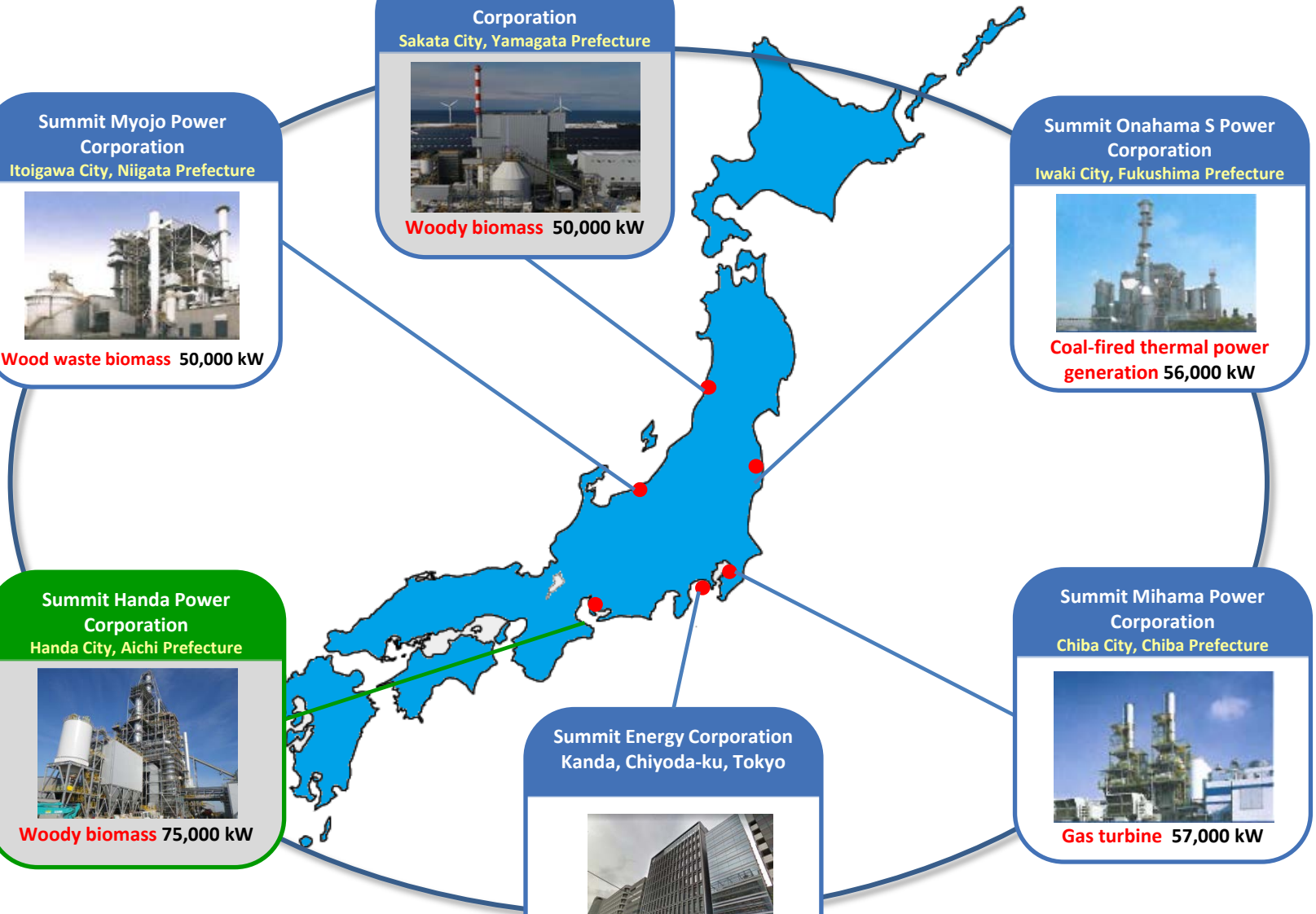
Summit Handa Power Corporation

1. Power Plant Overview (Power plants of the Summit Energy Group)

Summit Energy provides customers cost-competitive electricity and environmental value through the best mix of electricity procured from customers with power generation facilities and wholesale electricity markets, in addition to the group's own power plants such as Summit Handa Power.



1. Power Plant Overview (Summit Energy's own power source)



Summit Handa Power Corporation

1. Outline of Handa Biomass Power Station

1) Trade name : Summit Handa Power Corporation

2) Capital : 495 million yen

3) Establishment : December 7, 2012 (June 20, 2017: Commercial operation started.)

4) Location : Kawasaki Town, Handa City, Aichi Prefecture

5) Generating capacity : Output power of the generator 75,000 kW (75 MW)

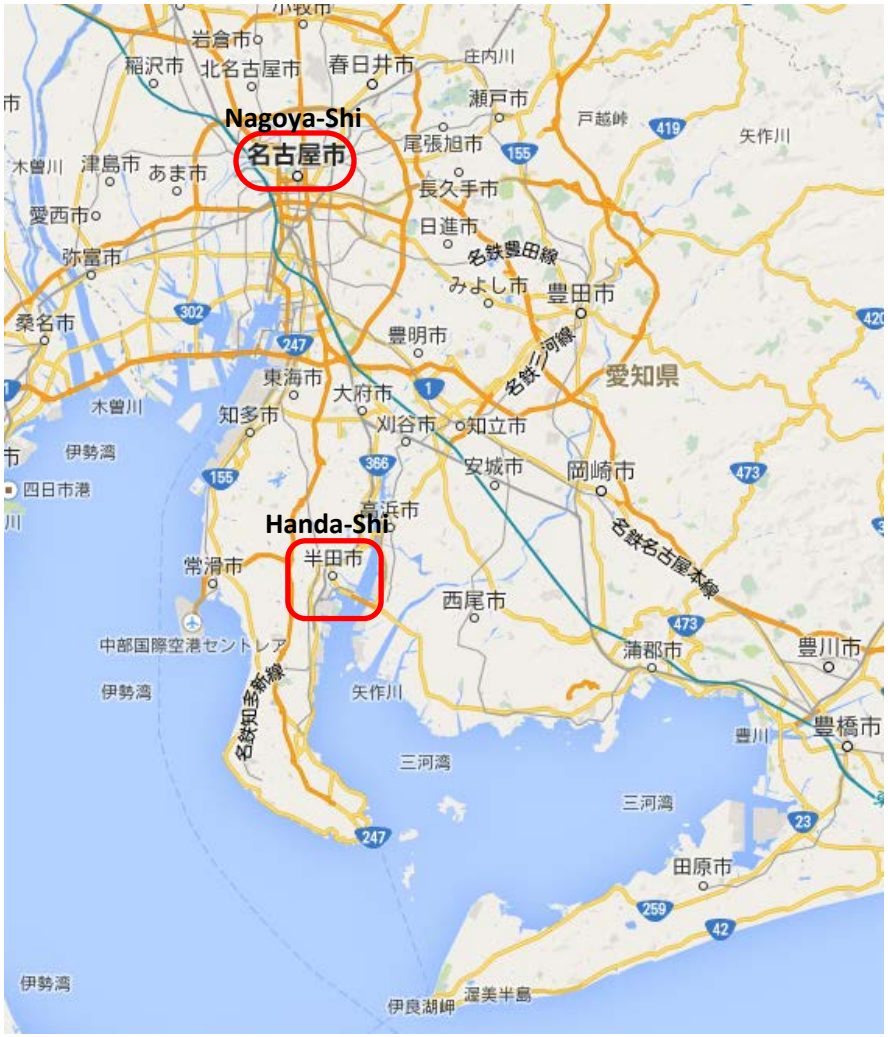
6) Boiler Type : Circulating fluidized bed boiler (EPC = Sumitomo Heavy Industries, Ltd.)

7) Total project cost : Approximately 25 billion yen

8) Operations : 20 year implementation of FIT scheme

9) Power supply to : Summit Energy Corporation

1. Overview of Handa Biomass Power Plant (About Handa City)



■Population

119,000 people

Central city in Chita area

■Location

40 km south of Nagoya City

Nagoya Station - Chita Handa Station

: 35 minutes (Meitetsu Line)

■History

The town developed as a prosperous town for shipping and brewing.

Brewing industry: Nakano Shuzo

↓

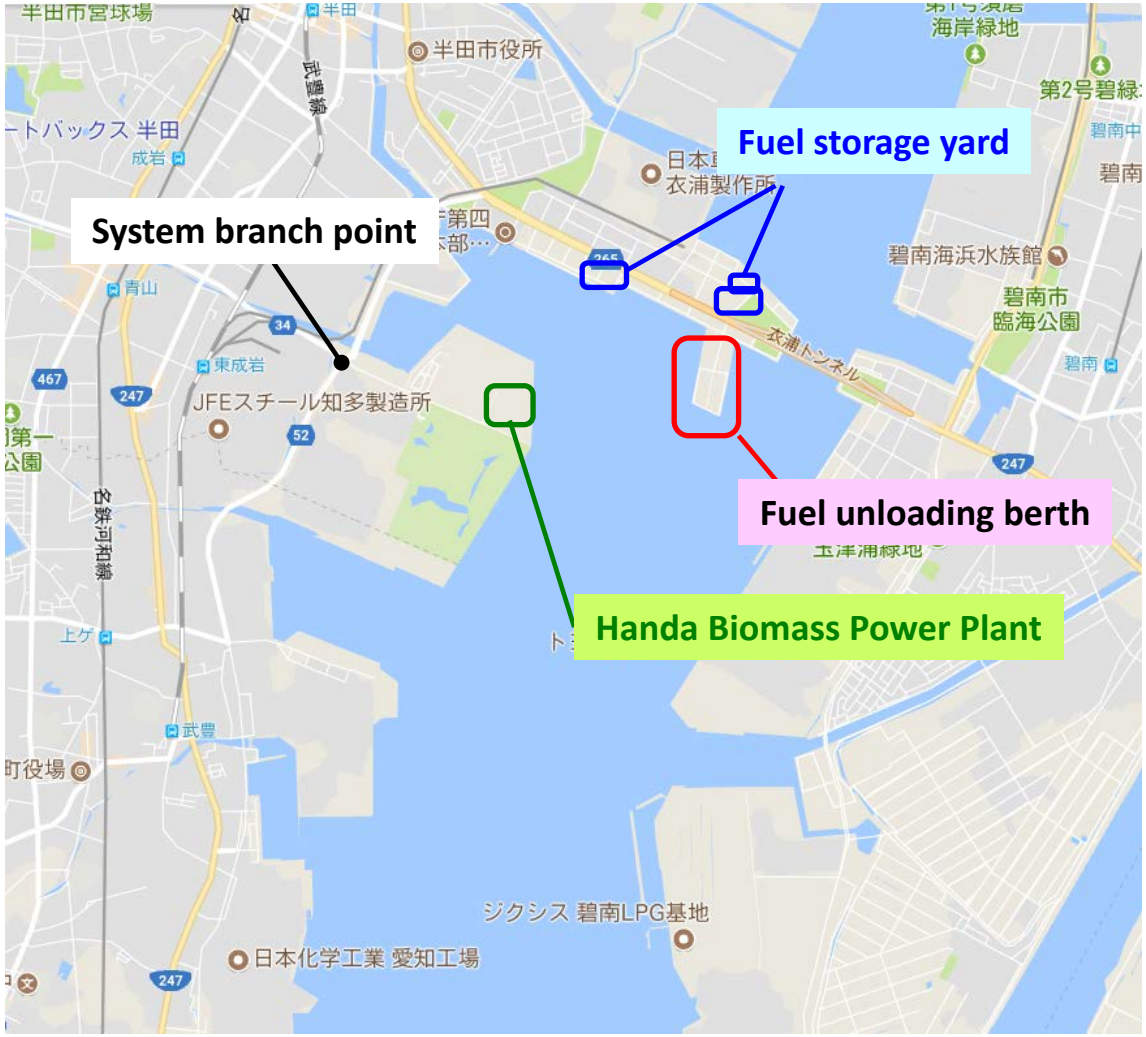
Nakanosumise separation

(Currently Mitsukan Head Office)

Shipping business: Transportation of rice stored in Owari-han

Formed as a material import port currently

1. Overview of Handa Biomass Power Plant (Location 1/2)



Reason for selecting the site

1 Water depth: 12 m class berth
→Large chip ship berthed

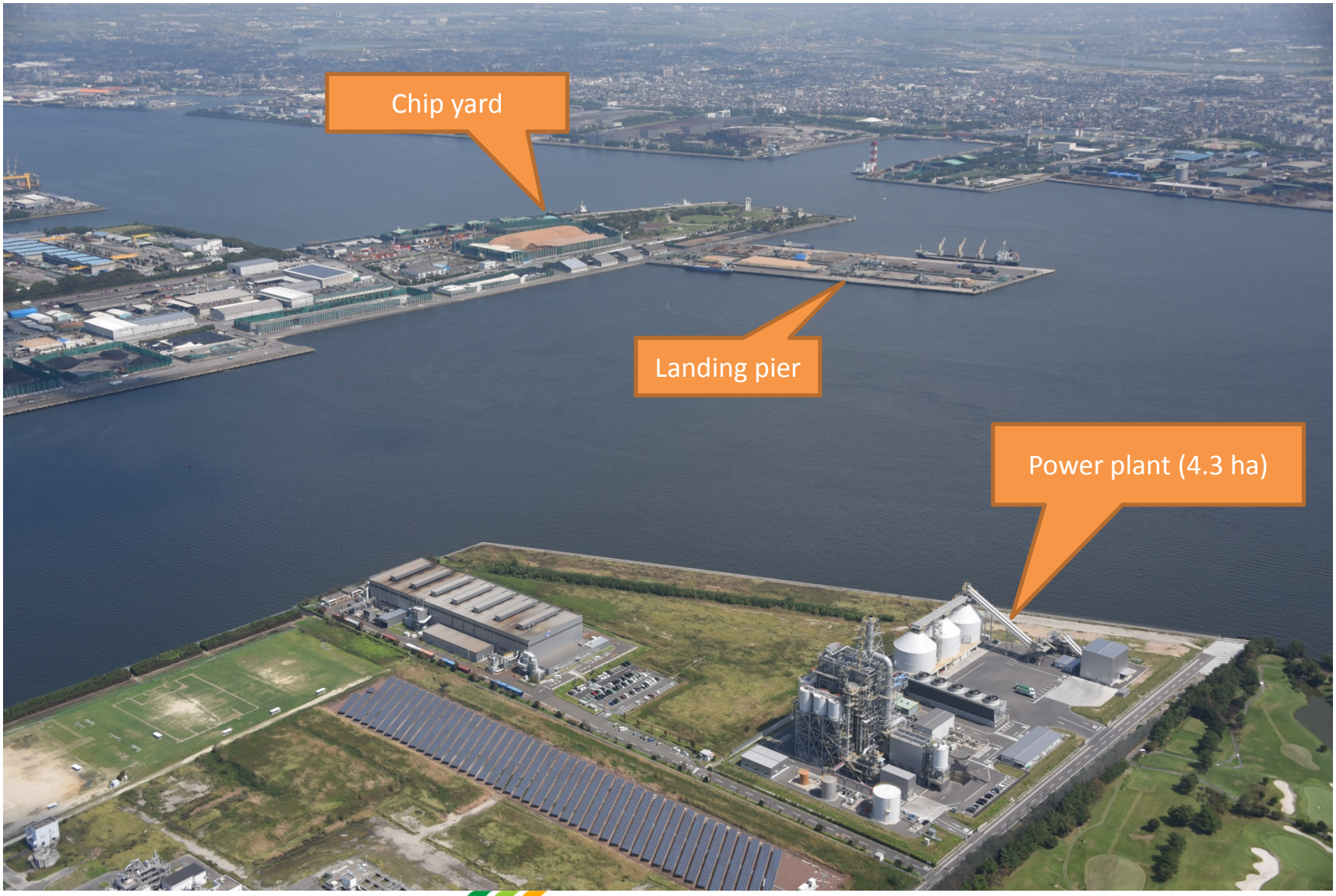
2 Storage Yard
→Secure near berth

3 Transportation routes
in the factory area
→Avoidance of residential areas

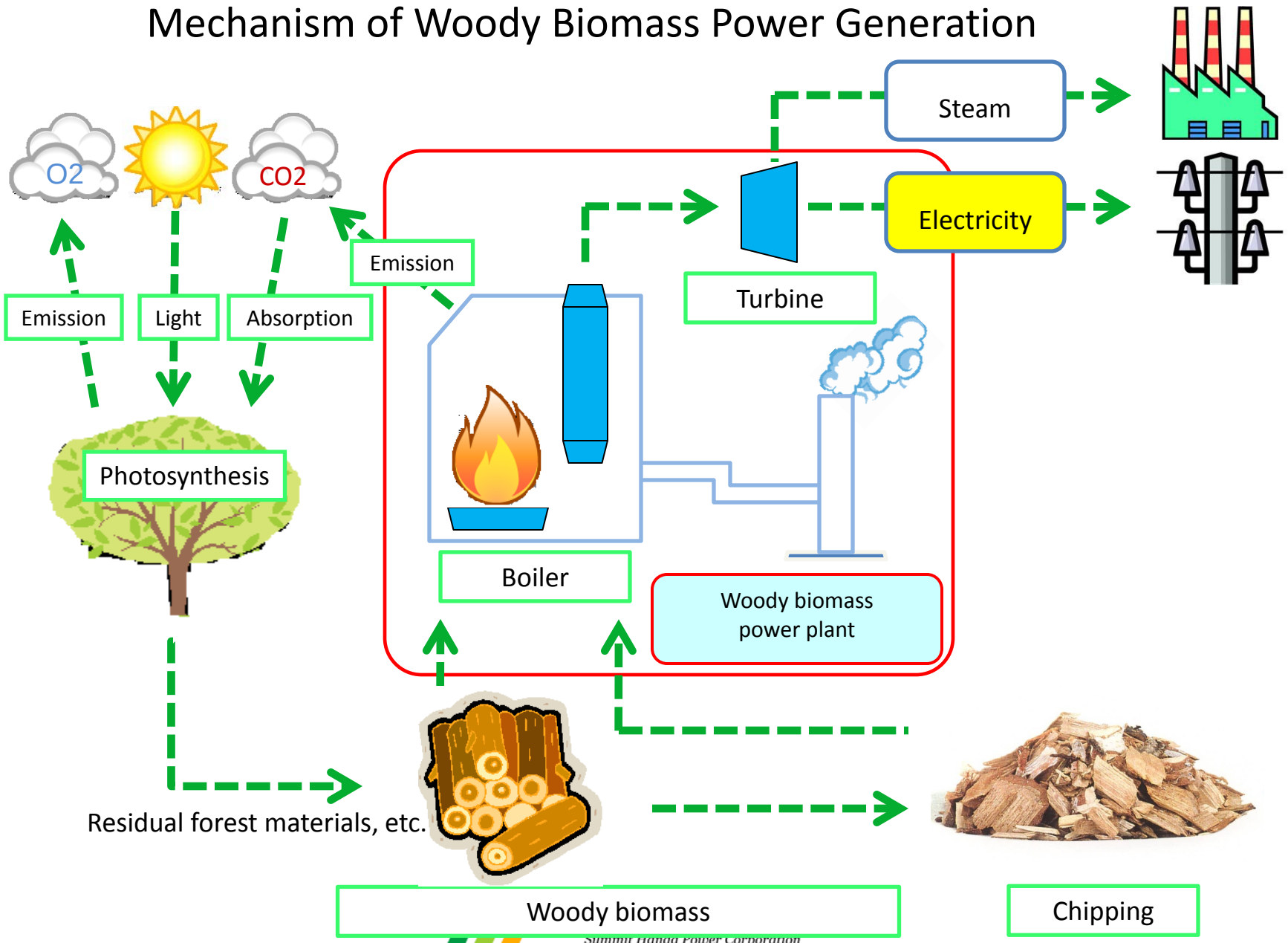
4 Distance to the system branch point
→Relatively close

5 Industrial water
→Relatively close

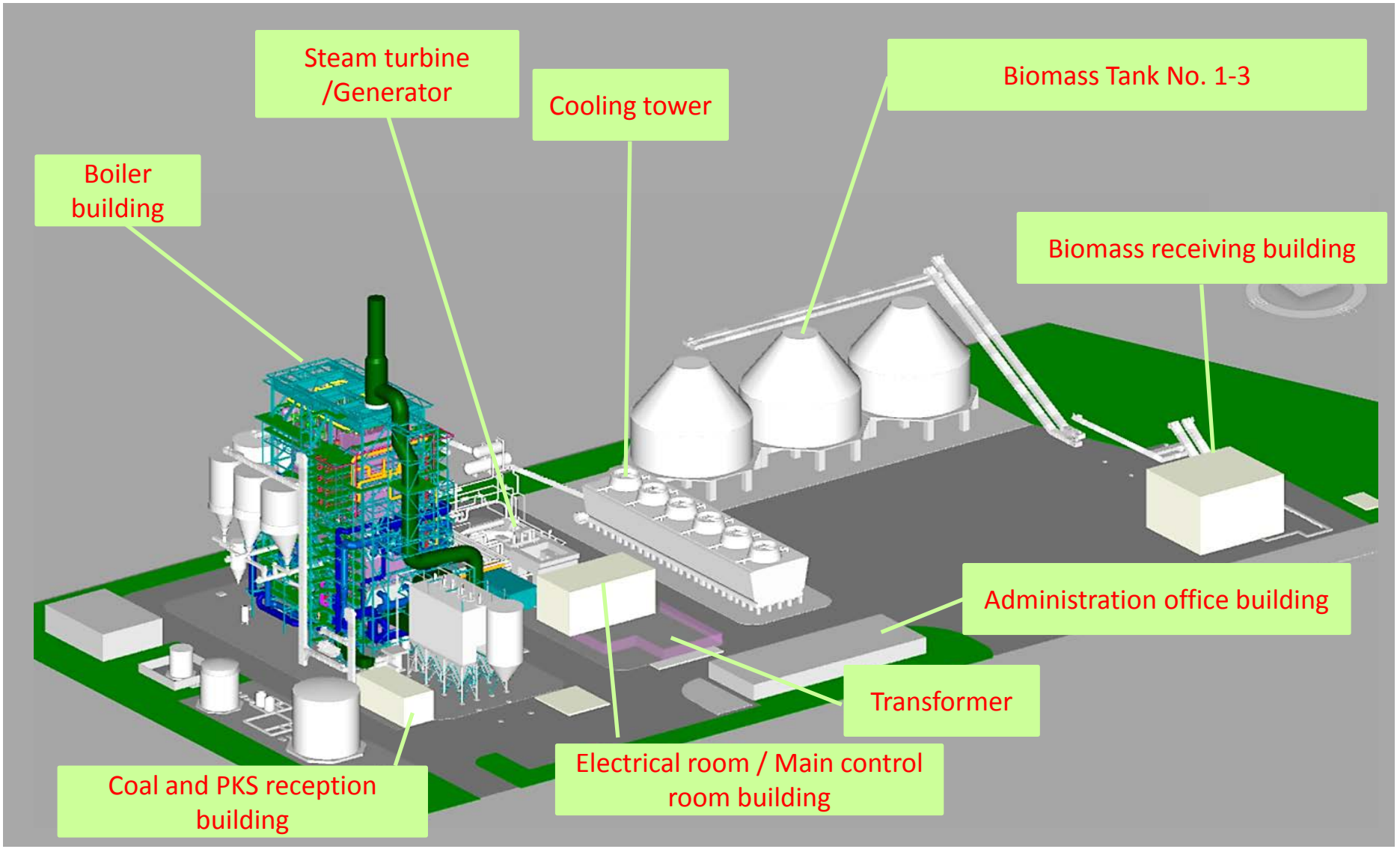
1. Overview of Handa Biomass Power Plant (Location 2/2)



2. Biomass power generation



3. About Plants (Power plant layout)

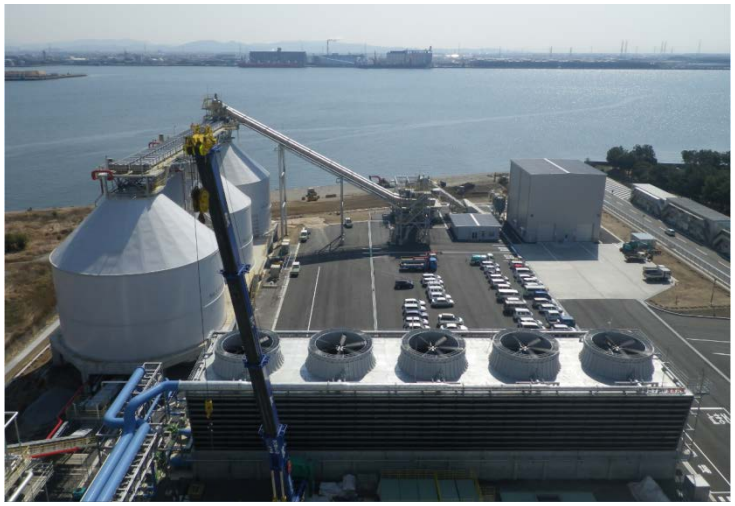


3. About Plants (Boiler)

3. About Plants (Biomass tank)

3. About Plants (Cooling tower)

3. About Plants (From the top of boiler)



East side

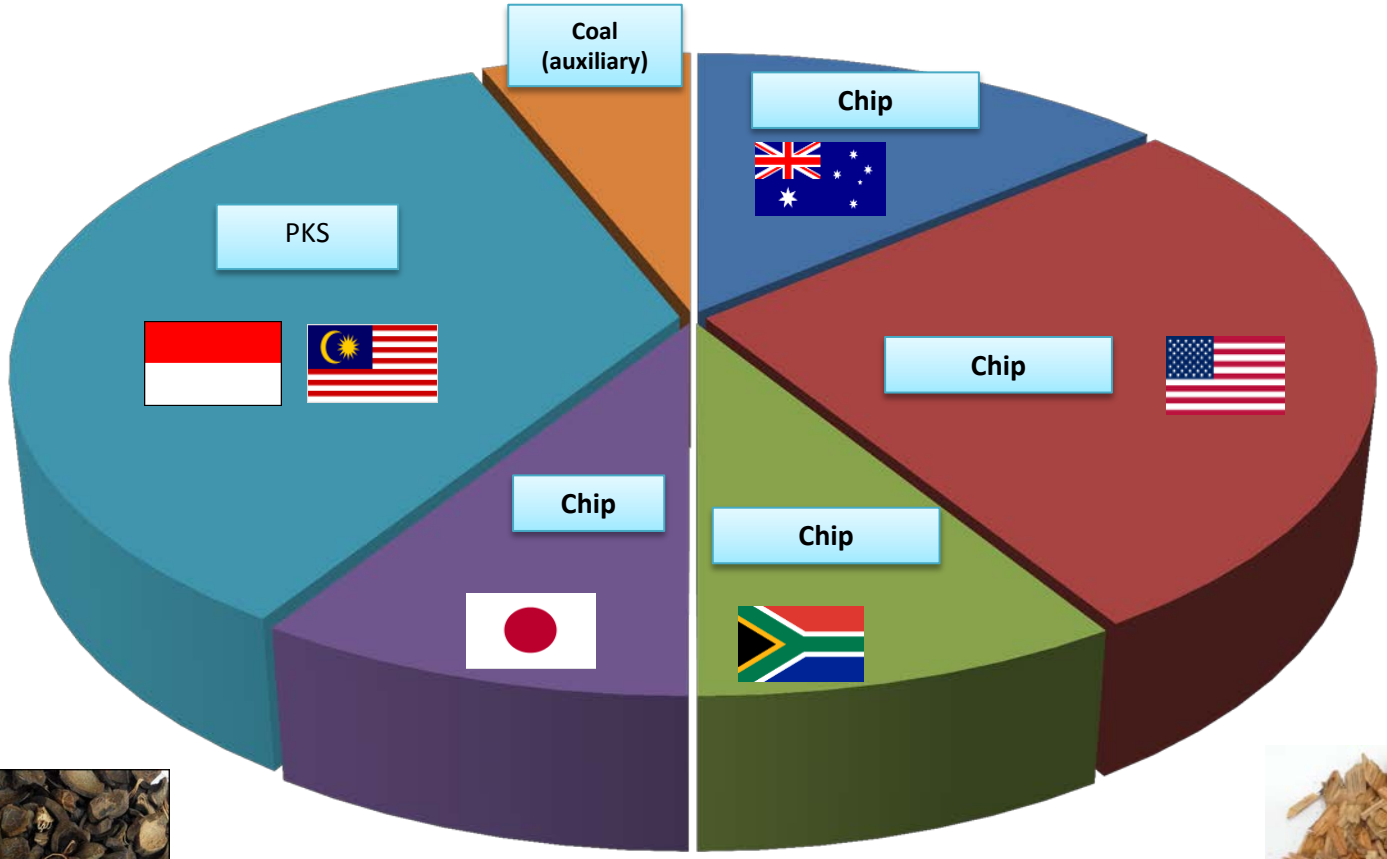
Northeast side (Port)

Southeast side
(Hekinan Thermal Power Plant)

South side

4. Fuel (Composition)

The fuel is wood chips, PKS and coal (auxiliary). It comes from Japan and overseas according to the graph.



PKS (Palm Kernel Shell)

Wood Chip

4. Fuel (FIT Price)

Procurement price of electricity and types of wood chips (2013)

Power Supply	Type of biomass		Example	Procurement price (per 1kWh)	Lead Time
Biomass	Methane fermentation gas (Derivered from biomass)		Methane gas (sewage,sludge,food residue)	39 Yen+Tax	20 Years
	Woody biomass (Deriverd from Thinnings, etc)	under 2,000kW	Thinning,Final cutting materials	40 Yen+Tax	
		over 2,000kW		32 Yen+Tax	
	General biomass, biomass from harverst		lumbering end material, imported wood, Palm Kernal Shell,chaff,rice straw	24 Yen+Tax	
	Construction materials waste		construction materials waste, other lumber	13 Yen+Tax	
	General waste, Other biomass		trimmed Branches,wood chip, paper food residue,waste edible oil, black liquor	17 Yen+Tax	

Unused wood

Domestic thinned wood

General wood

Imported wood

PKS

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4. Fuel (Yard to power plant)

4. Fuel (Biomass fuel delivery vehicles)

Wood chips (Imported wood)

Coal and PKS