

New efforts for recycling business

November 16, 2021



J&T 環境 株式会社 (J&T Recycling Corporation)

~ **Miracle Recycle** ~

President and CEO Tetsuo Tsuyuguchi

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- 1. PET bottle recycling
- 2. Home appliance recycling

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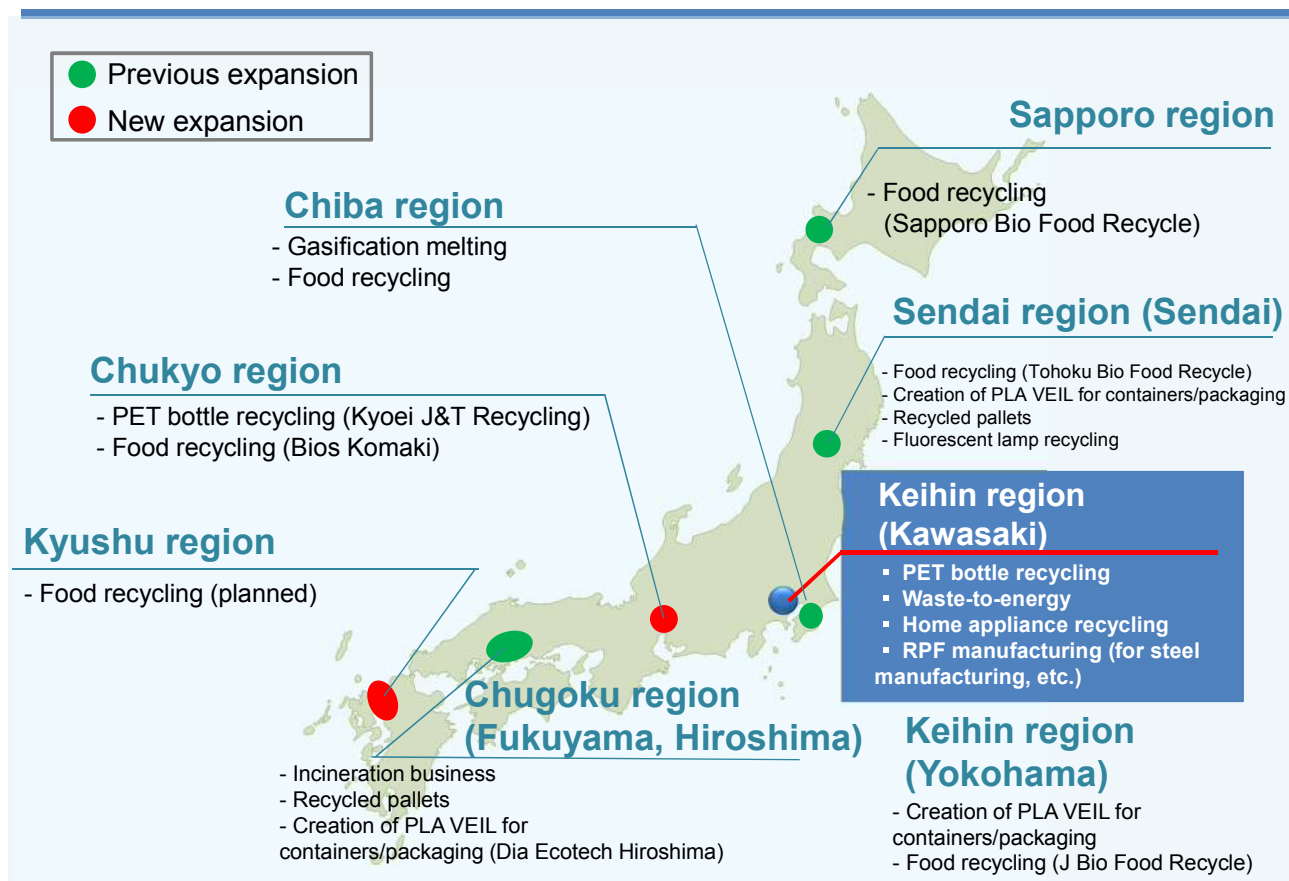
4 Example of recent efforts

- 1. Cooperation among municipal companies: efforts with Showa Denko
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1 Introduction to J&T Recycling

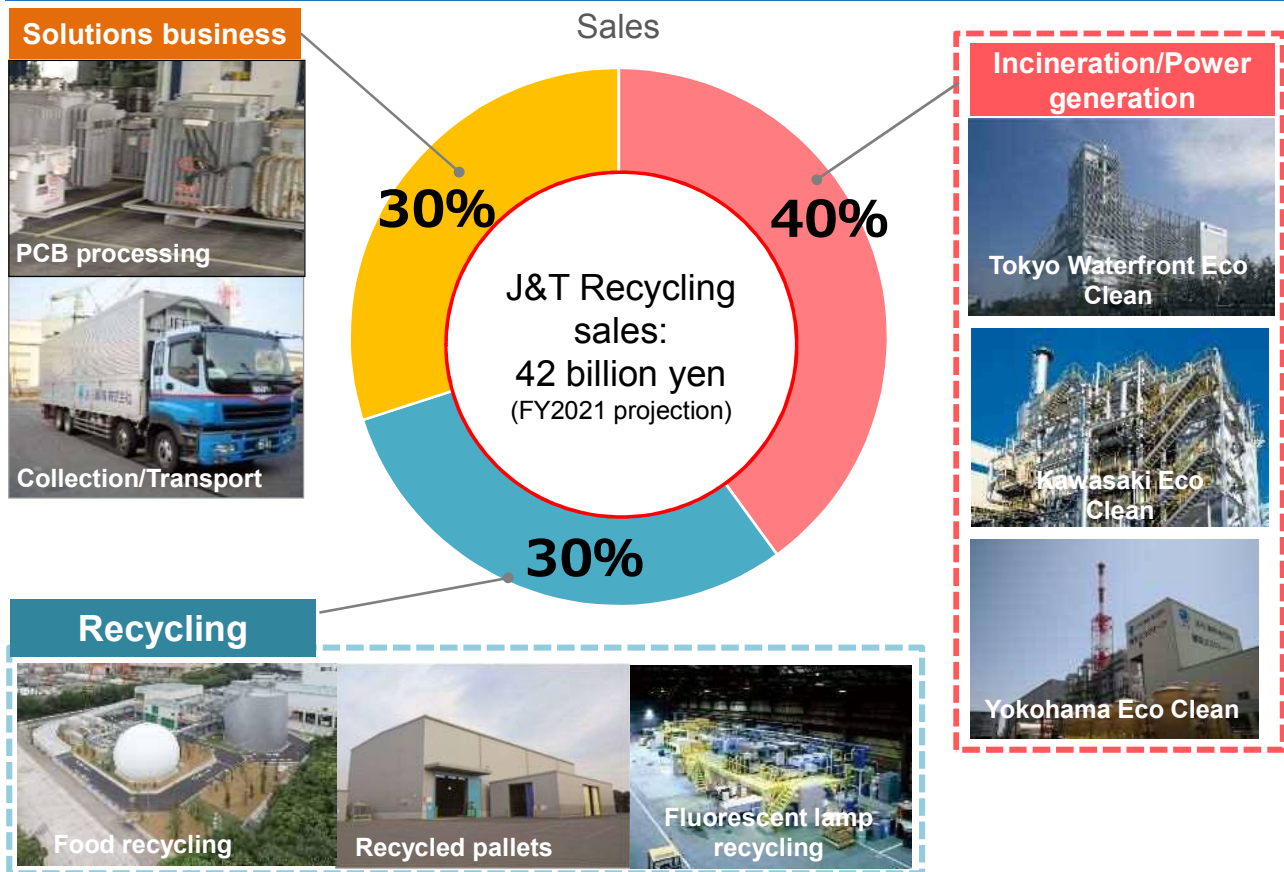
■ J&T Recycling: Domestic business sites

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■ Current business structure

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J&T Recycling's recycling business in Kawasaki City

1. PET bottle recycling business
2. Home appliance recycling "JFE Urban Recycle"

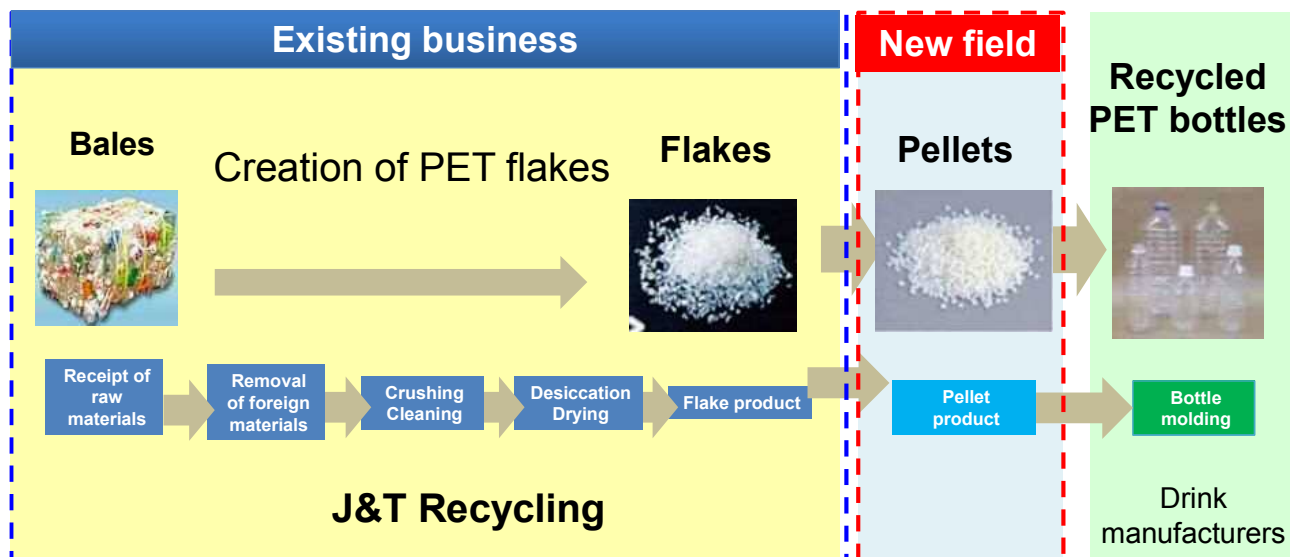
■ J&T Recycling: Recycling facilities in Kawasaki City 6



1. PET bottle recycling business

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Business	Amount processed (t/year)	Details
Kawasaki PET Bottle Recycling Plant	15,000	Manufacture of flake product from pet bottle waste



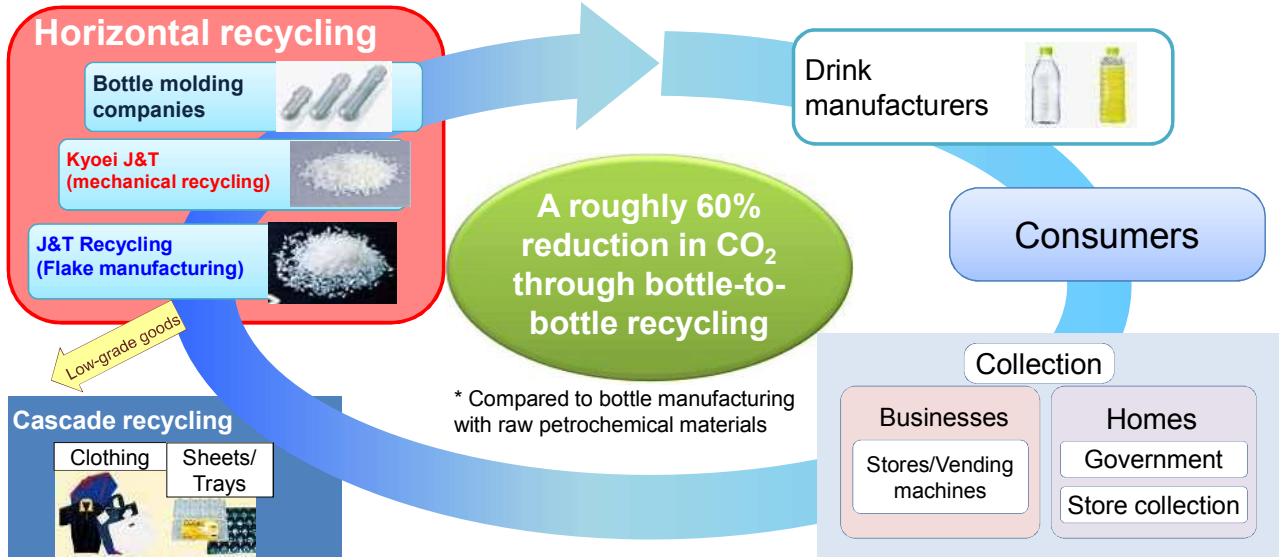
<Example> PET bottle B-to-B recycling

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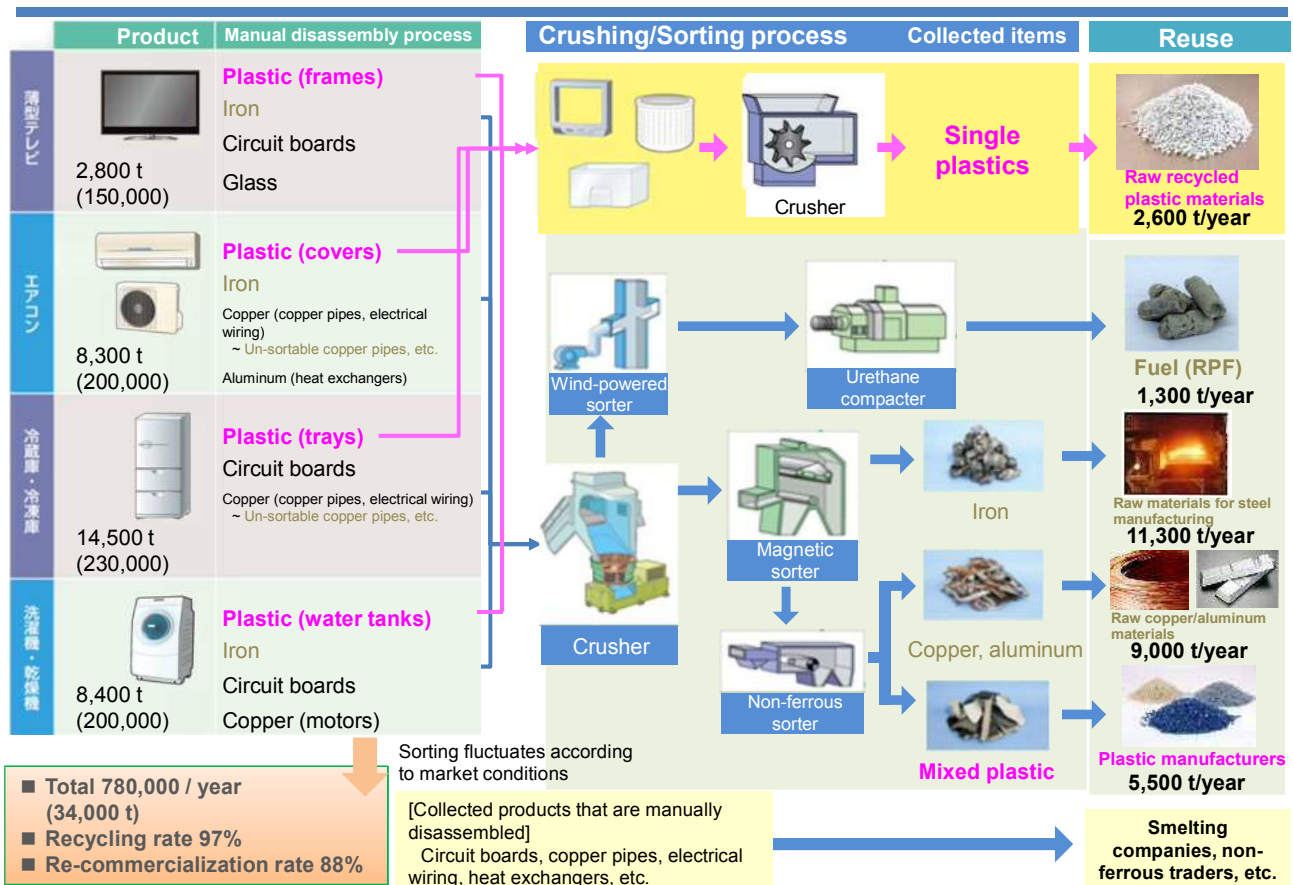
October 2021 Start of commercial operations at West Japan PET Bottle MR Center



- Company name: **Kyoei J&T Recycling Corporation**
- Location: Tsu City, Mie Prefecture (on premises of JFE Engineering Tsu Works)
- Capital: 100 million yen
- Shareholding companies: J&T Recycling Corporation; Kyoei Sangyo Co., Ltd.; Seven & i Holdings Co., Ltd.
- Future plans: October 2021 Operation of flake manufacturing facilities
February 2022 Planned start of BtoB pellet manufacturing



2. Home appliance recycling "JFE Urban Recycle"



3 Local energy for local consumption through waste-to-energy power generation

1. Efforts for local energy for local consumption through waste-to-energy power generation = Sodenwari®

2. Efforts by Kawasaki King Skyfront Tokyu Rei Hotel

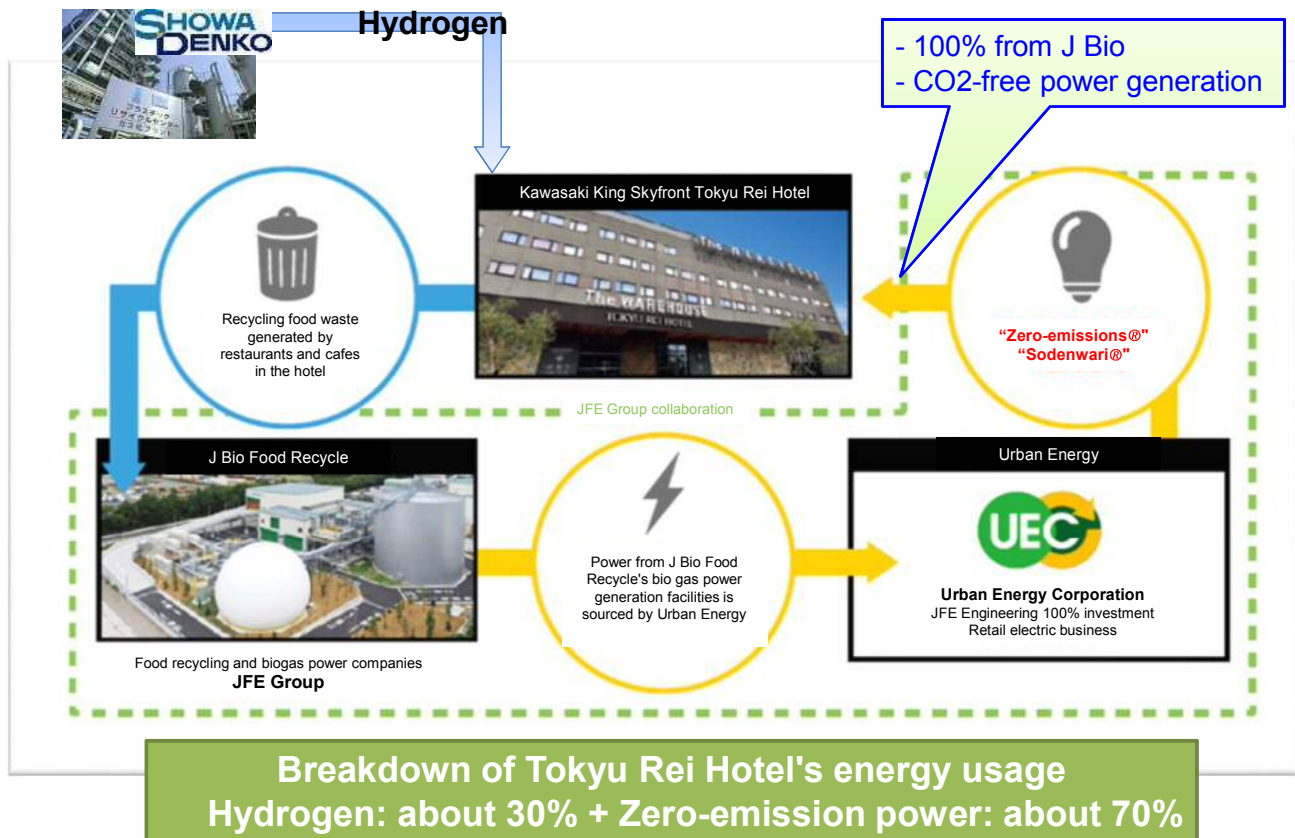
1. Local energy for local consumption through waste-to-energy power generation¹¹

What is Sodenwari®?

⇒ Plan to supply power generated from waste processing to the generator of that waste



2. Example of efforts by Kawasaki King Skyfront Tokyu Rei Hotel¹²



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4 Example of recent efforts

1. Cooperation among municipal companies: efforts with Showa Denko
2. Overseas development of waste processing business
Capital participation in Malaysian waste processing company

1. Cooperation among municipal companies: efforts with Showa Denko 14

(1) RPF supply

[Details]

The RPF we manufacture is supplied to Showa Denko. It is used as a raw material for ammonia and hydrogen manufacturing.

Supply started: In 2014

Amount supplied: About 7,000 t/year (2021 projection)



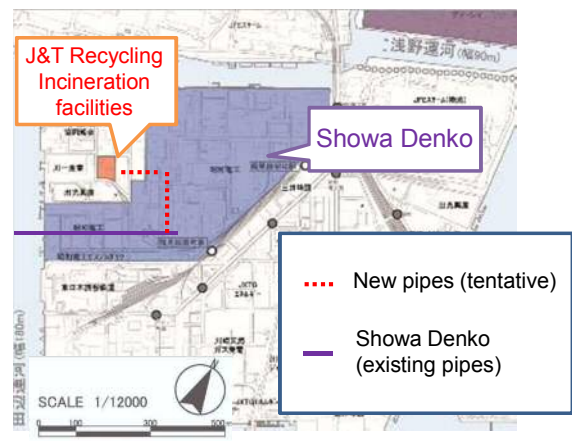
(2) Discussions on steam supply

[Details]

We are **investigating the environmental and economic effects of supplying steam from our waste-to-energy facilities** (currently in use for power generation) to **Showa Denko**.

FY2021 Implementation of FS after being selected for subsidies for business expenses for measures to prevent the release of carbon dioxide

(Project subsidized by the Ministry of the Environment)



2. Overseas development of waste processing business

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➤ July 2021 Investment in Malaysian waste processing company (Berjaya Alam Murni)

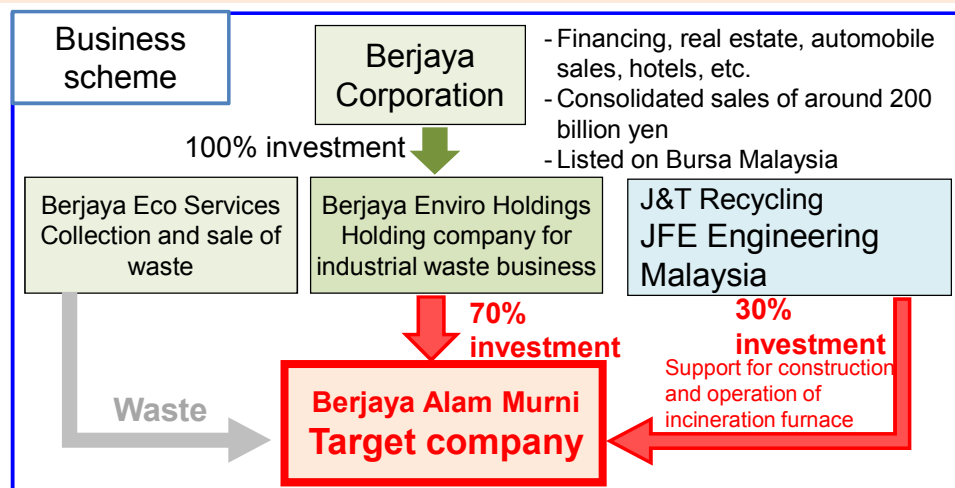


Photo = Signing ceremony for stock transfer (7/29)

- New company name: J&T Berjaya Alam Murni
- Headquarters: Kuala Lumpur, Malaysia
- Capital: 100 million yen
- Shareholding companies: Berjaya Enviro HD, J&T Recycling, JFE Engineering Malaysia
- Business details: General processing of industrial waste
Waste fluids, waste oil, medical waste, waste solvents, etc.
- Future plans: New construction and operation of incineration furnace



Map of planned business location



Thank you for listening.

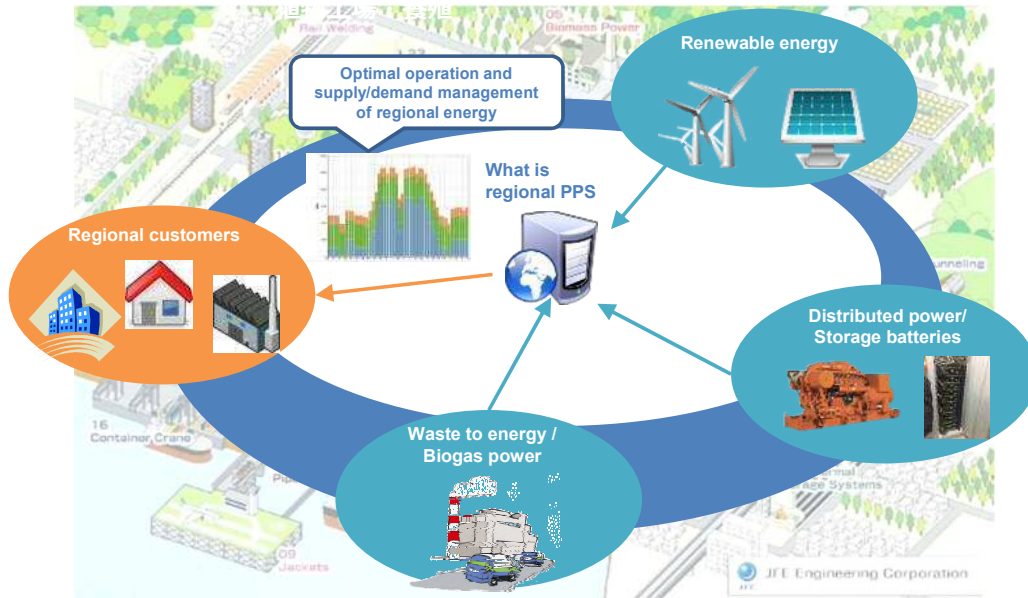
(Reference) Local energy for local consumption

➤ What is regional PPS?

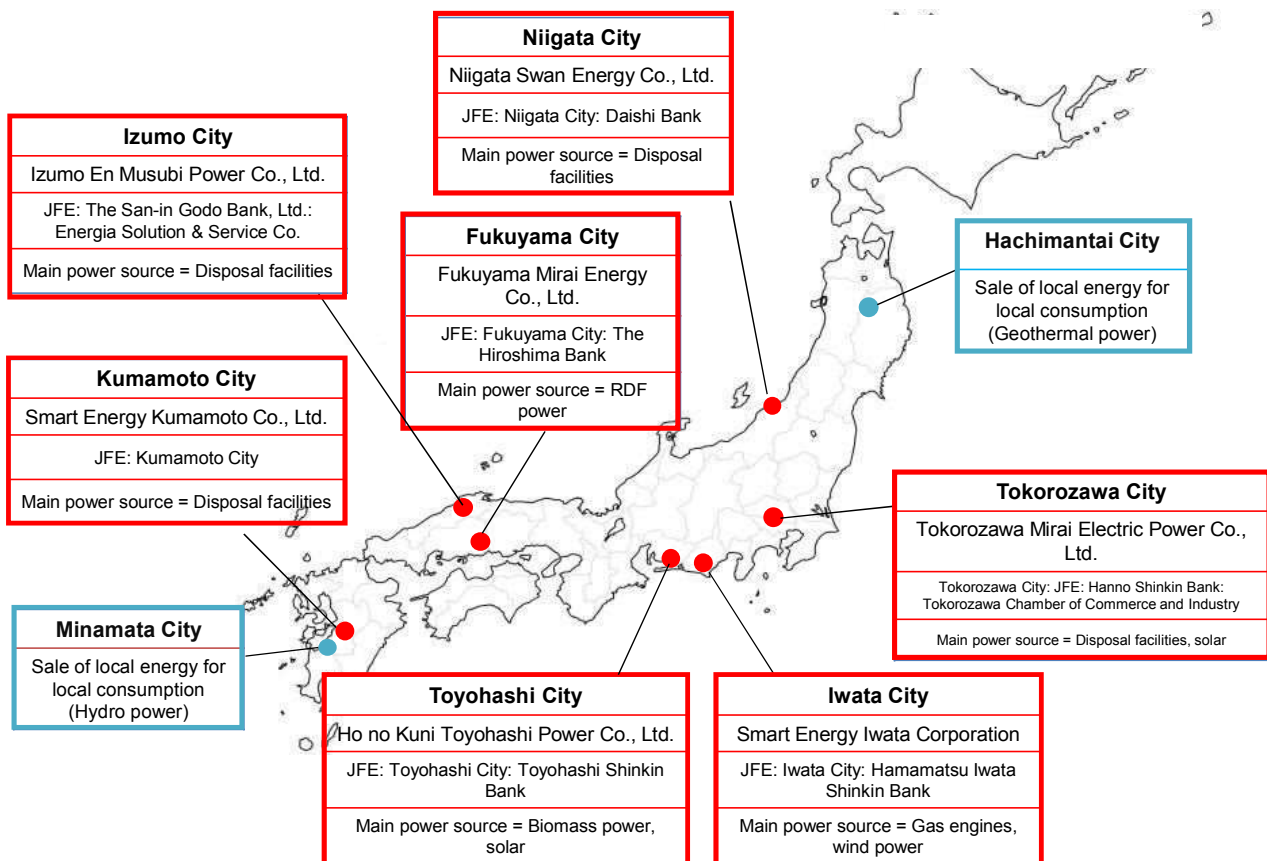
PPS companies established through the investment of PPS businesses, the government, and regional businesses

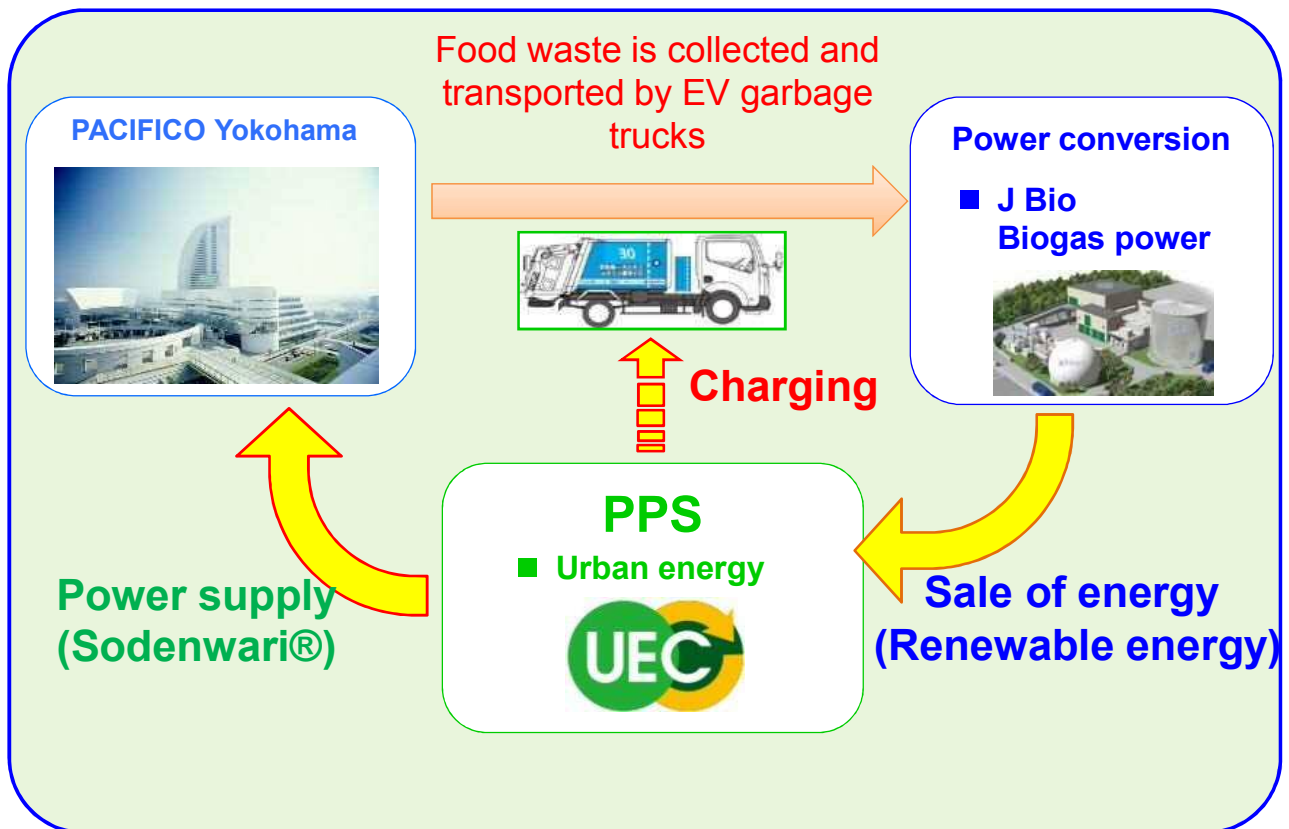
The concept is to locally produce energy for local consumption.

The aim is to achieve an energy system that is economical, has a high environmental value, and that is resilient to disasters by combining local renewable energy, energy sources from government-owned disposal facilities, distributed power sources, storage batteries, etc.



Reference: Regional PPS promoted by JFE-Gr 19





<<Reference>> EV garbage truck: **Garbage collection vehicle with replaceable battery**

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- Garbage truck with replaceable battery
- Battery is automatically replaced with a charged one (operated by remote control at battery station)
- In case of disaster, can be used as an emergency power source at evacuation shelters



[EV garbage truck]

- Releases no CO₂ during collection and transport
- Low running costs (25% the cost of fossil fuels)
- Low noise



[Battery station]

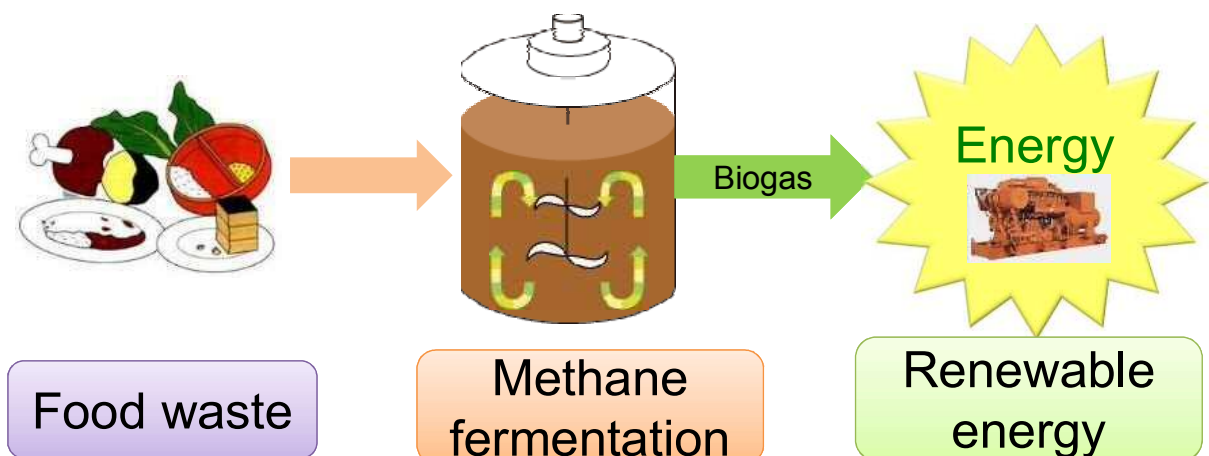
- Takes 3.5 minutes to replace the battery
- Can store 7 charged batteries

(Reference) Biogas power from food

■ What is a biogas power business?

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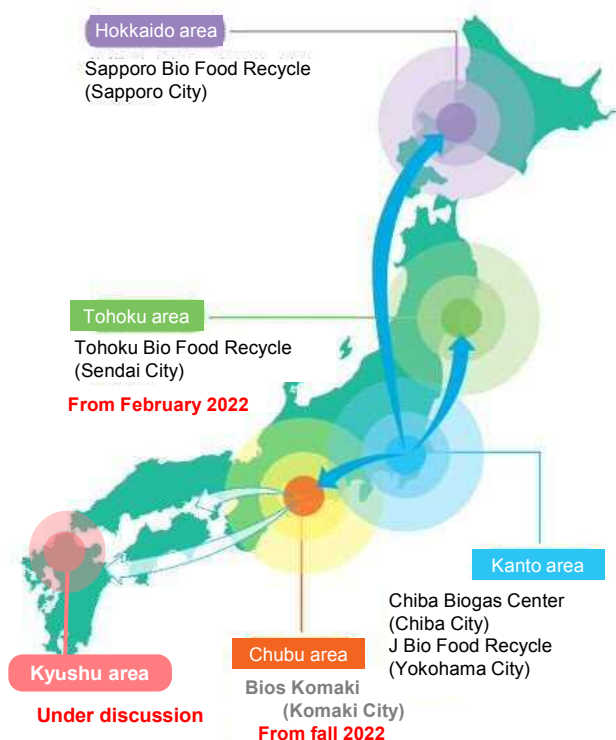
A business that uses the power of microbes to convert the energy in food waste to electricity (renewable energy)



■ J&T Recycling's involvement in the biogas power business

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- Has the **greatest processing capacity in Japan** in the food recycling and biogas power fields
- **Contributes to a de-carbonized society** by popularizing biomass power for local energy for local consumption



JFE Group Biogas power business		Processing capacity t/day	Power generation kW
2020	Sapporo Chiba Yokohama Nagaoka* Toyohashi*	327	4,650
2021	Sendai	367	5,430
2022	Komaki	487	5,530
2023	Kyushu area	587	7,130

* JFE Engineering PFI business

- Nagaoka City 60 t/day Food
- Toyohashi City 59 t/day Food + sewage sludge

■ Business starts in February 2022: Tohoku Bio Food Recycle Co., Ltd.

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Food waste recycling and biogas business in Sendai



Processing plans: 40 t/day

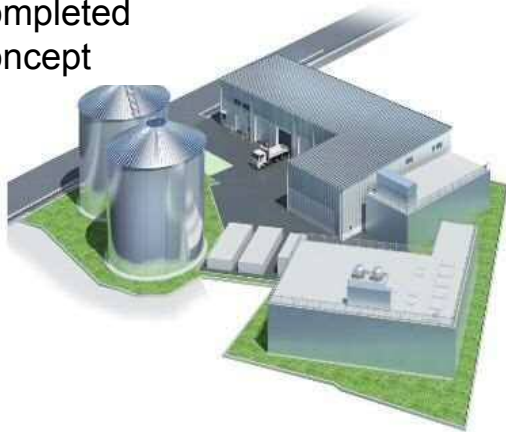
Processing targets:
(1) General waste (business)
(2) Industrial waste

Power generation: 6,500 MWh/year
⇒ equivalent to about 1,500 households

1. Establishment of company	November 2019	5. Stake	J&T Recycling Corporation	45%
2. Capital	600 million yen		East Japan Railway Company	29%
3. Location	Miyagino Ward, Sendai City, Miyagi Prefecture		Tokyo Gas Co., Ltd.	21%
4. Start of operations	Planned in January 2022		Tohoku Railway Transportation Co., Ltd.	5%

Food waste recycling and biogas business in the Chukyo region

Image of
completed
concept



Processing plans: 120 t/day

Processing targets:

- (1) General waste (business)
- (2) Industrial waste

Power generation: 9,200 MWh/year
⇒ equivalent to about 3,000 households

1. Establishment of company	March 2017	4. Construction period	May 2021 to November 2022
2. Capital	600 million yen	5. Start of operations	Planned for fall 2022
3. Location	Komaki City, Aichi Prefecture	6. Stake	J&T Recycling Corporation 100%

- ✓ Participating in MESSE NAGOYA, one of the largest cross-industrial trade fairs in Japan
Venue: Port Messe Nagoya
Dates: On-site 11/10 - 11/13; Online 11/1 - 11/19