

Nagoya's Low-Carbon City Strategy

**Graduate School of Environmental studies
NAGOYA UNIVERSITY**

**Tsuneo TAKEUCHI
Akio ONISHI**

Part 1

**Research of Nagoya University
to support the formulation
of Nagoya's Low Carbon City Strategy**

Part 2

**Outline of
Nagoya's Low Carbon City Strategy**
☐ formulated in Nov.2009 ☐



Nagoya Profile

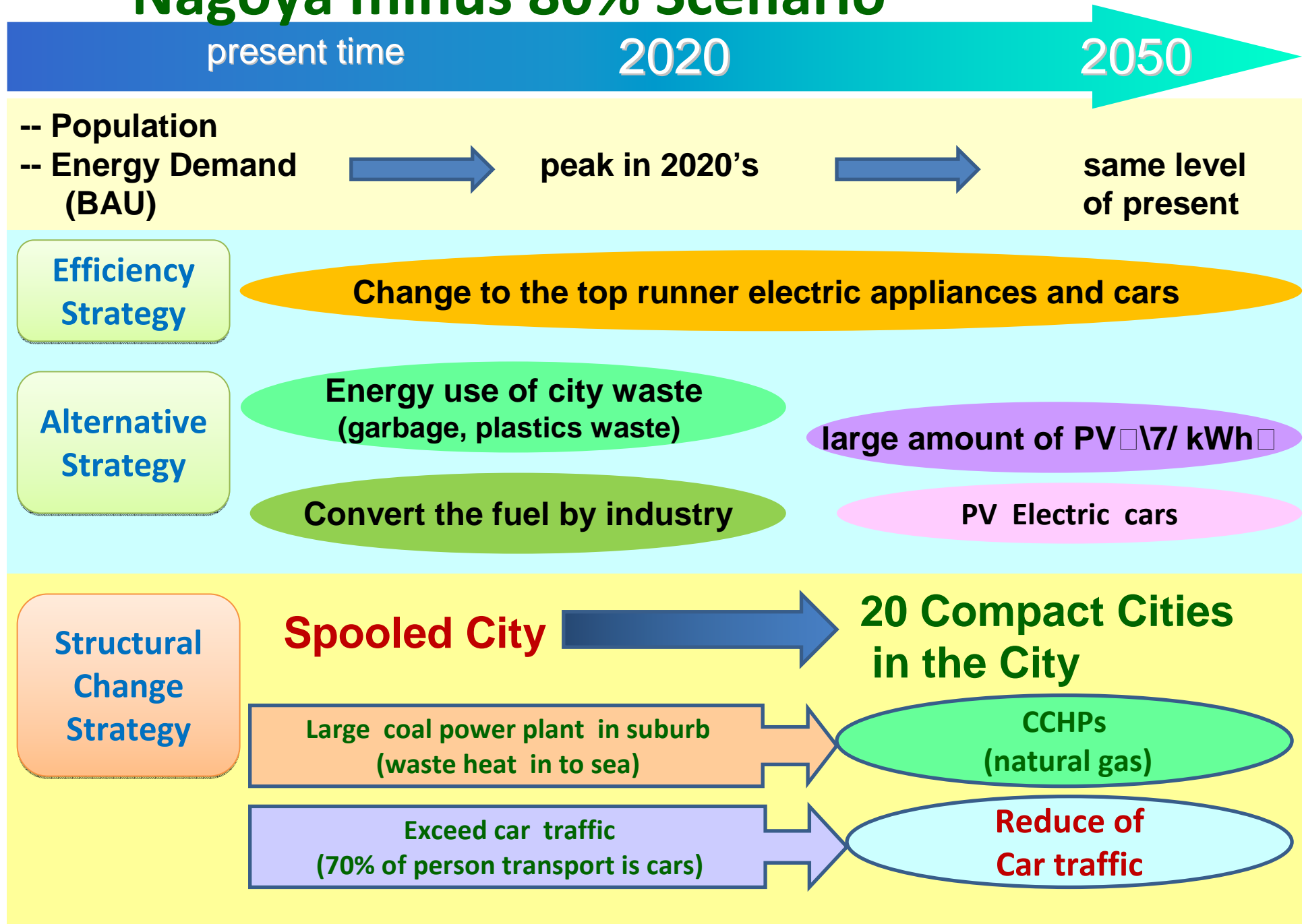


City area	326 km ²	
Population	2.25 million	*As same as half of Denmark
Number of households	1 million	
Population density	6,900 people/km ²	
Real gross production	13.2 trillion yen	*100 billion €
CO ₂ emission (2005)	16.4 million t	*1.2% of Japan

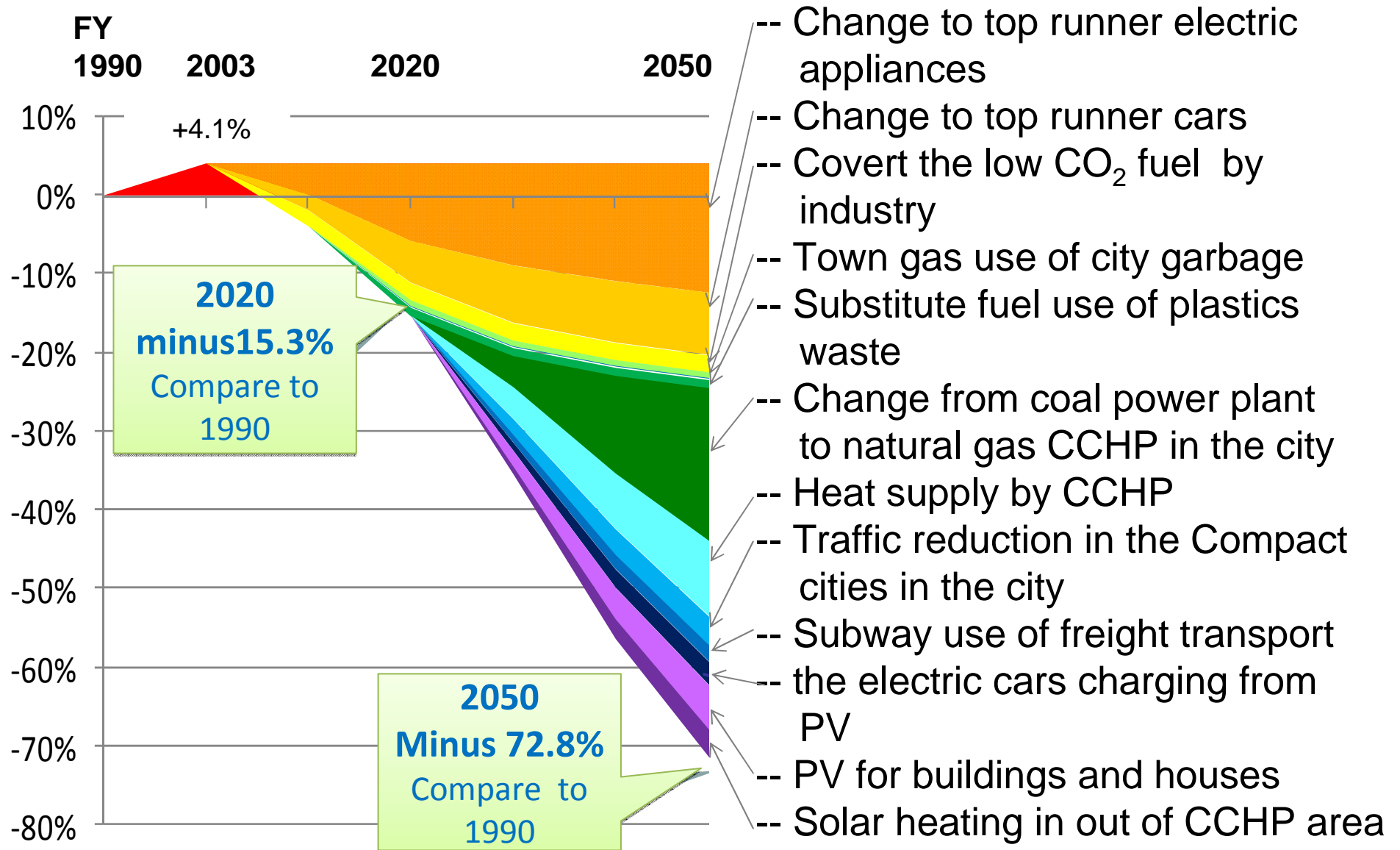
Part 1

**Research of Nagoya University
to support the formulation
of Nagoya's Low Carbon City Strategy**

Nagoya minus 80% Scenario



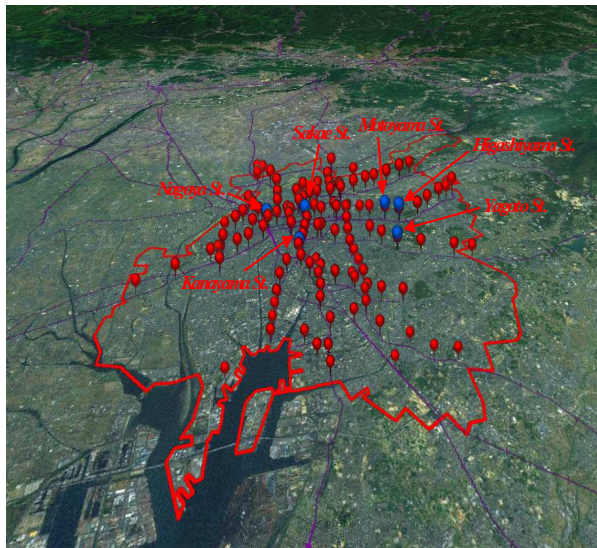
Proposal of Nagoya minus 80% Roadmap



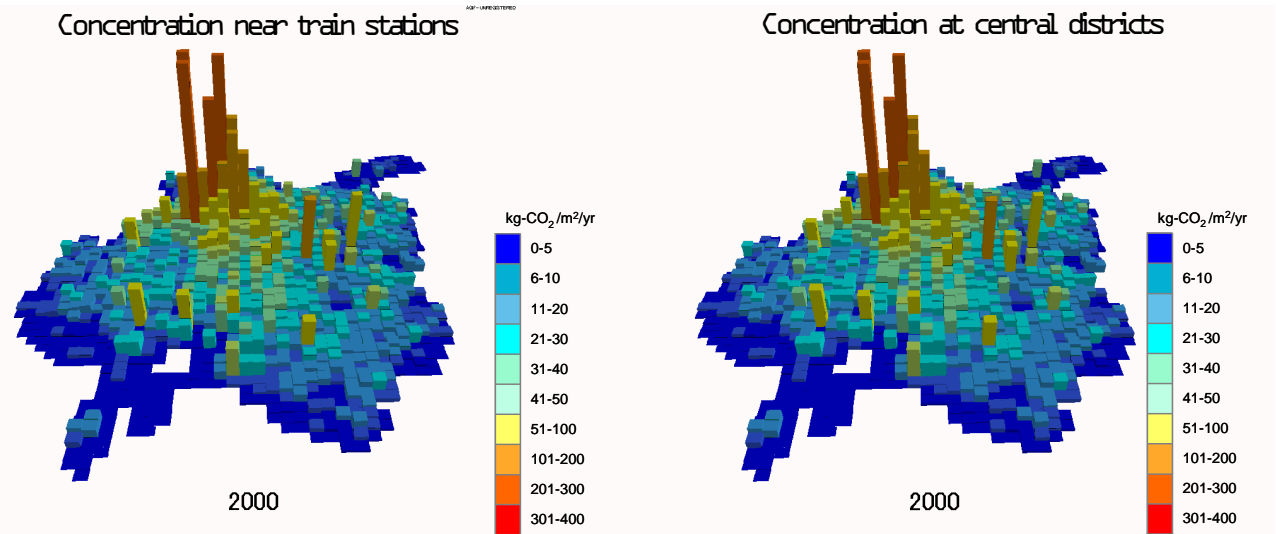
Urban Planning:

Simulation Result of CO₂ Emission - House and Building Sectors

Train Stations in Nagoya City



Changes of Energy Consumption and CO₂ Emission by Different Urban Forms



CO₂ emission by different urban forms □1,000t-CO₂ □

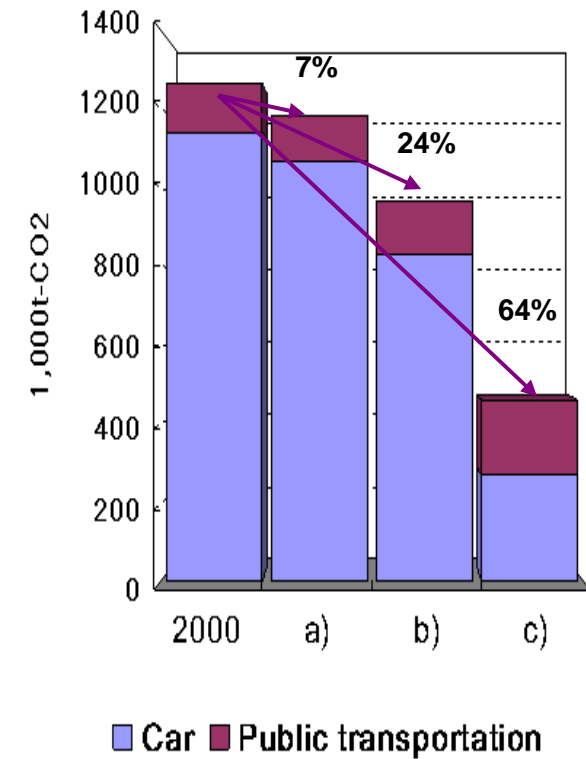
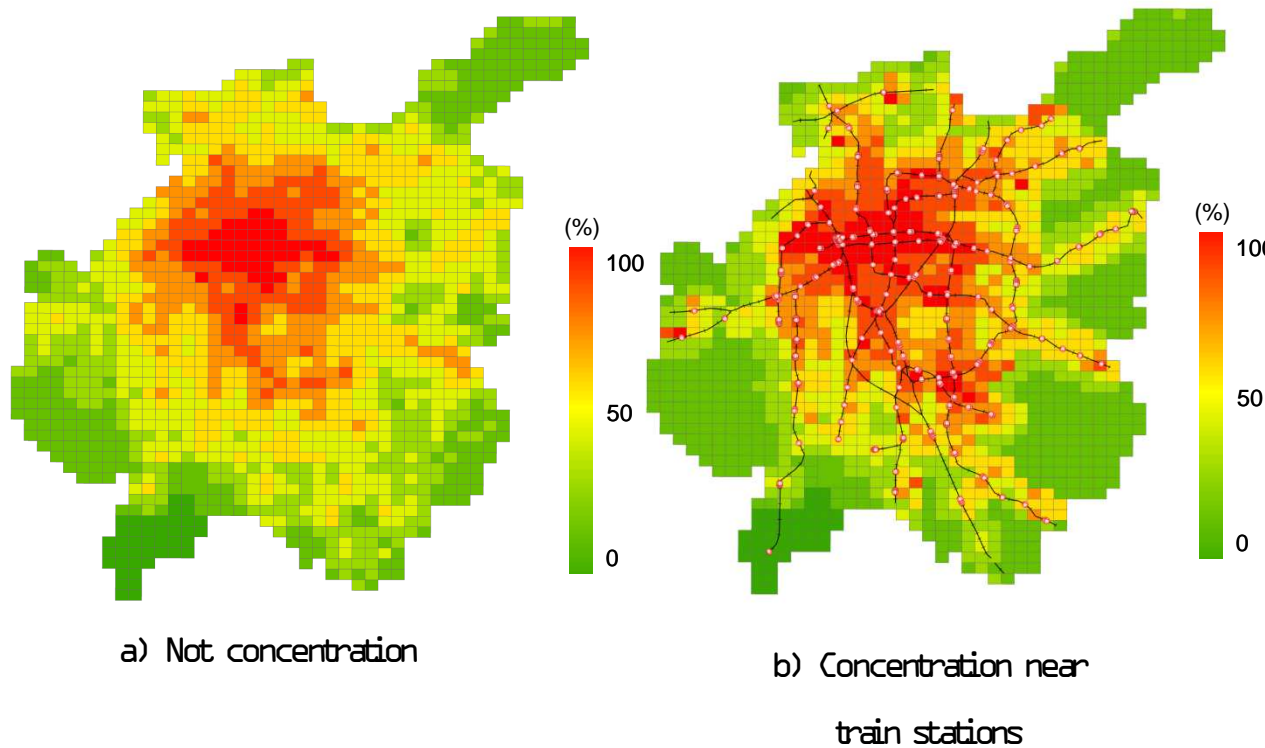
	Not Concentration (BAU)					Concentration near train stations					Concentration at central districts				
	Case0	Case1	Case2	Case3	Case4	Case0	Case1	Case2	Case3	Case4	Case0	Case1	Case2	Case3	Case4
2000	6717	6717	6717	6717	6717	6717	6717	6717	6717	6717	6717	6717	6717	6717	6717
2050	6176	3767	3930	7383	5246	5824	3623	3774	6949	5462	5798	3612	3762	6920	5453
Reduction rate □ Compare with year 2000(%) □															
2050	-8.1	-43.9	-41.5	+9.9	-21.9	-13.3	-46.1	-43.8	+3.5	-18.7	-13.7	-46.2	-44.0	+3.0	-18.8

Case0 □ No measures, Case1 □ G.S. with refrigerator □, Case2 □ G.S. without refrigerator □, Case3 □ Heat pump □, Case4 □ PV □

Urban Planning:

Simulation Result of CO₂ Emission -Transportation Sector

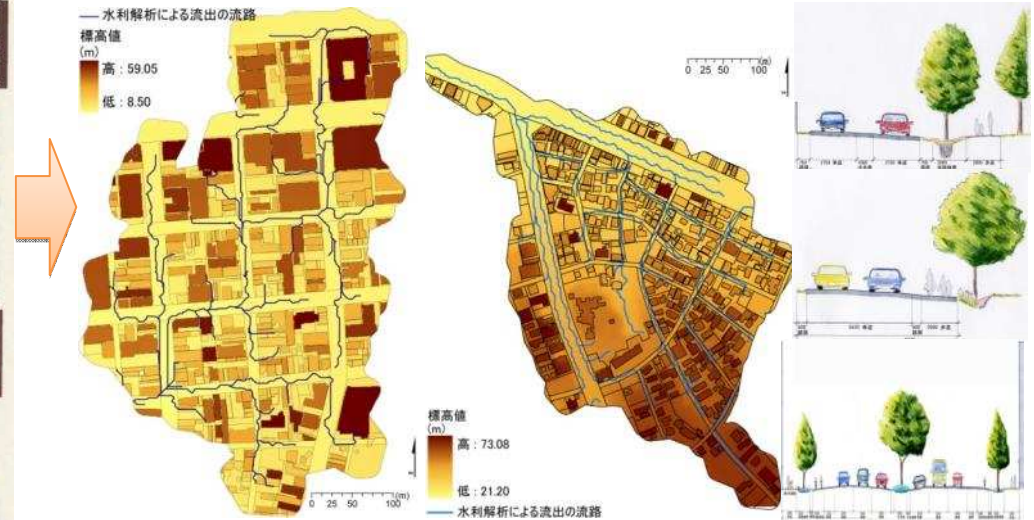
Modal Share of Public Transportation



- a) Not concentration
- b) Concentration near train stations
- c) Concentration at central districts

Mitigation of heat environment and enhancement of quality of life

Application of Green Street Plan



Study on effects of urban heat island mitigation by greening and its urban design



Ito lab. at Nagoya Institute of Technology.

Part 2

Outline of Nagoya's Low Carbon City Strategy □formulated in Nov.2009□

Nagoya's Low-Carbon City Strategy

formulated in Nov. 2009



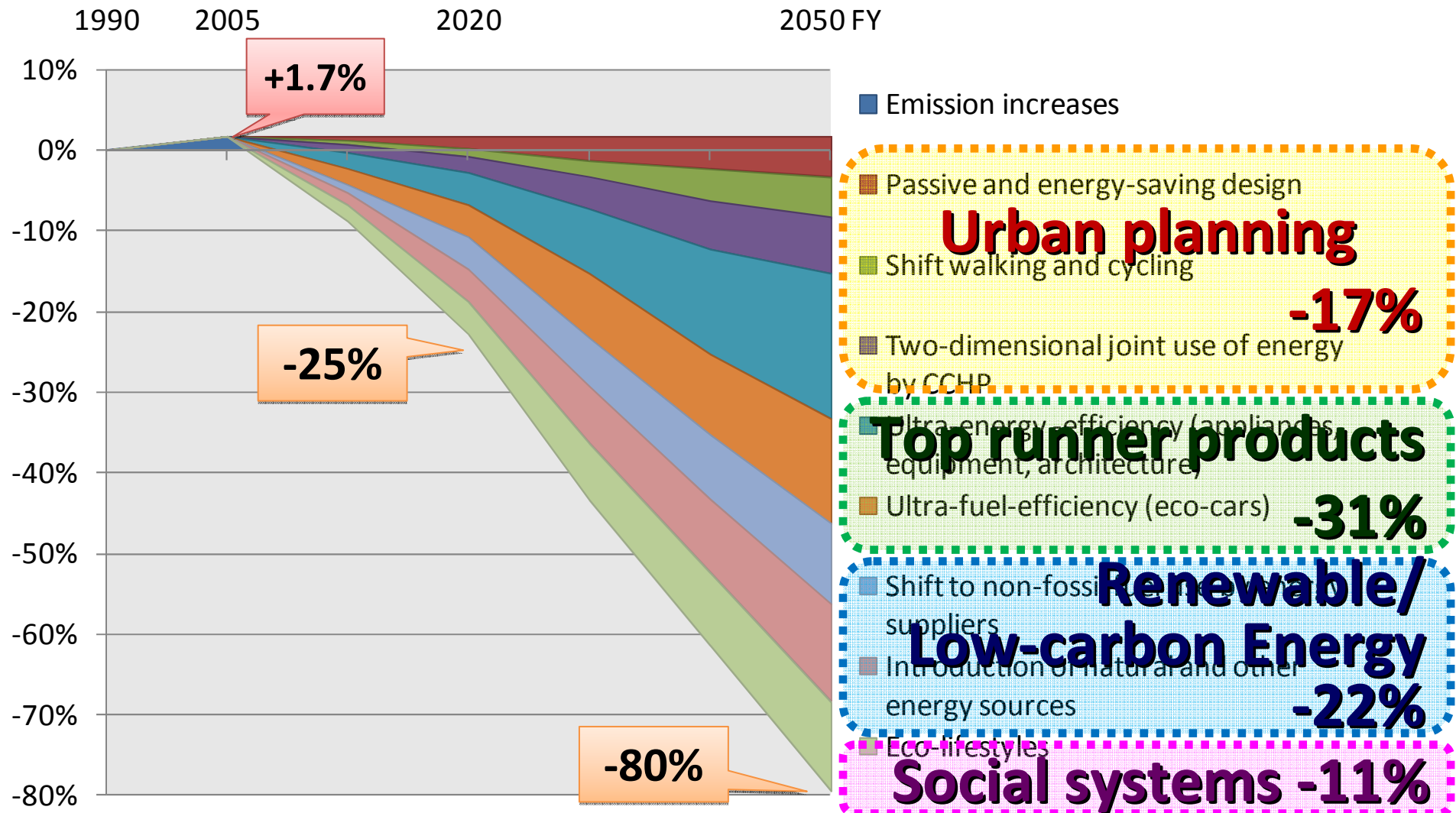
Reduction Targets of Nagoya

- Mid-term target : **25%** reduction
(by 2020, compared with 1990)
- Long-term target : **80%** reduction
(by 2050, compared with 1990)



Roadmap of Nagoya's Low Carbon City Strategy

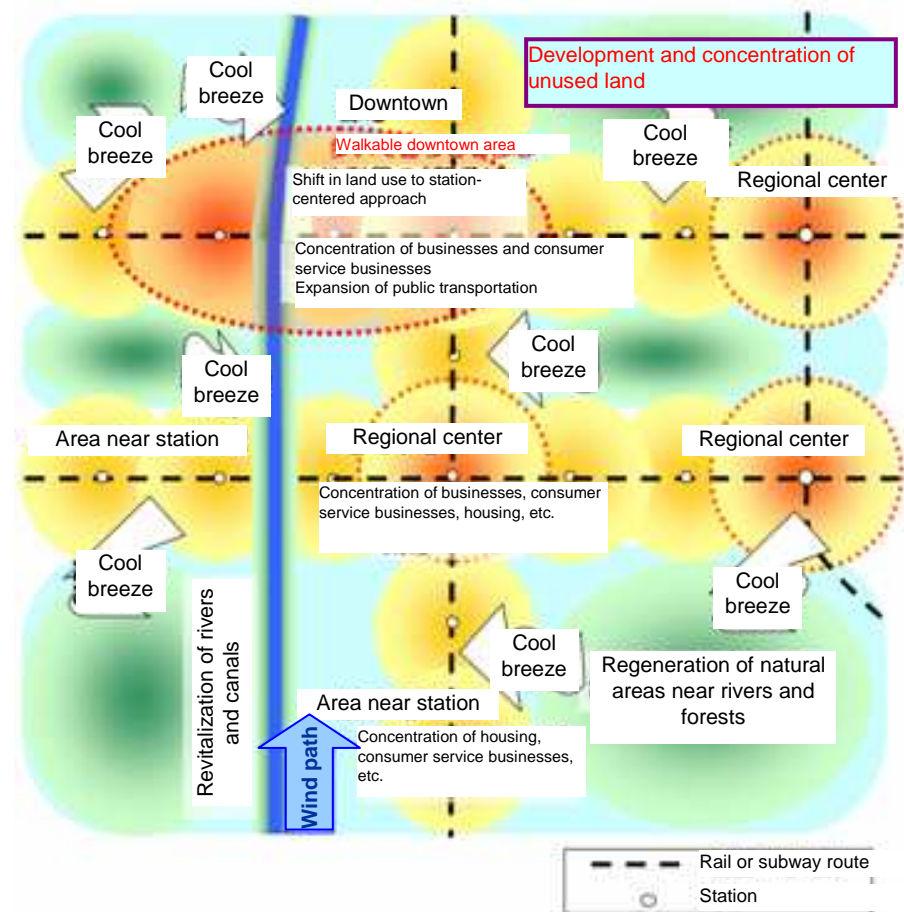
Estimate of reduction in energy-derived CO₂ emissions



Formulate "Station-centered Communities"

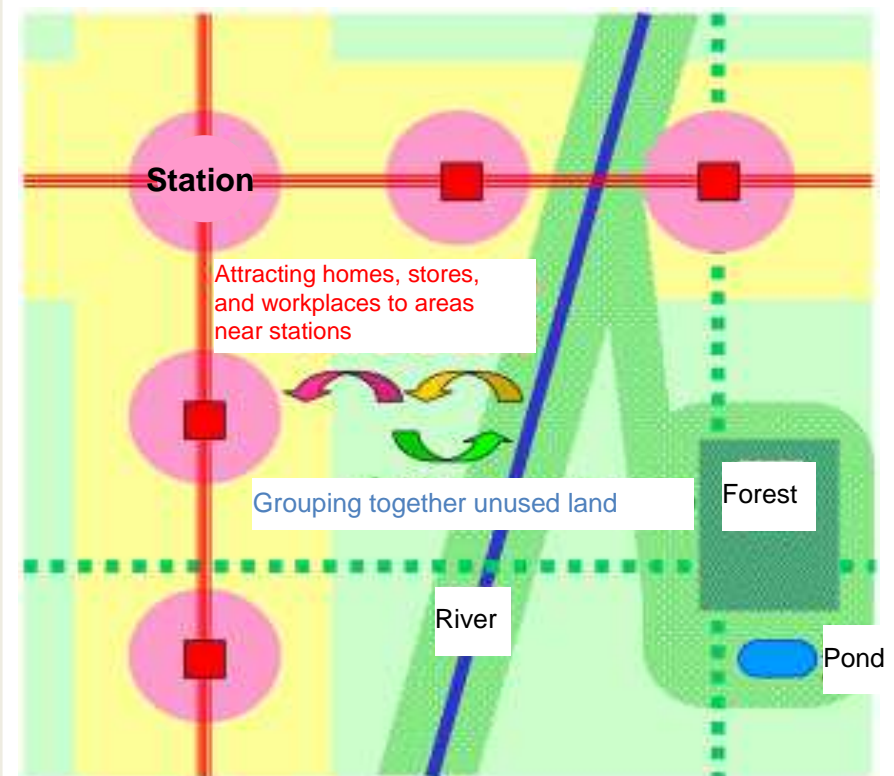
(Living/working near stations)

- Promotion of housing near stations
- Development of land use mechanisms (attracting businesses and residents to areas near stations and developing unused land)
- Transportation-oriented urban planning (development of new relationships among modes of transportation, urban space, and nature)



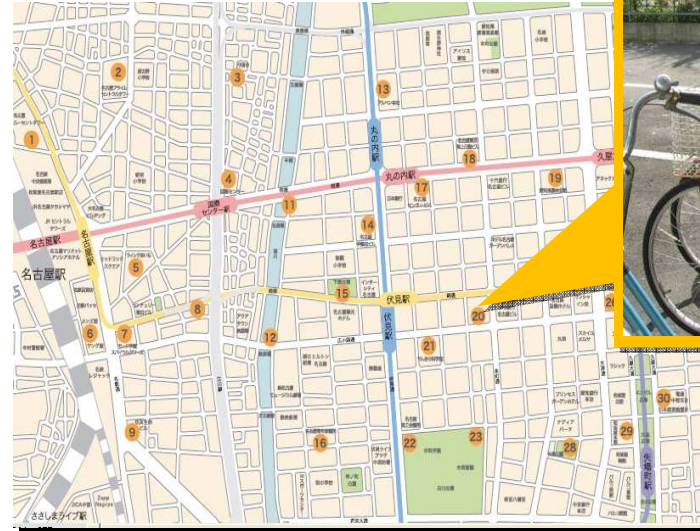
Develop Vegetations, Water-systems among “Station-centered Communities”

- Development of low-impact living arrangements that take advantage of natural surroundings and natural features
- “Greenification” of streets, land, and buildings
(shaded streets and shaded areas)
- Regeneration of nature near forests and rivers and utilization of natural air conditioning (wind paths and “cool spots”: evapotranspiration by trees)



Energy-Efficient Urban System

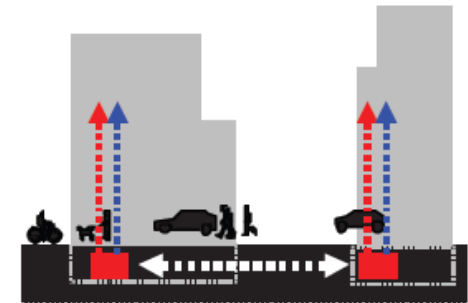
- Reduction of CO₂ emissions from automobile use
 - Joint use of modes of transportation (public transportation, car sharing, community-cycle)
- Comfortable lifestyles through ultra-energy-efficiency and natural air conditioning
- Locally produced, locally consumed energy
 - Effective use of waste products and biomass resources; CCHP (Combined Cool Heat and Power)



■ Social experiment in community-cycles (the Mei-chari project) Station Map (30points)



■ Sharing of low-carbon cars



■ Joint use of CCHP

See you soon in Nagoya
at CBD COP10 next October!!



Thank you
for your attention.

<http://www.env.nagoya-u.ac.jp/en/>

Nagoya University Graduate School of **Environmental Studies**