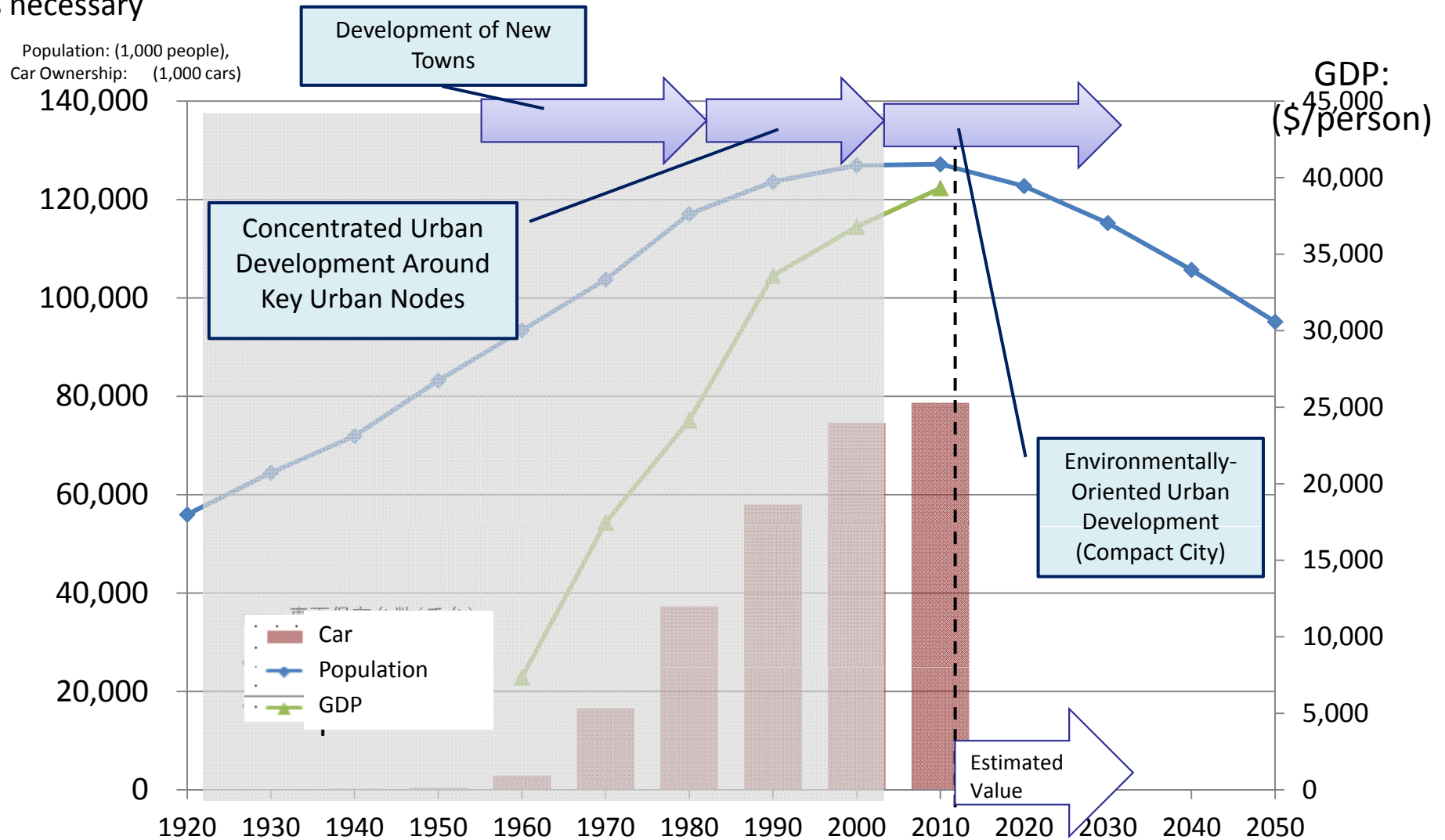


Promotion of Urban Renovation and Compact Cities

Approaching a depopulating society, from now on, the realization of an environment-oriented compact city is necessary



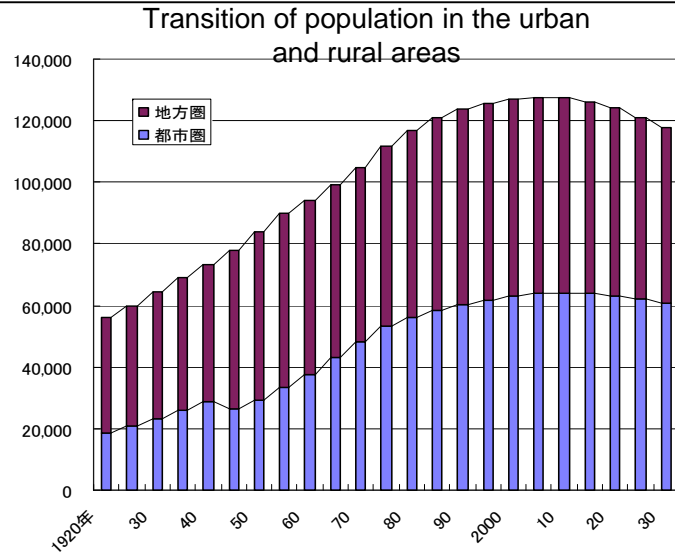
(Source) Population shows as moderate range estimated value as of October 1st in each year based on "Census" by Statistics Bureau, Ministry of Internal Affairs and Communications and "Estimated future population of Japan" by The National Institute of Population and Social Security Research. (December, 2007) GDP per capita is the data of World Bank (Converted to real values) Numbers of owned cars are by Ministry of Land, Infrastructure, Transport and Tourism. (Total of cars and motorcycles)

Promotion of Urban Renovation and Compact Cities

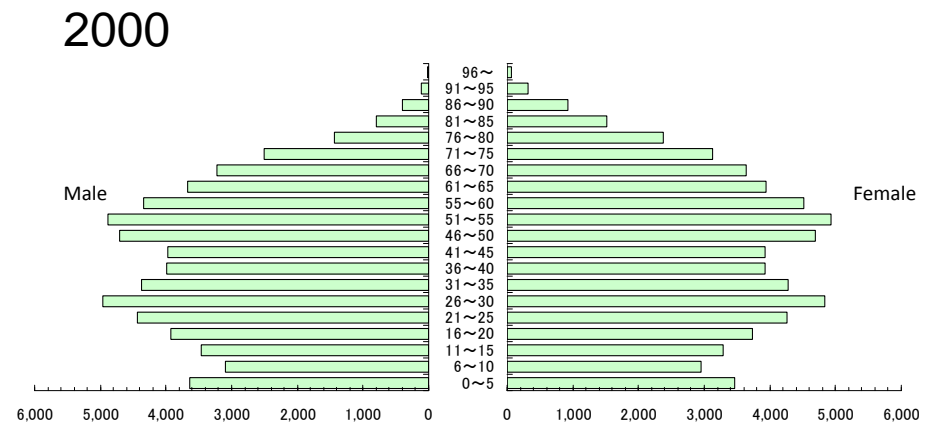
A. Depopulation and Aging Society

Transitions in the urban environment – The advent of depopulation and an aging society

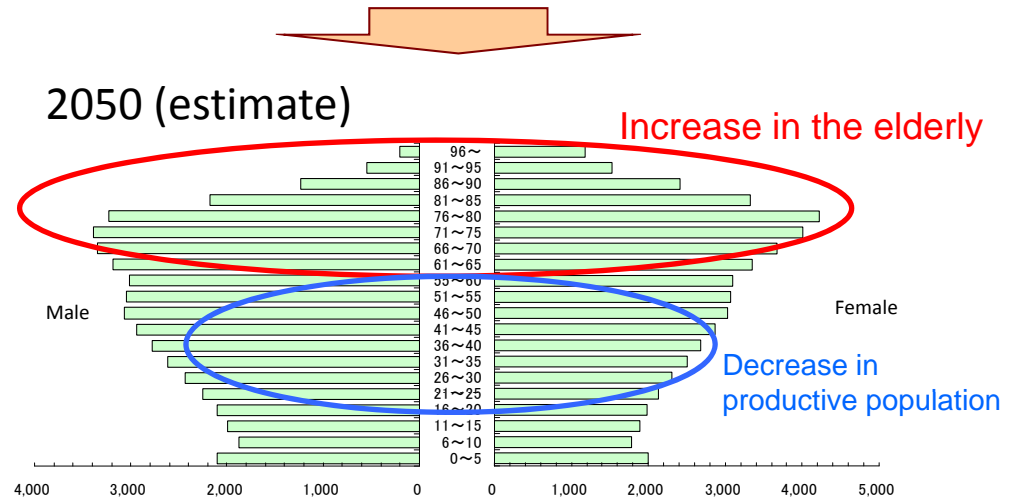
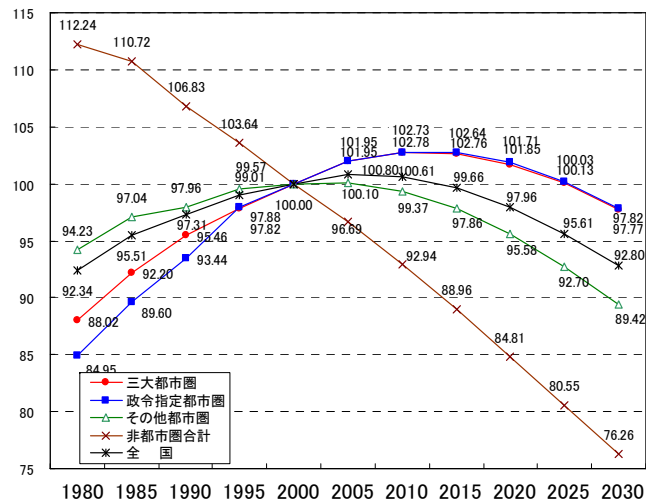
The population of Japan increased rapidly after WWII up to the rapid economic growth period. During these times, the population flowed into the urban areas. The forecast is that the total population of Japan will peak in 2006 and the total number of households will peak in 2015 before declining. There will be a decline in the younger as well as the productive population and an increase in the over 65 year olds. It is predicted that the low fertility rate and aging society will accelerate even more.



Estimate of the transition in population by age



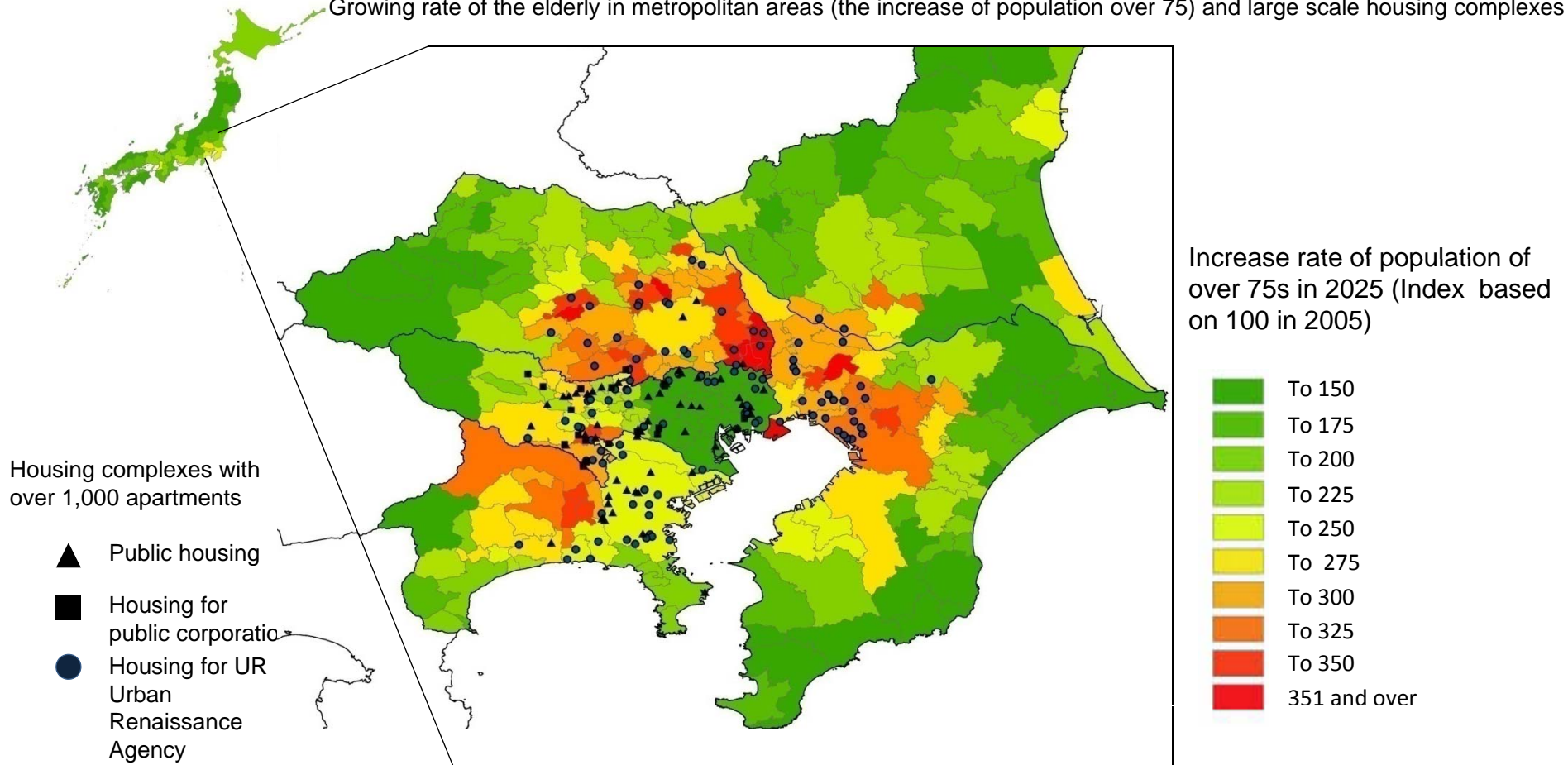
Transition of Population by City (Based on 100 in 2000)



A. Depopulation and Aging Society: Large Scale Housing Complexes

- The aging population will accelerate in the neighboring areas of the metropolitan cities in the future.
- These areas overlap with public rental housing complex areas (Areas where large scale housing complexes were built to accommodate the population flowing into metropolitan areas during the rapid economic growth period) .

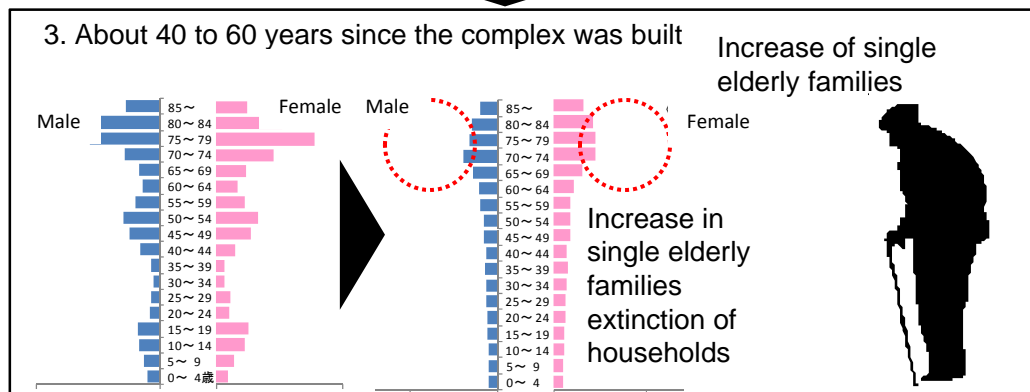
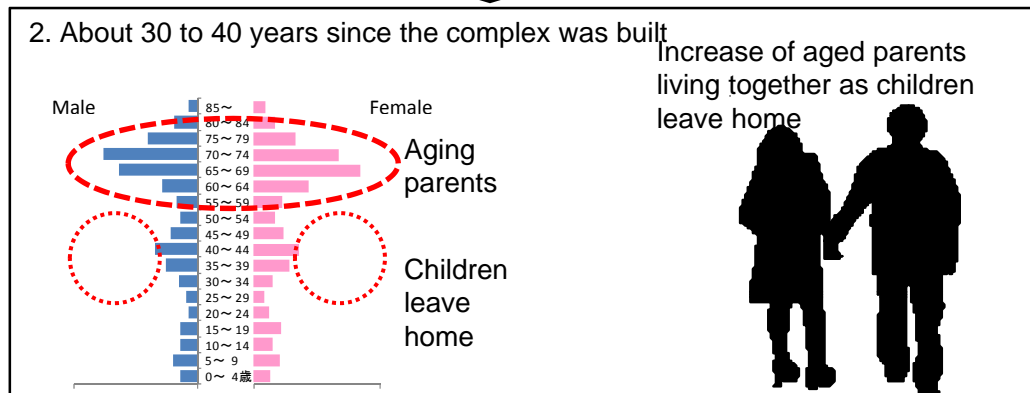
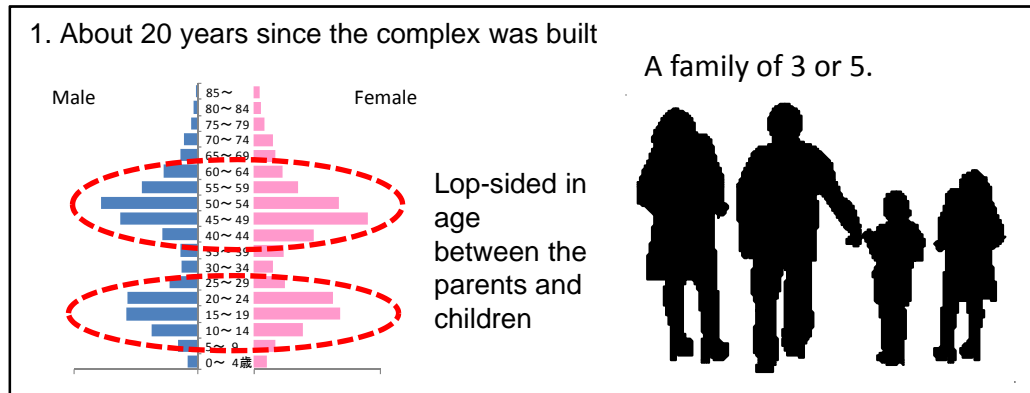
Growing rate of the elderly in metropolitan areas (the increase of population over 75) and large scale housing complexes



Promotion of Urban Renovation and Compact Cities

A. Depopulation and Aging Society: Large Scale Housing Complexes

Population structure when there is no rebirth and the younger generation do not live in the housing complexes



- As large numbers of housing were provided in the same period, the number of age groups entering the complexes are decreasing significantly.
- Rapid increase in the aging parents and children leaving home. Will bring about accelerating number of elderly people and decrease in population.
- The aging parents will demise around the same period.
- When the demand in housing is low, the children will not live in the complex and there will be no new residents. Further acceleration in population and household decline.

Promotion of Urban Renovation and Compact Cities

A. Depopulation and Aging Society: Large Scale Housing Complexes

Apparent issues arising in large scale housing complexes

● Cities with many steps

- As the developments were made on hills, there are many steep roads and many steps on pedestrian walkways
- The access to buses are difficult as pedestrian and vehicles are separated.

Access to bus stop by stairway



● Deteriorating houses and no universal design

- There are many housing complexes that were built 40 years ago. The facilities are deteriorating and the layout of the rooms are obsolete.
- Public housing with no elevators and lacks earthquake prevention functions.
- The apartments are too small for families and with the lack of support facilities for children, it prevents young households to move in.

Apartment blocks without elevators



● Deteriorating neighboring facilities

- Deteriorating and obsolete facilities
- Lacks convenience lifestyle-related facilities in walking distance.
- Difficult to maintain supermarkets and shops due to decrease in demand from depopulation

Deteriorating neighboring facilities



● Rapid increase of empty apartments and land

- The status quo of increasing empty land and apartments give impact to further decrease in households



Company apartments on sale



Empty land in cities

● Gap between the needs and actual condition of parks

- Gap between the needs and actual conditions of parks such as the deterioration and obsolete playground and facilities, and no universal design

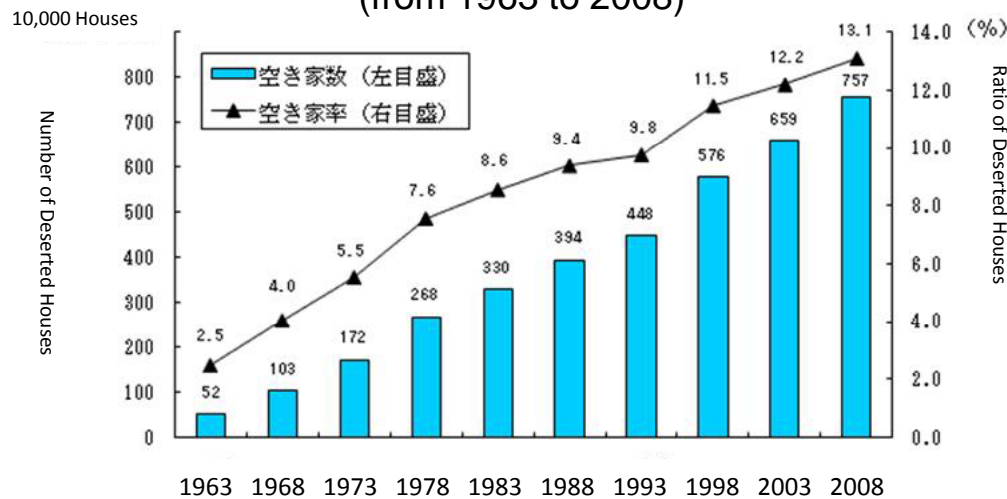
Promotion of Urban Renovation and Compact Cities

A. Depopulation and Aging Society: Empty Houses

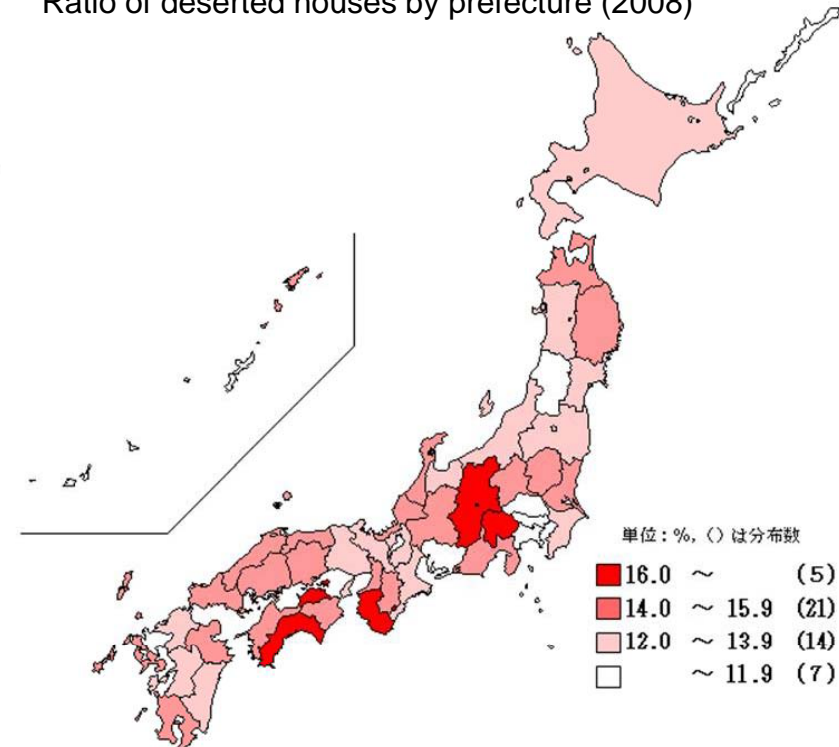
Status quo of deserted houses (Statistical survey of housing and land in 2008 by MIAC)

- The total number of houses as of October 1, 2008 is 57.59 million and the number of empty houses is 7.57 million. The ratio of empty houses is 13.1%, the highest to date, and 980,000 deserted houses has increased from the 2003.
- The ratio of deserted houses by prefecture shows Yamanashi Prefecture at the top with 20.3%, and the lowest in Okinawa Prefecture at 10.3%. The ratio of deserted houses in all prefectures is over 10%.

Transition in the number of deserted houses and ratio of deserted houses in Japan (from 1963 to 2008)



Ratio of deserted houses by prefecture (2008)



(Created by the Bureau of Statistics, MIAC)

Promotion of Urban Renovation and Compact Cities

A. Depopulation and Aging Society: Empty Houses

Examples of problems with deserted houses

○Deterioration in disaster prevention

- Collapse and destruction of house, roof, and outer wall
- Fire hazards

○Deterioration of crime prevention

- Entices crime

○Illegal disposal of waste

○Deteriorating hygiene and develop bad odor

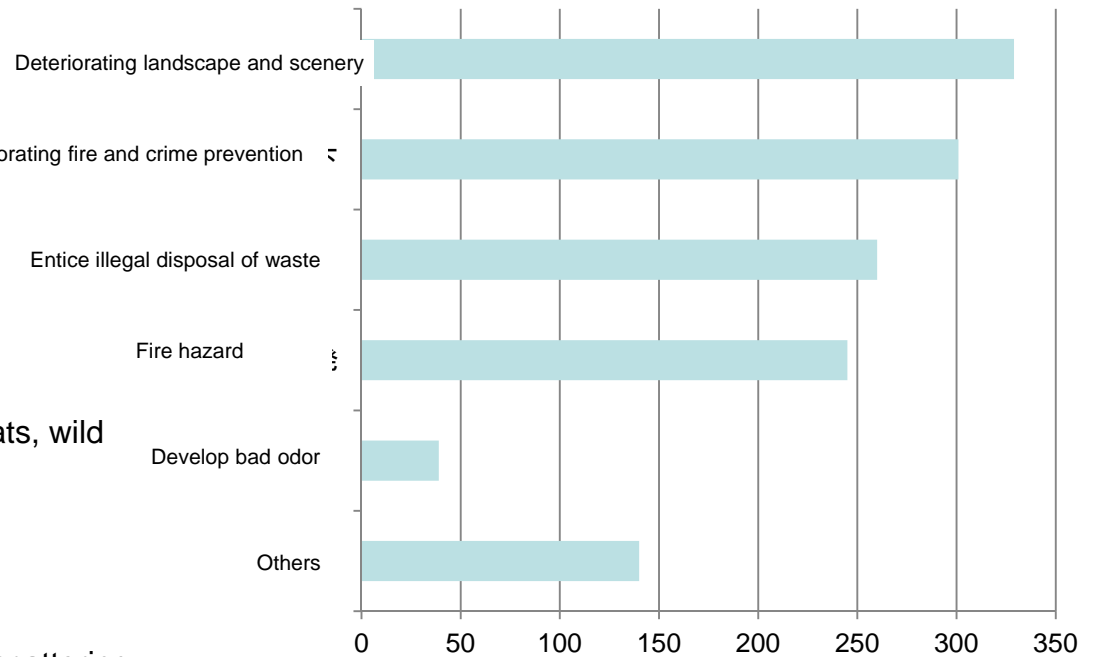
- Appearance and amassing of mosquitoes, flies, rats, wild dogs and cats

○Deterioration of landscape and scenery

○Others

- Overgrown trees, branches, and weeds, and the scattering of fallen leaves and such

Impact to Neighborhood with Bad Land Use (Number of Incidents)



*Questionnaire results from 1,804 cities, towns, and villages in Japan by the Ministry of Land, Infrastructure, Transportation, and Tourism (January 2009) The response rate was 67%.

*The above number of incidents are based on multiple answers.

*Bad land use includes deserted houses, empty houses, houses full of waste, abandoned farming land

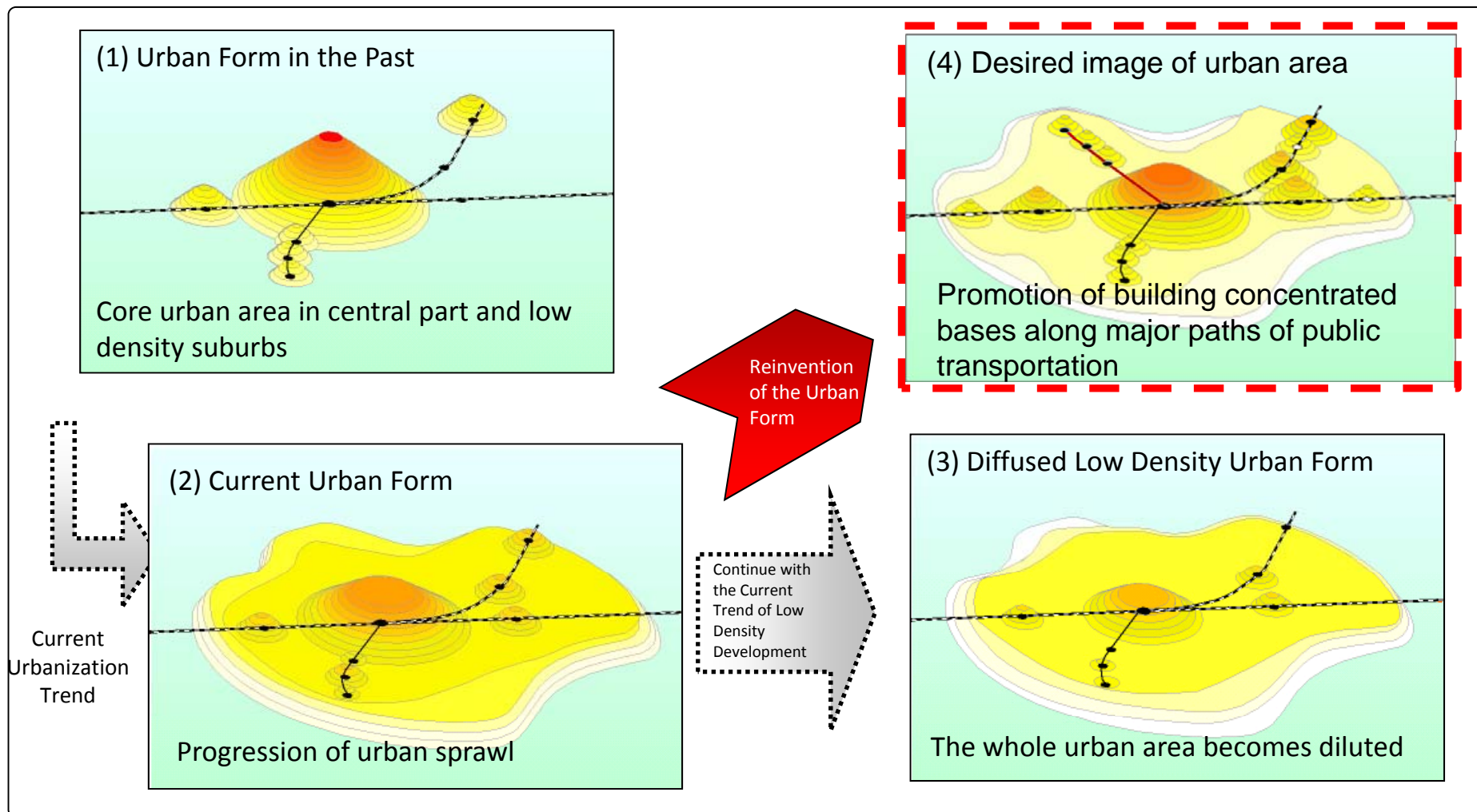


Promotion of Urban Renovation and Compact Cities

B. Compact Cities: Image of Cities

Realize sustainable cities by promoting a strategy of concentrating urban development on key transportation nodes and by improving the convenience of using public transportation

Conversion from diffused type urban form to a concentrated type urban form



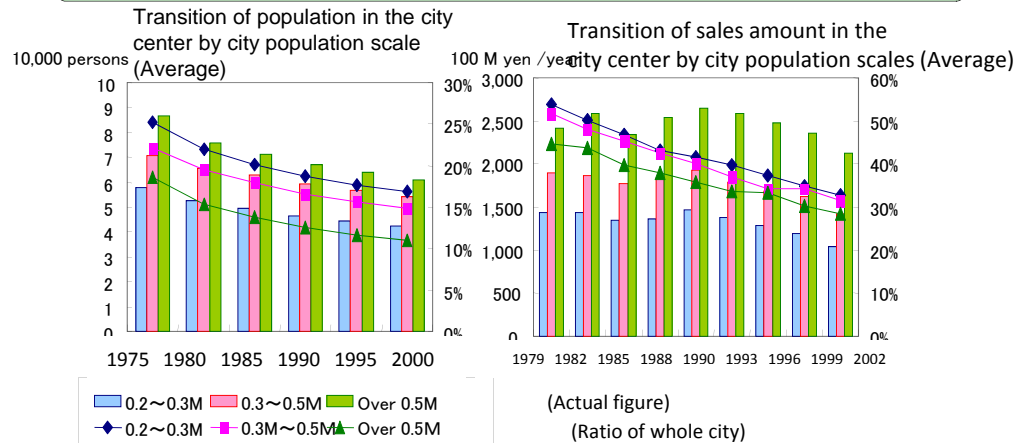
Promotion of Urban Renovation and Compact Cities

B. Compact Cities: City Centers

Status Quo of City Centers: Scattering of urban functions and trend in deserted city centers

- The trend in the city center situation on the whole is still grave. There is a decline in the resident population and the amount of commercial sales.
- Large scale commercial facilities are increasing in old factory sites and in the suburbs.

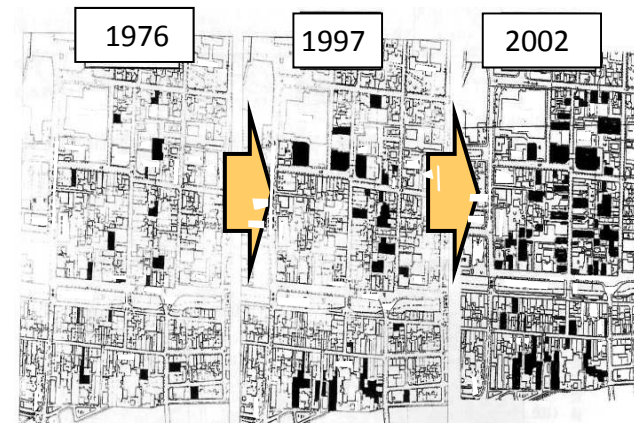
Decline in the resident population and sales amount in the city centers



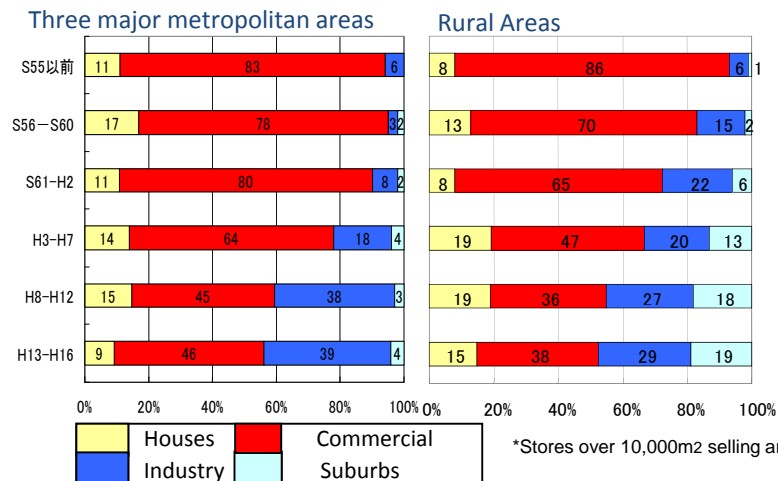
*Total census of cities with a population of over 200,000 persons in area other than the three metropolitan areas (Tokyo, Saitama Prefecture, Chiba Prefecture, Kanagawa Prefecture, Aichi Prefecture, Kyoto, Osaka, Hyogo Prefecture, and Nara Prefecture) and government ordinance cities.

*The data for sales amount in the past fiscal years were corrected by using the consumer index in 2002 as 100.

Increase of empty lands in city centers



Location of large scale stores



Shopping malls with closed-down stores

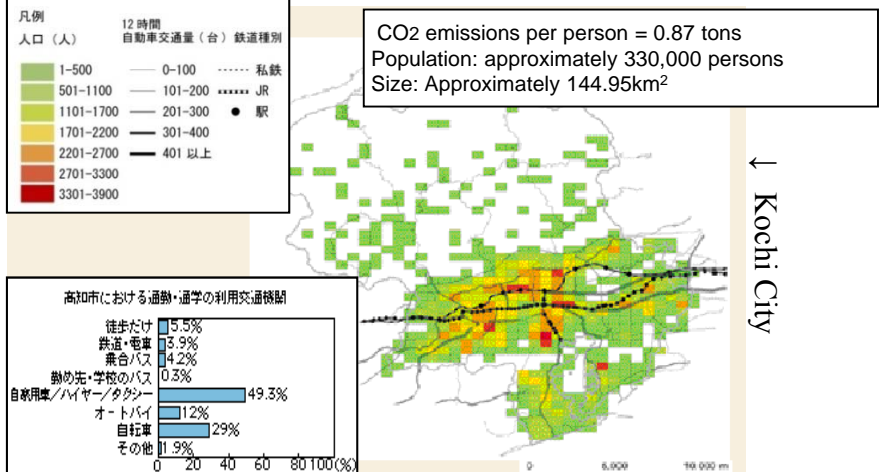
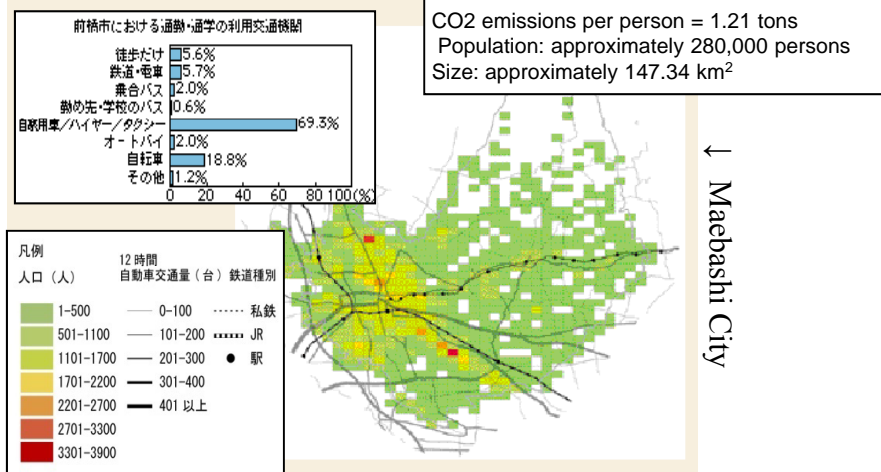


Promotion of Urban Renovation and Compact Cities

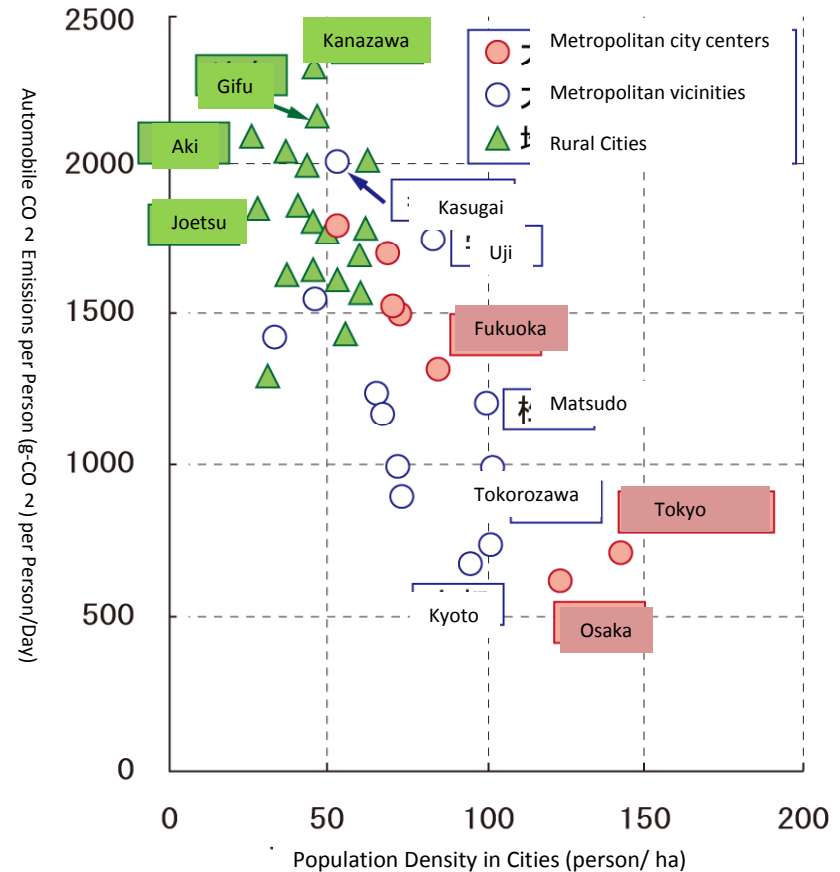
B. Compact Cities: Creating Low Carbon Cities

Relationship between compact cities and low carbon cities (1): CO2 Emissions and Urban Structures

- CO₂ emissions affect the urban structures significantly.
- For example, Maebashi City and Kochi City, which both have the same size and population, Maebashi City has approximately 40% more annual CO₂ emissions per person in the passenger transportation sector as it is a low density city dependent in vehicle transportation.
- In addition, city areas with high population density, tend to have lower CO₂ emissions per person, thus there is high correlation between compact and low carbon cities.



Automobile CO₂ emissions among differences in population density



*1 CO₂ emissions per person is for passenger transportation sector only

Source: Environmental White Papers 2006

Source: Mamoru Taniguchi: *Time Series Analysis of Automobile CO₂ Emissions from Urban Structures*, *Journal of City Planning Institute of Japan*, No. 43-3, October 2008

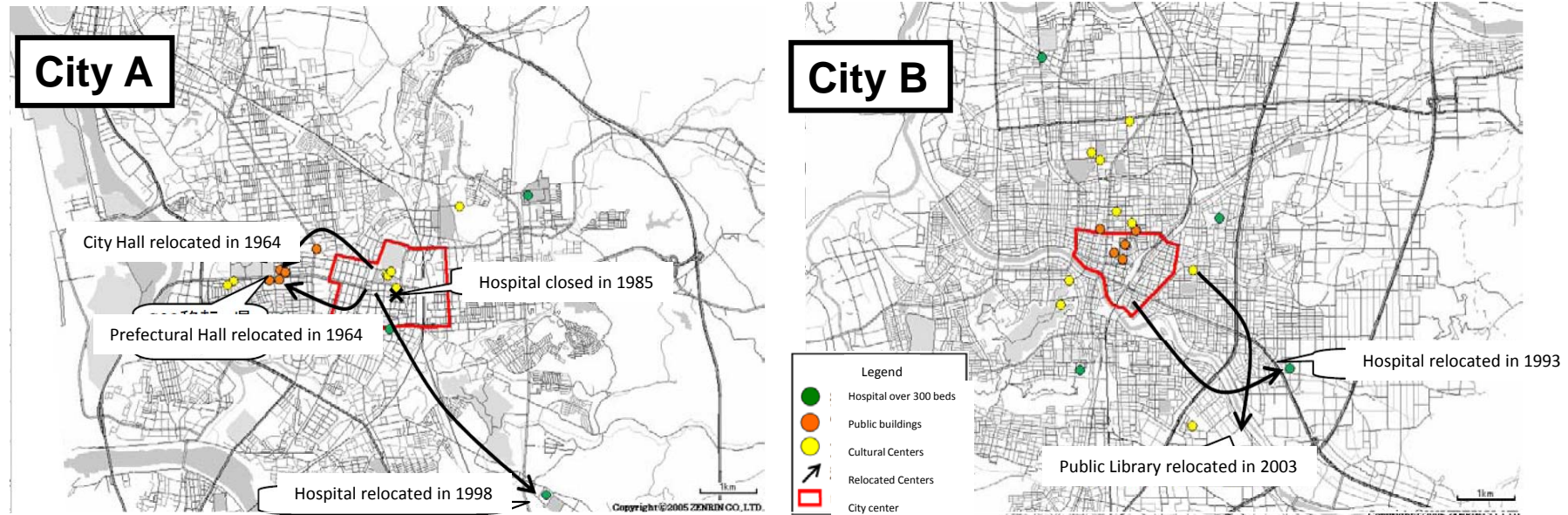
Promotion of Urban Renovation and Compact Cities

B. Compact Cities: Creating Low Carbon Cities

Relationship between compact cities and low carbon cities (2): Joining medical, work, and housing and low carbon

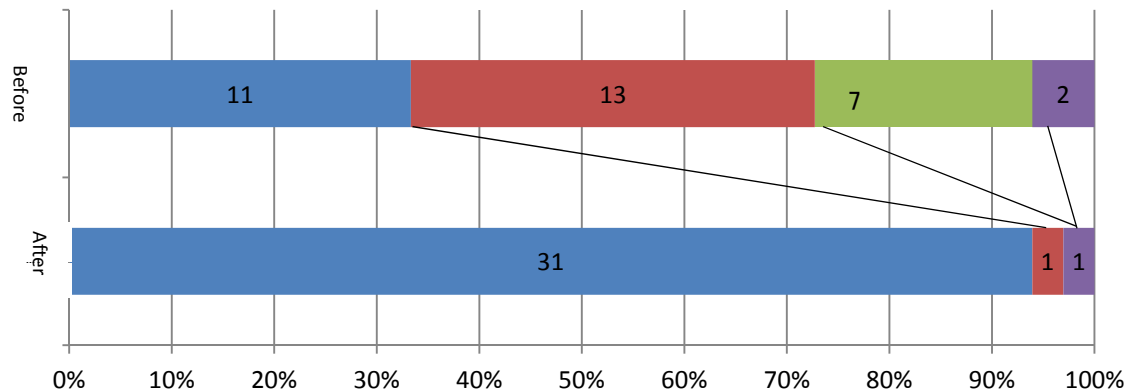
- Relocating medical institutions to the suburbs is one of the causes of preventing compact and low carbon cities.

Case studies of public facilities relocated to the suburbs



Source: *Urban Planning in Regenerating City Centers – Advisory Committee Report* (City Bureau, Ministry of Land, Infrastructure, Transportation, and Tourism, August 2005)

Access to Hospitals after Relocating to Suburbs



(Reference materials from 7th Subcommittee)

- Automobile
- Public buses
- Trains
- Unknown

Source: *Research on the Facts in Relocating Medical Institutions in Rural Cities and the Evaluation of Impact to City Centers by Administration* by Kosuke Kunitani and Norihiro Nakai (Journal of City Planning from The City Planning Institute of Japan)

Promotion of Urban Renovation and Compact Cities

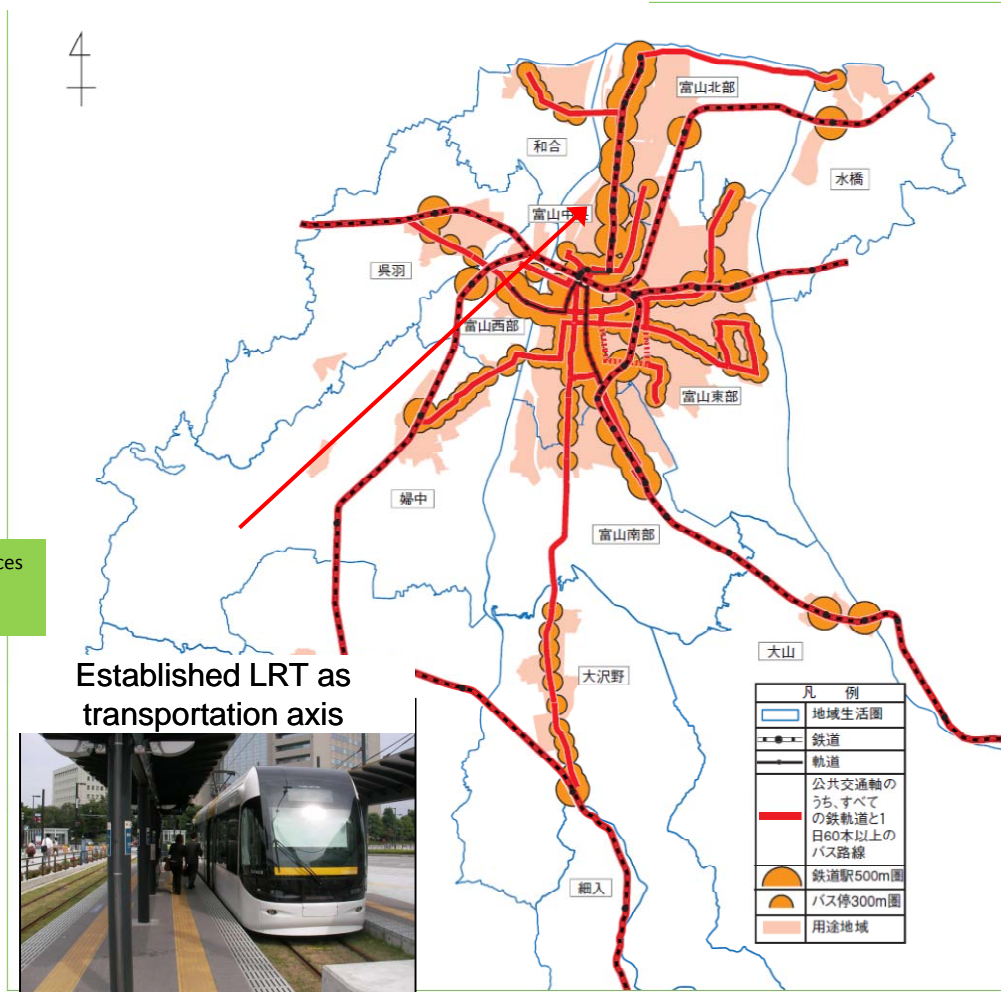
B. Compact Cities: Precedent Case Studies

Toyama City created a compact city structure (lines and circles) centered around the transportation axis of railways, existing and new LRT as well as route bus lines and used housing subsidies to build housing near stations and bus stops.



■ Diagram of future line and area urban structure Toyama City (Public transportation is the line and the living areas are the circles)

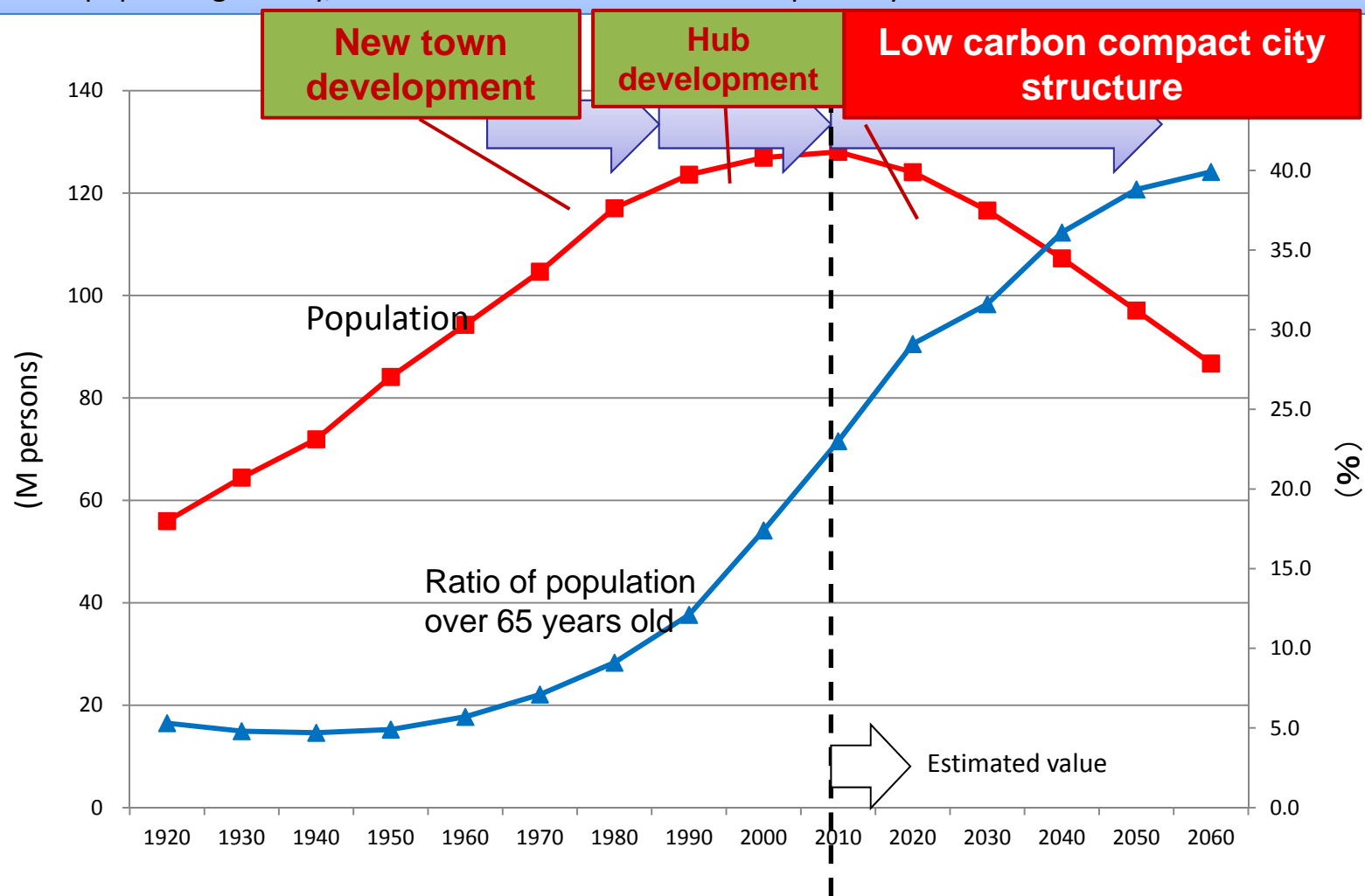
Diagram of compact city structure by using public transportation



Source: Urban Master Plan of Toyama City

Background and Prospects of Urban Development

- Urban development in Japan expanded with the development of new towns during the rapid economic growth period and the development of hubs during the stable economic growth period.
- With the depopulating society, we must realize a low carbon compact city structure.



Source: Population: *Census* by the Statistics Bureau of the Ministry of Internal Affairs and Communications and *Future Estimate go Population in Japan* by the National Institute of Population and Social Security Research (Estimate of January 2012) of each year on October 1 (medium estimate figures)

Basic Ideas in Low Carbon City Development

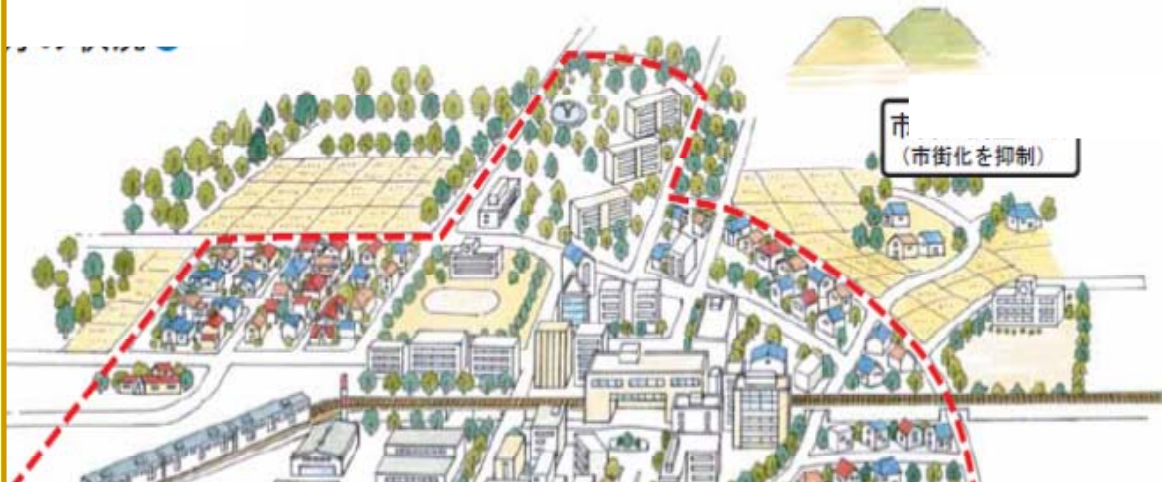
- ◇The coming of depopulation and hyper-aged society
- ◇Necessity to reduce environmental load
- ◇Increase in competition between global cities

Transfer to a compact city structure

Live in a community centered around core urban functions and public services. While realizing a good urban space efficiently, secure sustainability, safety, and security

Secure appropriate location of urban functions

- *Restrict the building to large scale facilities, hospitals, and schools that have major impact on urban structures and infrastructures in wide areas
- *the concentration of various urban functions (housing, public facilities, commerce, etc) to the city center
- *Focus public investment to the city center



Low carbon urban functions

1. Concentrate urban functions

Support development of public facilities (including medical institutions, welfare facilities, local interaction facilities)

2. Urban transportation policies

Create an environment by concentrating various functions along public transportation and in walking distance.
Link various functional hubs with public transportation

3. Promote use of energies in the entire area

Use non-used energy to promote development of local air conditioning facilities and networks
Promote local-made local-use recyclable energy in cities

4. Preserve greenery and promote urban parks

Secure greenhouse gas absorption and heat island measures to preserve and create greenery that helps improve the warming environment

Guidelines for a Low Carbon Urban Development (Announced in August 2010)

Guidelines to make possible selections of urban development measures for effective reductions of greenhouse gas emissions

***Submit "Act on Promoting Low Carbon Cities (Draft)" to the Diet**

Promotion of Low Carbon Cities

Background

With the change in energy demand due to the Great East Japan Earthquake and based on the uplift of consciousness among the people on energy and global warming, promote private investments in city areas, to create success stories on the rationalization of low carbon cities and transportation and energy use to spread these concepts to activate housing markets and regional economy.

Summary

- Enact basic polities (Minster)
- Enact low carbon urban plans (Cities, towns, and villages)
- Certify private low carbon buildings and others



Promote low carbon cities

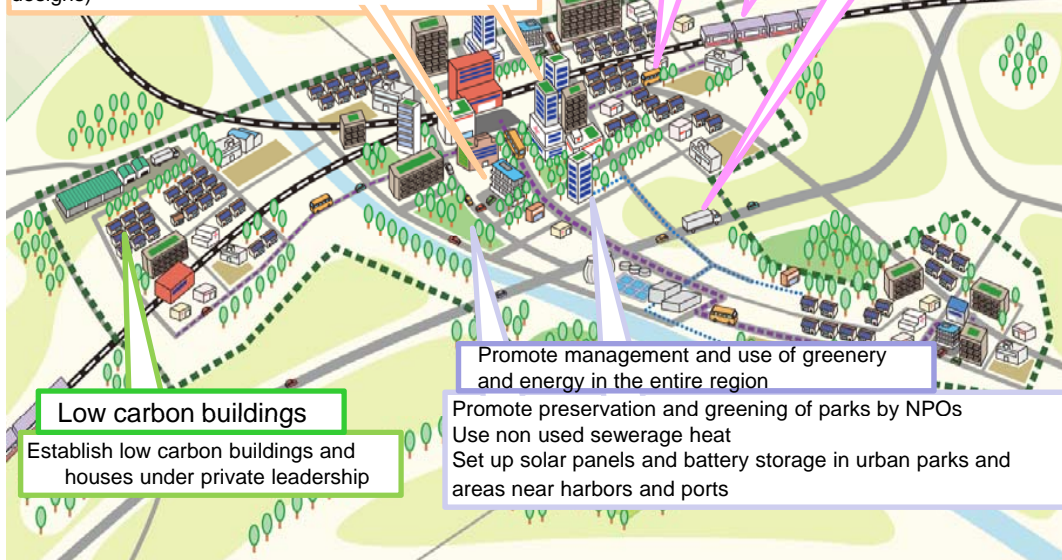
Image of low carbon city plans

Compact city functions

Establish compact hospitals, welfare centers, offices, and residential complexes
 Establish private compact parking facilities
 Urban planning in walking distance (pedestrian walkways, establish bicycle lanes, and universal designs)

Promote use of public transportation

Establish bus routes and LRT, enforce shared transportation and delivery
 Control automobile CO2 emissions



Promote management and use of greenery and energy in the entire region

Promote preservation and greening of parks by NPOs
 Use non used sewerage heat
 Set up solar panels and battery storage in urban parks and areas near harbors and ports

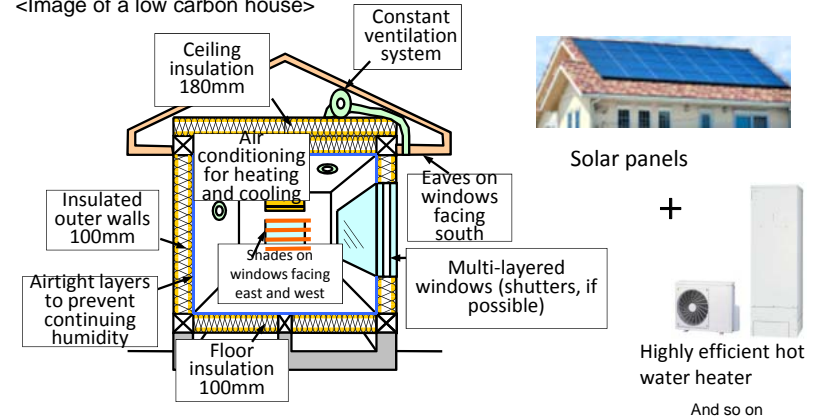
Low carbon buildings

Establish low carbon buildings and houses under private leadership

Certify private low carbon buildings

【Image of low carbon buildings】

<Image of a low carbon house>



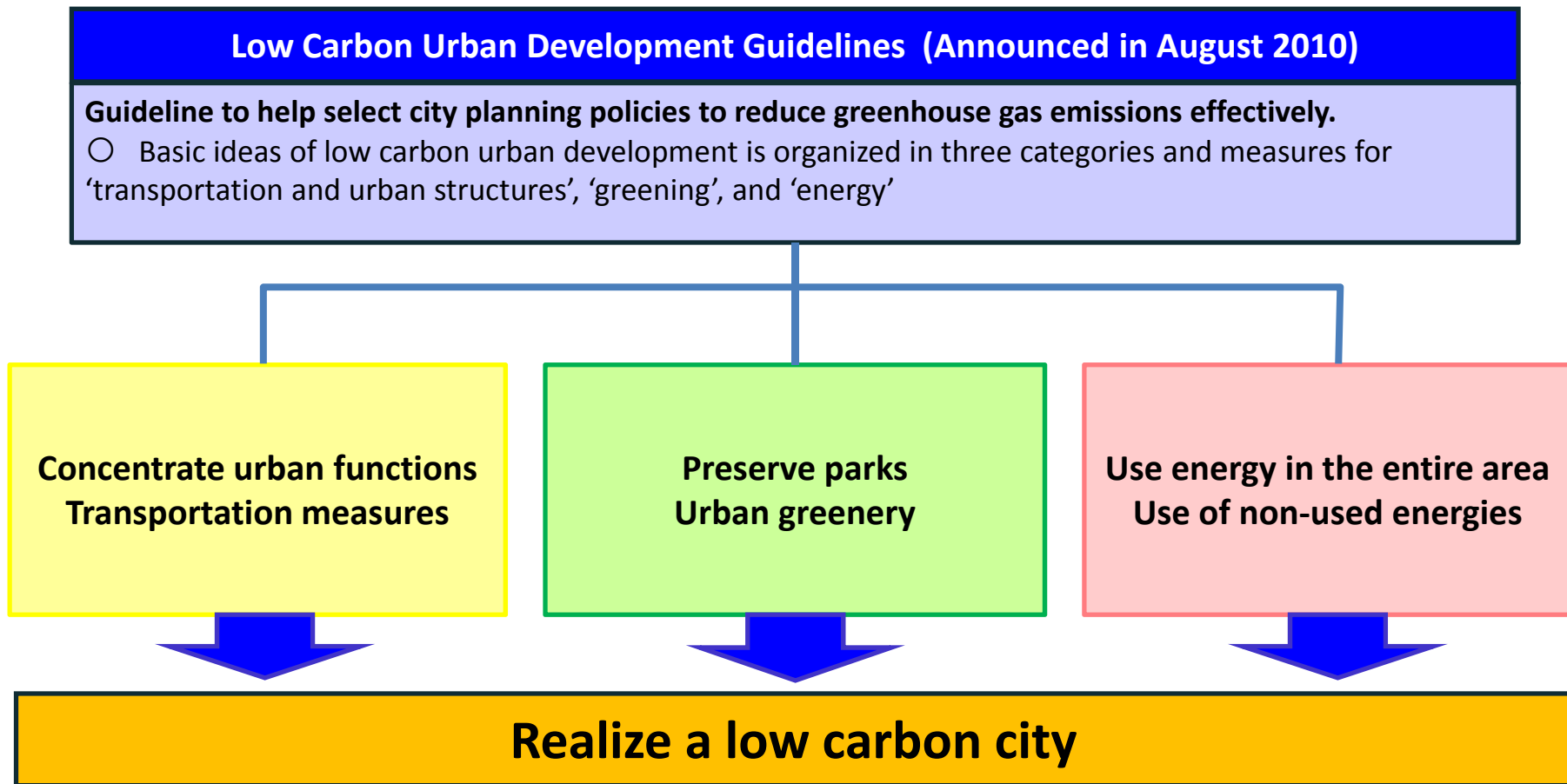
Grant incentives to low carbon buildings such as special tax measures (such as delving deep into reducing housing loans), and special floor area ratio

【More reduction in housing loans】

Years of abode	Deduction period	Deduction ratio	Maximum Tax Reduction (Ten Years)
2012	Ten years	1%	4 million yen (3 million yen for normal houses)
2013	Ten years	1%	3 million yen (2 million yen for normal houses)

Low Carbon Urban Development Guidelines

- Created by the Ministry of Land, Infrastructure, Transport, and Tourism to support review, and technical measures on “Low Carbon Urban Development” in various areas
- New guideline on low carbon urban development policies and how to analyze its effects



Case Studies of the Application of the Low Carbon Urban Development Guidelines

<Low Carbon Urban Development Guidelines>

1. To make basic information needed for each city to consider measures for a low carbon city clear and possible.
2. Particularly, it is expected not only to consider individual measures, but also to delve into giving objective and integrated considerations of the directions of urban (compact city) structures.

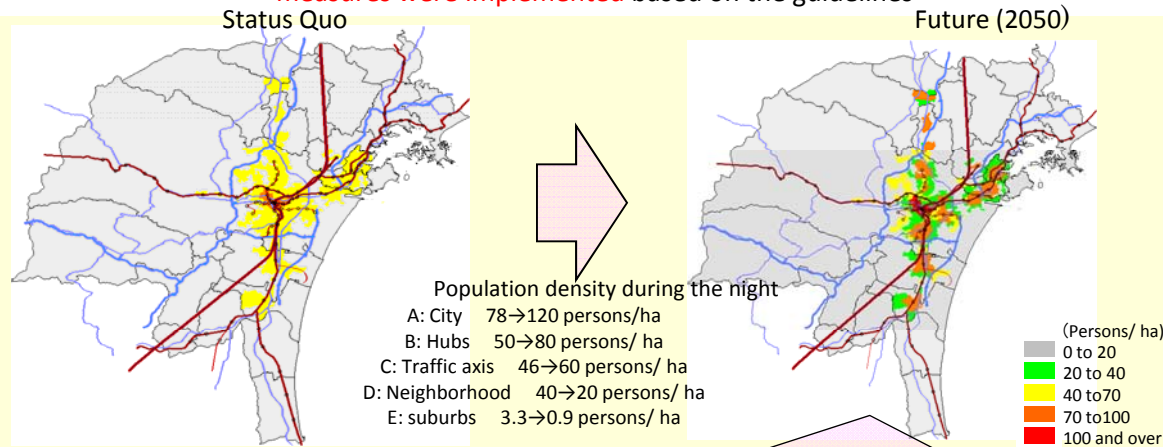
Premises for urban development policies ((over 30 main items and can establish more details)

- Arrange night-time population and its density (degree of intensity)
- Establish traffic facilities and enact intangible measures
- Update buildings and so forth

Organize and simulate each element systematically

Calculate the CO2 emissions of the whole city according to the combinations of the measures

Example of simulation results of the urban area of Sendai City **under the hypothesis that major measures were implemented** based on the guidelines



The CO2 emission for traffic in a compact city in 2050 will be

24.0% less compared to today
(820,000 tons-CO2/ year)

Impact of transfer efficiencies due to a compact city structure (centralize population to the hubs): 12.0% reduction

Impact by traffic measures: 4.9% reduction
Impact by depopulation: 7.1% reduction



The CO2 emission for private households in a compact city in 2050 will be

26.0% less compares to today
(630,000 tons – CO2/ year)

Impact of energy efficiencies due to a compact city structure (centralized population to the hubs): 8.1% reduction

Impact due to depopulation: 17.9% reduction
Impact to CO2 reduction due to a certain rate of population that is centralized to the hubs live in housing complexes. (*Can further reduce by implementing energy conserving devices when rebuilding.)

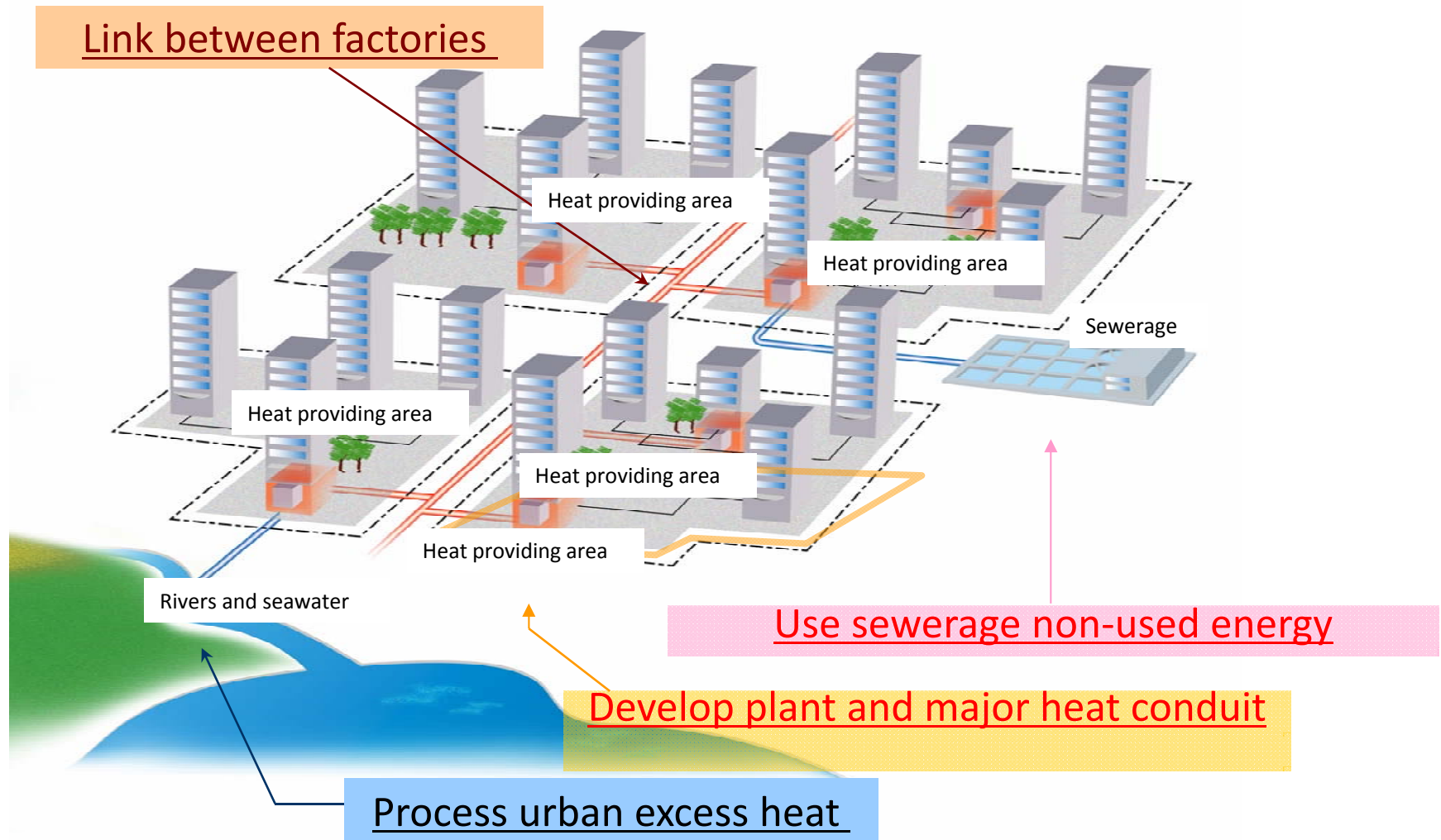
Premises of simulation

- Gather night-time and day-time population to the hubs (centralizing urban structure)
- Tangible development such as roads and railways and enact intangible measures to improve the convenience of public transportation

*Can compare and consider various measures by changing the combination of premises

Promote Energy Use in the Entire Area

With urban development, promote, develop, and network regional air conditioning facilities by using non-energies



Promote Urban Greening

Urban greening is positioned globally as a greenhouse gas sink along with forests and as a vegetation recovery actions in the Kyoto Protocol. It is also positioned in the Kyoto Protocol Target Achievement Plan as a means to low carbon cities by improving heat environment by regulating heat island phenomena and promoting enlightenment on its significance.

Measures for greenhouse gas sink (Vegetation recovery action in the Kyoto Protocol)

Secure sink by improving new parks and greenery

Facilities: urban parks, greenery on roadsides, riverside, harbors, sewerage processing plants, in public housing, within government facilities, and certified greenery development planned areas



* Article 3 Paragraph 4 in the Kyoto Protocol states 'vegetation recovery' as separate from the 3.8% sink from forests and can add to the sink amount ⇒ Japan's reduction target is 1/100 (equivalent to 0.06% of standard annual ratio)

Improvement in heat environment with heat island measures

Create low carbon cities by utilizing public space and government buildings as well as rooftops and walls on private buildings and preserve urban farming land by improving the ground surface.



Spread enlightenment on urban greening



Increase urban greening attitudes and knowledge with urban greening fairs



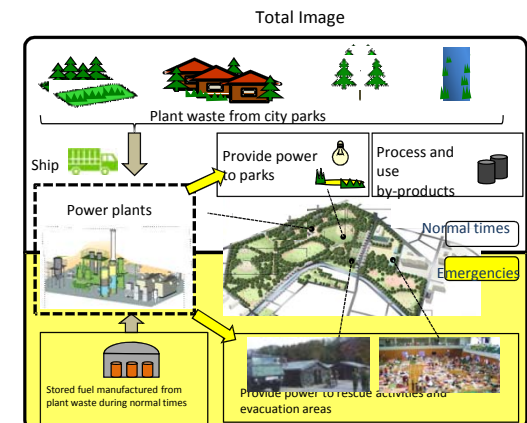
Evaluate greening measures by companies

Promote local-made local-use energy with plant waste

Use un-used plant waste from city parks and streets as local-made local-use recyclable energy

- Carry out tests on plant waste from national parks to understand the characteristics as energy source (amount of gas formation, etc.) and consider power plant specifications that have significant energy efficiencies.

- Consider measures that establish CO2 and financial income and expenditures for a sequence of processes in using plant waste to create energy.



■ Concept of a Future Environmental City

National Strategy Project of “New Growth Strategy (Cabinet Decision June 18, 2010)

【Aim of Concept】

- Select limited and special cities for the following objectives:
- Create success stories not found in other countries in technology, socio-economic systems, services, business models, town planning regarding environment and ultra aging society which are issues for all human beings in the 21st century.
- By developing and spreading in Japan and other countries, expand demand and create jobs to aim at ultimately realizing a development of a sustainable economic society in the whole of Japan
- The government will support related budgets, regulations, systems, and tax revision for this future environmental city.

【Basic Concept】

○ To realize a ‘city that creates new human-focused values for the environment and ultra aging society’, configure a sustainable socio-economic system that responds to global warming, restrictions in resources and energies, and ultra aging society the Japan and the other countries in the world are facing and while recovering and solving the social solidarity, aim at creating a city that anyone can live and anyone can enjoy by creating values in the three areas of environment, society, and economy.

【Selection Process】

○ There were 30 suggestions from September 1 to September 30, 2011 (Until October 25 in disaster hit areas).
(There were six suggestions from disaster hit areas.)

○ Committee of evaluation and survey review of future environmental city (Chairperson: Shuzo Murakami from Building Research Institute) conducted interviews



● Announced the selection of a total 11 regions as future environmental cities on December 22, 2011

☆ Selected areas

- Shimokawa-machi, Hokkaido
- Kashiwa City, Chiba Prefecture
- Yokohama City, Kanagawa Prefecture
- Toyama City, Toyama Prefecture
- Kita-kyushu City, Fukuoka Prefecture

<Among which were Great East Japan Earthquake disaster areas>

- Oofunatoshi City, Rikuzen Takada City, Sumida-cho, Iwate Prefecture
- Kamaichi City, Iwate Prefecture
- Iwanuma City, Miyagi Prefecture
- Higashi Matsushima City, Miyagi Prefecture
- Minami Soma City, Fukushima Prefecture
- Shinchi-machi, Fukushima Prefecture

Selected Regions for the Future Environmental City Concept

