

JCM Project Development by JFE



September 2019



JFE Engineering Corporation



JFE Holdings, Inc.

Japan Marine United



JFE Engineering

Net Sales(million JPY)

485,815



JFE Steel

Net Sales(million JPY)

2,830,649



JFE Shoji Trade

Net Sales(million JPY)

1,125,861



(FY2018)



Waste-to-Energy



Waste Heat Recovery



Sewage Treatment



Operation & Maintenance

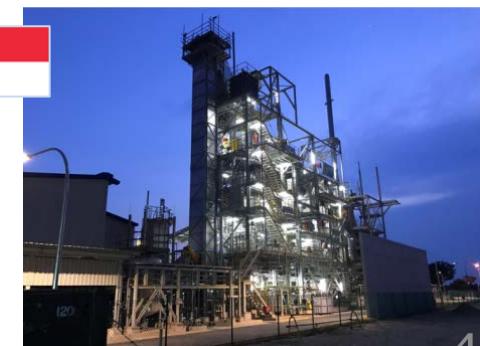
Europe

65
sites



Asia

20
sites





Source : "Dump fire raging after three days, chokes Yangon residents", 24 Apr 2018, Myanmar Times



CH₄ Emission

Pest, Odor, Fire, Water & Air Contamination

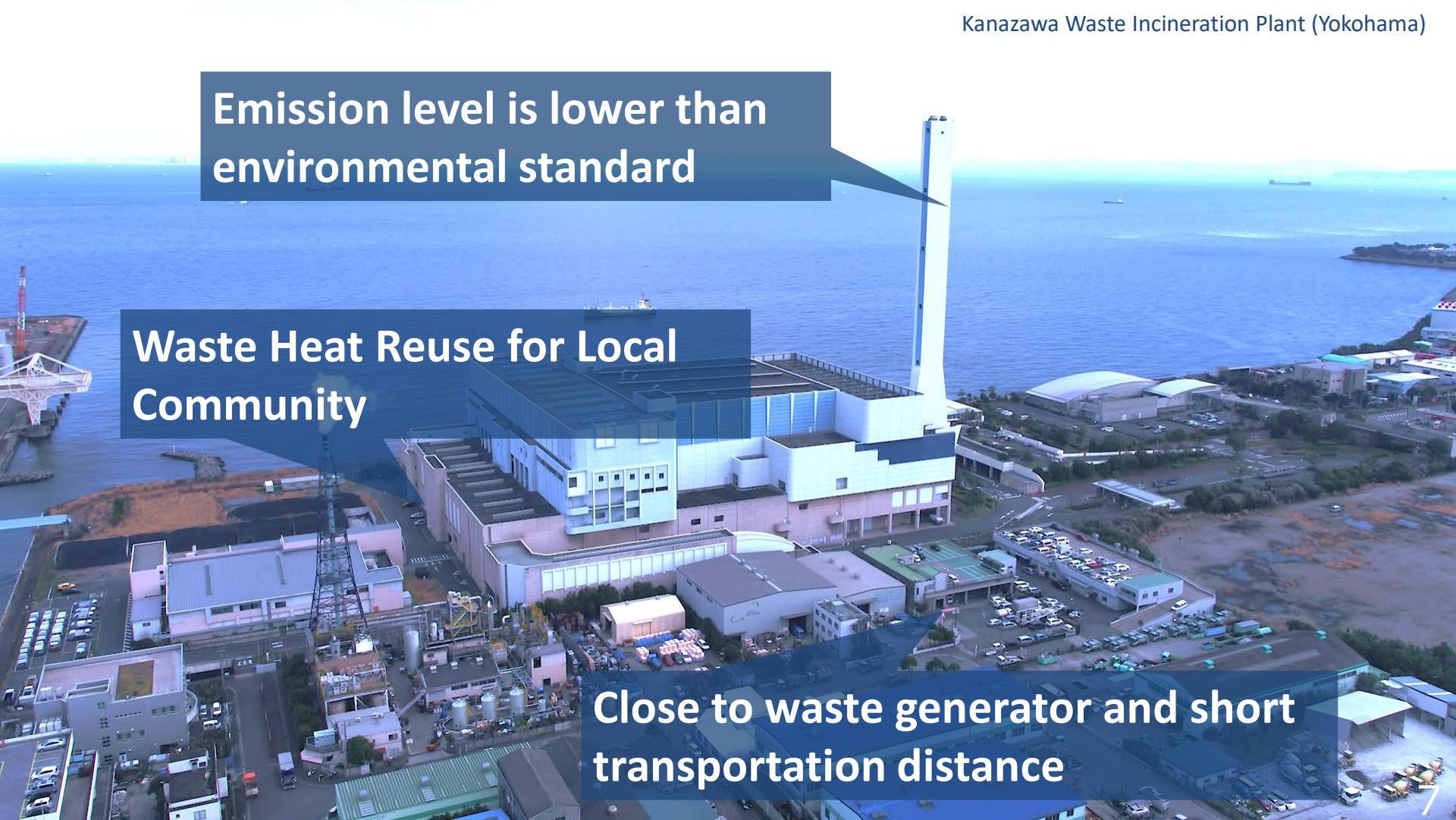
Global Warming

Pollution

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

Land Availability

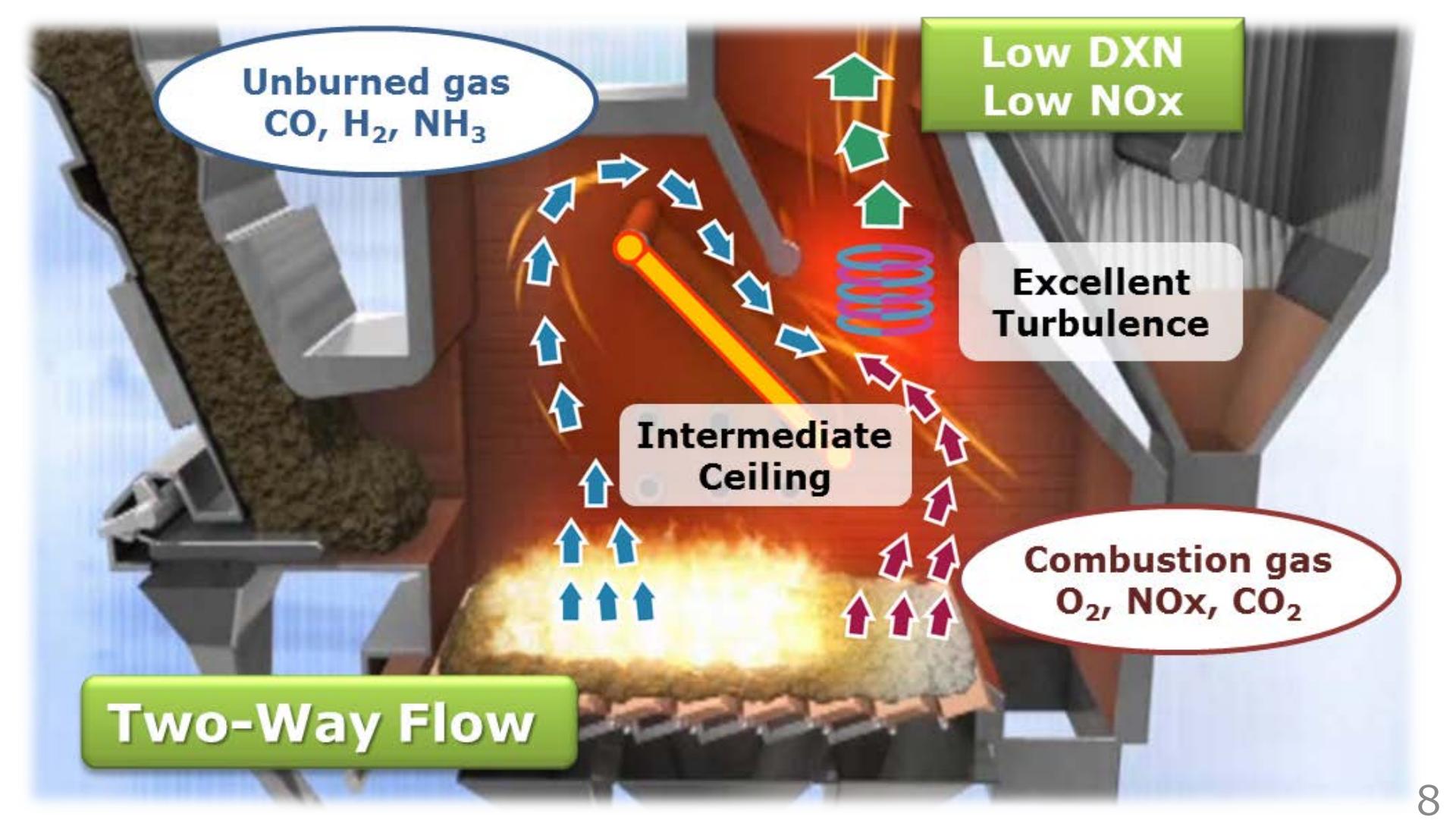
**Difficult to secure new
Landfill space**



Emission level is lower than environmental standard

Waste Heat Reuse for Local Community

Close to waste generator and short transportation distance



Unburned gas
 $\text{CO}, \text{H}_2, \text{NH}_3$

Low DXN
Low NOx

Excellent
Turbulence

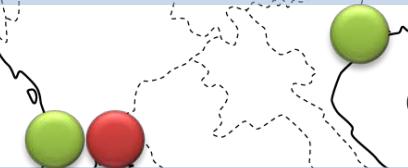
Intermediate
Ceiling

Combustion gas
 $\text{O}_2, \text{NOx}, \text{CO}_2$

Two-Way Flow

Vietnam

Waste Heat Recovery Power Generation at Cement Factory in Quang Ninh Province **FS(2015)**



Myanmar

Introduction of Waste to Energy Plant in Yangon City
FS(2014), Model Project(2015)



Indonesia

Power Generation by Waste-heat Recovery in Cement Industry
PS(2013), Model Project(2014)





<Project 1>

Yangon Waste to Energy plant by introducing power generation and avoidance of landfill gas emissions through combustion of municipal solid waste (MSW)

- Ref No. MM001



- ✓ Incinerator : 60ton/day
- ✓ GHG Reduction : 4,700tCO₂e/y
- ✓ Generator : 0.7MW

Myanmar Government



September 16, 2015

JCM Agreement

Japanese Government



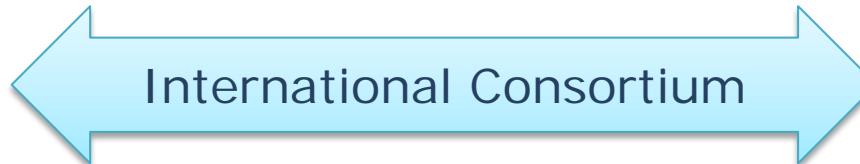
Yangon City's Budget

Yangon City
Development Committee



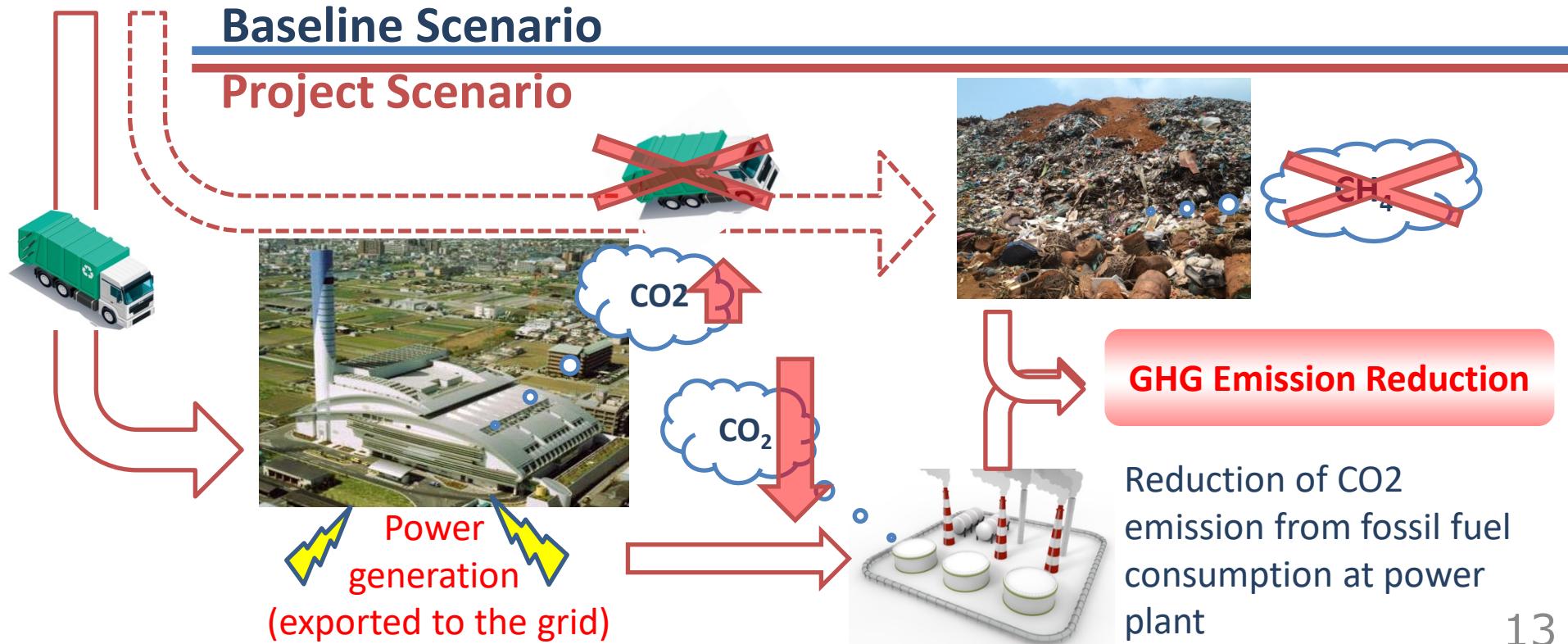
JCM Subsidy from Japan

JFE Engineering Corporation



- ✓ Operation
- ✓ Maintenance
- ✓ Monitoring
- ✓ Reporting

- ✓ Engineering
- ✓ Procurement
- ✓ Construction
- ✓ SV for commissioning



4,732 tCO₂/ year

(2,358tCO₂ accounts for the energy-originated CO₂)

- ✓ The calculation is based on the condition of 60t of waste treated per day and operation of 310days per year, 24 hours per day (operating ratio: 85%).
- ✓ The emission factor refers to the latest CDM project in Myanmar (0.8tCO₂/MWh).





Small Scale WTE As a Model Project



Larger Scale WTE



Capacity Building,
Regulation Setting,
Training of WTE Operation,
Finance Arranging, etc.



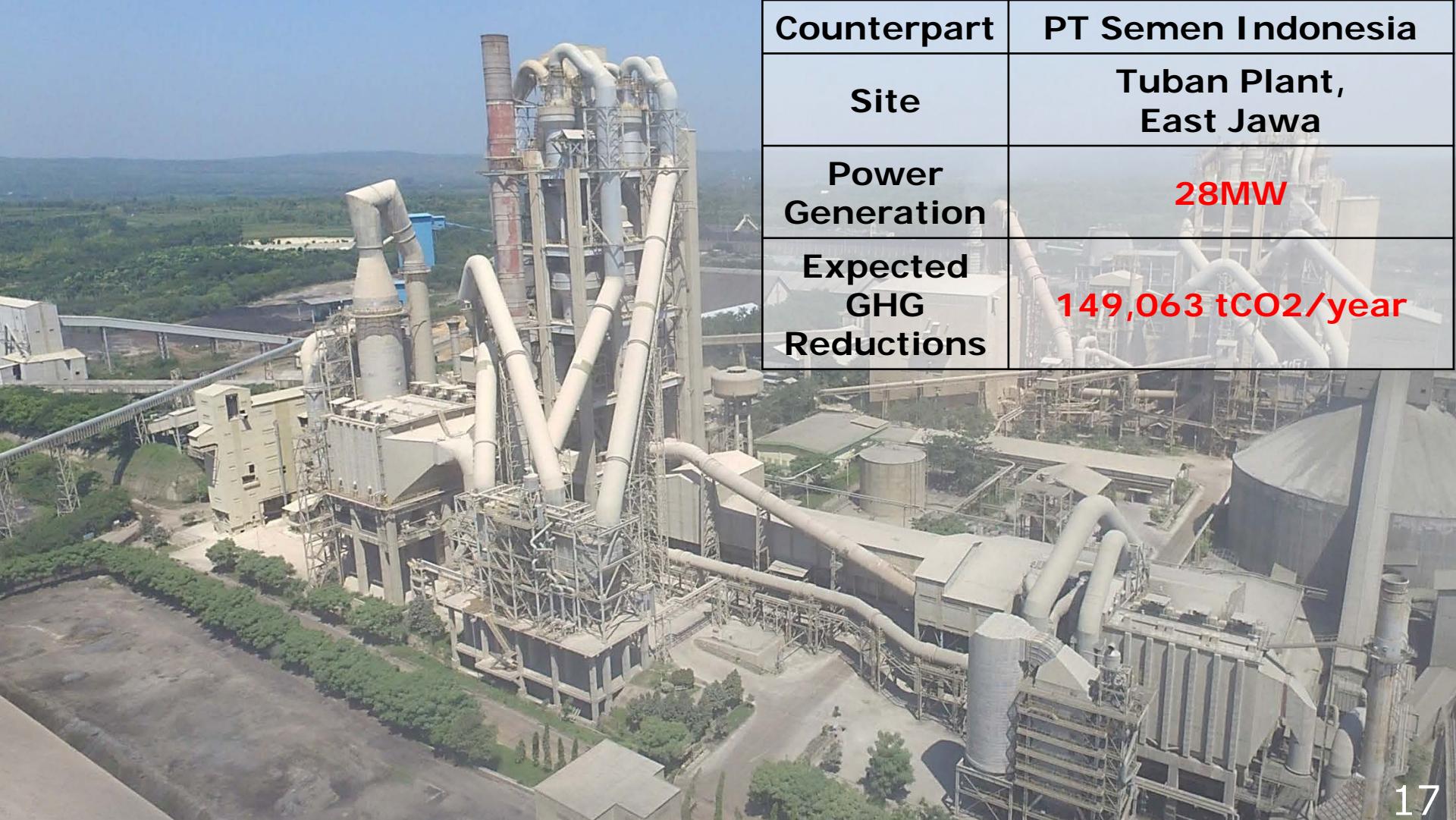
Complete
Integrated
Waste
Management



<Project 2>

**Power generation by waste heat recovery in the PT
Semen Indonesia (Persero) Tbk factory in Tuban**

- Registered Project ID013, 10 Jul. 2018



Counterpart	PT Semen Indonesia
Site	Tuban Plant, East Java
Power Generation	28MW
Expected GHG Reductions	149,063 tCO2/year



No.1 SP Boiler



No.1 AQC Boiler



Air Cooled Condenser

14 Mar 18 Request of registration

30 Jun 18 Starting date of project operation

10 Jul 18 Registration of project

Estimated emission reductions in each year

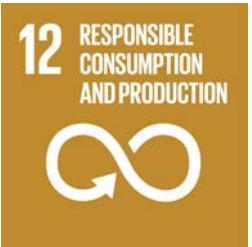
99,375 (in 2018)

149,063 (in 2019)

149,063 (in 2020)

...

Expected operational lifetime : 9 years



**SUSTAINABLE
DEVELOPMENT
GOALS**



Thank you

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