The CO_2 Reduction Plan Provided by the Toyama Compact City Strategy

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Mayor, Toyama






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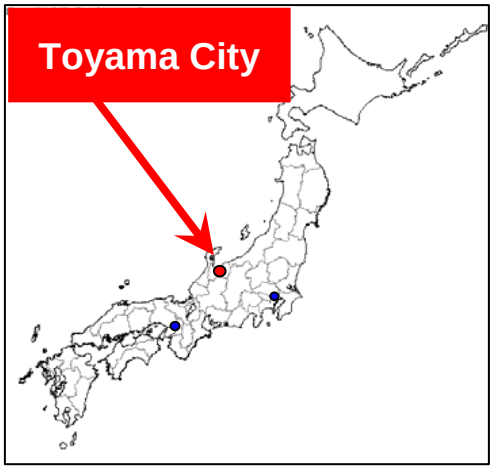
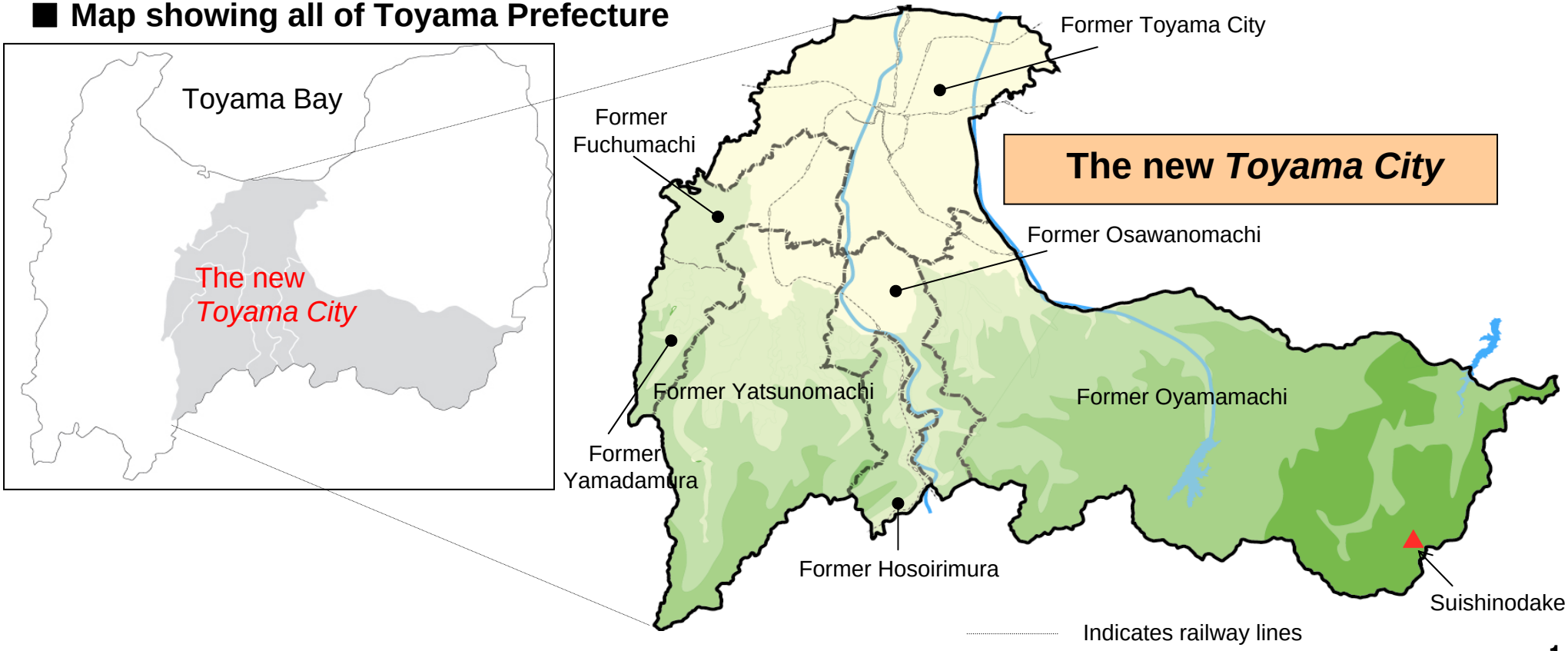
1. Toyama City at a Glance

- The birth of a new Toyama City came about as a result of a merger between 7 municipalities (April 1, 2005)
- The population of the city represents about 25% of the population of Toyama Prefecture（417,465 people） NOTE: As of April 1, 2005
- The area of the city represents about 33% of the area of Toyama Prefecture (1,241.85k㎡)
- Diverse topography includes area from sea level (Toyama Bay) to 2,986 meters in elevation（ Mt. Suishinodake ▲）



■ Map showing all of Toyama Prefecture

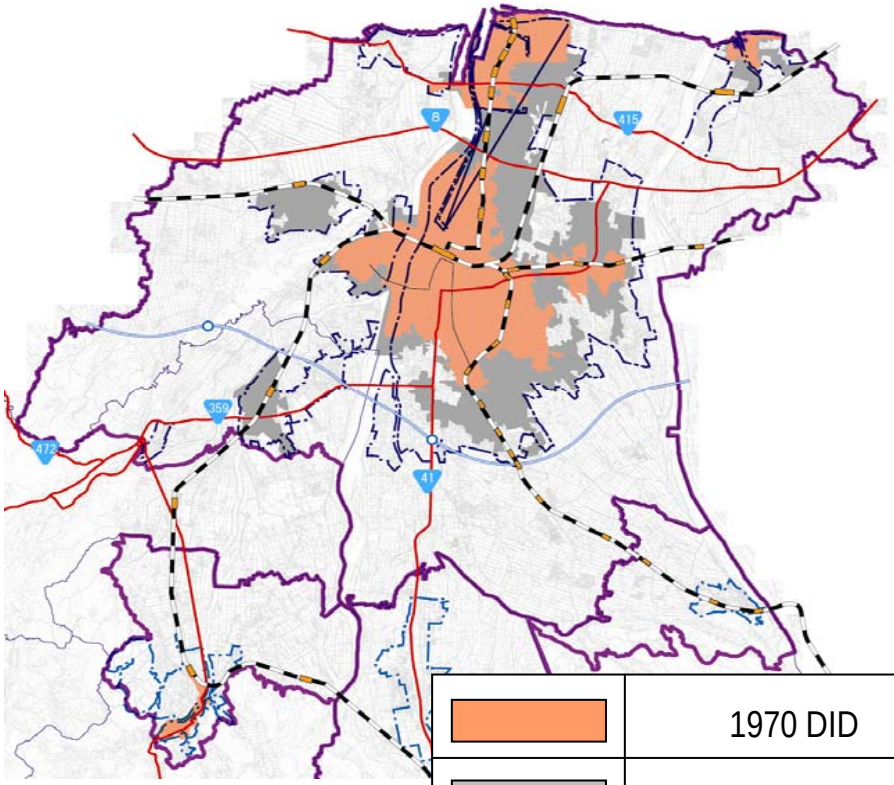


2. Urban Characteristics of Toyama City

2-1 Local urban areas with low population density

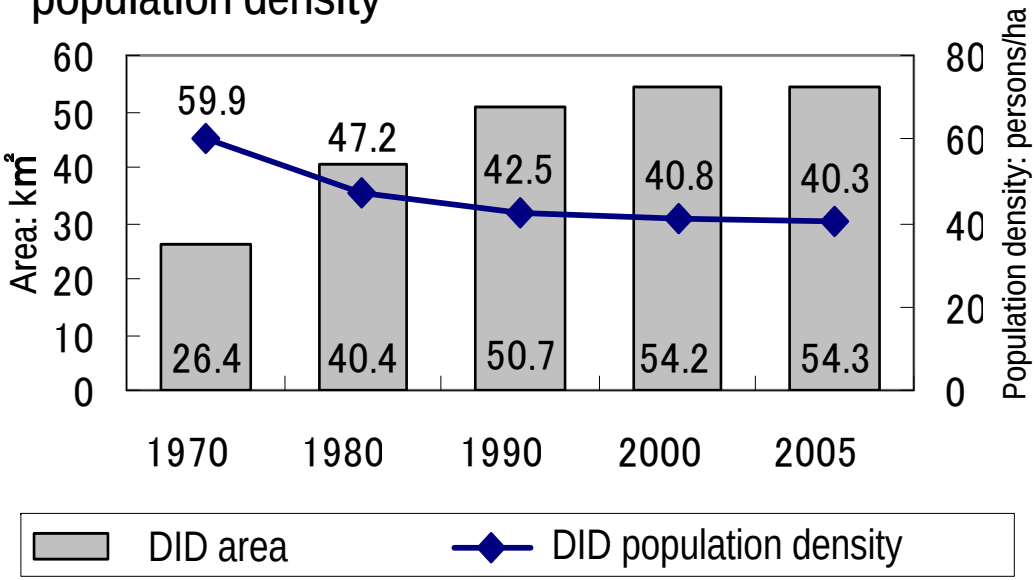
○ Due to the spillover effects of expansion into local urban areas, Toyama City has the lowest population density (40.3 persons/ha) of all prefectural capitals

(1) Changes in densely inhabited districts (DID)



	1970 DID
	2000 DID

(2) Enlargement of the local urban area and changes in population density



(3) Population density comparisons for densely populated districts (DID)

Toyama City	40.3 persons/ha
National average	67.1 persons/ha
Tokyo	115.3 persons/ha

2-2 A significant dependence on the automobile

(1) Increase in the number of passenger vehicles owned

General motor vehicle ownership has increased by 1.4 times (national average is 1.3 times)

Light motor vehicle ownership has increased by 6.5 times (national average is 5.6 times)

Trends in vehicle ownership in Toyama City

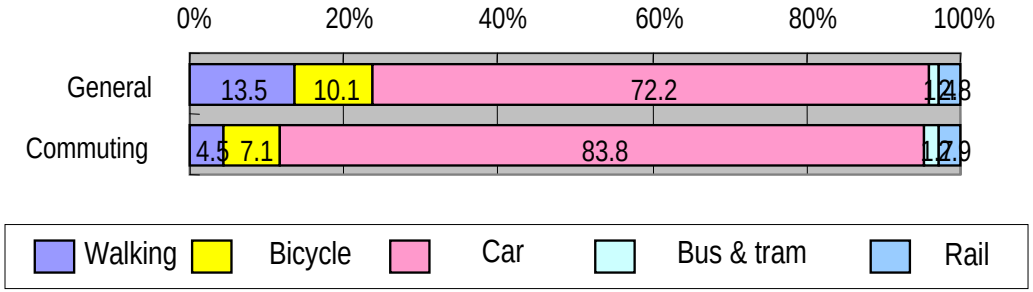
	1990	2006
General	127,276	181,299
Light	10.826	70,122

(2) High rate of automobile usage

72.2% of the population uses cars for general transportation purposes;

83.8% of the population uses cars to commute

Rate of usage for different means of transportation



From the *Third Toyama/Takaoka Extended Metropolitan Area Survey*

(3) Declining public transportation

-Rates of decline in usage - 1990 → 2006 (16 year period)

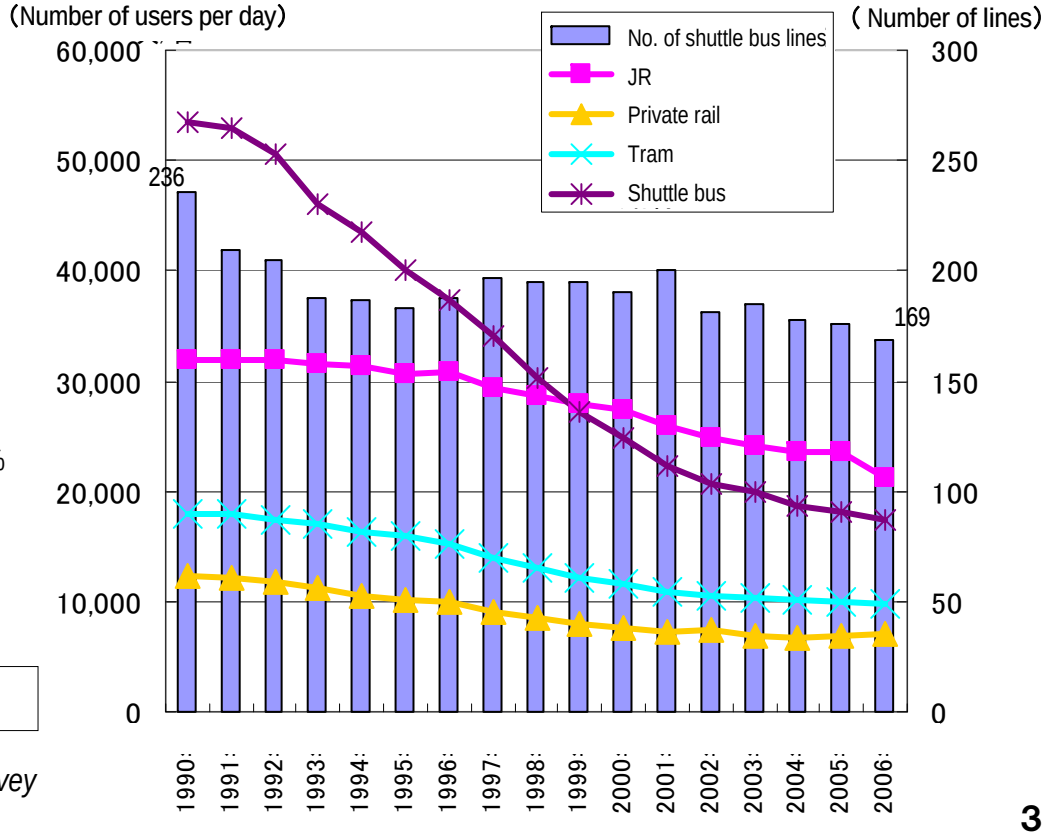
JR 33% ↓ (In 2006, the Toyama Harbor line was discontinued)

Private rail 43% ↓

Tram 46% ↓

Shuttle bus 67% ↓

⇒The shuttle bus system has declined by about 30% over the last 16 years

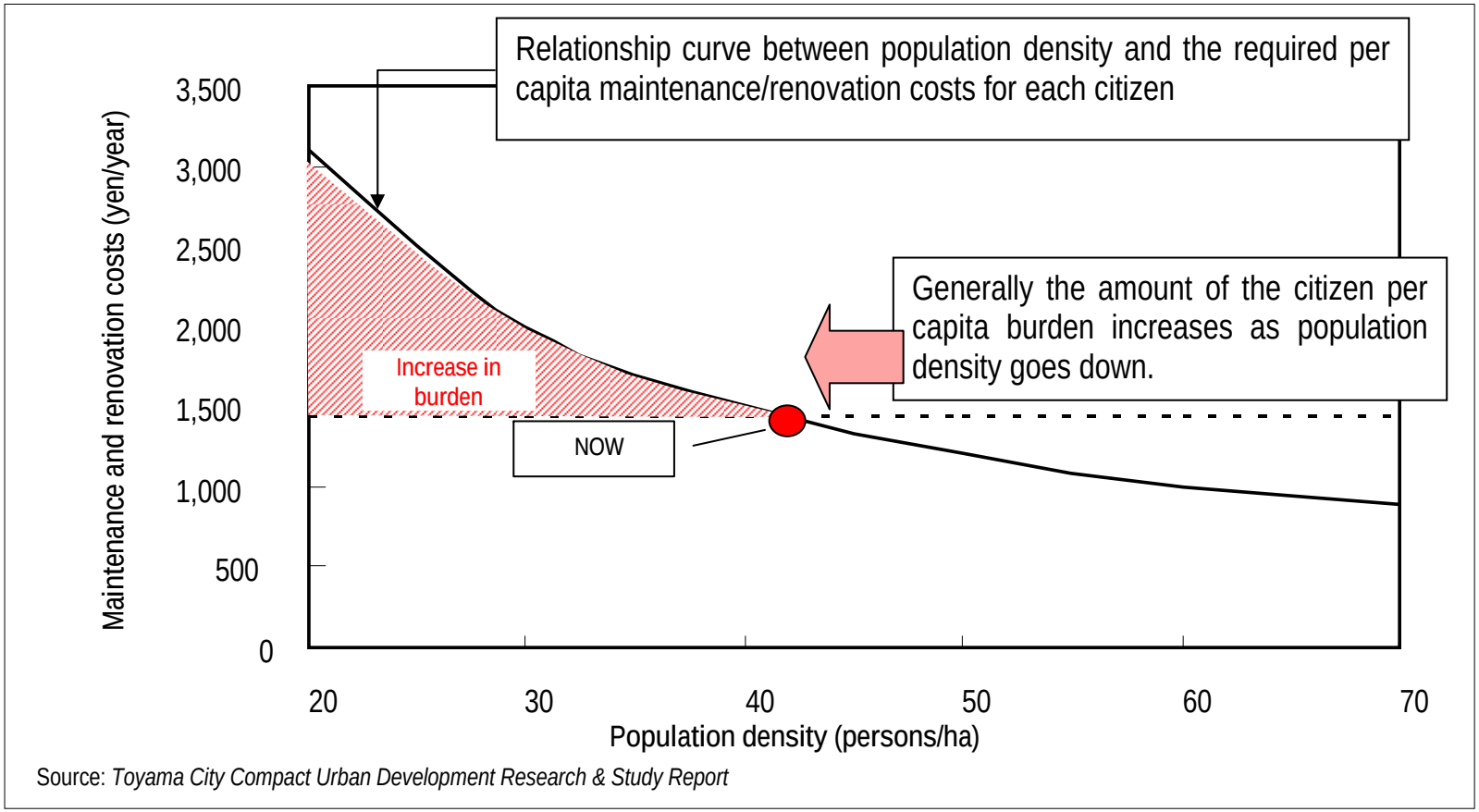


2-3 A High Energy Consumption Type of Urban Structure

Because of the decreased population density effect of expansion into local urban areas, ...

- ○ There has been a deterioration in the upkeep of roads, parks, sewer systems, etc.
- ○ There has also been a deterioration in services such as garbage collection, social services and postal services

■ The relationship between the population density of local urban areas and the O & M costs of public facilities*



Source: *Toyama City Compact Urban Development Research & Study Report*

*Public facility O & M costs ＝expenses for snow removal, street cleanup, and the management of local parks and sewers/aqueducts.

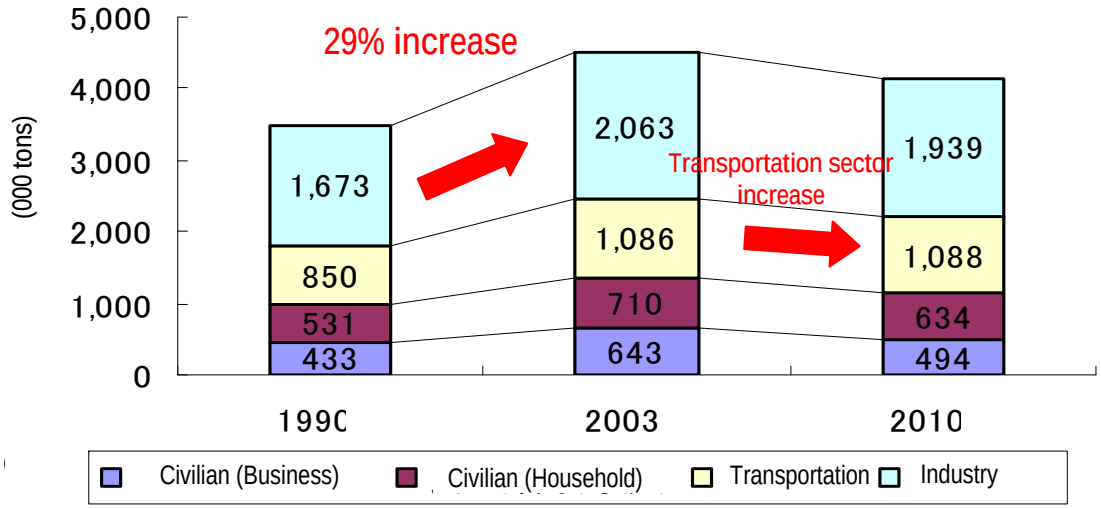
2-4 CO_2 Emissions Volume for Toyama City

- CO_2 emissions volume increased 29% in Toyama City between 1990 and 2003
- Per capita CO_2 emissions volume attributable to transportation are roughly 3 times as high as for the Tokyo metropolitan area
- The increase in CO_2 emissions volume due to the decreased population density of local urban areas is an issue of joint interest for regional communities.

Rate of increase in CO_2 emission volumes 1990 → 2003

	Nationwide	Toyama City
Business consumers	+ 36%	+ 48%
Household consumers	+ 32%	+ 34%
Transportation	+ 20%	+ 28%
Industry	+ 0%	+ 23%
Total	+ 14%	+ 29%

Source: *Regarding Greenhouse Gas Emissions (Ministry of the Environment)*



Per capita CO_2 emissions volume attributable to transportation (2003)

	Nationwide	Toyama City	23 wards of Tokyo
Emissions volume (tons/year)	260,000,000	1,086,000	7,227,669
2005 census population (persons)	127,767,994	421,239	8,489,653
Per capita emissions (tons per year/person)	2.0	2.6	0.9

3. The Toyama City Municipal Master Plan (Created March 2008)

3-1 Basic urban development policy

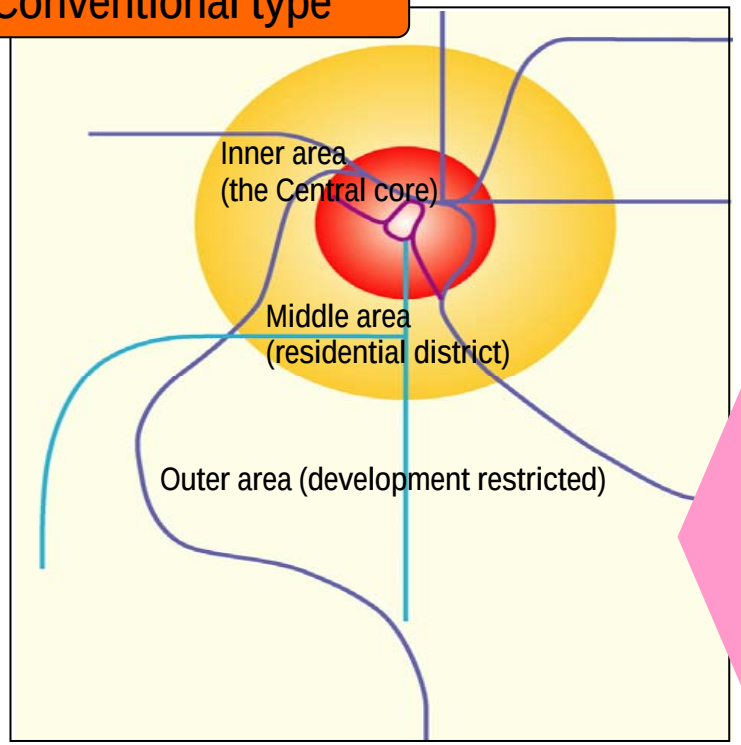
○ Rail and other forms of public transport will be developed, and residential, business, commercial, cultural and other facilities will be clustered in the 'corridors' that this public transportation development forms and thus compact urban development bases centered around public transportation will be realized.

The 'dumpling and skewer' form of urban structure that Toyama City has its sites on

Skewers : public transportation with, at a minimum, a constant service level

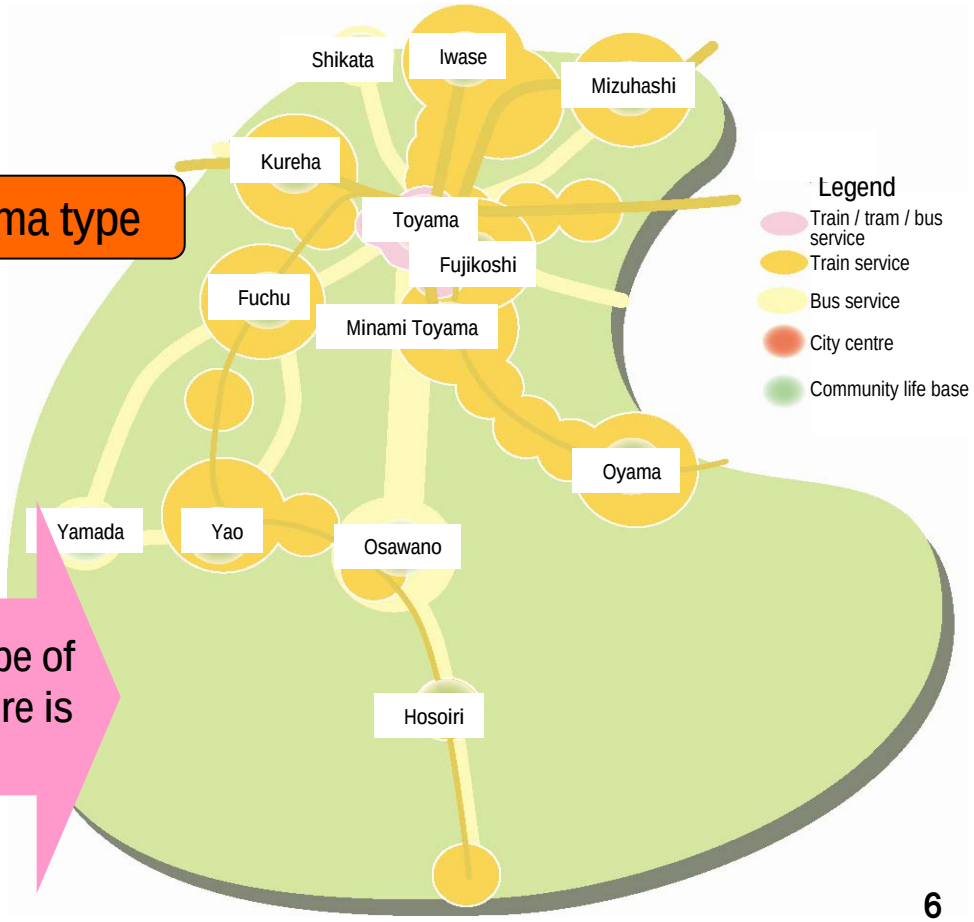
Dumplings :areas accessible by foot that are linked by the public transportation 'skewers'

Conventional type



A different type of urban structure is strived for

Toyama type



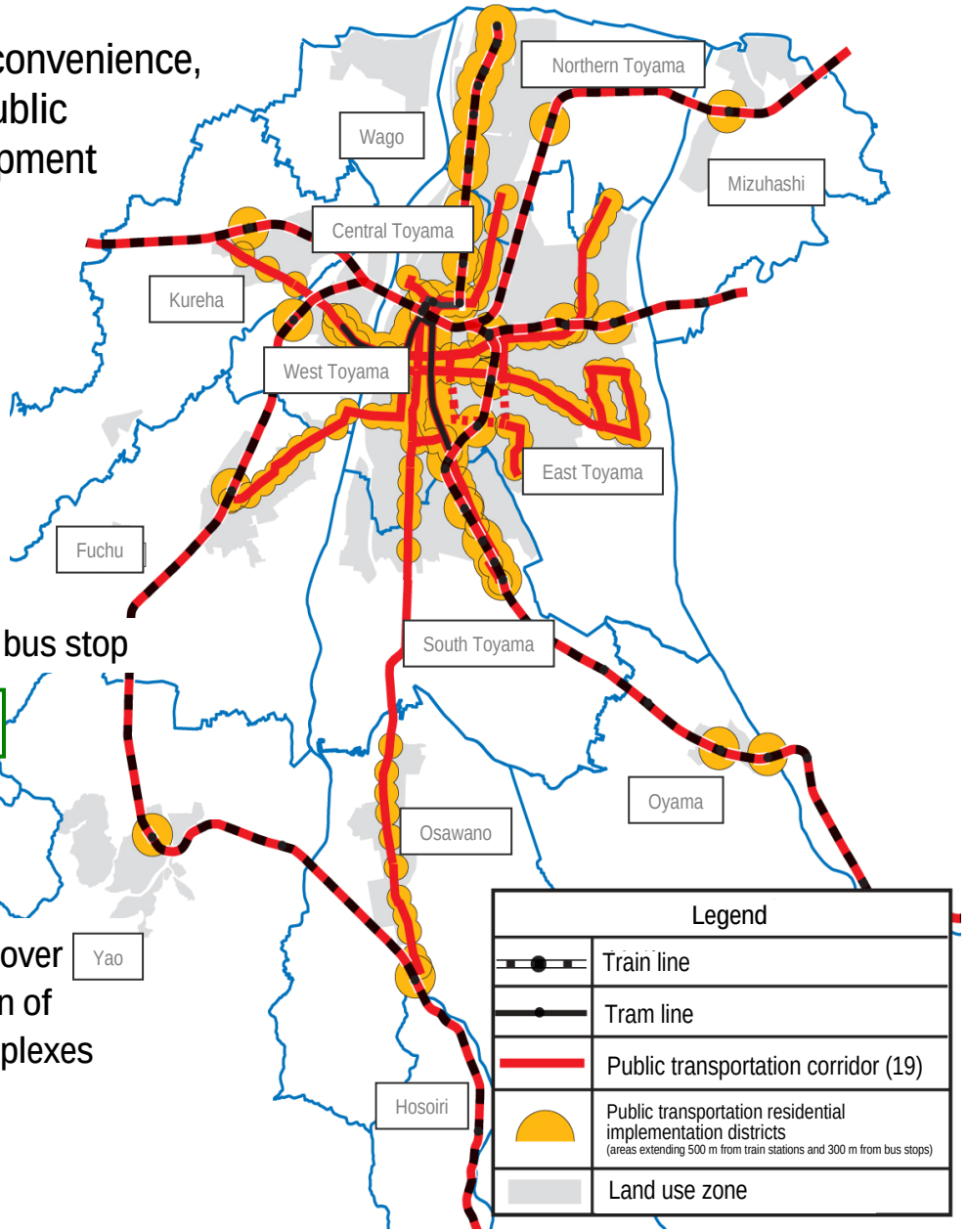
3-2 Establishing areas with public transportation corridors and residential areas

- Pursuant to providing, at a minimum, a constant level of convenience, bus routes will be positioned along all rail lines to form public transportation corridors with an eye toward future development

  ○ Routes: (19 in total)
  - Tram/train 6 lines (all routes within the city)
  - Bus routes: 13 (more than 60 buses running each day)

- Establishment of *public transportation residential implementation districts* along the public transportation corridors, and the promotion of compact urban development via the fostering of residential areas and other means

  ○ Areas are to be 500 m from a tram train station or 300 m from a bus stop



Support for citizens

Assistance in acquiring detached houses and condos (per residence)

【City residences】

¥500,000 per residence	¥1,000,000 per residence
¥300,000 per residence	¥700,000 per residence

【Public transportation corridor residences】

Support for businesses

Assistance to cover the construction of residential complexes (per residence)

3-3 Establishing objectives for the compact urban development made possible by public transportation development

○ Improve the the service level and user-friendliness of public transportation by increasing the ratio of citizens living in areas handy to public transportation.

Now

Ratio of citizens living in areas convenient to public transportation = about 30%

■ Area (including the city centre)
- Near rail lines 1,481 ha (4 lines) *over50 trains/day
- Near bus routes 1,446 ha

■ Population density
- Near rail lines 45.8 persons/ha
- Near bus routes 34.4 persons/ha

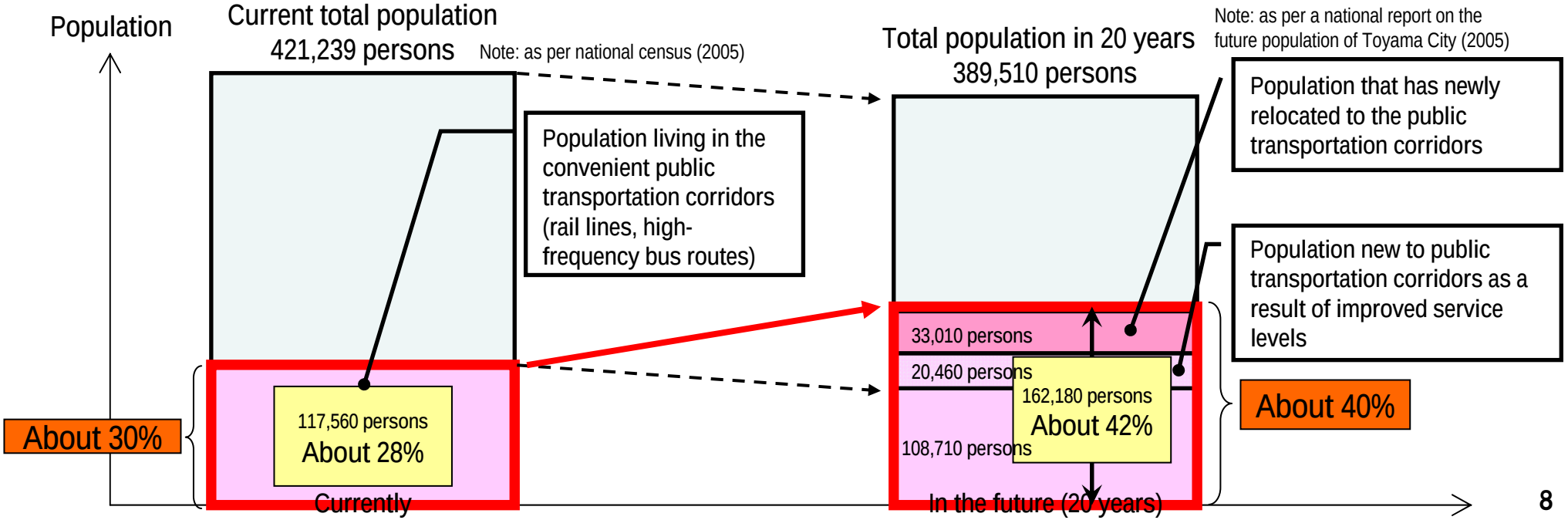
Enforcement of public transportation incentive plans, urban residence implementation policies, etc.

Future

Ratio of citizens living in areas convenient to public transportation = about 40%

■ Area (including the city centre)
- Near rail lines 2,043 ha (6 lines) *2 lines will be improved
- Near bus routes 1,446 ha

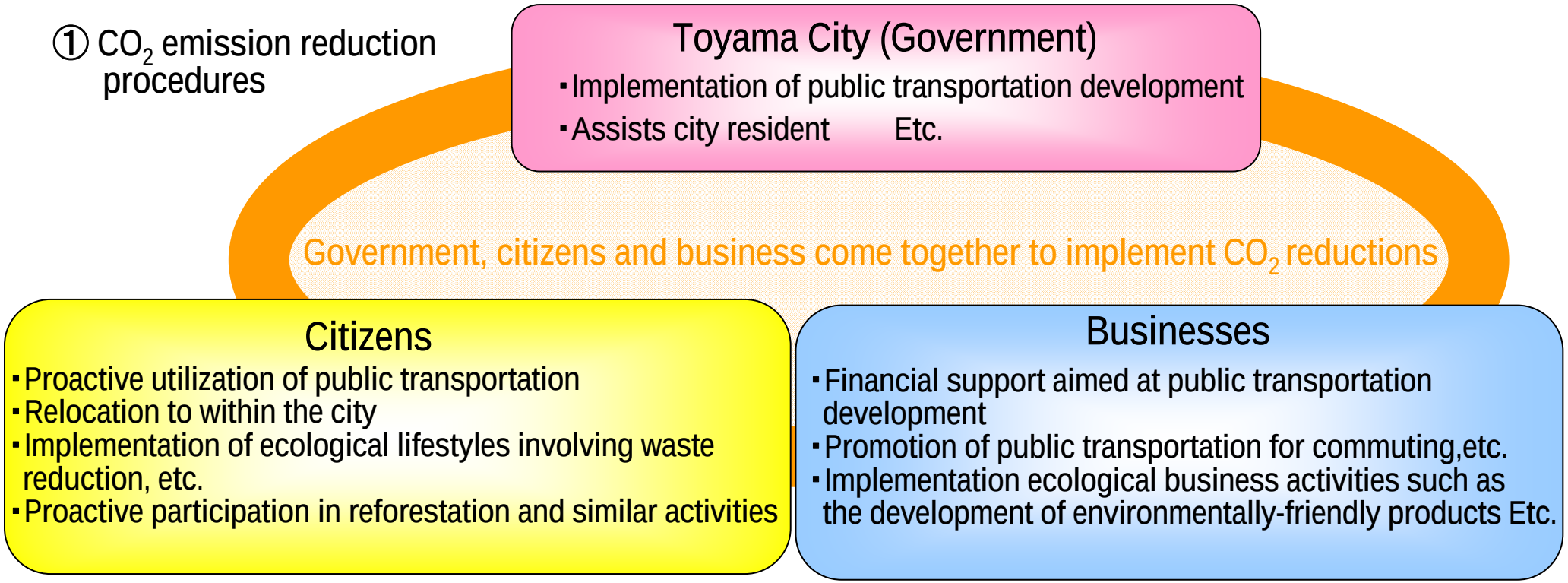
■ Population density
- Near rail lines 50 persons/ha
- Near bus routes 40 persons/ha



4. Initiatives That Bring Together Government, Citizens and the Business Community

4-1 CO_2 emission reduction procedures and target volumes

① CO_2 emission reduction procedures

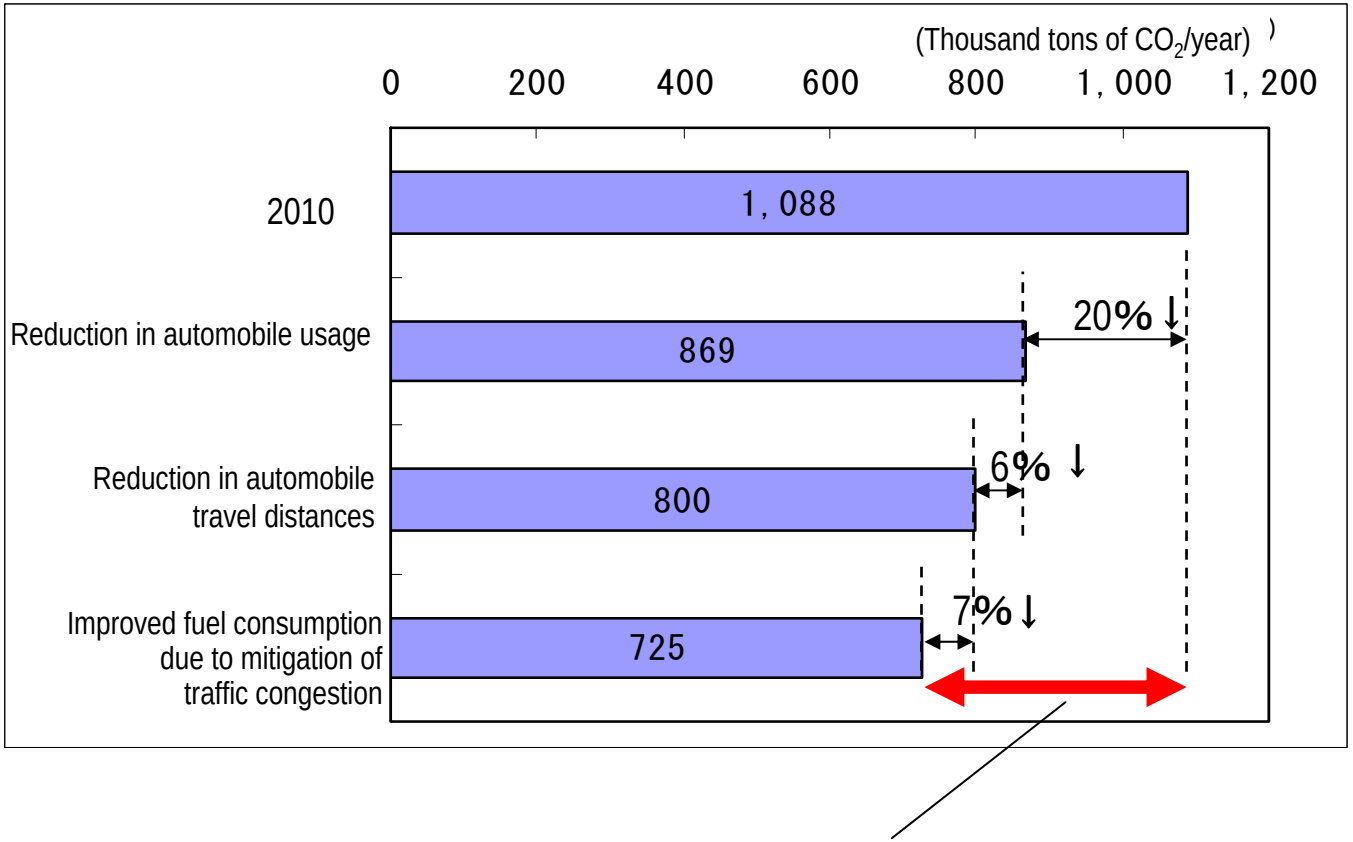


② CO_2 emission reduction targets (basement: 2010)

Initiative objectives	Mid-term goal (2030)	Long-term goal (2050)
① Development of public transportation	30% reduction (▲1,246,290 tons)	50% reduction (▲2,077,150 tons)
② Promotion of facility clusters in the city centre and the public transportation corridors		
③ Promotion of ecological lifestyles to go with compact urban development		
④ Promotion of ecological business activities to go with compact urban development		

4-2 Estimates of CO_2 emission reductions made possible by compact urban development

- With reduced automobile usage, shorter distances to travel and other effects, motorized traffic will be reduced, resulting in less traffic congestion.
- As a result, using 2010 as a base, there is expected to be a 33% decrease in the volume of CO_2 emissions attributable to transportation by the year 2030.



Medium term (2010 → 2030) transportation emission reduction objective = 30% reduction

5. Main Initiatives by Toyama City

5-1 The development of public transportation with a focus on rail

(1) The development of the Toyama Harbor line light rail transit

○ With government introducing the concept of public construction and private operation with regards to this local rail line that continued to suffer a decline in passengers, this revitilization effort involves the nation's first full-scale light rail transit system. This initiative brings forth a large-scale increase in the scale of operations and the introduction of new rail cars and features barrier-free tram stops and an all-inclusive design.

Route overview

Section: Northern side Toyama station - Iwasehama

Extension: 7.6 km (train section 6.5 km, tram section 1.1km)

Number of tram stops: 13

Number of cars: seven combinations of two cars apiece

Travel time: about 25 minutes

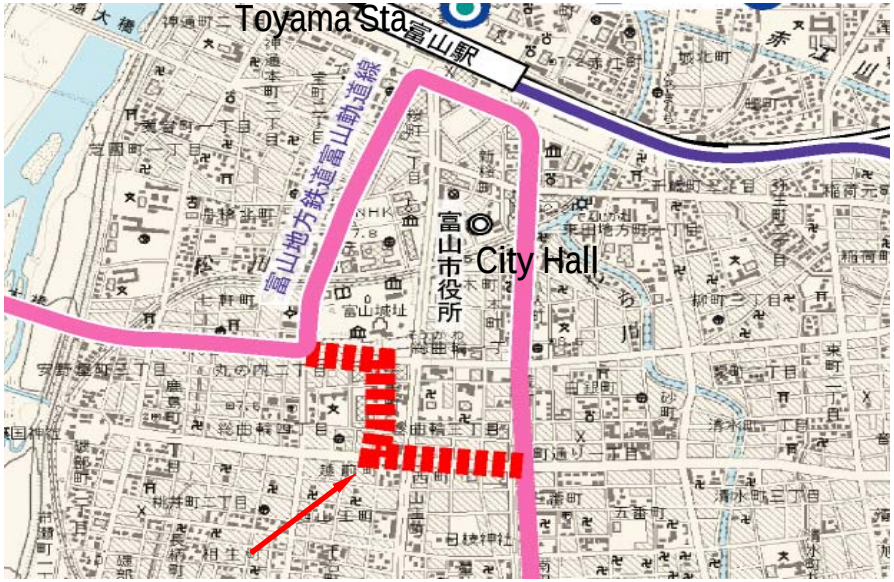
■ Tram section

■ Train section

(2) The City's Loop Line Project

○ With the goal of bringing vitality to the city centre and making round trips easier, a section of the city's rail line will be extended to form a loop line. Boasting the nation's first top-and-bottom separation method, the city will be tasked with performing maintenance on the tracks.

■ Overview of the city's rail and loop line project



Extended section

■ Overview of the city's loop line (extension) plan

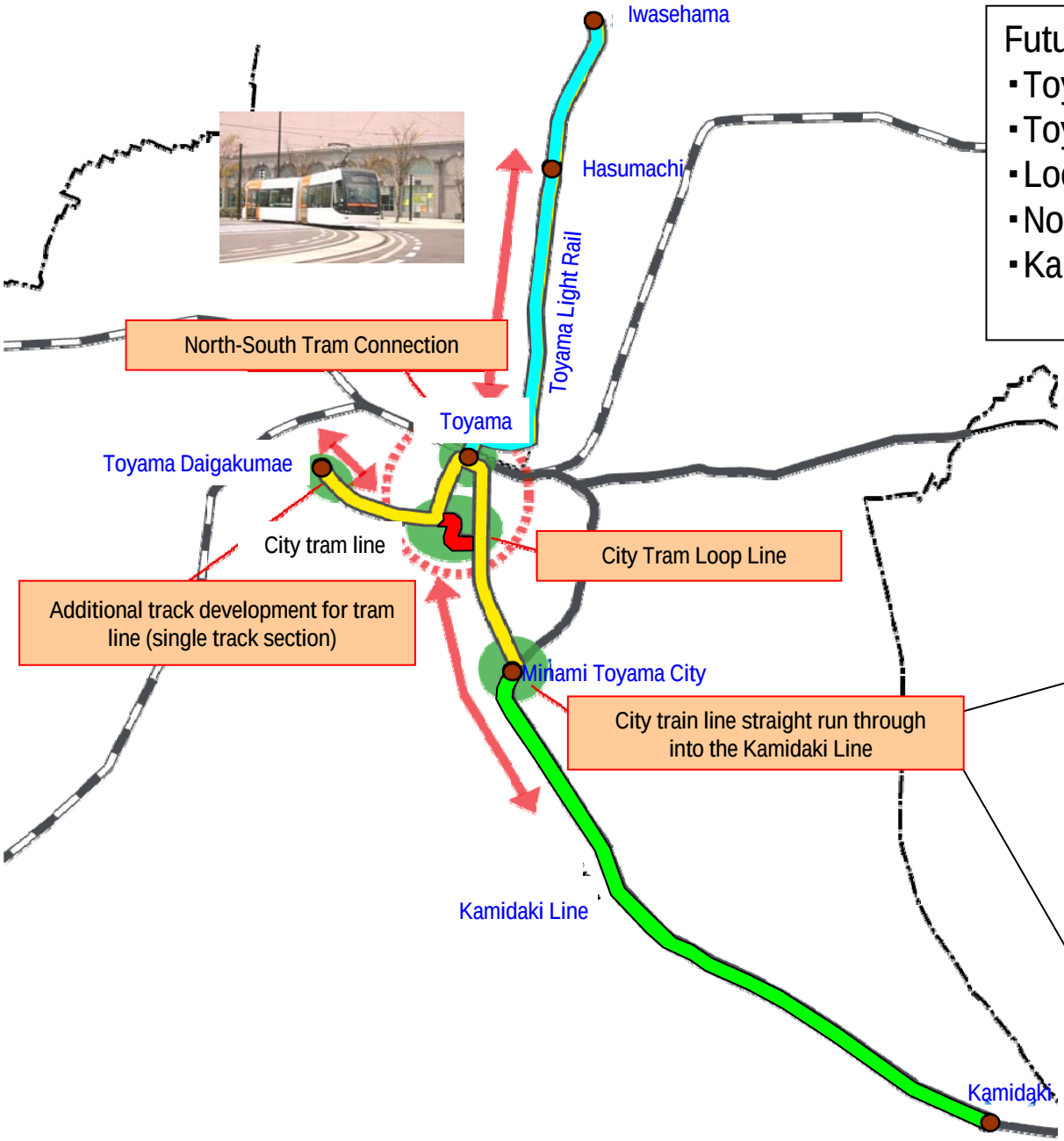
- Length: about 0.9 km (loop section about 3.5 km)
- Tram: single track (may be expanded to two tracks in the future)
- Tram stops: three stops will be established along the new section
- Service scheme:
  One-way service in a counter-clockwise direction will be added to the existing line.
- Departures: every 10 - 15 minutes
- Tram cars: new low-floor cars will be added

Construction started in Mar. 2008
Estimated time of completion is Dec. 2009

■ Overview of the Toyama Regional Train Line and City Tram

- Route length: 6.4 km with 20 stops
- Number of cars: 17 • Fare: ¥200 • Runs: 2
- Service intervals: 10 -15 minutes
- Number of passengers: 10,016 people/day (2005)

(3) Light Rail Transit Network Plan



Future LRT Network	
・Toyama light rail	7.6 km
・Toyama Railroad city tram	6.4 km
・Loop line	0.9 km
・North-south connection	0.3 km
・Kamidaki line extension	10.1 km
Total	25.3 km

5-2 The development of an urban center

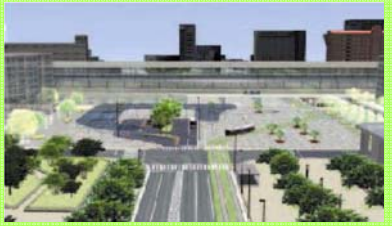
Urban center development projects (27 projects provided for by the Urban Center Development Master Plan)

○ By enhancing the appeal of the urban center, the promotion of city living is advanced.

Three pillars

- User-friendly improvements in public transportation
- Creation of a site with bustling activity
- Promotion of urban living

● Ongoing grade separation project in the area around Toyama Station



● Grand Plaza Creation and Management Project

● The South Sogawa-dori First Urban Redevelopment Project (Daiwa Toyama Store)

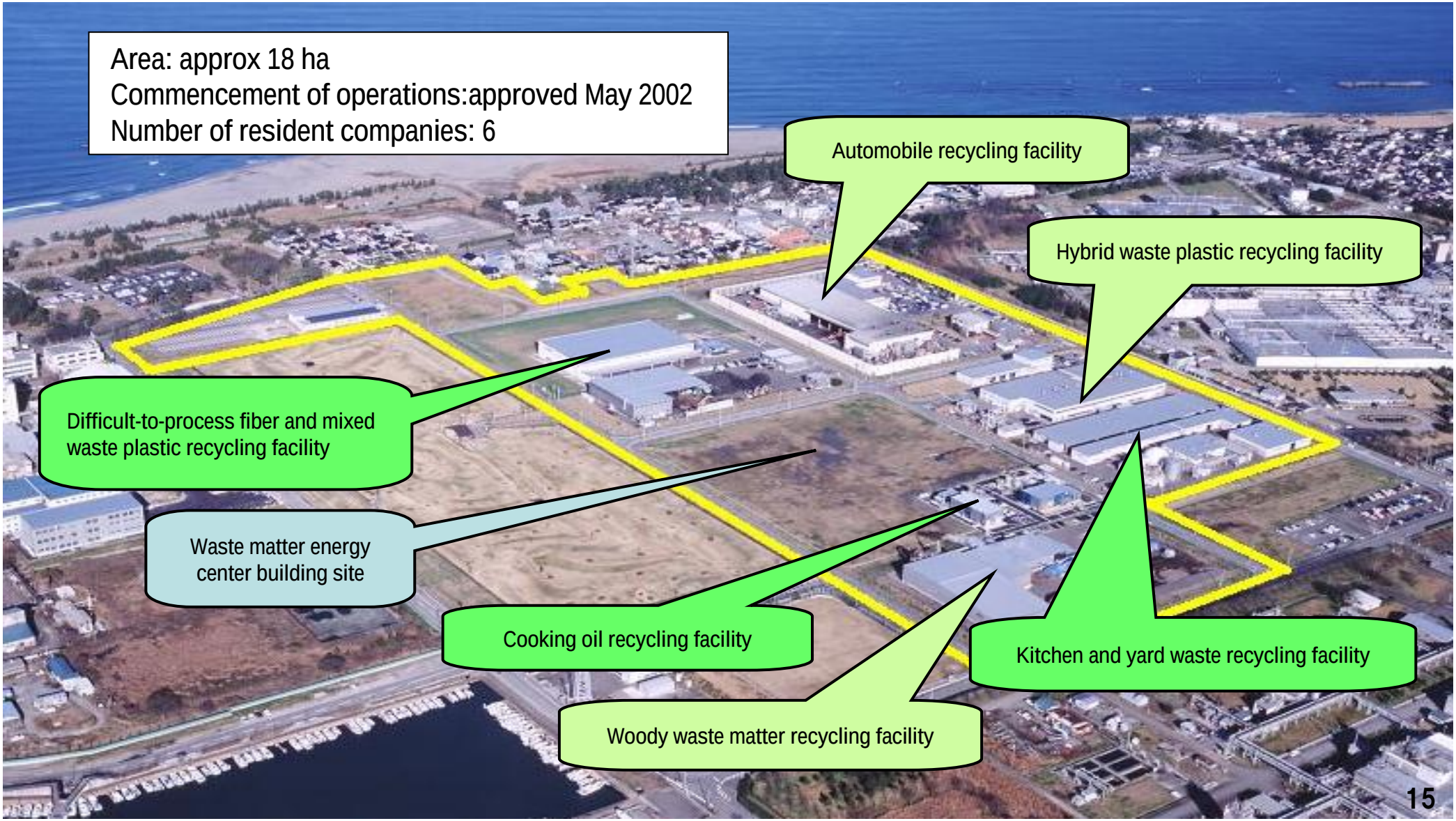
● Castle Park Improvement Project

- Urban Center Development/ Community Bus Service Project
- Land Readjustment Project in the area adjacent to Toyama Station
- Advanced Structure Renovation Project in Tsutsumicho-dori, 1-chome

... and other projects (27 in all)

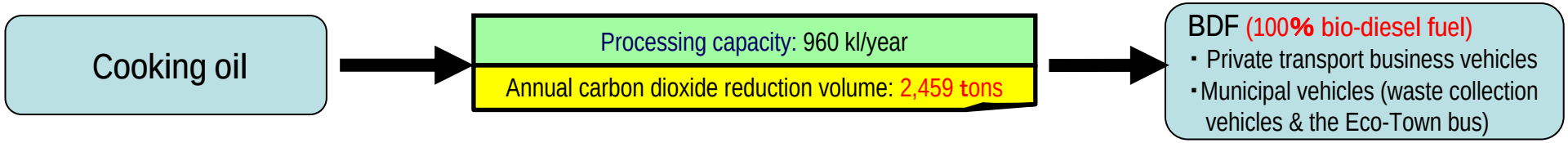
5-3 The Utilization of New Energy Sources Made Available by Recycling (Initiatives by the Eco-Town Industrial Park)

(1) An Overview of the Eco-Town Industrial Park



(2) Cooking Oil Recycling Facility (Toyama BDF Co. Ltd.)

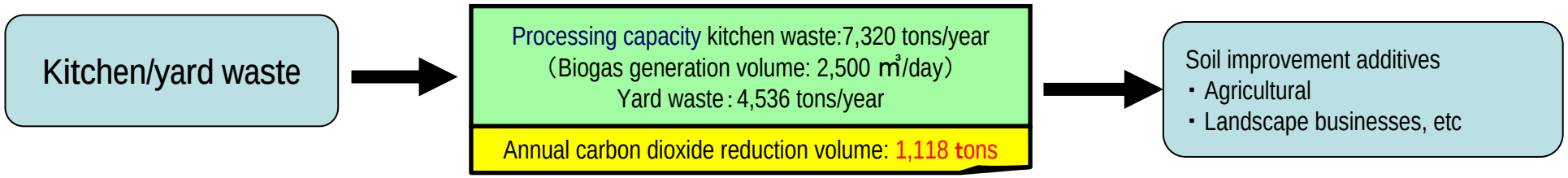
○ Using cooking oil as the main raw material, manufactures bio-diesel fuel (BDF), an alternative to diesel fuel.



(3) Kitchen and Yard Waste Recycling Facility (Toyama Green Food Recycle, Inc.)

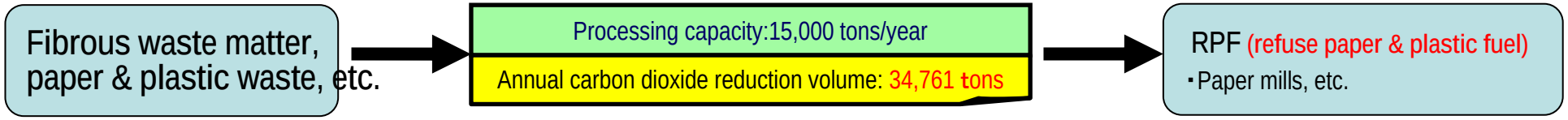
○ Produces methane from food waste, generating power from the resulting biogas and using it as electricity.

○ Makes efficient use of yard waste and the liquid waste that results from methane fermentation by composting them.



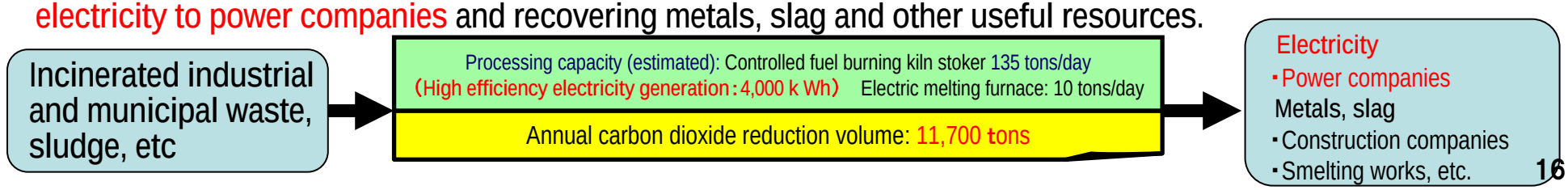
(4) Difficult-to-Process Fiber and Mixed Plastic Recycling Facility (Eco Mind Co. Ltd.)

○ Using waste matter as a main ingredient, manufactures refuse paper & plastic fuel (RPF), stable in quality, reliable alternative fuel.



(5) Waste Matter Energy Center (Ishizaki Industries Co. Ltd) NOTE: scheduled to start operations in 2010

○ Incinerates industrial and business waste and efficiently generates electricity from thermal energy, selling surplus electricity to power companies and recovering metals, slag and other useful resources.



5-4 *Team Toyama* Tackles Environmental Activity

209 teams 15,536 people

Registered as of Nov. 28, 2008

○ Government, citizens and businesses voluntarily form teams, engaging in creative activities to aid in the prevention of global warming and setting goals for these activities. Toyama City joins in as *Team Toyama*, with the mayor serving as captain; the team will develop citizen-wide, hands-on activities aimed at checking global warming.

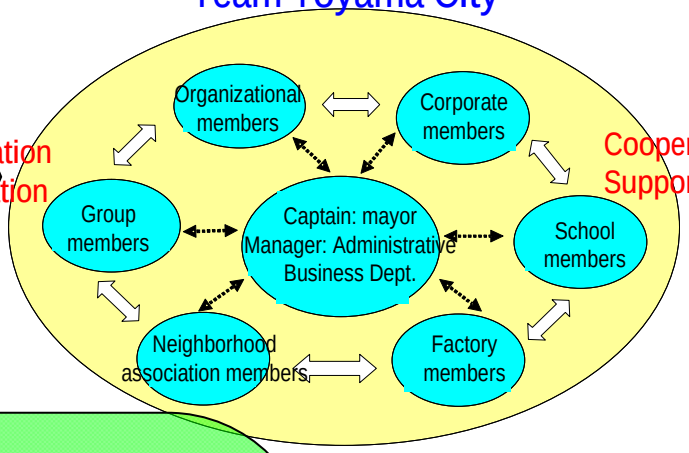
Calling out to all of Toyama City to join our team in fighting global warming!

Team Toyama City

Citizens/ Businesses

- Learn about global warming and teach others
- Consider ways to check global warming and discuss them with others
- Voluntary formation of, and participation in, teams at the regional and work place level

Participation Mobilization



Cooperation Support

City (executive office)

- Advertisements, member recruitment activities
- PR, event sponsorship, public acknowledgements
- Information exchanges, coordination with fellow members

5 important points regarding *Team Toyama City*

Ⅰ Implementation of energy conservation measures
Ⅱ Implementation of transportation measures
Ⅲ Energy conservation and other activities
Ⅳ Implementation of the 5 Rs (Reduce, Reuse, Recycle, Refuse, Repair)
Ⅴ Promotion of forest conservation and tree planting activities

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ーストップ温暖化ー
とやまがかえる。みらいをかえる。

Moving Towards the Realization of a Low-Carbon Society in Toyama City

① The balance between quality of life and a low-carbon society

・Changing habits such as excessive dependence on cars and mass consumption/waste requires almost limitless patience.

⇒ Linking a satisfying lifestyle with a low-carbon existence

: A connection is provided through walking more, creating a lifestyle that is safe, secure and comfortable, etc.

② The balance between economic development and a low-carbon society

・ Even though it is clear that in the long run there are economic advantages to such a society, in the short term a lack of funds means little in the way capital investments for improvements.

⇒ Creation of an accessible support system: aid, loans, tax relief, etc.

③ Creating a sense of urgency with regards to global warming

・The importance of understanding that timely action is both effective and economically beneficial (these actions cannot be put off)

⇒ How to create lifestyle changes

Grass-roots citizen activities are critical

：Human resource development, information sharing, etc.