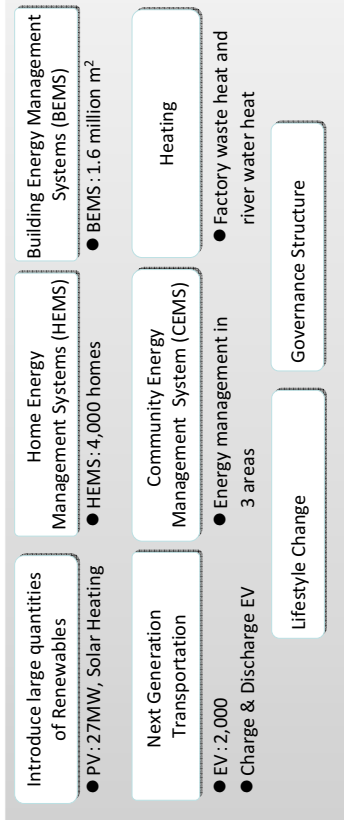


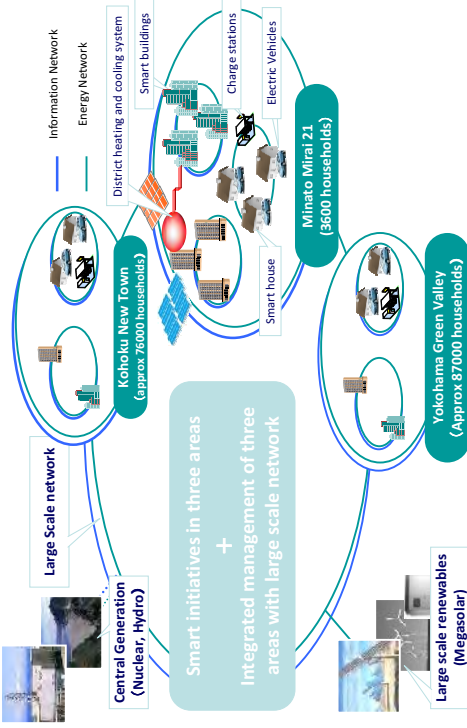
## YSCP Initiatives and Targets



16

## Highlight 1: Community Energy Management System (CEMS)

Absorbs power output fluctuation from renewables by integrating stationary battery with Home Energy Management Systems and Building Energy Management Systems

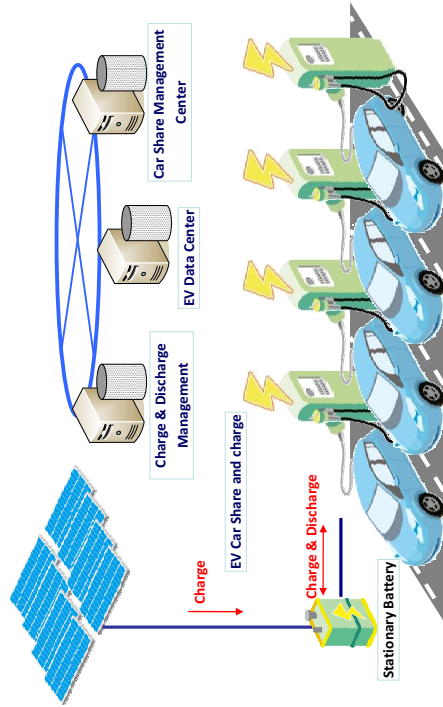


Achieves efficient energy management by managing both demand side and stationary energy storage

17

## Highlight 2: Energy Management with Charge and Discharge Enabled EV

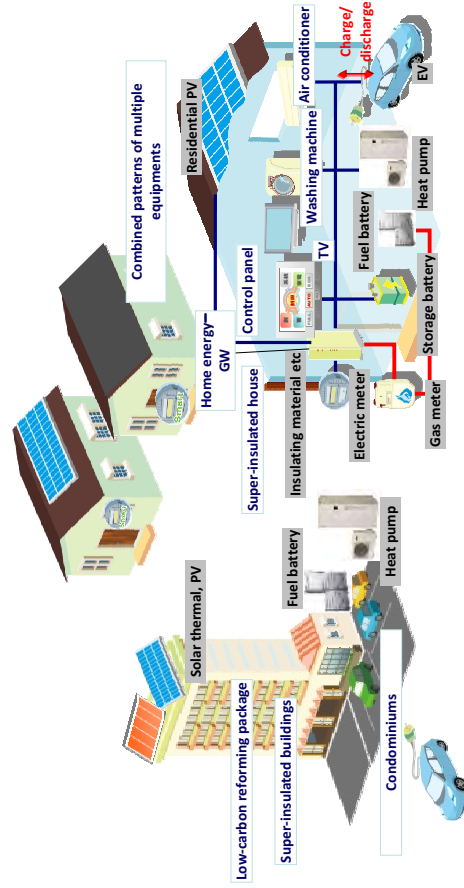
Increase usage of solar power and lower well to wheel EV CO2 footprint by developing Charge and Discharge enabled EVs that can be leveraged as clean energy storage in the three areas



Maintains EV user satisfaction and minimize societal cost

18

## Highlight 3: Home Energy Management System (HEMS)



• Introduces combined patterns of multiple PV and energy saving equipments to houses and buildings  
 • Examines to minimize the costs by combining with reforming and expansion of efficiency by insulating materials

19

◆ **Nissan Motor Co., Ltd. and City of Yokohama Signed the confirmation in March 2009.**

- Agreement on a 5-year project outline from 2009 to 2013.

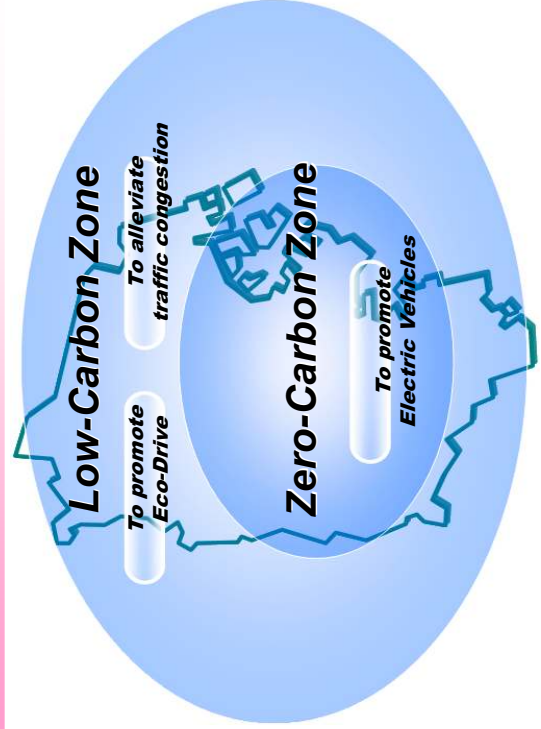
**Yokohama Mobility Project ZERO(YMPZ)**



<Scope of the Projects>

- (1) Promotion of Ecological driving
- (2) Validation Test of Route Guidance System
- (3) Promoting of Electric Vehicles
- (4) Benefit Estimation and Announcement

The Concept of  
**YOKOHAMA Mobility Project ZERO**



The Characteristics of  
**YOKOHAMA Mobility Project ZERO**

■ **Comprehensive and multiple measures**

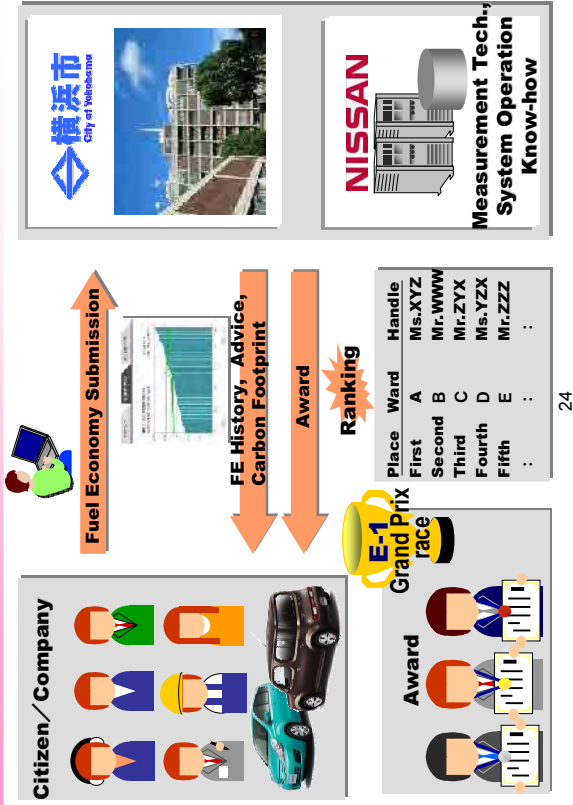
- Improvements in fuel efficiency of vehicles
- Improvements in traffic flow
- Construction of transportation system
- Cooperation with public transport.

■ **Unique approach**

- The development of collaboration between industry, government and academia at the policy-making stage prior to commercialization.

## YOKOHAMA Mobility Project ZERO

### (1) Promotion of Ecological Driving



## YOKOHAMA Mobility Project ZERO

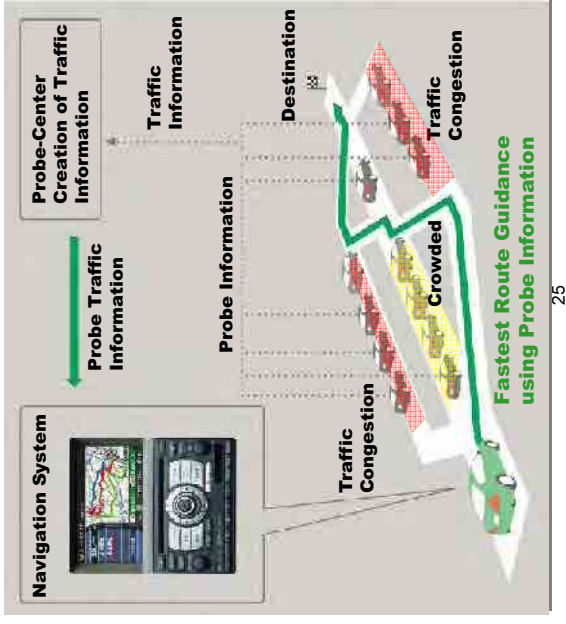
### (3) Promotion of Electric Vehicle (EV)

- Subsidy for the electric-charging infrastructures  
100 rapid electric-charging units (200V) were subsidized  
¥200,000 per unit in FY2009.
- Subsidy for EV purchases  
300 vehicles, including plug-in hybrid vehicles, are subsidized  
¥150,000 per vehicle in FY2010.
- The introduction of EV into the Yokohama municipal vehicle fleet
- Electric-charging infrastructure construction at Nissan facilities



## YOKOHAMA Mobility Project ZERO

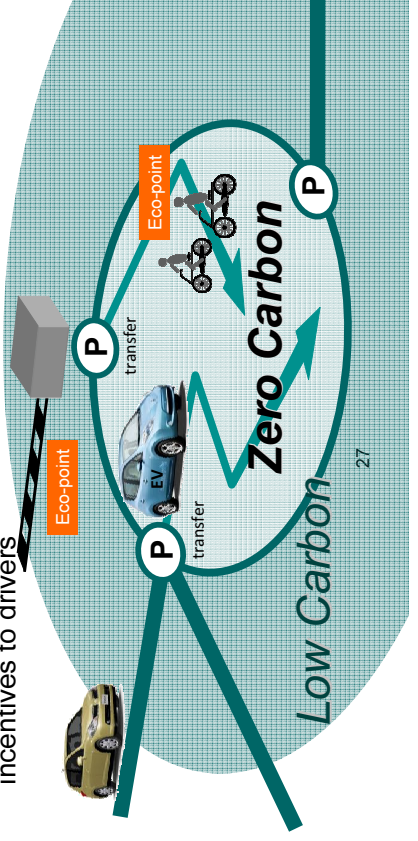
### (2) Validation Test of Route Guiding System



## YOKOHAMA Mobility Project ZERO

### (4) Benefit Estimation and Announcement

- Evaluate the impact of the Project on CO2 emission
- Study urban mobility planning
  - Study/Validation test for Car-sharing and measures to improve connections to public transportation
  - Validation test of the eco points system to provide incentives to drivers



**Thank you for your attention**

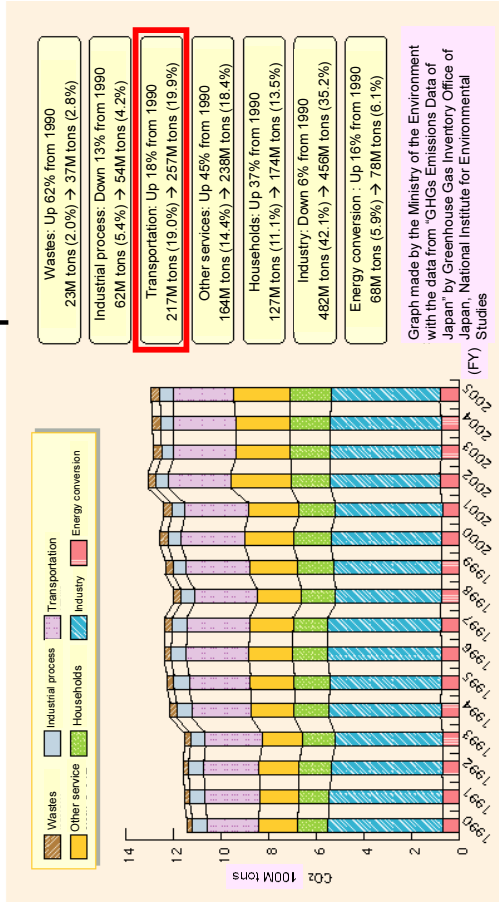
**Climate Change Policy Headquarters**

**City of Yokohama, Japan**

**[on-smart@city.yokohama.jp](mailto:on-smart@city.yokohama.jp)**



# Changes in Carbon Dioxide Emission in Japan



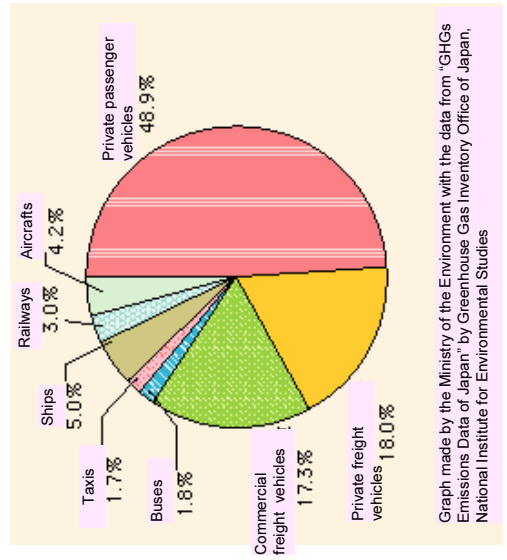
1

## Efforts against Global Warming in Transportation Sector

Transportation Pollution Measures Division  
 Environmental Conservation Department  
 Environmental Planning Bureau, City of Yokohama

2

## Breakdown of Carbon Dioxide Emission in the Transportation Sector (FY2005)



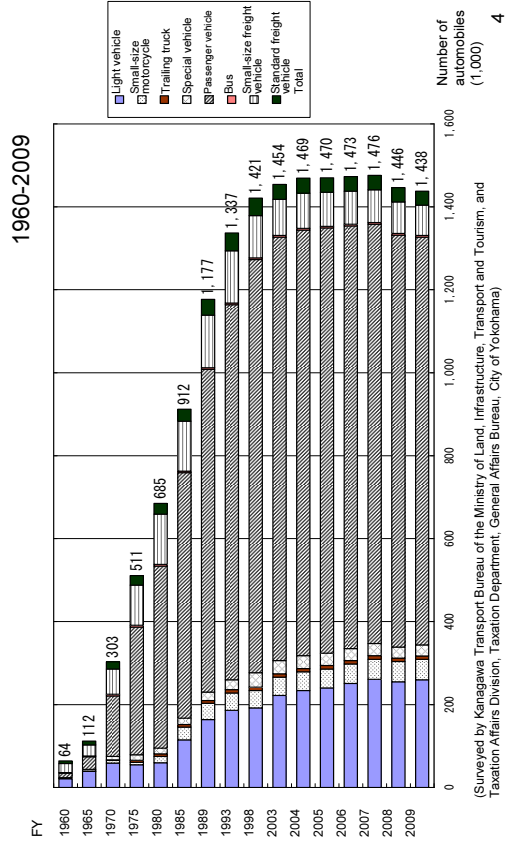
About 90% of the carbon dioxide emission in the transportation industry is from automobiles. The rest is from railways, ships and aircrafts. 56% of the emission from automobiles is from passenger vehicles.

Graph made by the Ministry of the Environment with the data from "GHGs Emissions Data of Japan" by Greenhouse Gas Inventory Office of Japan, National Institute for Environmental Studies

Source: Annual Report on the Environment and the Sound Material-Cycle Society in Japan FY 2007, Ministry of the Environment

3

## Changes in the Number of Automobiles Owned in Yokohama



(Surveyed by Kanagawa Transport Bureau of the Ministry of Land, Infrastructure, Transport and Tourism, and Taxation Affairs Division, Taxation Department, General Affairs Bureau, City of Yokohama)

Source: Annual Report on the Environment and the Sound Material-Cycle Society in Japan FY 2007, Ministry of the Environment

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## Article 144 of the Ordinance to Preserve the Living Environment of the City of Yokohama

[Creation of global warming prevention plan]

- Business operators shall create a global warming prevention plan that includes matters concerning greenhouse gas emission, measures and targets for emission reduction etc. based on **the guideline** and submit it to the mayor.
- Business operators shall report the implementation status to the mayor and disclose it to the public (every year).

Business operators required to observe these provisions

- Those that use 1500kl or more of oil equivalent
- **Those that use 100 or more vehicles**
- Others

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## Article 144 (2) of the Ordinance to Preserve the Living Environment of the City of Yokohama

(Evaluation and recognition of global warming prevention plan)

- Mayor shall evaluate the contents of global warming prevention plans and reports upon submission.
- Details of the evaluation shall be informed to business operators. Highly evaluated plans/reports shall be released to the public.
- If the implementation or target achievement status is exceptionally good, such operators may be publicly recognized.

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## Guideline concerning Reduction of Greenhouse Gas Emission (Parts concerning Automobiles)

**Priority measures for emission reduction**

- Improvement of the promotion structure
- Appropriate management of use of automobiles
- Management of data concerning energy consumption etc.
- Development of a structure to promote eco-driving

**Study and implementation of measures for emission reduction**

- For appropriate maintenance of automobiles and **introduction of low-emission and fuel-efficient vehicles**, actively conduct study and ensure implementation.

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## Promotion of Low-Emission and Fuel-Efficient Vehicles

- The top-level meeting of nine prefectures and cities (Metropolis of Tokyo, Prefectures of Saitama, Chiba, Kanagawa, and Cities of Yokohama, Kawasaki, Chiba, Saitama and Sagami-hara) **designated low-emission vehicles**.
- The criteria were revised in FY2009 in line with the new national automobile unit regulation.
- For gasoline-fueled passenger cars to be **designated as low-emission vehicles by the nine prefectures and cities**, the emission level has to be 75% lower than the 2005 emission standard and the fuel efficiency satisfies the 2015 standard or 25% higher than the 2010 standard.

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## Promotion of Low-Emission Vehicles Designated by the Nine Prefectures and Cities

Introduction of low-emission vehicles as official cars

- As a general rule, the city government shall select low-emission vehicles designated by the nine prefectures and cities when introducing official cars.



## Actions to Promote Use of Low-Emission Vehicles

- Subsidy for replacement with a designated low-emission vehicle

Fixed subsidy for replacement with a low-emission truck, bus, electric vehicle or a plug-in hybrid vehicle designated by the 9 prefectures and cities (Metropolis of Tokyo, Prefectures of Saitama, Chiba and Kanagawa, and Cities of Yokohama, Kawasaki, Chiba, Saitama and Sagami-hara) [since 2003]

- Subsidy for introduction of a compressed natural gas (CNG) car

Subsidy equal to half of the cost for the introduction of a CNG truck, bus or passenger car [since 2002]

## Promotion of Electric Vehicles (EV) and Plug-in Hybrid Vehicles (pHV)

- Subsidy for replacement with EV and pHV (Subsidy of 150,000 yen for the replacement of a car for which the annual mileage is 6,000km or more with an EV or pHV vehicle)  
\*The 6,000km condition removed in 2011
- Subsidy for installation of a double speed charging station (200V) for EV and pHV (half of the equipment cost (up to 200,000 yen) + part of the installation cost (up to 200,000 yen))

	LEAF (EV)	i-MiEV (EV)	Prius Plug-in Hybrid (PHV)	X-TRAIL FCV 2005 model (FCV)
Mileage per charge	200km	160km	23.4km only with electricity, and then hybrid driving	Over 370km per hydrogen charge
Cell capacity	24kwh	16kwh	5.2kwh	Output of compressed hydrogen fuel cell 90kw
Charge time	200V: 8 hrs	200V: 7 hrs 100V: 14 hrs	200V: 100 min 100V: 180 min	*
Weight	1,520kg	1,100kg	1,490kg	1,750kg
Price (tax included)	3.68M yen	3.98M yen	5.25M yen	—

\*Hydrogen charge time for FCV is hoped to be at the same level as gasoline-fueled vehicles in the future.

## Double Speed Charging Station

Kouhoku Ward Office



Nishi Ward Office

\*Double speed charging stations are also installed in other locations including convenience stores, parking spaces of large commercial facilities and gas stations.



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## Introduction of EV, pHV and Charting Stations

As of end March, 2011

- EV and pHV
  - Subsidies provided by the city for 134 EVs
  - 6 EVs and 2 pHVs introduced as official cars
- Charging station
  - Subsidies provided by the city for 55 stations
  - 7 stations at the city hall and ward offices

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## Subsidy for Double Speed Charging Stations

- Single-phase current 200V
- With a charging connector
- With a timer
- Can be used for EV and pHV



Subsidy will be available for the installation of a charging station at a mechanical parking system from 2011.

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## Promotion of Eco-Driving

- Eco-driving training in collaboration with JAF in the 9 prefectures and cities
- E1 Grand Prix website
- Training session held by Totsuka Ward in collaboration with JAF at Yokohama Driving School
- Rental of eco-driving rapid diagnosis tools for business operators



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## 10 Tips for Eco-Driving

- Use low gears to assist breaking
- Minimize use of air conditioning
- Accelerate smoothly
- Warm up you car appropriately
- Plan your travel
- Minimize your cargo
- No idling
- No illegal parking
- Check tire pressure
- Minimize accelerating and braking for fuel efficient driving

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## Promotion Activities

### Promotion activities with fuel-cell vehicles

- Environmental class at elementary school since FY2004 (for 6,558 pupils at 72 schools in total as of FY2010)
- Exhibition of fuel-cell vehicles at events



Fuel-cell vehicle  
(hydrogen-  
powered)

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## Classifications and Types of Waste

### ① General waste:

Waste other than industrial waste

### ② Special control general waste:

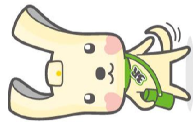
Out of general waste, explosive, toxic and infectious waste and other items designated under government ordinance as being harmful to human health and the living environment

### ③ Industrial waste:

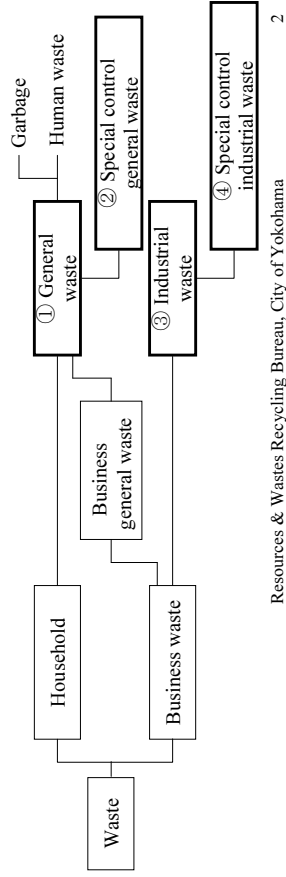
Waste products (20 items) generated in line with business activities, and imported waste

### ④ Special control industrial waste:

Out of industrial waste, explosive, toxic and infectious waste and other items designated under government ordinance as being harmful to human health and the living environment



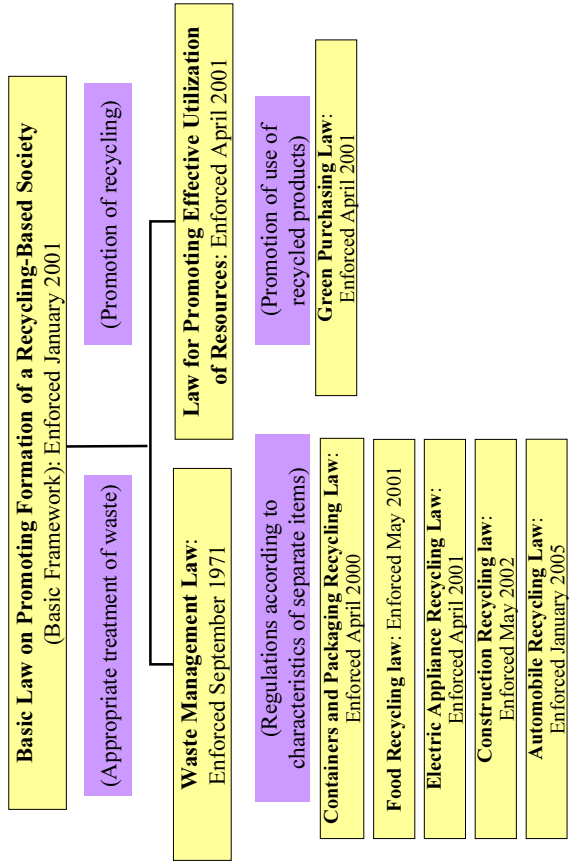
Resources & Wastes Recycling Bureau,  
City of Yokohama



Resources & Wastes Recycling Bureau, City of Yokohama

# “Yokohama G30” to “Yokohama 3R Dream” (S l i m)

## Legal Framework for Promoting Formation of a Recycling-Based Society



Resources & Wastes Recycling Bureau, City of Yokohama

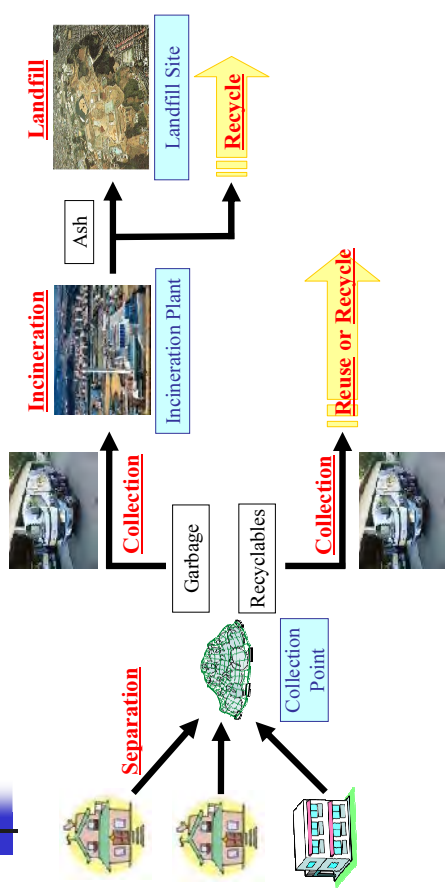
## City of Yokohama Profile

Population	3,687,311 (as of April 1, 2011)
Households	1,586,986 (as of April 1, 2011)
Frequency of garbage collection	Household waste (Combustible waste), Dry-cell batteries, Noncombustible waste, Spray cans : Twice a week Cans, Bottles, PET bottles, Small metal items, Plastic containers and packaging : Once a week Used paper, Used cloth : Twice a month Bulky waste : Application required
Collection points	About 63,000 sites



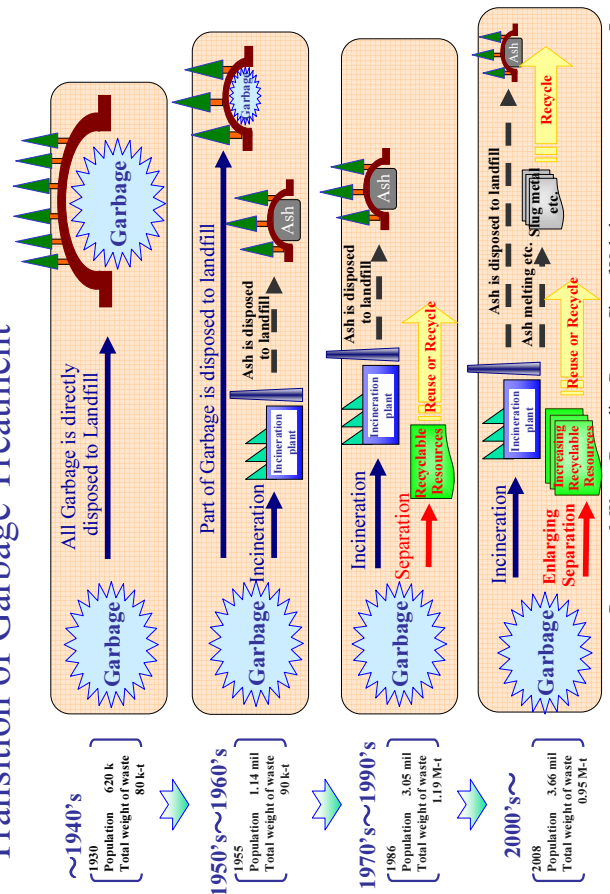
Resources & Wastes Recycling Bureau, City of Yokohama

# Flow of garbage and recyclables treatment



Resources & Wastes Recycling Bureau, City of Yokohama

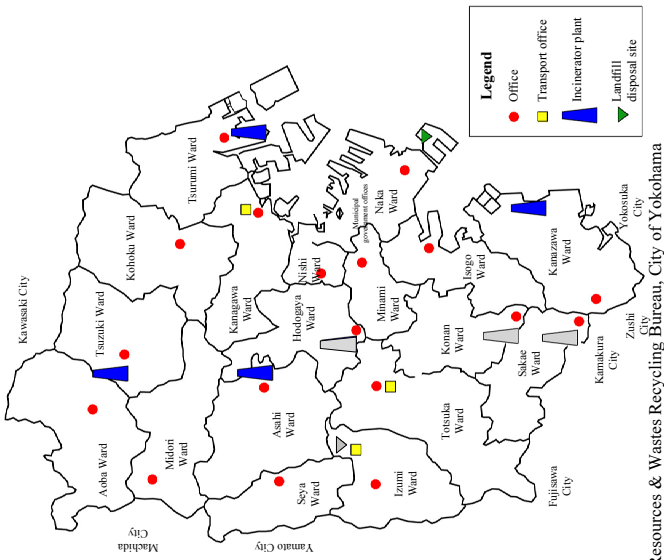
# Transition of Garbage Treatment



Resources & Wastes Recycling Bureau, City of Yokohama

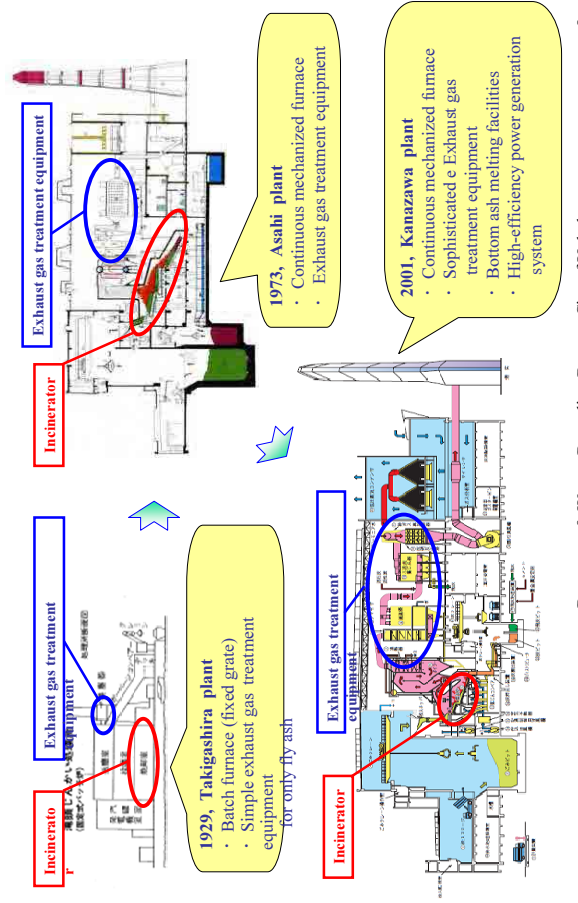
# Facilities layout

- ◆ Collection offices 18 in the city (1 in each ward)
- ◆ Transport offices 3 in the city
- ◆ Incineration plants 4 in the city (2 plants: closed, 1 plants: suspended)
- ◆ Landfill sites 1 in the city (1 site: closed)



Resources & Wastes Recycling Bureau, City of Yokohama

# Transition of System of Incineration



Resources & Wastes Recycling Bureau, City of Yokohama

# Incineration Plants and Landfill Sites

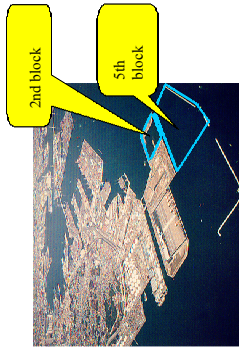
## ◆ Incineration Plants

	Tsurumi	Asahi	Kanazawa	Tsuzuki
Started in	Apr. 1995	Apr. 1999	Apr. 2001	Apr. 1984
Treatment capacity	1,200 t/day	540 t/day	1,200 t/day	1,200 t/day

## ◆ Landfill Sites



Shimmedai Disposal Site (~Mar. 2011)

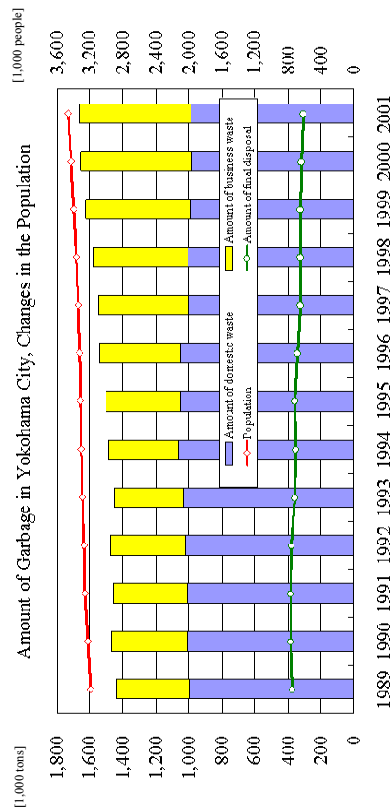


Minami-Honmoku Final Disposal Site  
Resources & Wastes Recycling Bureau, City of Yokohama

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# Background for the Creation of the Yokohama G30 Plan (1)

## Ever-Increasing Garbage



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# “Yokohama G30”

Yokohama municipal solid waste management master plan (FY2002-FY2010)



# Background for the Creation of the Yokohama G30 Plan (2)

Continuation of society will be difficult if no action is taken to solve various environmental problems...



In order to hand over the rich natural environment to our children

Jan. 2003

“Yokohama G30 Plan” was created

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## Basic Principles of the Yokohama G30 Plan

Citizens, companies and the administration work together in promoting the 3Rs for waste, with the aim of realizing a “sound material-cycle society” where the consumption of resources and energy is reduced as well as reducing the environmental impact.

### Roles of Citizens, Companies the Administration

<b>Citizens</b>	Changing to an environmentally friendly lifestyle, rigorous sorting of garbage, etc.
<b>Companies</b>	Design and production of products which reduce the emission of waste, collection and recycling of used products, etc.
<b>Administration</b>	Creation of systems for 3Rs, raising the awareness of people, provision and exchange of information, etc.

Resources & Wastes Recycling Bureau, City of Yokohama

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## Publicity and explanation to the residents

- ◆ Separation briefing : About 11,000 times (FY2004 & 2005)
- ◆ Educational campaign in front of train stations : About 600 times (FY2004 & 2005)
- ◆ Early morning educational instruction at collection point : About 3,300 times (FY2004 & 2005)
- ◆ Garbage left behind due to non-separation : About 10,900 times (FY2009)



Separation briefing



Educational campaign in front of the stations



Early morning educational instruction

Resources & Wastes Recycling Bureau, City of Yokohama

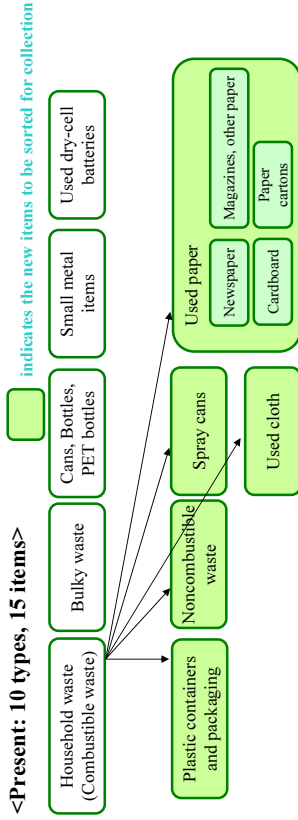
15

## Efforts to Reduce Household Waste - Increase in Items for Sorted Collection -

### <Past: 5 types, 7 items>



### <Present: 10 types, 15 items>



Resources & Wastes Recycling Bureau, City of Yokohama

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## Inspection of Collected Garbage at Plants

- ◆ The inspection of collected waste at incineration plants became stricter from Dec. 2003.
- ◆ A self-propelled waste inspection device was introduced at all plants.
- ◆ If the collected garbage contains a large volume of inappropriate waste and recyclable waste such as used paper, the garbage collection company is instructed to take it back.



Inspection of incoming waste



Waste inspection device

	Rate of collection trucks inspected
FY2008	77% (156,864 trucks)
FY2009	85% (150,606 trucks)

Resources & Wastes Recycling Bureau, City of Yokohama

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## Promoting Environment Study

- ◆ **G30 Delivery lecture** : Visit elementary and Junior High schools
  - Explain about the situation with the amount of garbage and processing system
  - Demonstration of collection work
- ◆ **Incineration plant facility tour** : **About 38,000 participants (FY2009)**



Incineration plant facility tour



G30 Delivery lecture

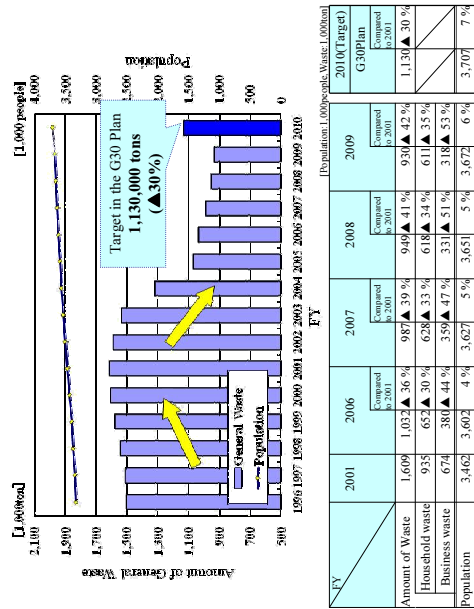


G30 Delivery lecture

Resources & Wastes Recycling Bureau, City of Yokohama

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## Movements and Targets of Amount of Waste



Resources & Wastes Recycling Bureau, City of Yokohama

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## Service Improvement for Citizens

- ◆ **“Fureai” Collection** : with the help of volunteers from the local area, we offer assistance to the elderly and persons with disabilities by carrying trash from their homes to the collection locations.
- ◆ **Narrow road collection** : Utilize pickup trucks to collect refuse from areas where the regular garbage collectors cannot enter.



“Fureai” collection



Pickup truck used for narrow road collection

Resources & Wastes Recycling Bureau, City of Yokohama

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## “Effects of G30”

### (1) Incineration plants - closed and suspended -

- ◆ Two incineration plants were closed down and one was suspended due to a significant reduction in the amount of garbage.

[Incineration plant]

Sakae (1,500t/day)

Konan (900t/day)

Hodogaya (1,200t/day) : Apr. 2010 **suspended**

: Oct. 2005 **closed**

: Nov. 2006 **closed**



Resources & Wastes Recycling Bureau, City of Yokohama

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## “Effects of G30”

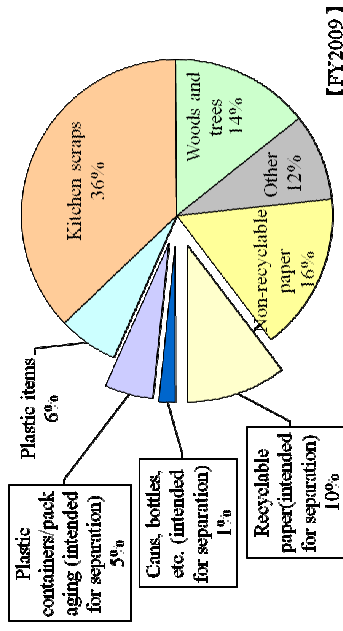
### (2) Reduction of Environmental Impact

- ◆ CO<sub>2</sub> emissions when treating garbage were reduced by significantly reducing the amount of garbage.
- ◆ CO<sub>2</sub> emissions in FY 2009 were **reduced by 900,000 tons** when compared to FY 2001.  
(originally calculated by City of Yokohama with LCA method.)

This is equivalent to the CO<sub>2</sub> absorbed by **64 million Japanese cedars** in one year.



## Household Waste (Combustible Waste) Composition



“Combustible waste” still contains recyclable paper or plastic containers that can be separated out.

## Beyond the G30 Plan

### “Yokohama 3R Dream”

Yokohama municipal solid waste management master plan (FY2010-FY2025)



## G30 to Yokohama 3R Dream Plan ( s l i m )

### ◆ G30 Plan (Jan. 2003)

We have promoted reduction of the amount of garbage by the separation and recycling of garbage



### ◆ Yokohama 3R Dream Plan (Jan. 2011)

While continuing the separation and recycling of garbage, we plan

1. to reduce garbage (waste generation control)
2. to deal with global warming and to reduce GHG emissions
3. to pursue safe, secure, and stable garbage processing

## What is “3R Dream”?

“3R Dream” ⇒ “3R Dream Plan” aims to reduce garbage and its impact on the environment by “3R”, and ensure the environment’s richness to future generation. And so we will establish a society comprising of citizens and companies where children have “Dreams” for future.

“3R” ⇒ Practice the 3Rs

Reduce : Reduce garbage itself

Reuse : Use any goods as long as we can

Recycling : Separate and use articles as recyclables

Resources & Wastes Recycling Bureau, City of Yokohama

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## Basic principle of 3R Dream Plan

We will endeavor to effectively use limited resources and energy as well as to promote 3R based on further cooperation among the citizen, companies, and administration by conducting proper disposal management, and establish a sustainable and Eco-Model City by combining reduction in the impact on the environment and healthy fiscal management.



## Targets of 3R Dream Plan

Scheduled Period : FY2010 to FY2025

### ◆ Further challenge for 3R

We will reduce total generation of garbage (total amount of garbage and recyclables) by **more than 3%** by FY2013 (as compared to the generation for FY 2009) and by **more than 10% by FY2025** (as compared to the generation for FY 2009)

### ◆ Tackle global warming starting from reduction garbage

We will reduce GHG emissions from garbage processing by **more than 10%** by FY2013 (as compared to the emissions for FY 2009) and by **more than 50% by FY2025** (as compared to the emissions for FY 2009)

### ◆ Pursuing safe, secure, and stable garbage processing

Resources & Wastes Recycling Bureau, City of Yokohama

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## Match of Reduce ~ Yokohama R Square ~

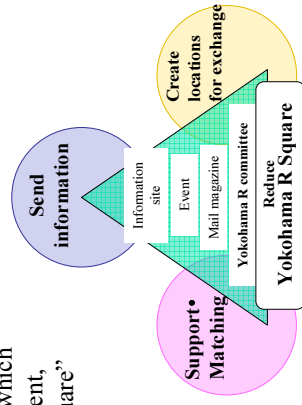
### Promoting “Reduce” efforts

In order to promote the “Reduce” effort, which is the measure most kind to the environment, we introduced “Yokohama R(reduce) square” in Oct. 2010.



Yokohama R Committee

Committee made up of residents, businesses and the municipal government to support the actualization of new efforts by providing information, publicity and the introduction of partners.



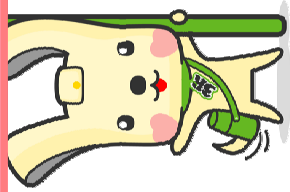
【Schematic image】

Resources & Wastes Recycling Bureau, City of Yokohama

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**Striving for the further  
reduction and recycling of waste.**



**END**