

# Policies and practices of low carbon, green cities in Japan

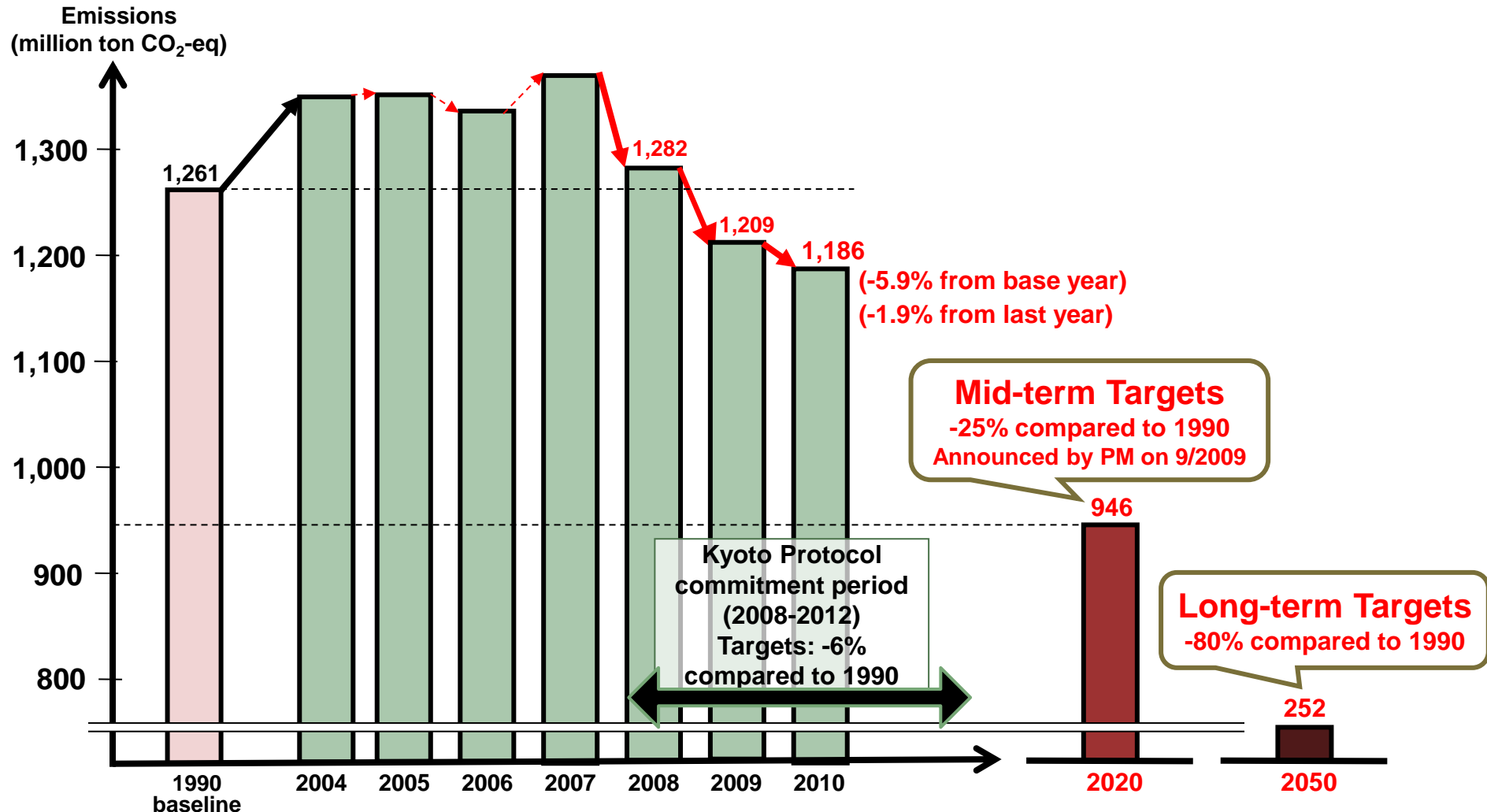
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**Ikuyo KIKUSAWA**

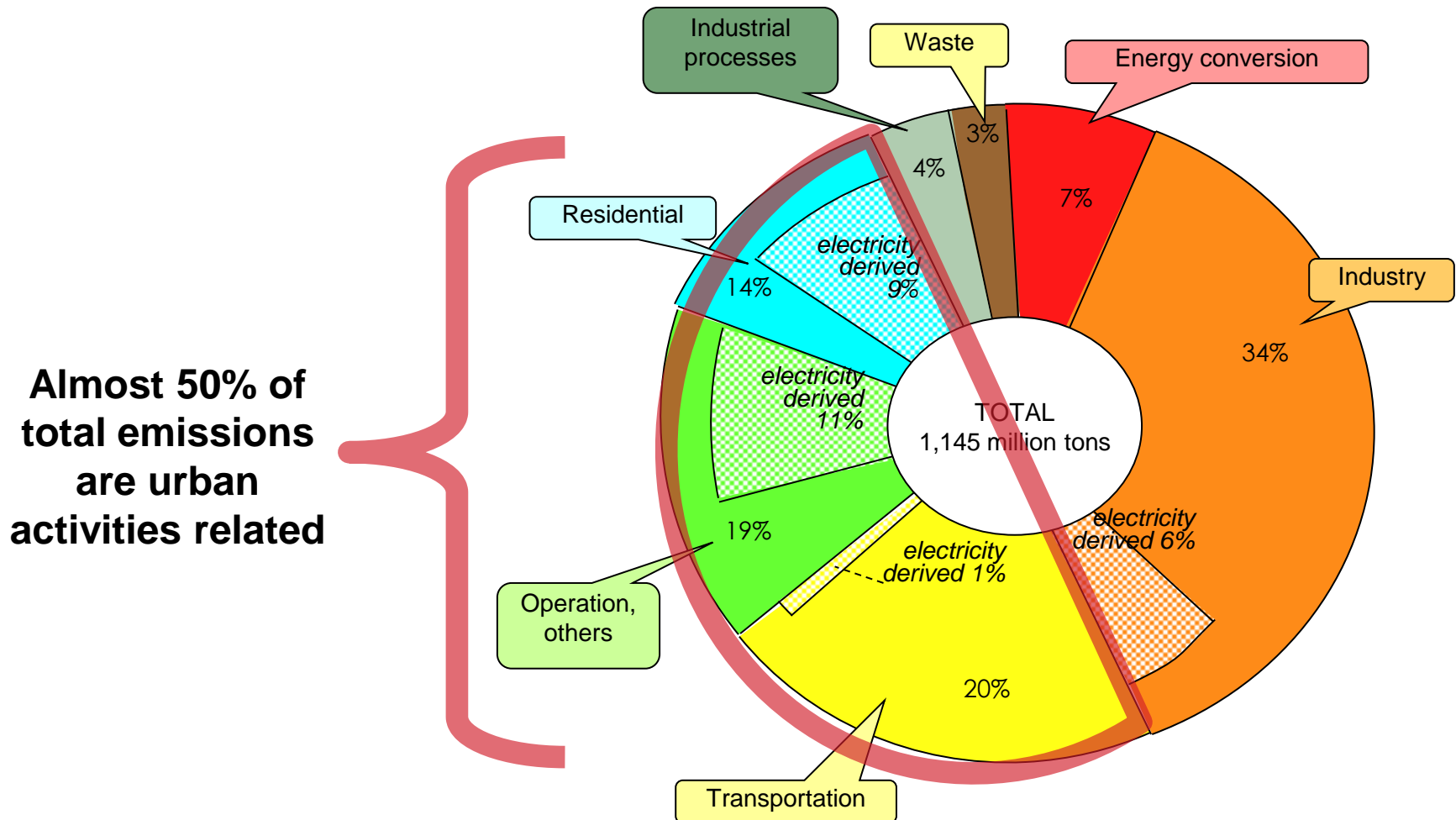
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# GHG Emissions in Japan & Mid- & Long-Term Targets



## CO<sub>2</sub> emissions by sector



Source: GHG emissions and absorption index

# History of Japan's Global Warming Countermeasures

## International trends

- 1992 United Nations Framework Convention on Climate Change adopted
- 1997 Kyoto Protocol adopted
- 2005 Kyoto Protocol entered into force
- 2007 Bali Road Map
- 2009 Copenhagen Accord

- Require large and designated cities to incorporate GHG reduction measures in the city's Action Plan

## Japanese government's policies

- 1998 Act on Promotion of Global Warming Countermeasures enacted
  - Fundamental policy of global warming countermeasures, commitment
  - **National/local governments' Initiative Action Plans**
- 2002 Act on Promotion of Global Warming Countermeasures revised
  - Kyoto Protocol Target Achievement Plan stipulated
- 2005 Act on Promotion of Global Warming Countermeasures revised
  - **Mandatory Greenhouse Gas Accounting and Reporting System** introduced
  - Japanese Voluntary Emissions Trading Scheme started
- 2006 Act on Promotion of Global Warming Countermeasures revised
  - Utilization of **Kyoto Mechanisms**
- 2008 Act on Promotion of Global Warming Countermeasures revised
  - **Local governments' programmes for the control of Greenhouse Gas within their local areas**
  - Guideline for the control of Greenhouse Gas for business operators
  - Offset Credit Scheme (J-VER) started
- 2010 The Bill of the Basic Act on Global Warming Countermeasures submitted

Developed from Hikaru Kobayashi

## Status of the Implementation of Action Plan

		No. of city	Implemented	To be introduced in FY2010	To be introduced after 2011	Not planned	Not specified
<b>Administrative</b>	Government ordinance city (> 0.5 million)	19	16 (84%)	3			0
	Core city (> 0.3 million)	40	39 (98%)	1			0
	Special city (> 0.2 million)	41	39 (95%)	1	1		0
	Other city	1,650	1,142 (69%)	107	397		4
	<b>Total</b>	<b>1,750</b>	<b>1,236 (71%)</b>	<b>112</b>	<b>398</b>		<b>4</b>
<b>Divisional</b>	Government ordinance city (> 0.5 million)	19	1 (9%)	7	11		0
	Core city (> 0.3 million)	40	10 (25%)	21	9		0
	Special city (> 0.2 million)	41	3 (7%)	16	21	1	0
	Other city	1,650	37 (2%)	70	308	1,171	64
	<b>Total</b>	<b>1,750</b>	<b>75 (4%)</b>	<b>114</b>	<b>349</b>	<b>1,172</b>	

**Transport and urban structure**

- Menu 1 Conversion to compact urban structure**
- Menu 2 Road**
- Menu 3 Demand**
- Menu 4 Public transportation**
- Menu 5 Promotion of public transportation use**

**Energy**

- Menu 6 Reduction in energy impact**
- Menu 7 Efficient use of energy**
- Menu 7 Unused energy use**
- Menu 9 Renewable energy**

**Green**

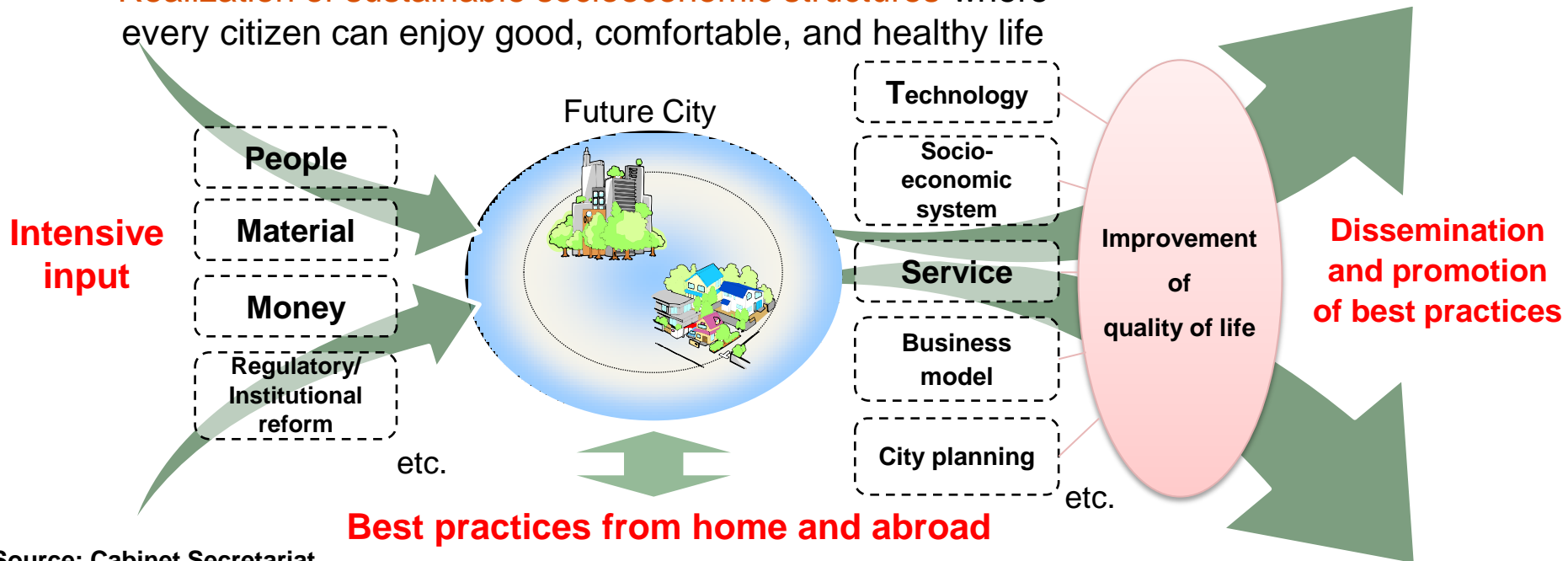
- Menu 10 Urban planning master plan**
- Menu 11 Park maintenance**
- Menu 12 Greenery management**
- Menu 13 Green tax**
- Menu 11 Large scale greenery**
- Menu 12 Wooden biomass**
- Menu 13 Heat island**

# Future City initiative led by Cabinet Secretariat

Based on New Growth Strategy (Cabinet approval : June 2010),  
Creating best practices, which are unprecedented in the world, in limited number of specific cities  
Disseminating best practices both at home and abroad → demand expansion, job creation, enhancement of ability to solve problems internationally

Regional revitalisation through socioeconomic system innovation

Realization of sustainable socioeconomic structures where every citizen can enjoy good, comfortable, and healthy life



# IIDA CITY: Community-based Solar Energy

## Population

105,364 (2010)

## Households

37,817 (2010)

## Area

658.76 km<sup>2</sup>/Woodland : 84.3%

## Ratio of seniors

27.8% (April 2009)

## Agricultural output

Approx. \11.5 billion

## Employment distribution

Primary industry...10.9%

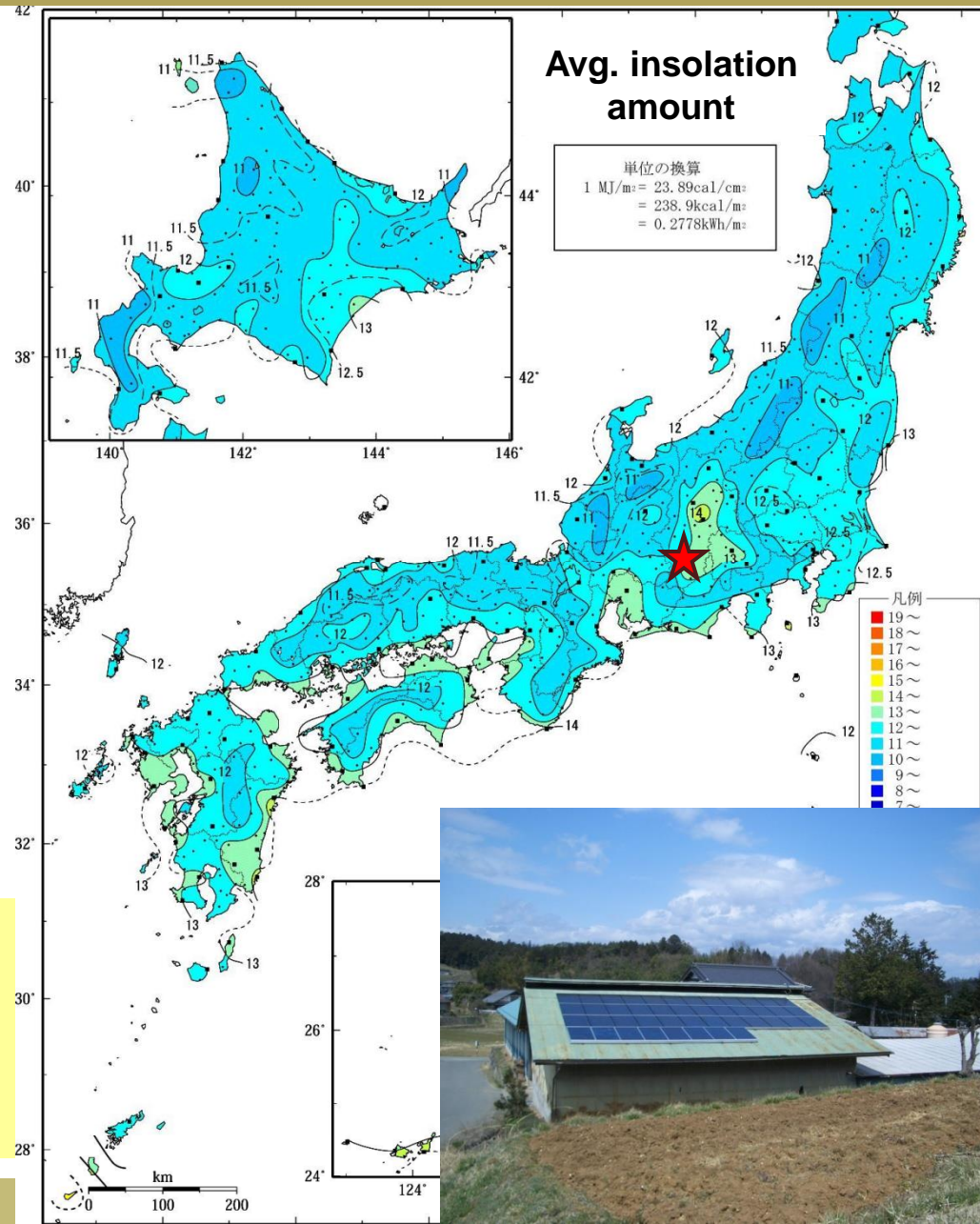
Secondary industry...36.5%

Tertiary industry...52.5%

## Climate

Average temperature 13.1°C

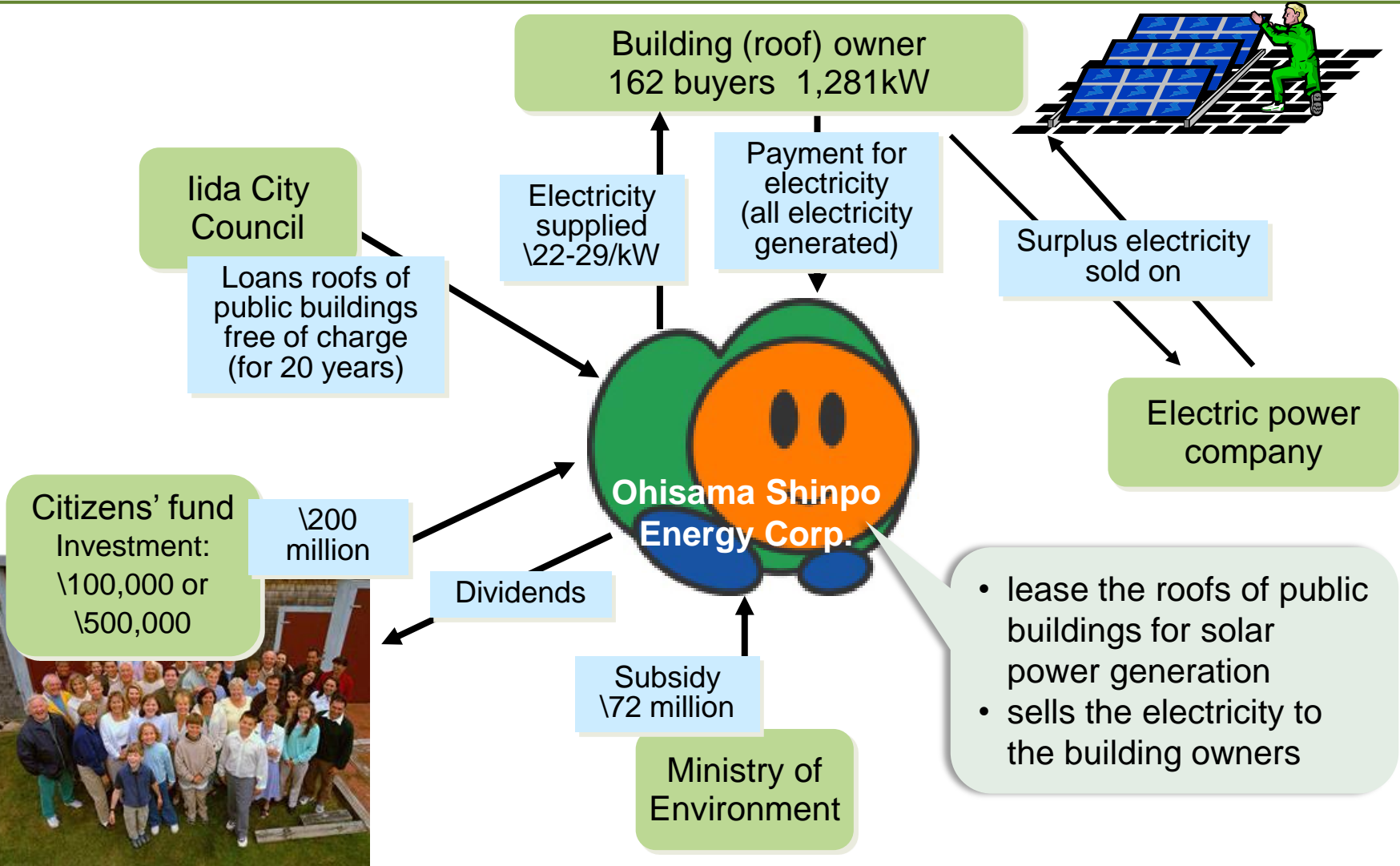
Annual rainfall 1,767mm



- Stable sunlight hours /day year-round (approx. 2,000 hours of sunlight annually)
- Inland location ensures high insolation levels
- Warm climate suitable to solar generation



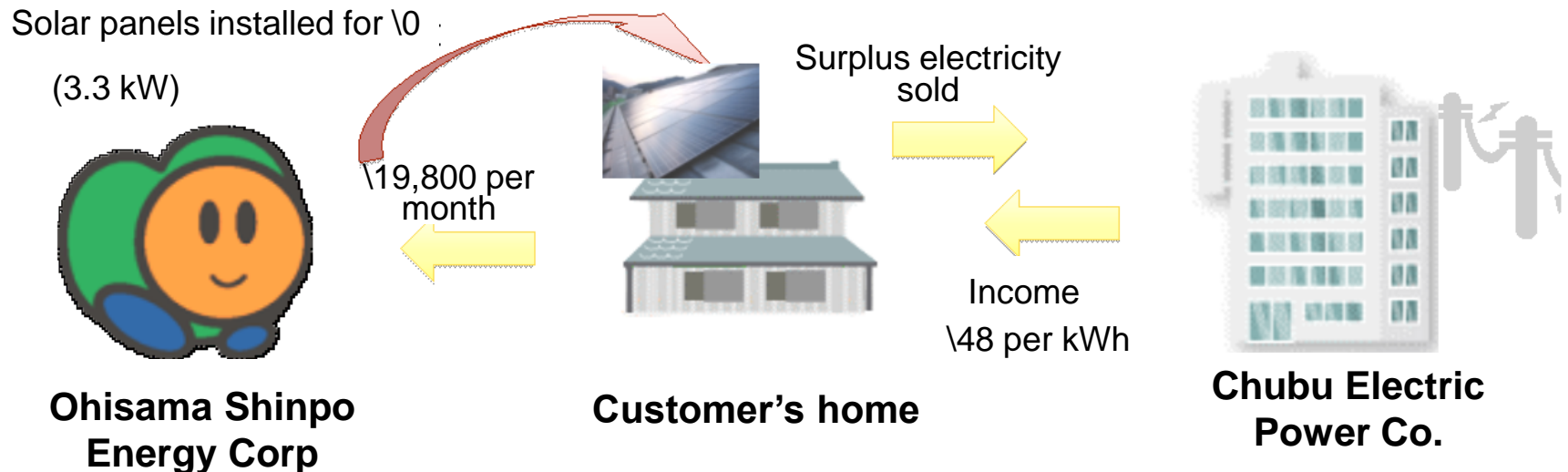
# Cooperative Solar Power Generation Project



## ¥0 Solar System\*

\* 2010 version

- Ohisama Shinpo Energy Corp. installs solar panels at the customer's home for no fee (¥0).
- The customer pays the corporation a fixed rate of ¥19,800 per month for 9 years.
- The customer sells electricity surplus to Chubu Electric Power Co. via its power grid
- Chubu Electric pays ¥48 per kWh to the customer
- In the 10th year, ownership of the panels passes to the customer for no additional fee.



# TOYAMA CITY: Renovation of public transportation system

## Population

417,465

approx. 20% decline 2005 – 2040

1 in 3 – over 65 by 2035

## Area:

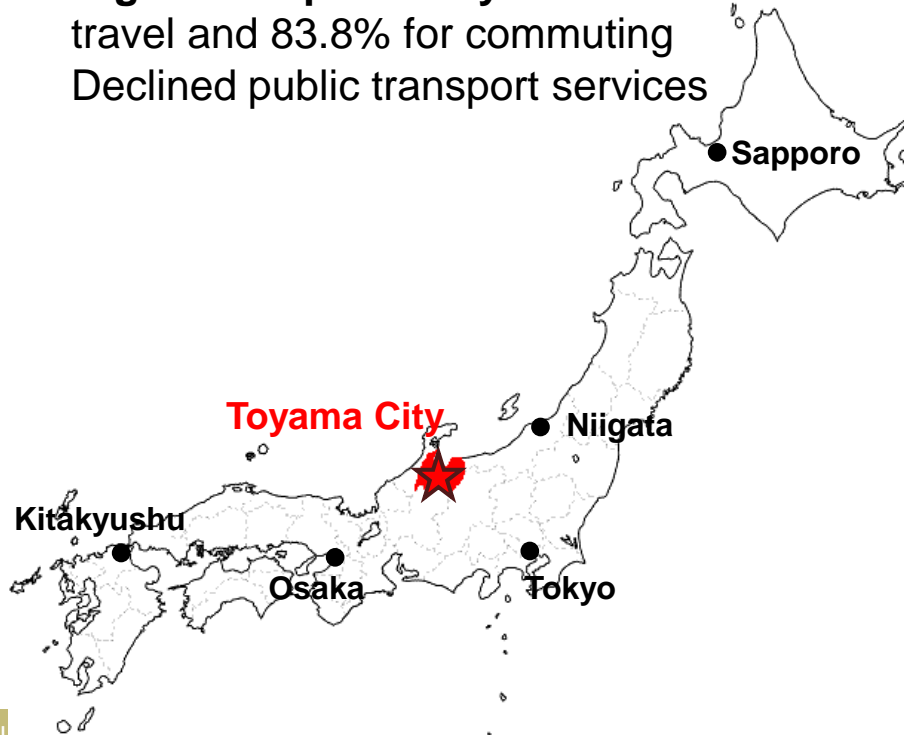
1,241.85 km<sup>2</sup>

## Key features

**Low population density:** (40.3/ha) due to flat landscape, large habitable area

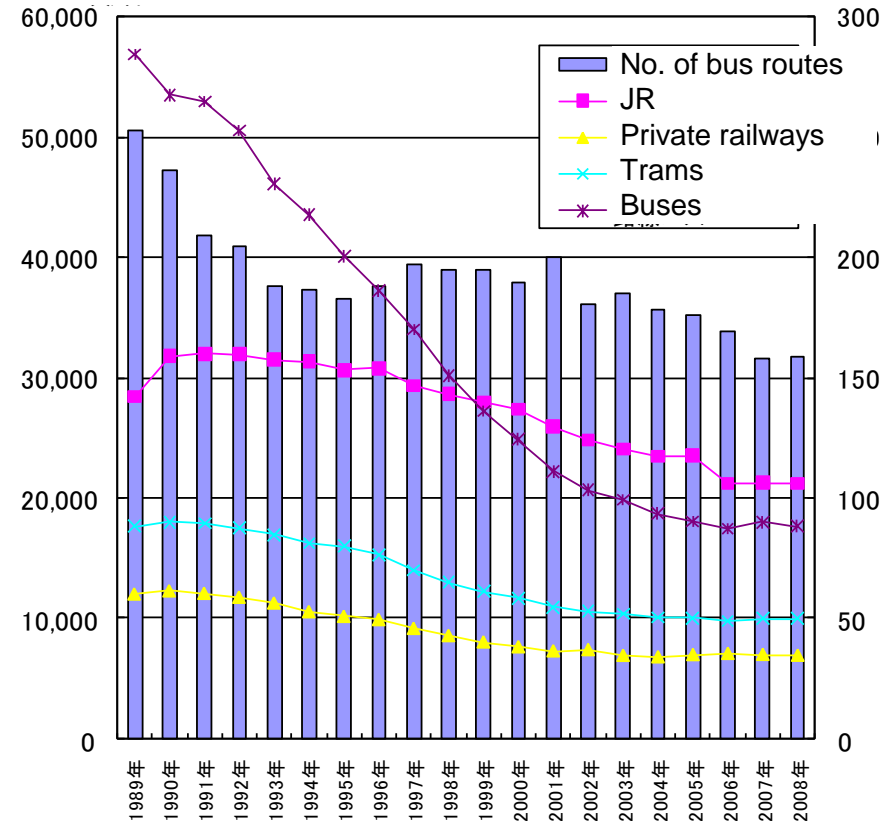
**High car dependency:** 72.2% of all travel and 83.8% for commuting

Declined public transport services



## Passengers/ day

## No. of routes





**Former JR Toyamako Line**



**LRT Network**

- Japan's first full-scale LRT system
- Publicly-constructed and privately-operated
- project cost ¥5.8 billion.
- Service improvement

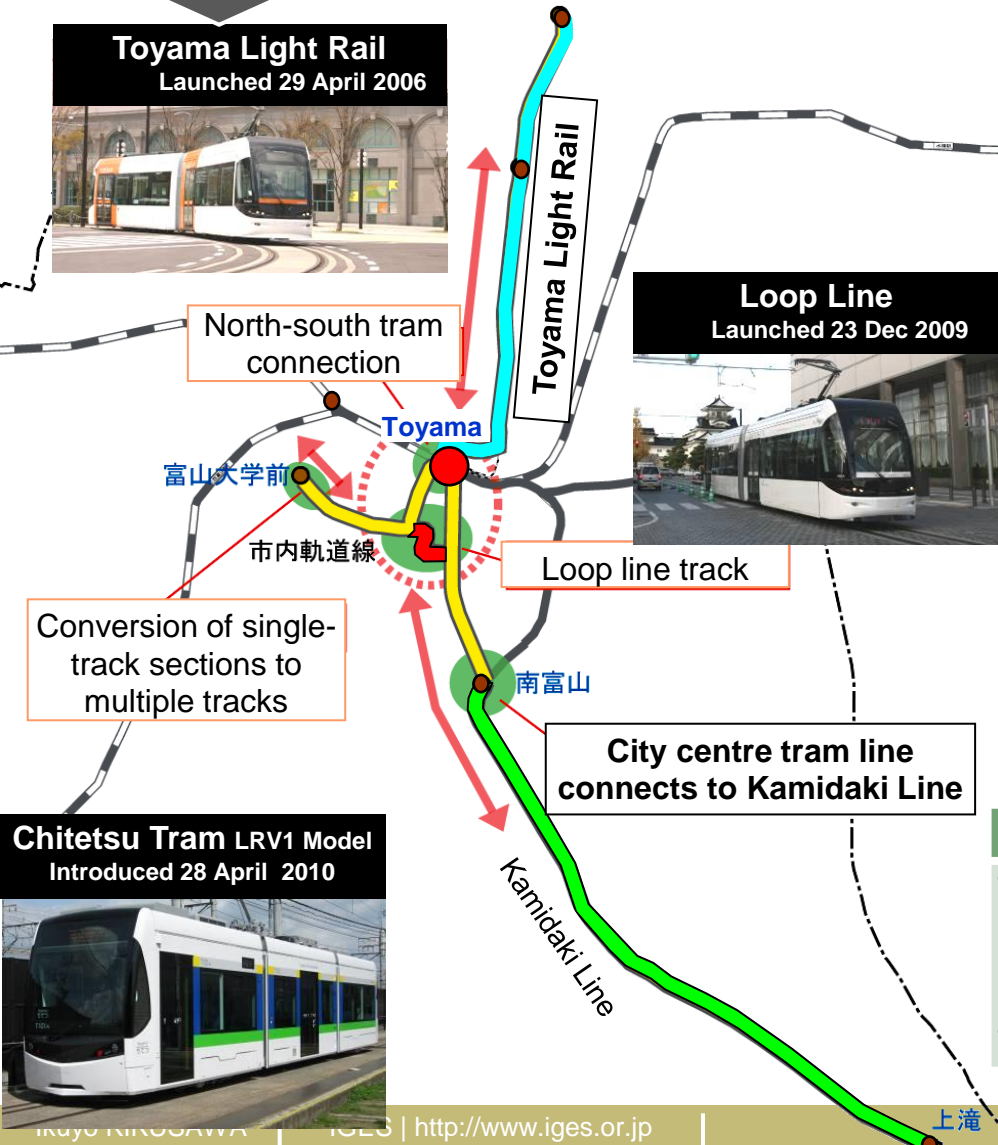


	Before	After
Headway	30 – 60 mins.	15 mins (10 mins for rush hour)
First / last train	5:00 / 21:00	5:00 / 23:00
No. of station	9	13
Train	Conventional rail car	Low carriage floors

**Toyama Light Rail**  
Launched 29 April 2006



**Loop Line**  
Launched 23 Dec 2009



**City-centre Tram Loop Line Project**

- Line extension: approx. 0.9 km (loop line section 3.4 km in total)
- No. of stops: 3 new stops on extended line
- Planned service: 2 existing routes supplemented by an additional anti-clockwise loop route
- No. of trams: 3 new low-floor trams put into operation

Future Rail Network (extension)	
Toyama Light Rail	7.6 km
Chitetsu* trams	6.4 km
Loop Line completion	0.9 km
North-south connection	0.3 km
Transfer to Kamidaki Line	10.1 km

**Chitetsu Tram LRV1 Model**  
Introduced 28 April 2010



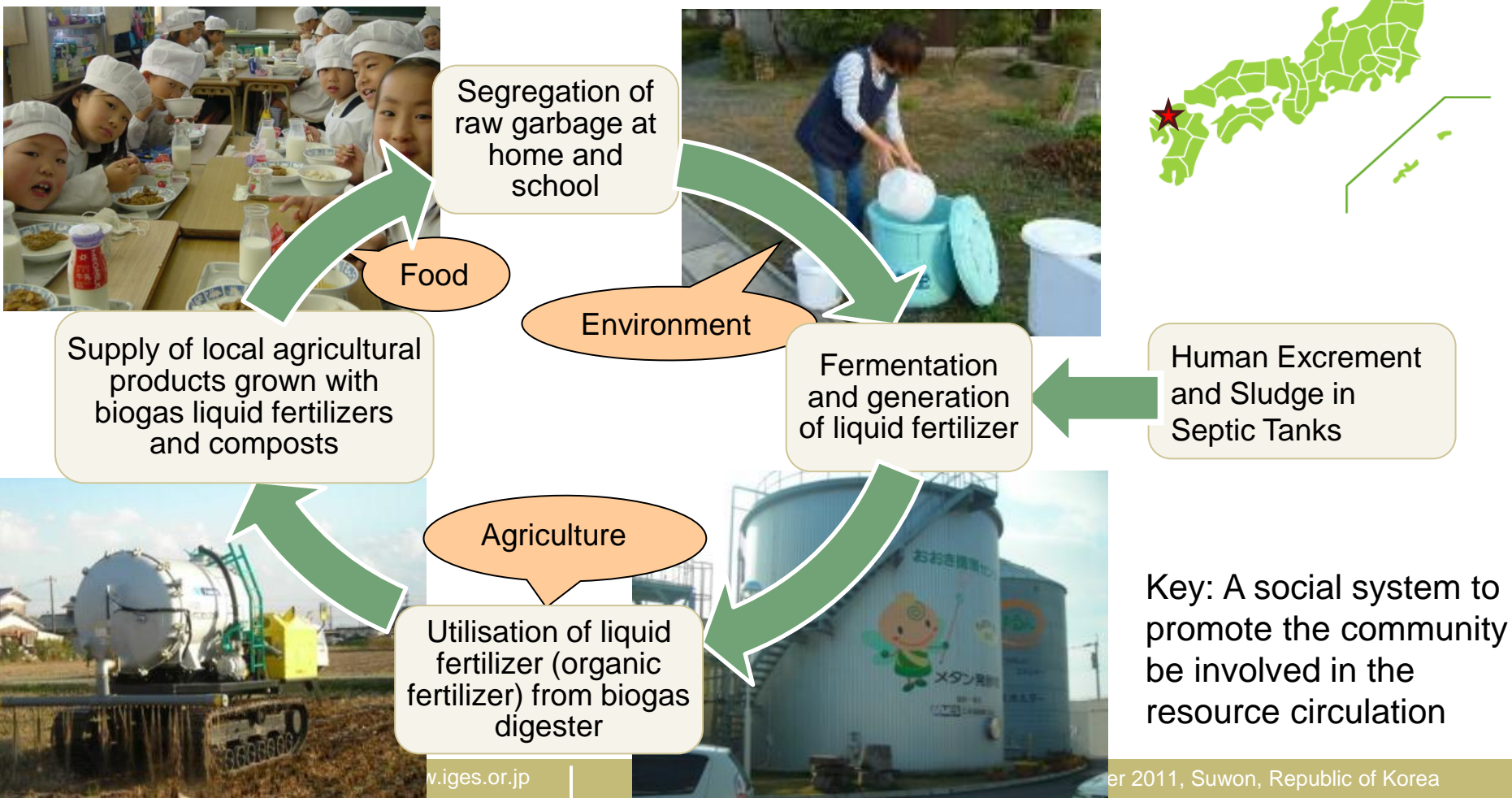
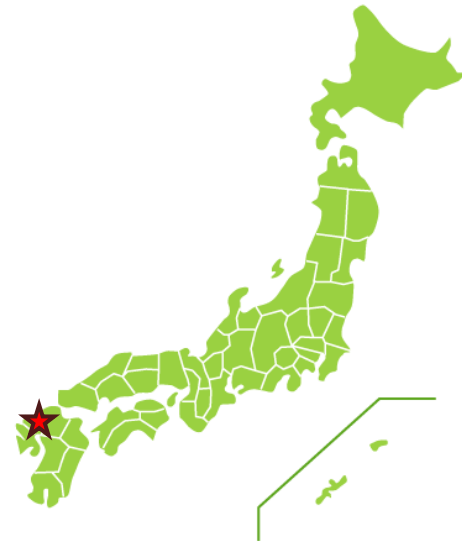
# OHKI TOWN: Linking food, agriculture and the environment

Population: about 14,500

Area: 18.43 km<sup>2</sup>

Roadside canals occupy about 14% of town area

Strawberry, lyophyllum, enokidake mushroom, and floral mat are local specialty products



## Ohki Circular Center

## Achievement in solid waste reduction

Project: 2005 - 2009

1<sup>st</sup> period (2005 - 2006)

Methane fermentation  
plant (\519.66 million)

	Combustible		Noncombustible		Total
	Household	Business	Household	Business	
2005	2241 t	710 t	93 t	3 t	3101 t
2007	1267 t	351 t	59 t	1 t	1733 t
	▼44%	▼51%	▼37%	▼67%	▼44%
2010	1182 t	419 t	4 t	1 t	1635 t
	▼47%	▼41%	▼96%	▼67%	▼47%

## Reduction of waste management costs

	FY 2005		FY 2009		Remarks
	Amount (t)	Costs (yen)	Amount (t)	Costs (yen)	
Incineration	3,005	86,457,000	1,630	51,132,000	Exported
Collection		33,576,638		24,300,000	Contracted collector
Ocean disposal of human excrement	9,448	64,009,628			Commissioned agency
<b>Total of Disposal</b>	<b>12,453</b>	<b>184,043,266</b>	<b>1,679</b>	<b>75,432,000</b>	
Raw garbage recycling			1,172		
Human excrement recycling			10,178	67,048,000	Collection costs included
<b>Total recycled amount</b>		<b>0</b>	<b>13,029</b>	<b>67,048,000</b>	
<b>TOTAL</b>	<b>12,453</b>	<b>184,043,266</b>	<b>13,029</b>	<b>142,480,000</b>	
<b>Disposal Cost Reduction by Biomass Recycling (yen)</b>				<b>41,563,000</b>	