



# Cities: the Front Runners of Low-Carbon Society

International Conference on Promoting the Low-Carbon Cities in  
Kyoto

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**Blessing of stable  
climate**

## Global cooperation and Japan's policies in progress toward climate stabilization

- Science: the ultimate goal is to achieve near-zero emissions for climate stabilization. Back to pre-industrial era?
- International cooperation (Cancun Agreements in December 2010):
  - Recognized that deep cut of GHG are required so as to hold the increase in global average temperature below 2 degree Celsius above preindustrial level
  - A call for early peak out of GHG emissions, introduction of monitoring, reporting and verifying system, and the provision of financial aid to developing countries

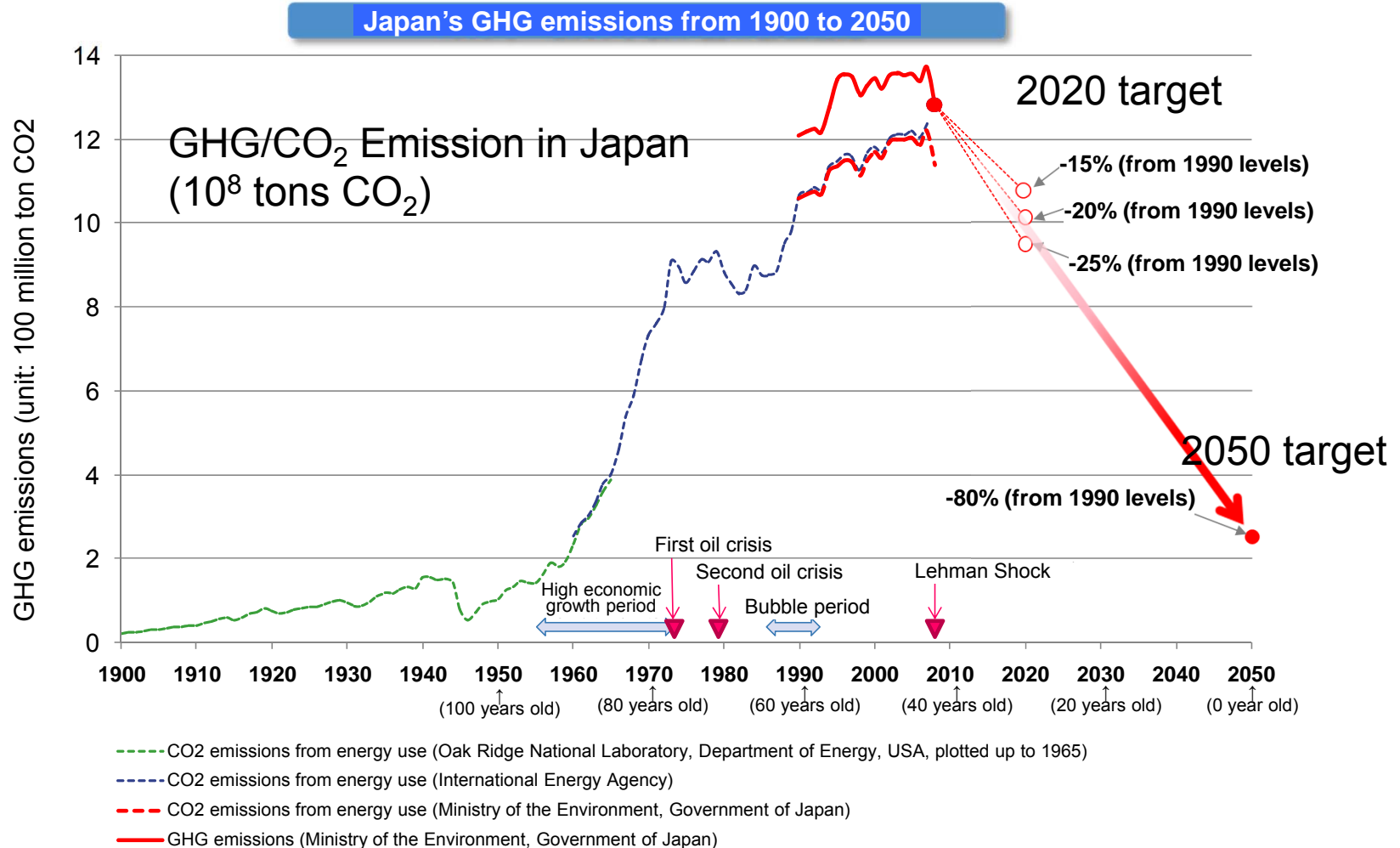
- Japan's policies: the Basic Law on Global Warming Countermeasures to the Diet in 2010

Showing first political commitment to mid- and long-term reduction

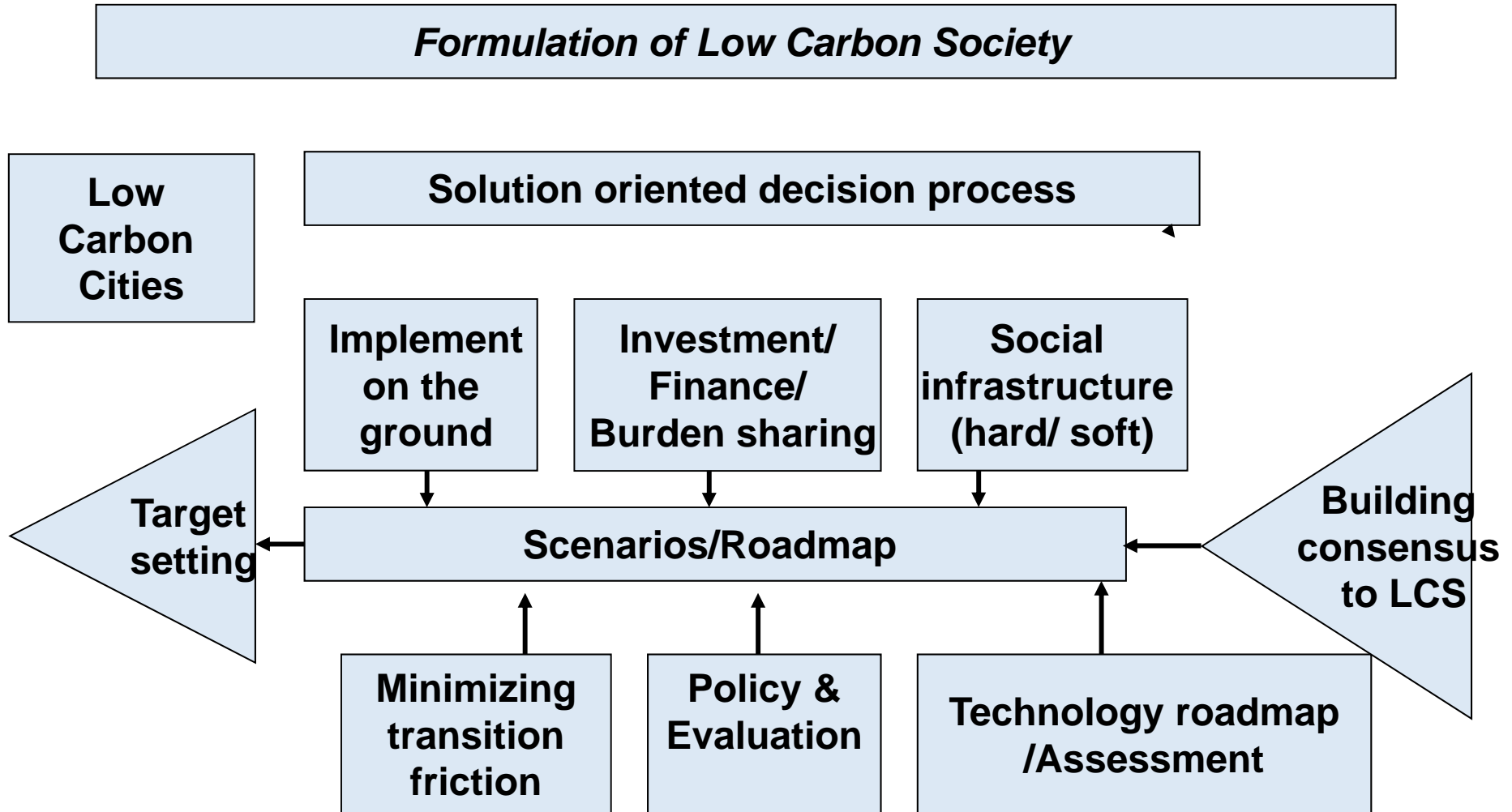
- Clearly indicating numerical targets for mid- and long-term reduction (with conditions attached)
  - From 1990 levels: -25% by 2020, -80% by 2050
- Presenting specific measures (Taxes, Emissions trading, Feed-in tariff)

## Japan's mid- and long-term targets: a huge challenge in history

The goal of reducing GHG emissions 80% by 2050 can be attained only with an unconventional social framework. Mid-term targets for 2020 and 2030 should be set while keeping 80% reduction in mind.



Figures in parentheses represent the ages that people born in different years will be in 2050.



## Stepwise planning for realizing a Low Carbon Society



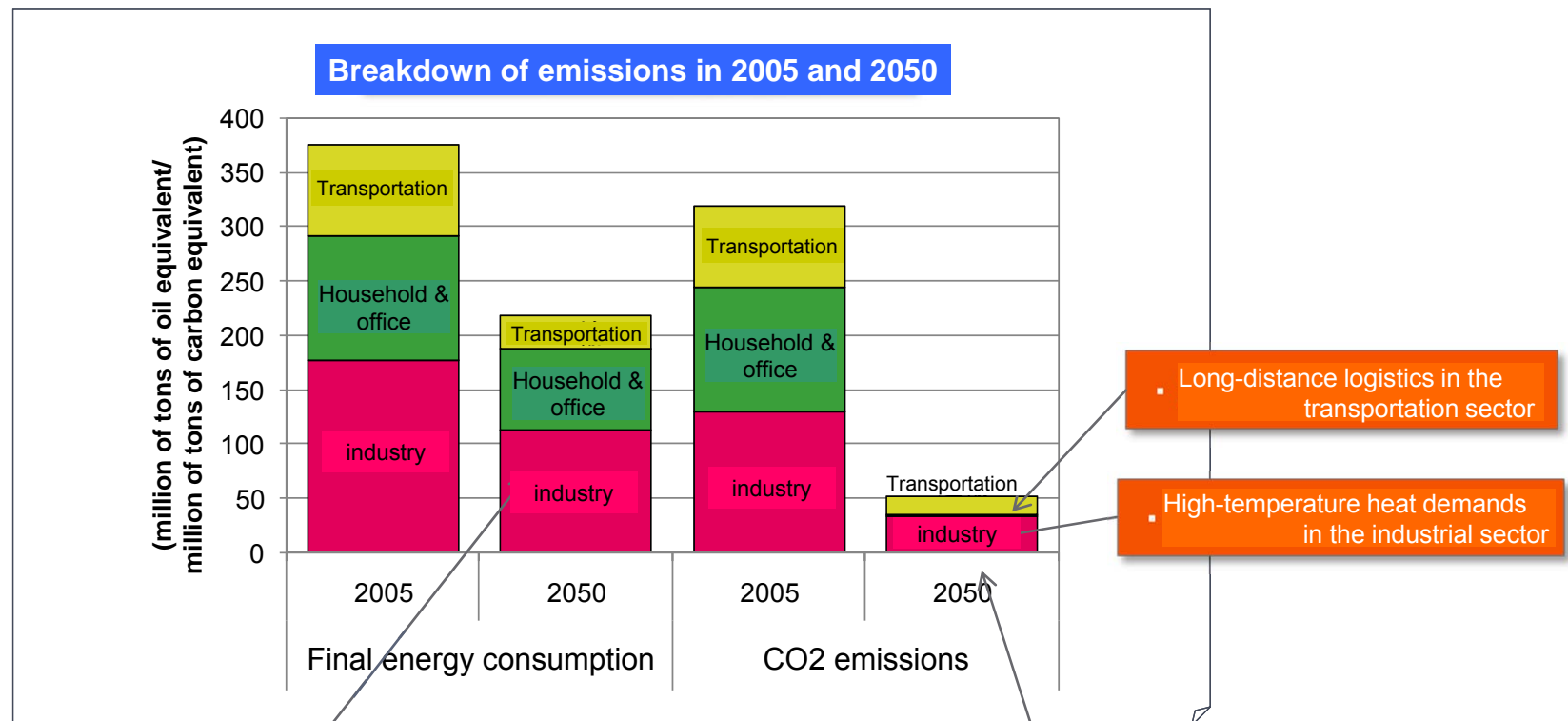
## Mid- and Long-Term Roadmap to Low-carbon Japan

(an interim summary)

- Japan's GHG emissions reduction targets:  
**25% reduction** by 2020, and **80% reduction** by 2050, from 1990 levels
- **Building the world's pioneering model of a low-carbon society may serve as a basis for Japan's future growth.** It should be noted, however, that **an unprecedented, drastic innovation will be required to build such a society.**
- **The objective of building the mid- and long-term roadmap is to present a springboard for discussion** about possible paths toward achieving a low-carbon society. (e.g. the timing and details of measures/countermeasures to be implemented)
- The roadmap are expected to serve as a springboard for **public discussion in all sectors and levels**, to help build a low-carbon society in and outside Japan.

# Breakdown of energy consumption and CO<sub>2</sub> emissions in 2050

- In Low Carbon Japan ( 80% reduction in GHG emissions from 1990), high-temperature heat demands in the industrial sector and long-distance logistics in the transportation sector will account for most of the direct combustion of fossil fuels.
- Zero emissions need to be achieved in the commercial/residential sector, electric power generation sector, passenger vehicles, and short-distance logistics.



\* The graph above was prepared based on the estimations of the Low-Carbon Society Scenarios towards 2050 snapshot model.

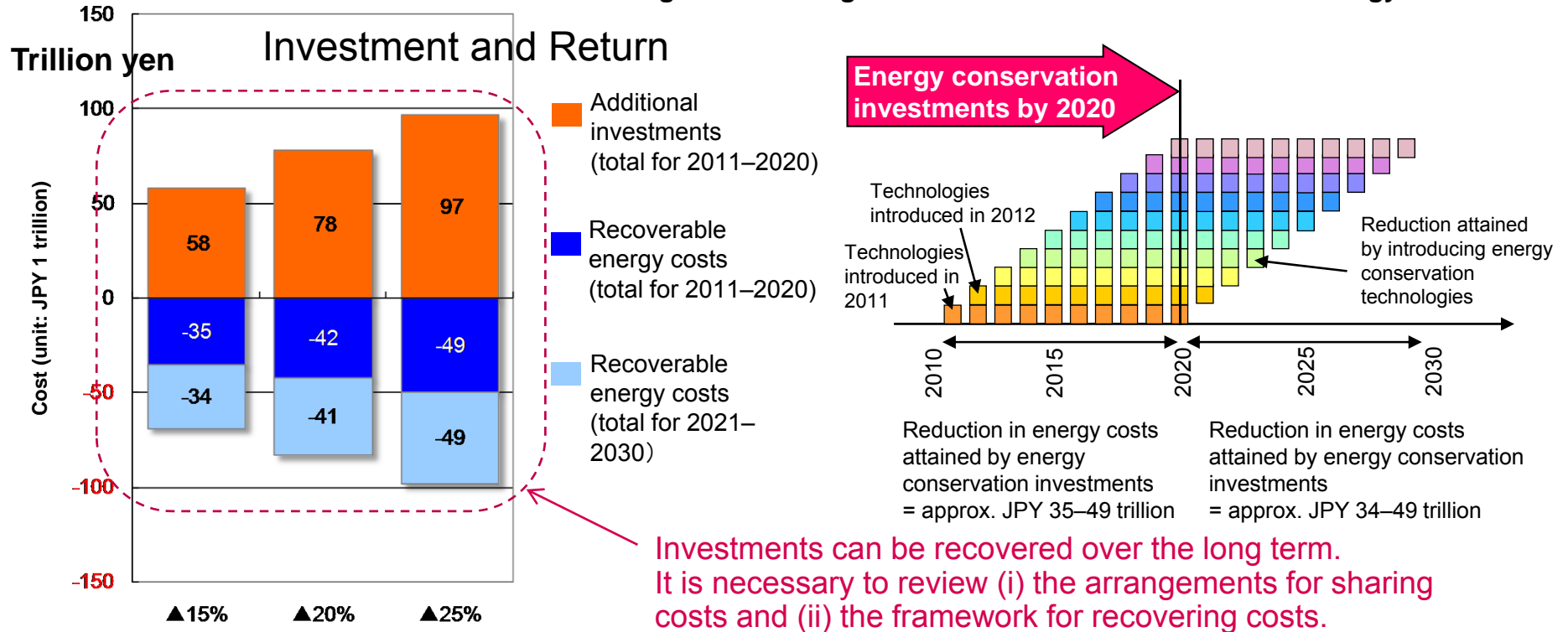
- Reducing final energy consumption by 40%

Commercial/Residential sector, electric power generation sector, passenger vehicles, and short-distance logistics --> Zero emissions

# Expected return on low-carbon investments in terms of energy conservation

Additional investments for global warming countermeasures will be recovered in the form of reductions in energy costs attained by introducing new technologies. Overall, in Japan, half of additional investments will be recovered by 2020, and the other half by 2030. Further review will be required to determine (i) the arrangements for sharing the initial costs and (ii) the framework for ensuring quick cost recovery.

【Correlation between additional investments in global warming countermeasures and reduction in energy costs】



○Comments expressed at Roadmap Sub-committee

- It is necessary to take into consideration co-benefit of energy conservation in evaluating these numbers.
- It is not realistic for companies to develop investment plans while taking into account the advantages of energy conservation 10 years or 20 years ahead.
- The impact of climate change is accompanied by a time lag; the generation making investments does not necessarily benefit from such investments.

## 2050 vision for Japan

	Progress in global warming countermeasures by 2050	Multi-Benefits
Manufacturing industry	Japanese technologies helping the rest of the world to cut GHG emissions by half	Low-carbon manufacturing-oriented country
Houses and buildings	Achieving zero emissions of houses and buildings (stock average)	Healthy, comfortable living space
Vehicles	Next-generation vehicles accounting for nearly 100%	Reduced air pollution, traffic congestion, and heat island phenomena
Community	Achieving compact cities, Improvement of low-carbon districts	Pedestrian oriented safe town
Rural areas	Community planning toward zero-carbon emissions	Improved self-sufficiency rates of food and timber products
Energy supply	Zero-carbon power sources	Improved energy self-sufficiency

(The table above was prepared based on reviews at working groups.)



# Goal, objective, and means for building low-carbon cities

Building an interactive framework and promoting efforts toward low-carbon communities

## Goal

### Building low-carbon communities

### Low Carbon Community

- City planning for pedestrian lifestyles based on public transportation systems
- Taking full advantage of unused and renewable energy available in communities
- Reducing the percentage of vehicles for passenger and cargo transportation

## Objective

### Objective in promoting efforts to build low-carbon communities

Promoting consensus building among relevant entities

Stakeholders' consensus building

## Means

### Four means to promote consensus building

### 4 measures

#### Developing cross-sectoral plans

- Promoting efforts to link plans (including land use, transport, energy use, and the creation of green spaces) in a cross-sectoral manner, from the viewpoint of achieving low-carbon communities
- Developing tools for (i) providing scientific grounds to plans and (ii) supporting promotion of consensus building among stakeholders

Integrated planning

#### Giving institutional incentives

- Creating a framework under which efforts to promote low-carbon communities produce economic benefits for the implementing entities

Policies and measures to promote incentive

#### Facilitating financing

- Creating a framework that helps (i) improve public transport services and (ii) extend public support for improving administration
- Creating a framework to extend public support to communities in utilizing unused energy

Finance

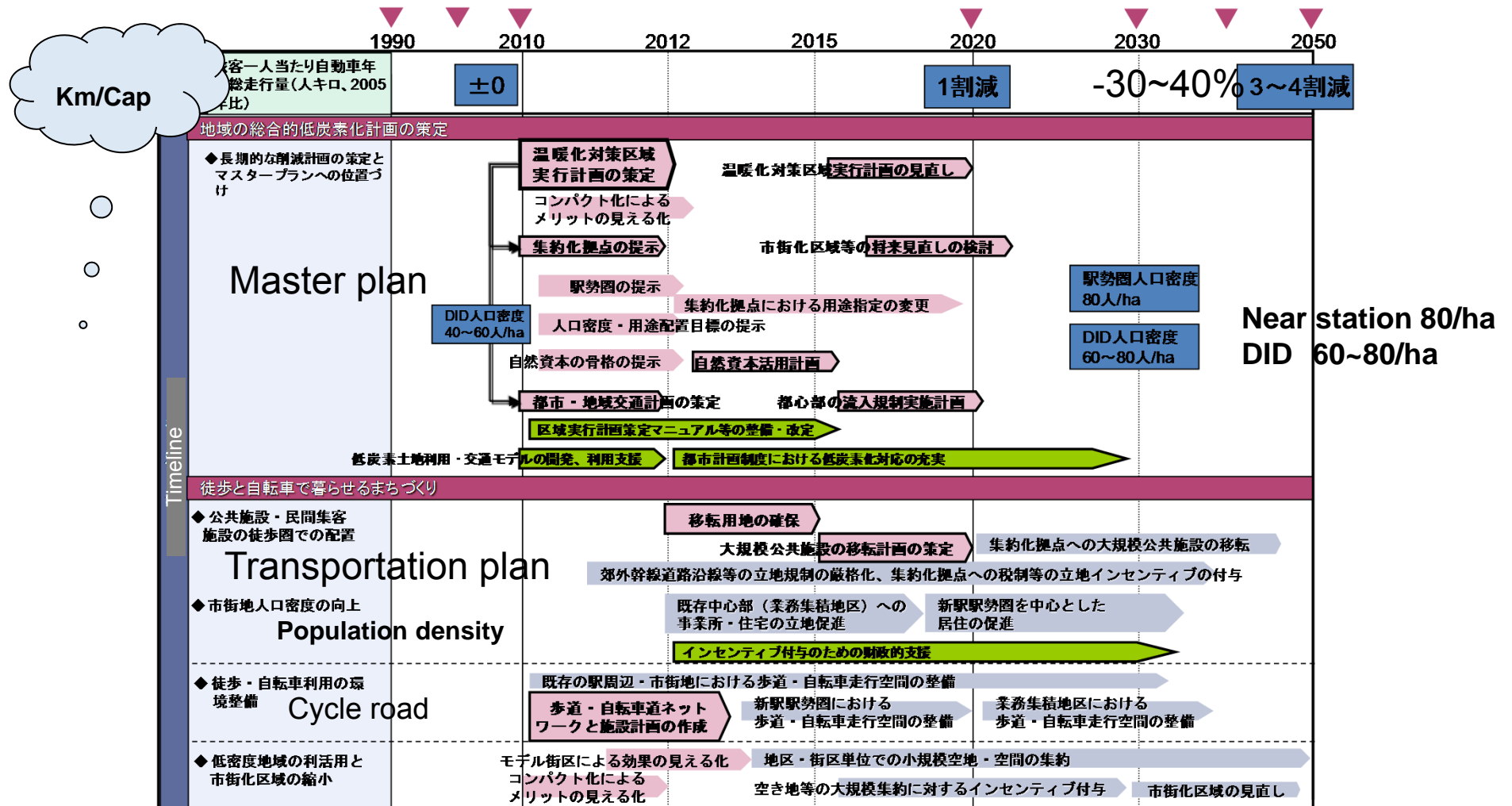
#### Developing human resources to take action

- Developing human resources (including city planning committees, NPOs, and coordinators) who promote community-building efforts and supporting these activities
- Helping local government staff members gain expertise in building low-carbon communities
- Promoting the visualization of benefits derived from promoting low-carbon efforts

Human resources

# An example of a mid- and long-term roadmap

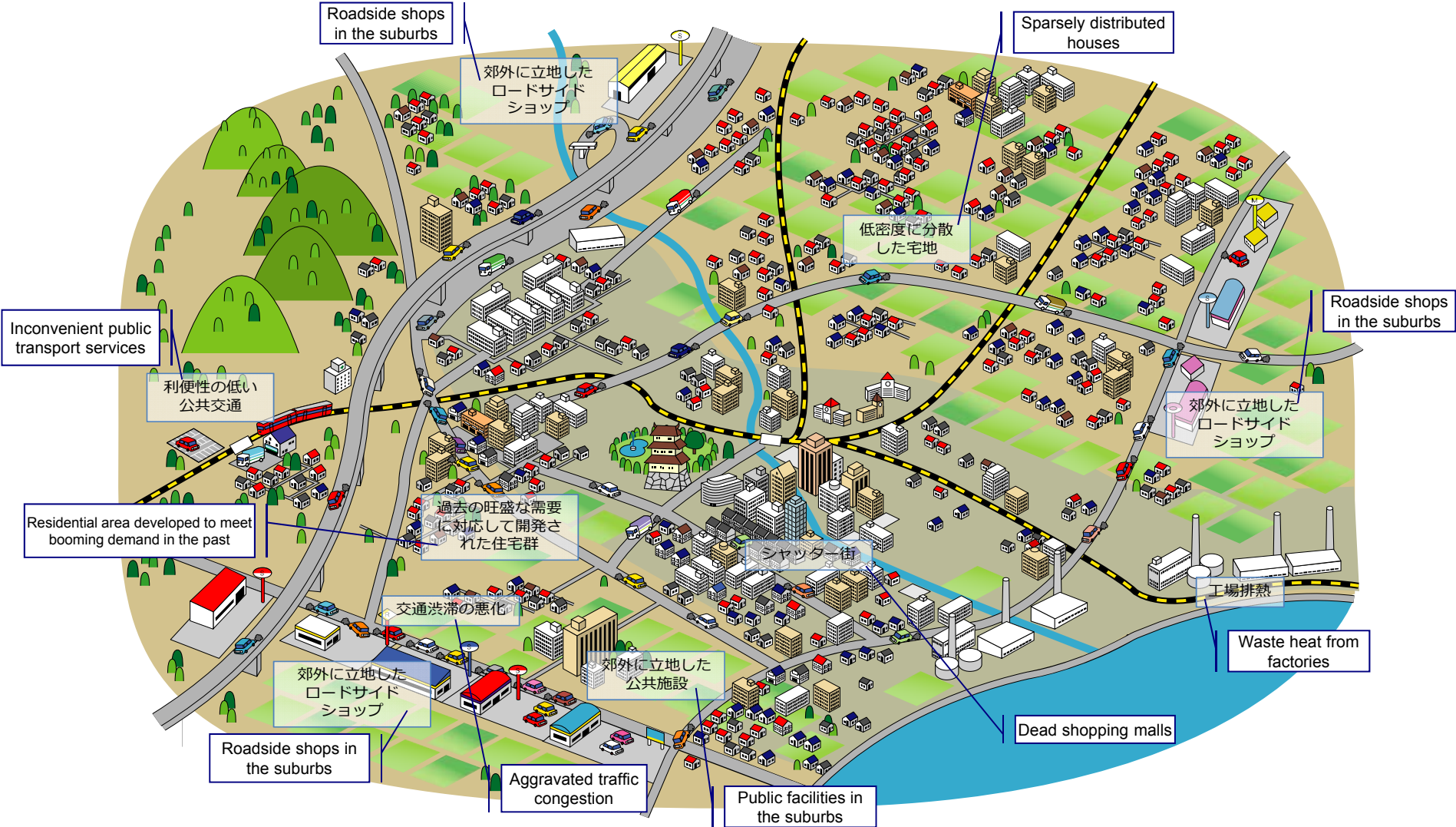
## Community building roadmap: an example of a timeline for a local main city becoming a compact city based on public transportation services (1)



\* Tax revenues, etc. from the Global Warming Countermeasures Tax (to be implemented from FY2011) will be utilized to strengthen the above actions and countermeasures.

→ Activities for promoting countermeasures 
 → Measures that should be implemented in the lead-up 
 → Measures taken by the national government

# An example of a high-carbon city: Dispersed, expansion, dependence on external resources, caution enjoying maximized freedom?







# What Toyama LRT means

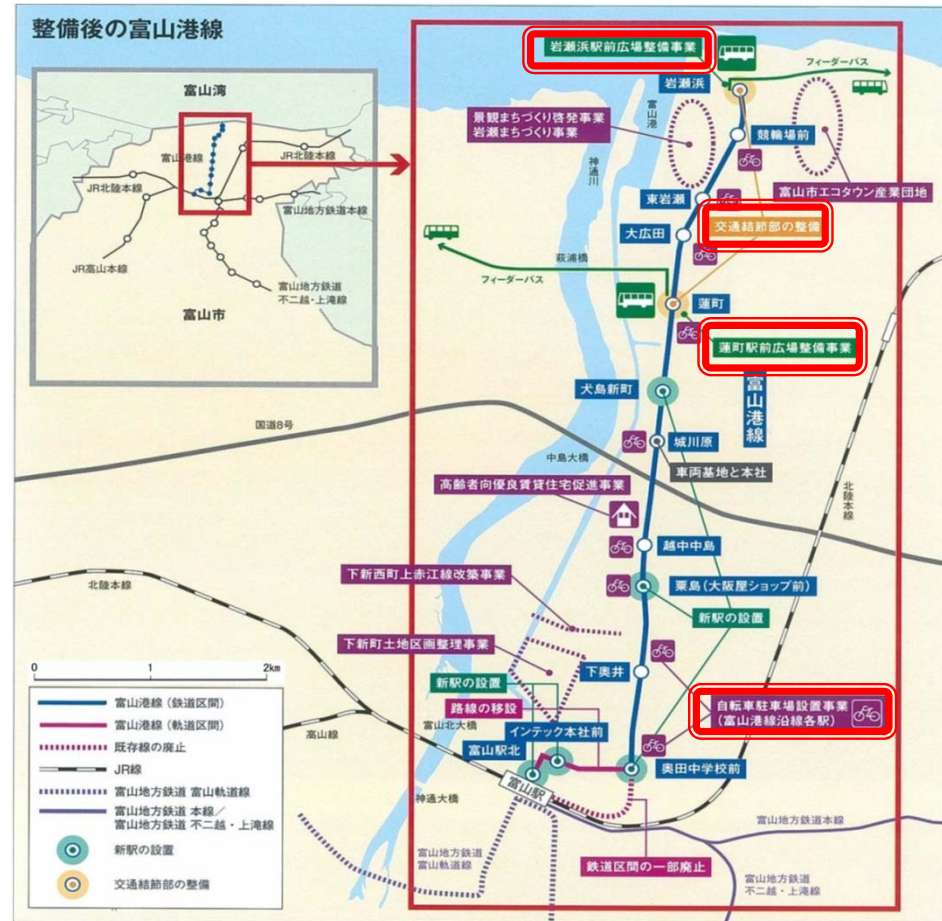
- Improving access to stations
- Introducing feeder bus services
- Promoting long-term residence around stations
- Promoting planning for an attractive city
- Putting in place an information space for city planning based on public transportation systems
- Comprehensive design plans



Source: *Tetsudo Gaho* No. 6 (Seibundo Shinkosha Publishing Co., Ltd.)

## Multi-Benefits: developing public transportation systems and revitalizing communities

### Toyama City: an example of the introduction of an LRT (Light Rail Transit) system



Source: *Tetsudo Gaho* No. 6 (Seibundo Shinkosha Publishing Co., Ltd.)

Reference: Light Rail Transit (LRT) Systems for Creating Compact Cities, a presentation by Masashi Mori, Mayor of Toyama City at a BBL Seminar, Research Institute of Economy, Trade and Industry

Reference: *Introducing a Light Rail System to the Toyamako Line and New Efforts in City Planning*, Norio Nagakura, General Manager, City Improvement

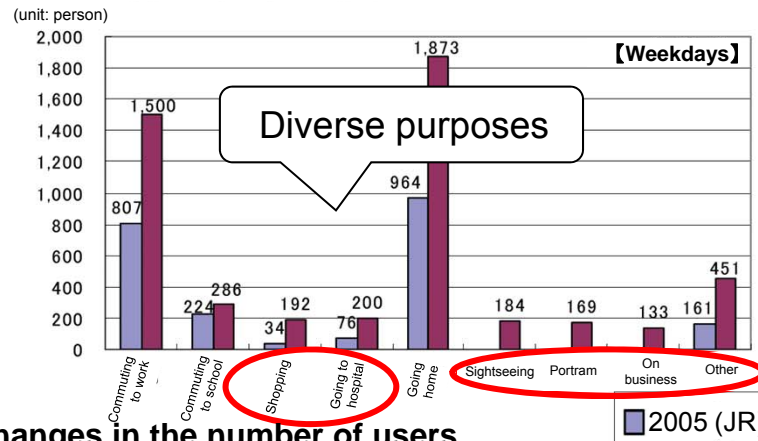


# What Toyama LRT achieved

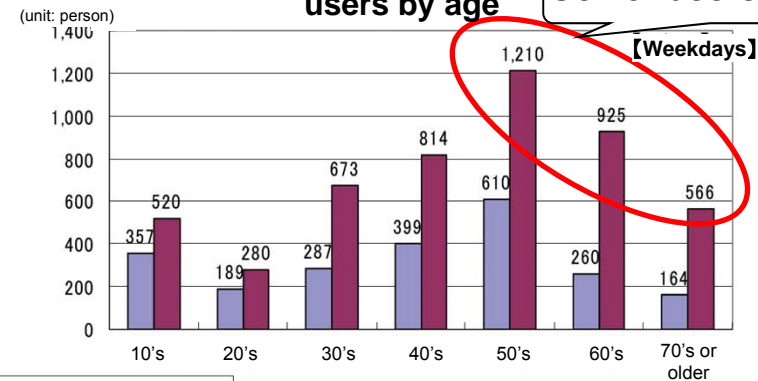
(before and after: 2005/2006)

**Multi-benefits: bringing senior citizens to the city in large numbers, a modal shift, more sightseers and more people outside of office hours.**

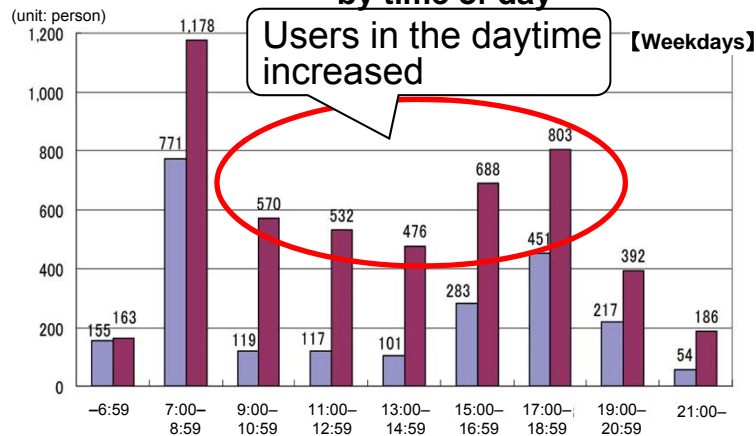
## Changes in the number of users by purpose



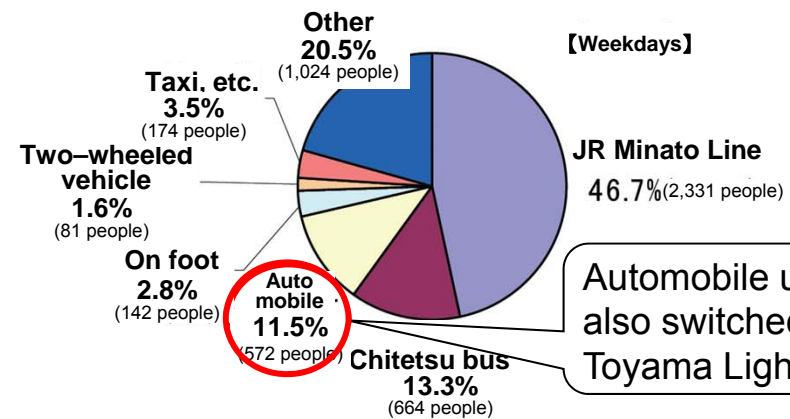
## Changes in the number of users by age



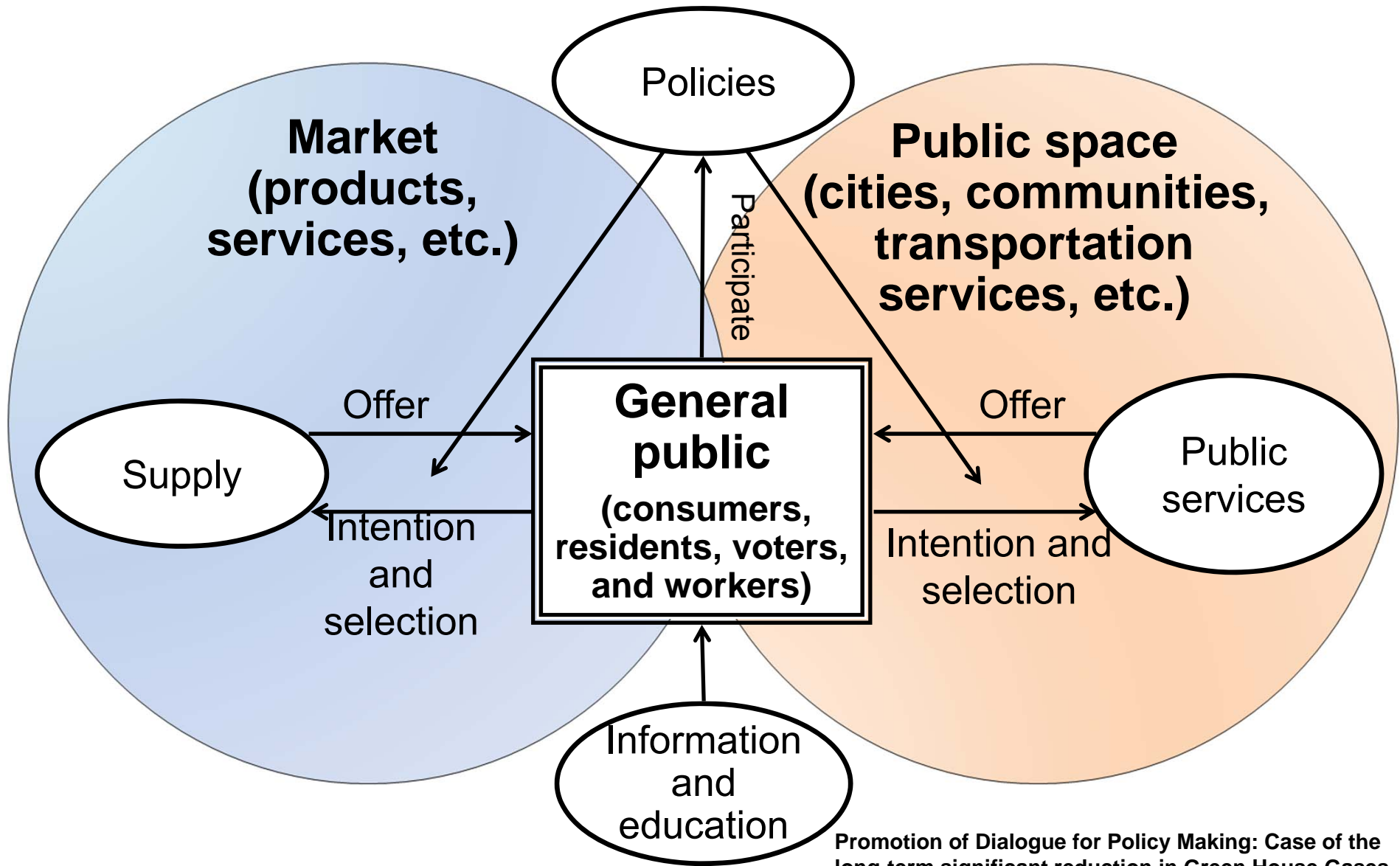
## Changes in the number of users by time of day



## Means of transportation before Toyama Light Rail came into service



# The multi-layered relationship among companies, governmental bodies, and citizens that make up a low-carbon society



What factors that determine citizens' lifestyles?

Promotion of Dialogue for Policy Making: Case of the long-term significant reduction in Green House Gases emissions, JST Research, Yagishita Laboratory, Sophia University (2011)

# Challenges in building low-carbon cities

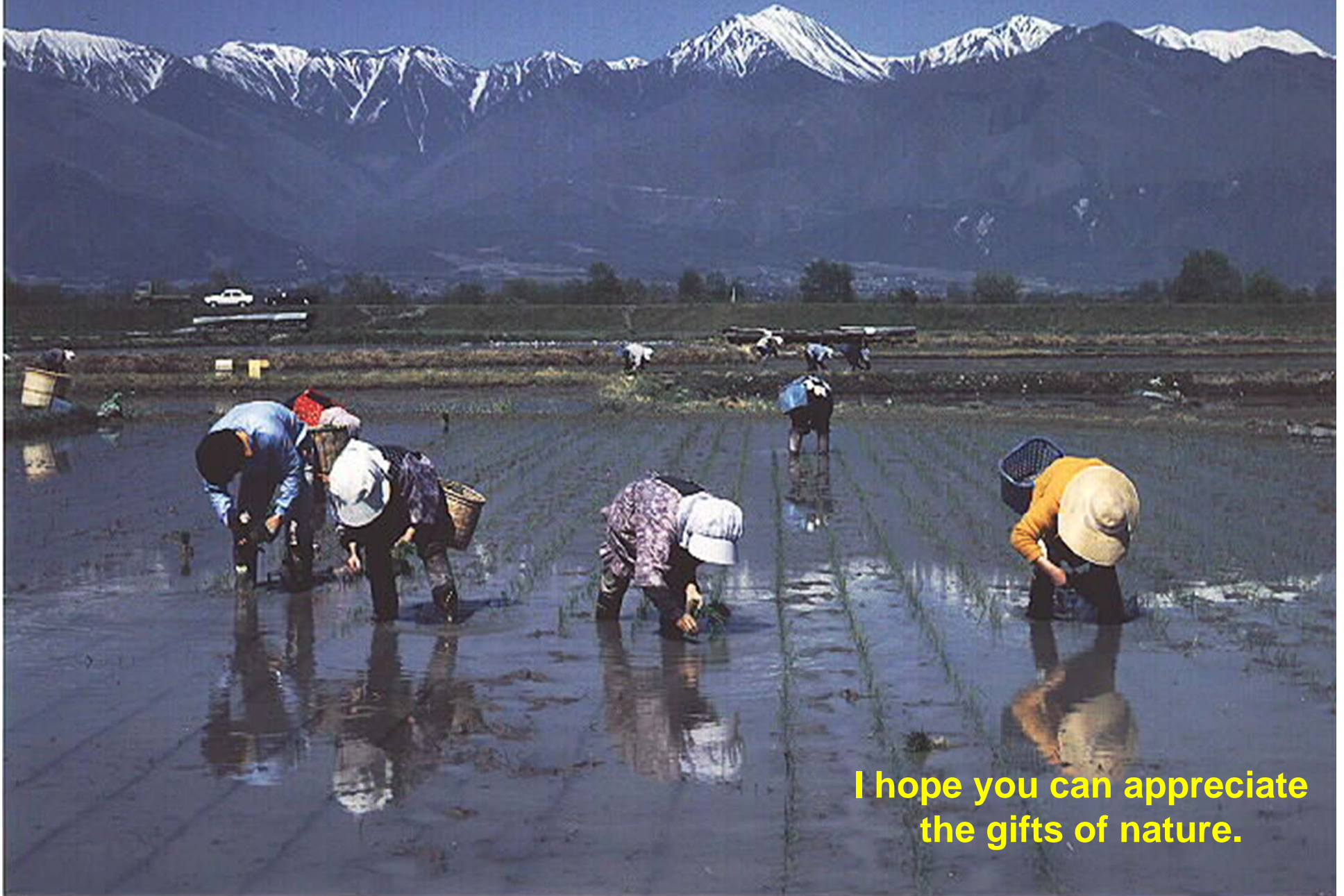
- Cities have great opportunities toward building a low-carbon society.
  - Cities are directly responsible for planning traffic, land use, buildings, waste management, etc.
  - In general, cities are managed by single authorities.
- Voluntary participation by stakeholders; involving stakeholders
- Empowering citizens' groups
- It is essential to build a new governance framework
  - Involving multi-layered and varied sectors at all levels
- Governmental bodies are expected to improve their functions as enablers and facilitators.
- Collaboration among communities: among cities; between cities and communities, and with developing countries

## Conclusion

- We are entering an era of low-carbon societies. We have to use our ingenuity. This is a drastic change which reset the Industrial Revolution.
- Low-carbon efforts require an innovation of conventional systems in which various factors are intertwined. The reforms need to be implemented under multi-layered governance.
- Cities, which have all of these factors, can make quick decisions. Cities can take the lead in achieving green growth and building a low-carbon society.
- To implement plans, it is essential to promote active involvement by stakeholders, establish governance that drives communities, and facilitate participation by citizens.
- Stakeholders need to share a common future urban vision and follow implementation procedures on a step-by-step basis in the form of roadmaps. Plans for respective communities can be developed based on the national roadmaps available.
- Cities work together with other cities or rural areas and rural areas to take the lead in creating a sustainable low-carbon society. Today, in particular, it is indispensable to set an example for developing countries to contribute to climate stabilization.



**Thank you for your attention.**



**I hope you can appreciate  
the gifts of nature.**