

# Smart Solutions by utilizing 3R

## the case of city-to-city collaboration between Kawasaki city and Bandung city



Ohzenji Waste Treatment Center in Kawasaki city



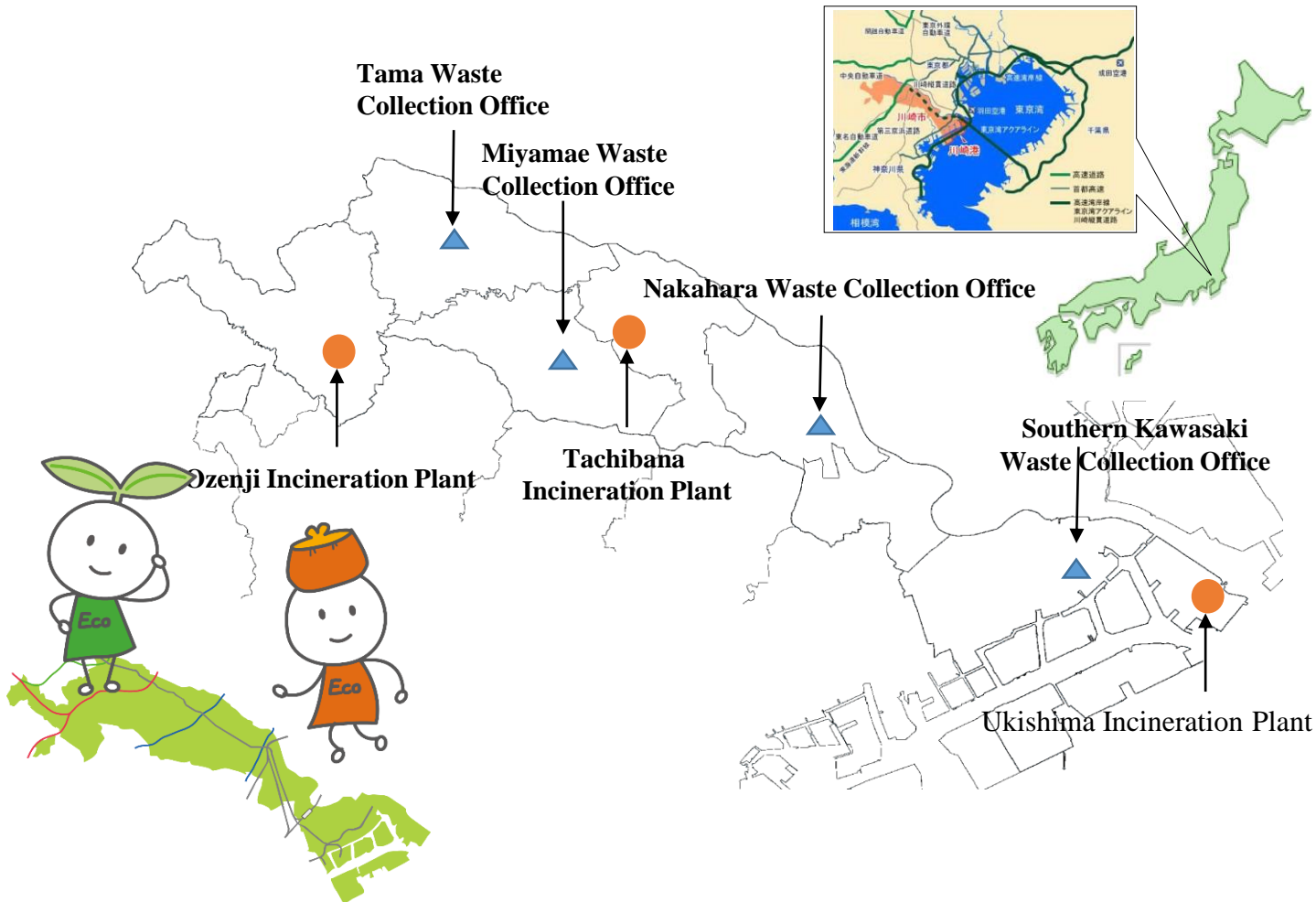
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# 1. Overview of Kawasaki City

Kawasaki City is located approximately the center of Japan. In a period of high economic growth, Kawasaki supported Japanese industry as a core of Keihin Industrial Zone. By utilizing human resources and industries accumulated during this period, Kawasaki City has been changed into the international industrial and research & development city where worldwide companies with the latest environmental technologies, for example, are located.



<b>Establishment</b>	<b>1924 (50,000 population)</b>
<b>Territory</b>	<b>144.35 km<sup>2</sup></b>
<b>Population</b>	<b>1,505,357 (As of 1<sup>st</sup> January, 2018)</b>
<b>Household</b>	<b>717,241 (As of 1<sup>st</sup> January, 2018)</b>
<b>Gross product</b>	<b>5,369,000,000,000 JPY (FY2014)</b>
<b>Population growth rate</b>	<b>0.99% (As of FY2016) (Top rate among major cities)</b>
<b>Major industry</b>	<b>Manufacture (Steel, electricity, precision machinery, petro chemistry), informatics, service providing</b>
<b>Growing industry</b>	<b>ICT, environment, welfare, life-science</b>

# 2. History of waste policy of Kawasaki City

Because of rapid economic growth and urbanization  
Public health problems occurred

Establishment of appropriate waste treatment  
structure for collection and incineration

Increasing population and economic growth resulted in  
waste generation increase →Emergency declaration of  
waste treatment (1990)

Waste recycle policy: Establish resource recycle society

The master plan for general waste treatment of Kawasaki  
City (2005) -Kawasaki challenge, 3R-

The master plan for general waste treatment of Kawasaki  
City (2016) -Waste reduction and EcoLife for bridging  
the future-

Appropriate  
treatment

Recycle

3R

◎ Major achievement

Waste reduction

Even under increasing  
population, waste generation  
amount reduced and waste  
recycle ratio improved



Incineration plants

Reduced from 4 to 3  
contribute to reduce 72,000,000,000  
JPY expenditure in 40 years



Landfill site

Life span is extended  
28 years  
Extended from 2028 to 2056





# 2. History of waste policy of Kawasaki City

## (1) Establishment of appropriate waste treatment structure

### ■ From establishment to 1960s

Rapid economic growth and urbanization

Landfill of untreated wastes

Problem of public health

Establishment of appropriate waste treatment structure

Cleansing ordinance of Kawasaki City

Four incineration plants

Direct management of waste treatment

Daily collection of food waste

Kawasaki city was evaluated as pioneer city of waste treatment because of the establishment of structure of daily waste collection and waste incineration



City official who were pulling handcart for waste collection



Load packer car (from 1960)

1924	Start monitoring of cleansing activity soon after establishment of Kawasaki City
1936	Start incineration of wastes
1938	Acquisition of waste collection from private sector, and start direct management
1954	Formulation of cleansing ordinance of Kawasaki City
1955	Invention of unique waste collection car, and start to waste collection using vehicles
1961	Start daily waste collection (6 days per week)
1968	Start collection of bulky waste

## 2. History of waste policy of Kawasaki City

### (2) Emergency declaration of waste treatment

#### ■ Emergency declaration of waste treatment ~1990s

Increasing population and economic growth

Waste generation amount was kept increasing, which resulted in reaching the capacity limit of incineration plants

Emergency declaration of waste treatment

Complete rectification of waste treatment ordinance (1992)

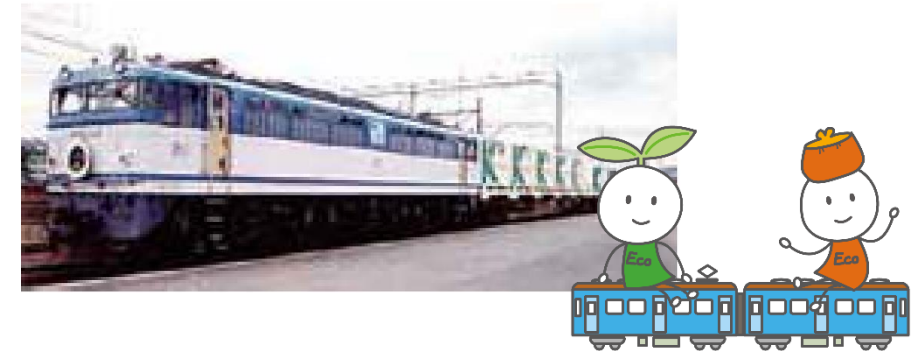
Based on appropriate waste treatment

Formulation of resource recycling society

Various measures were carried out for waste reduction and recycle (Waste decreased even population increased)



leaflet



Under consideration of decreasing transportation efficiency because of bad traffic condition and also of restrict exhausted gases from vehicles, for alternating waste transportation by collection vehicles, waste transportation systems conducted by specific train was adopted for the first time in Japan

1977	Start collection of cans(Execution in whole city from 1998)
1984	Start collection of waste dry-cell batteries
1991	Start collection of glass bottles (cans for 1977)
1997	Start collection of small size metal items
1999	Start collection of plastic bottles Recyclable collection date becomes once a week

## 2. History of waste policy of Kawasaki City

### (3) 3R promotion in 2000s

#### ■ From 2000s to present

- Worldwide awareness of environmental problems and waste problems
- Beginning of recycle society (2000)
- Determination of recycling related acts

The master plan for general waste treatment of Kawasaki City (Kawasaki challenge 3R) (2005)

Based on the recycle

Based on the 3R (Reduce, reuse and recycle)

Endeavor for aiming Global environment friendly and sustainable recycle based society

Incineration plant reduced from 4 to 3  
Life extension of landfill site



Citizen's activity to utilize compost in flowerbed



Collection point of waste small electronics

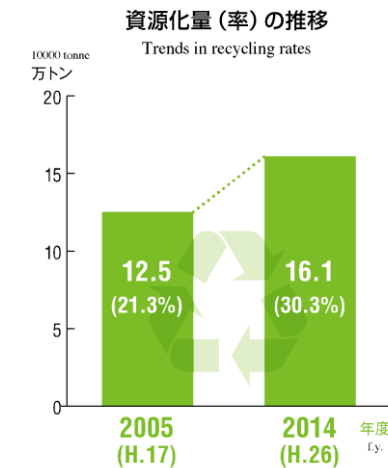
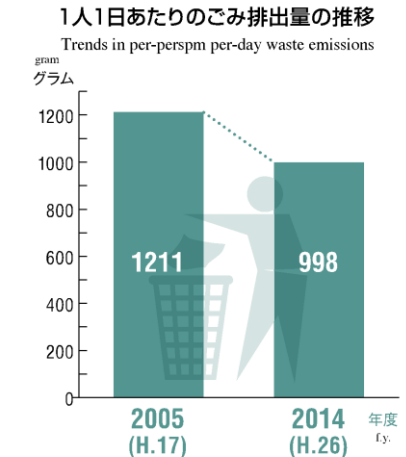
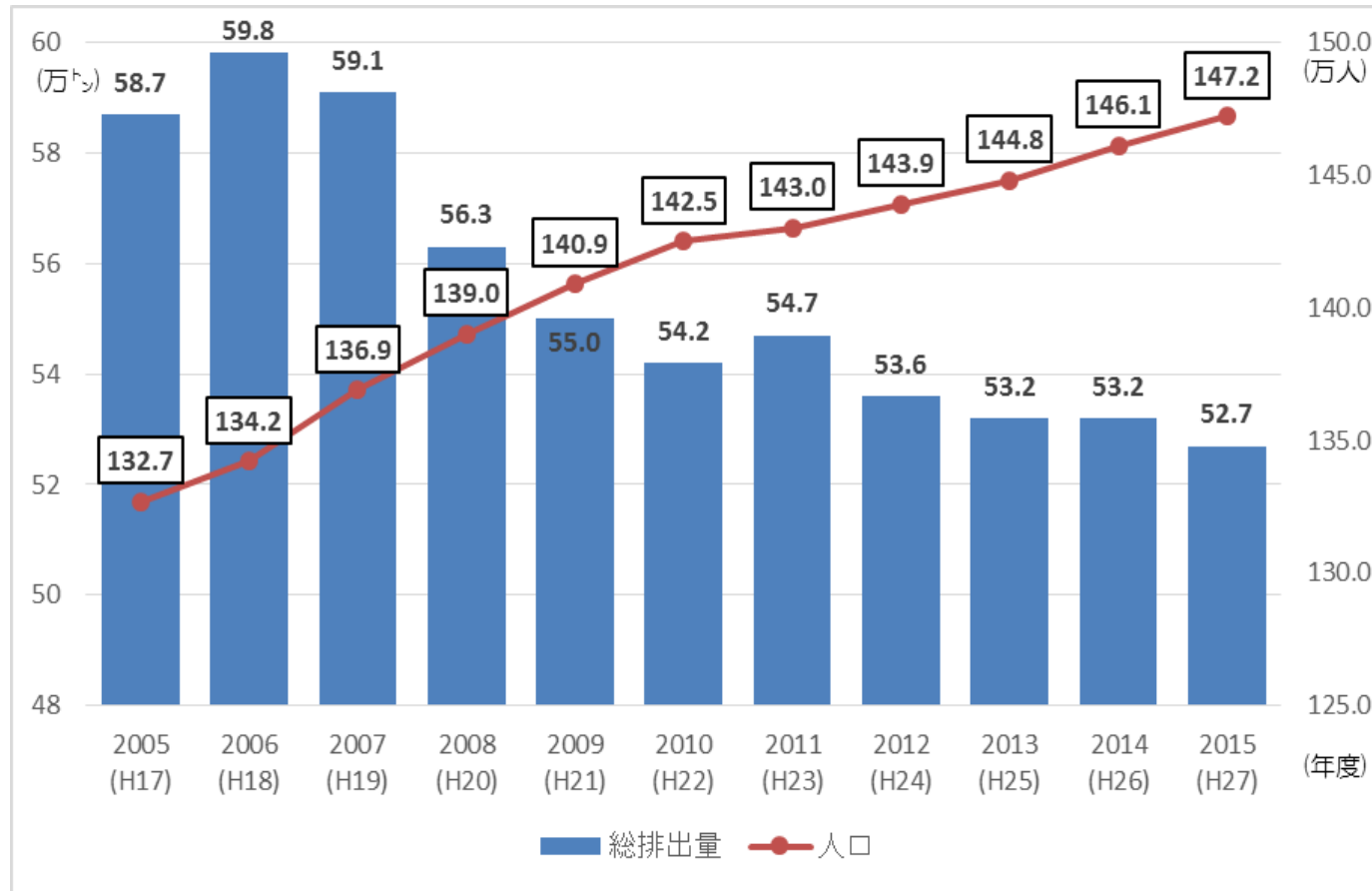


3R promotion character  
『Kawarun』

2000	Revision of waste collection fee for business operators, introduce designated waste collection bags and manifest
2004	Abolishment of waste collection from business operators
2006	Start collection of mixed papers (Execution in whole city from 2011)
2007	Revision of general waste collection (Reduced from 4 days to 3 days per week)
2011	Start collection of plastic wraps and containers
2013	Revision of general waste collection (Reduced from 3 days to 2 days per week)
	Start collection of waste small electronics at public facilities
2013	Incineration plant reduced from 4 to 3

# 2. History of waste policy of Kawasaki City

## (iv) Achievements and future endeavor



- Reduction of Incineration plant from 4 to 3 contribute to reduce 72,000,000,000 JPY expenditure in 40 years
- Landfill lifespan was extended to 2056, which was originally 2028



## 2. History of waste policy of Kawasaki City

### (iv) Achievements and future endeavor

- The 4th basic environment plan (2012), the 3rd the fundamental plan for establishing a sound material-cycle society (2013)
- Aiming to realize low-carbon and recycling society in waste management field

The master plan for general waste treatment of Kawasaki City (2016)  
-Waste reduction and EcoLife for bridging the future-

Based on the 3R (Reduce, reuse and recycle)

Promote 2R activities which has less load than recycle

#### Principle

Aim to realize sustainable and global environment friendly city

#### Fundamental policy

- Dealing with social condition change, realize society with generating waste as less as possible
- Practice of EcoLife with cooperation of citizens, business operators and municipal government, and promote 3R activities
- Protect comfortable, secure and healthy living environment

#### Planned period

From FY2016 to FY2025 (10 years)



### 3. Case of city-to-city collaboration between Kawasaki city and Bandung city

#### i. Origin of the city-to-city collaboration

## a. Collaboration through Asia-Pacific Eco-Business Forum (Collaborative activity with relevant organizations, such as the United Nations Environmental Program [UNEP])

- ◆ Kawasaki city convenes Asia-Pacific Eco-Business Forum every year in collaboration with UNEP, National Institute for Environment Studies of Japan and others in order to foster relationship among Kawasaki city and participating cities. Participants exchange information on advanced environmental technologies and strategies in the Forum.
- ◆ The 14<sup>th</sup> Forum was convened in February 2018.
- ◆ Bandung city, Indonesia, has participated in the Forum since its 2<sup>nd</sup> one.



### 3. Case of city-to-city collaboration between Kawasaki city and Bandung city

#### i. Origin of the city-to-city collaboration

#### b. Collaborative activities through the Joint Crediting Mechanism (JCM)

- Bandung city requested Kawasaki city to implement city-to-city collaboration activities for transforming Bandung city to a green city.
- Kawasaki city's reaction to the request from Bandung city:
- Kawasaki city received this request and implemented the following city-to-city collaboration activities with Bandung city from FY2014 to FY2015 by utilizing the JCM provided by the Ministry of the Environment of Japan:

<Example: city-to-city collaborative activities by utilizing JCM in FY2014>

Project 1	Providing information through on-site visits and training programs for capacity building toward formulating a Low Carbon City Plan in Bandung City
Project 2	Investigating introduction of LED lighting fixtures and energy management systems
Project 3	In the area of water and waste, examining introduction of energy generation technology (biodigester) utilizing food waste and other organic waste.

### 3. Case of city-to-city collaboration between Kawasaki city and Bandung city

#### i. Origin of the city-to-city collaboration

**18<sup>th</sup> February, 2016**

**Based on these city-to-city collaborative activities since 2014, Bandung City and Kawasaki City concluded a memorandum of understanding (MoU) concerning city to city cooperation towards low carbon and sustainable cities.**



#### Scope of Cooperation of the MOU:

- Solid waste management,
- Waste water management,
- Air quality management,
- Energy management,
- Transportation technologies,
- Other environmental fields that shall be mutually agreed by Bandung city and Kawasaki city.



### 3. Case of city-to-city collaboration between Kawasaki city and Bandung city

#### i. Origin of the city-to-city collaboration



- At the time of signing the MoU, the Mayor of Bandung requested Kawasaki City to implement city-to-city collaborative activities for the following points regarding waste management.

Request 1	Promotion of introducing and popularizing energy generation technology (biodigester) utilizing food waste and other organic waste
Request 2	Search for utilization methods of waste plastic in non-organic waste
Request 3	Support for establishment and operation of a recycle center



### 3. Case of city-to-city collaboration between Kawasaki city and Bandung city

#### ii. City-to-city collaboration project relevant to 3R



- Based on the MOU and the requests from the Mayor of Bandung city, Bandung city and Kawasaki city launched a **waste management support project toward a sustainable resource recycling society in Bandung city**.

Project purpose	Bandung City is to promote actions for building a sustainable resource recycling society by properly conducting the 3Rs (Reduce, Reuse, Recycle) through capacity development of residents and businesses, and by improving capacity for proper separation of organic and non-organic waste to recycle them as much as possible.
Outputs of the Project	<ol style="list-style-type: none"><li>1. Communities in Bandung City are to improve their capacity to properly separate and utilize waste.</li><li>2. Restaurants, hotels and others in Bandung City are to improve their capacity to properly separate and collect business-related food waste in order to promote utilization of biodigesters in Bandung City.</li><li>3. Bandung City is to improve its capacity to properly design, renovate and manage TPS 3Rs.</li><li>4. Bandung City is to properly implement a waste management master plan</li></ol>

### 3. Case of city-to-city collaboration between Kawasaki city and Bandung city

#### ii. City-to-city collaboration project relevant to 3R

#### Project Executing Organizations

Japan	<ul style="list-style-type: none"><li>➤ Kawasaki city government:<ul style="list-style-type: none"><li>• Kawasaki Environment Research Institute (KERI), Environmental Protection Bureau.</li></ul></li><li>➤ Institute for Global Environmental Strategies (IGES),</li><li>➤ Japan Environmental Sanitation Center (JESC) and, City of Kawasaki</li></ul>
Indonesia	<ul style="list-style-type: none"><li>➤ Bandung city government<ul style="list-style-type: none"><li>• Agency of Environment and Waste Management,</li><li>• Regional Development Planning Board</li></ul></li><li>➤ Bandung city Public Corporation on Waste Management (PD Kebersihan)</li><li>➤ Universities in Bandung city (Bandung Institute of Technology, Islamic University of Bandung),</li><li>➤ Citizens,</li><li>➤ Business sector including restaurants, hotels and traditional markets.</li></ul>

## 4. Summary

- Kawasaki city experienced three processes of waste management, such as (1) establishment of appropriate waste treatment, (2) emergency declaration of waste treatment, and (3) promotion of 3R. Presently, Kawasaki city goes ahead with policies for formulating circulation society and low carbon society in the sector of waste management.
- Due to promotion of 3R, quantity of Kawasaki city's generated waste has been decreased in spite of the situation that population of Kawasaki city has been increased.
- Kawasaki city and Bandung city have fostered a relationship of city-to-city collaboration through Asia-Pacific Eco-Business Forum convened by Kawasaki city. Based on the relationship, Kawasaki city and Bandung city implemented the city-to-city collaboration activities by utilizing the JCM. Based on these city-to-city collaborative activities since 2014, Bandung City and Kawasaki City concluded a memorandum of understanding (MoU) concerning city to city cooperation towards low carbon and sustainable cities.
- Based on the MoU, Kawasaki city and Bandung city implement a city-to-city collaborative project on 3R.

# Thank you for your kind attention



Kawarun

Kawasaki city's 3R  
promotion character



Eco-chans

Kawasaki city's ecological life  
promotion character

If you have questions on this presentation,  
please send your questions  
to the following email address:

[ono-taka@city.kawasaki.jp](mailto:ono-taka@city.kawasaki.jp)