“FutureCity” Initiative and green innovation:

Creation of new values through the integration of environment, society and economy

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Topics

1. “FutureCity” Initiative

2. Social system innovation toward the creation of values

3. Value creation example in each city

“FutureCity”: Cities selected (11 cities in 2011)

Shimokawa Town in Hokkaido Pref. (Population: 3,645)

Creation of a self-sustaining and comprehensive forest industry through the use of plentiful forest resources and development of a self-sustaining community based on the model of collective living

Kamaishi City in Iwate Pref. (Population: 38,000)

Development of an industrial welfare city that promotes local production and local consumption of energy and integrates health, medical care, welfare, and nursing care services at livelihood support centers

Ofunato City, Rikuzentakata City, Sumita Town in Iwate Pref. (Total population: 67,000)

Development of an elderly-friendly and connected compact city on elevated grounds as a future city focusing on environment and disaster prevention

Toyama City in Toyama Pref. (Population: 417,000)

Development of a compact city by focusing on LRT and other public transportation systems and provision of Toyama-style day-care services without making distinctions among elderly people, disabled people, and children

Kitakyushu City in Fukuoka Pref. (Population: 970,000)

Emphasis on cooperation among citizens, corporations, and governments and on connection among people in communities, based on experiences of overcoming pollution and engaging in global environmental cooperation and manufacturing technologies

Higashimatsushima City in Miyagi Pref. (Population: 40,000)

Development of self-sustaining and distributed power sources through the use of renewable energy and promotion of healthy housing through the use of the CASBEE health checklist

Iwanuma City in Miyagi Pref. (Population: 44,000)

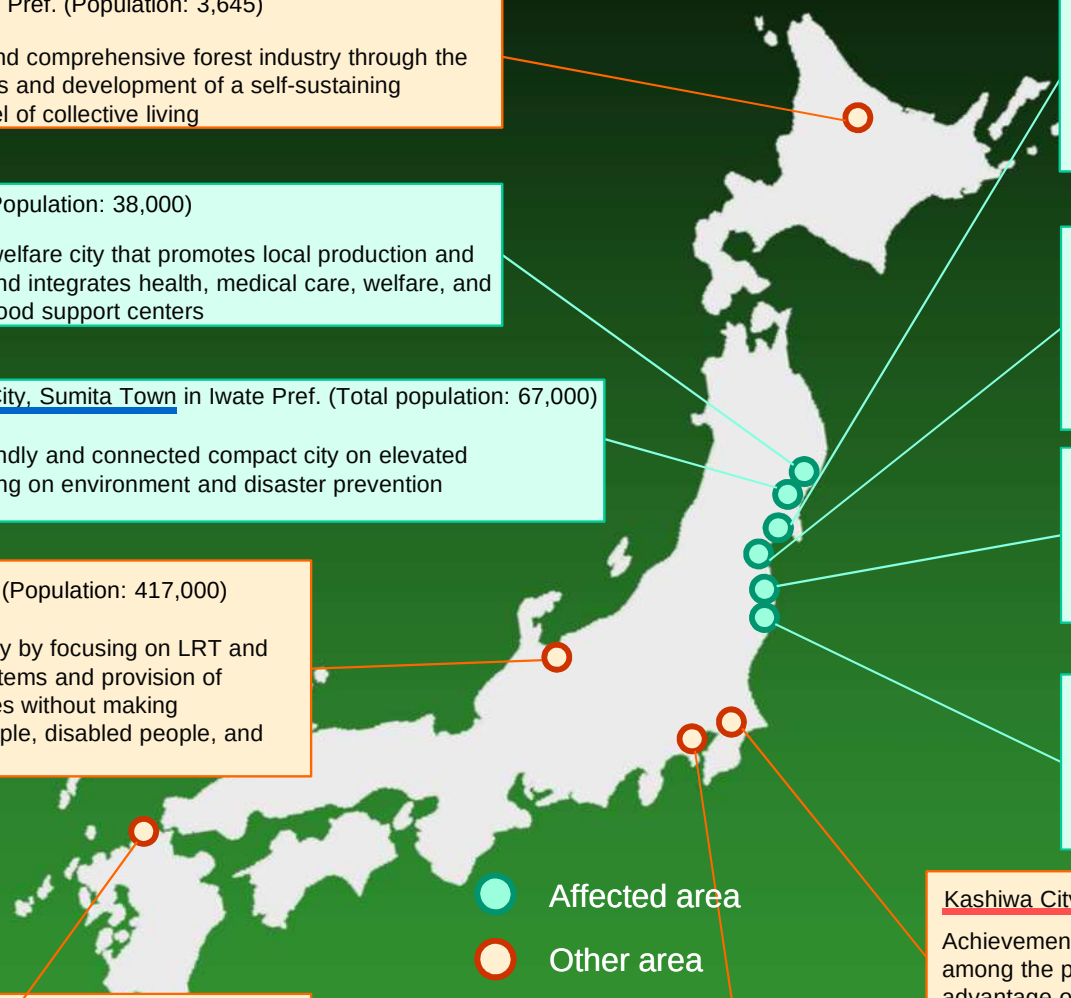
Creation of a “Hill of Thousand-Year Hope” for disaster mitigation through the use of rubble from the earthquake and tsunami and development of a global welfare city by taking advantage of the area’s location as an important transportation point

Shinchi Town in Fukushima Pref. (Population: 8,110)

Development of information and telecommunication infrastructure through the use of ICT and good use of local communities, which are soft infrastructure

Minamisoma City in Fukushima Pref. (Population: 66,000)

Creation of a cyclical regional industry that uses its own processing and distribution channels by overcoming the earthquake and tsunami and focusing on the primary industry



Kashiwa City in Chiba Pref. (Population: 405,000)

Achievement of autonomous urban management through cooperation among the private sector, public sector, and academia by taking advantage of cutting-edge knowledge held by universities and other institutions in the Kashiwanoha Campus

Yokohama City in Kanagawa Pref. (Population: 3,692,000)

Wide-ranging efforts, from response to environmental issues to response to the aging of society, by taking advantage of regional characteristics and the driving power of citizens, including corporations and civil groups, regarding problems faced by a big city

⇨ Cooperation with prevenient “Eco-Model City” program

“FutureCity” Initiative as leverage for green innovation

Efforts

- Innovation of social and economic systems to improve the environment and respond to the super-aging of society, etc.
  - ⇨ Greening of society and economy, etc., through the creation of new values
- Assistance for reconstruction from the Great East Japan Earthquake

Vision

- Global proposal of a universal model for achievement of green innovation in cities around the world

(Rio+20) and “FutureCity” (2012)

Official side event hosted by the Japanese government:
“Future Cities We Want”

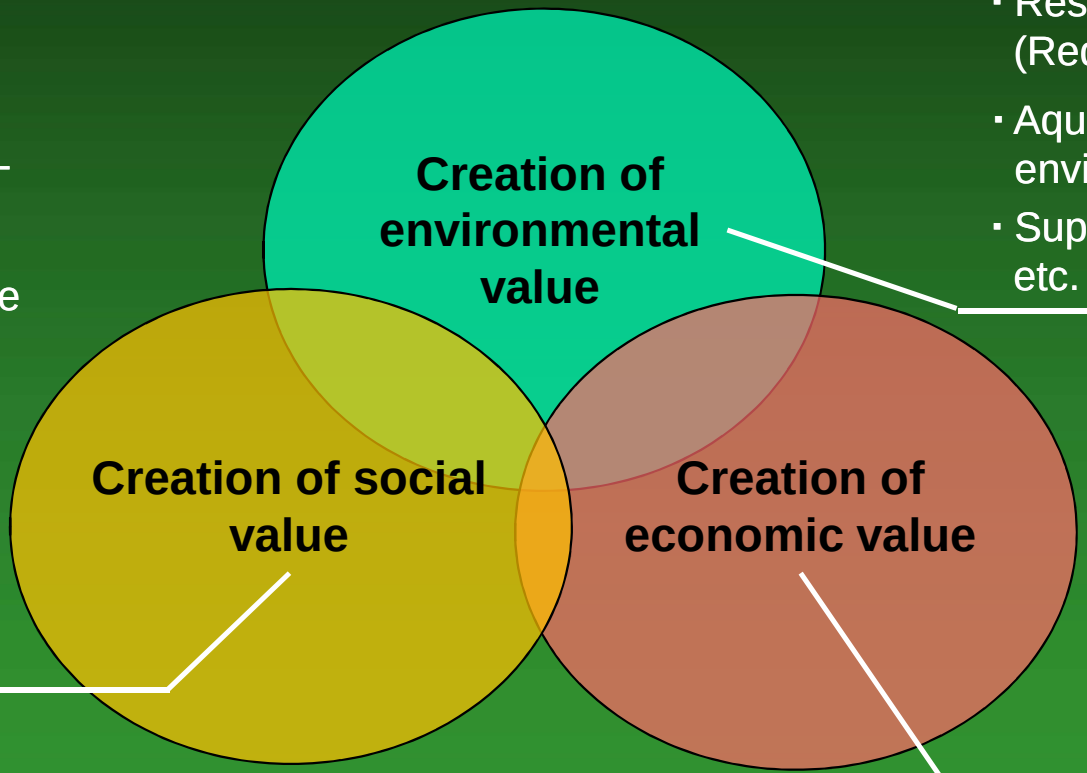
Greeting by the Minister of Foreign Affairs

Shuzo Murakami (then Chairman of the Expert Study-Group for the “FutureCity” Initiative)
Introduction of the “FutureCity” Initiative

(Rio+20: United Nations Conference on Sustainable Development)

Creation of 3 values for achievement of green innovation

⇨ Creation of environmental value, social value, and economic value

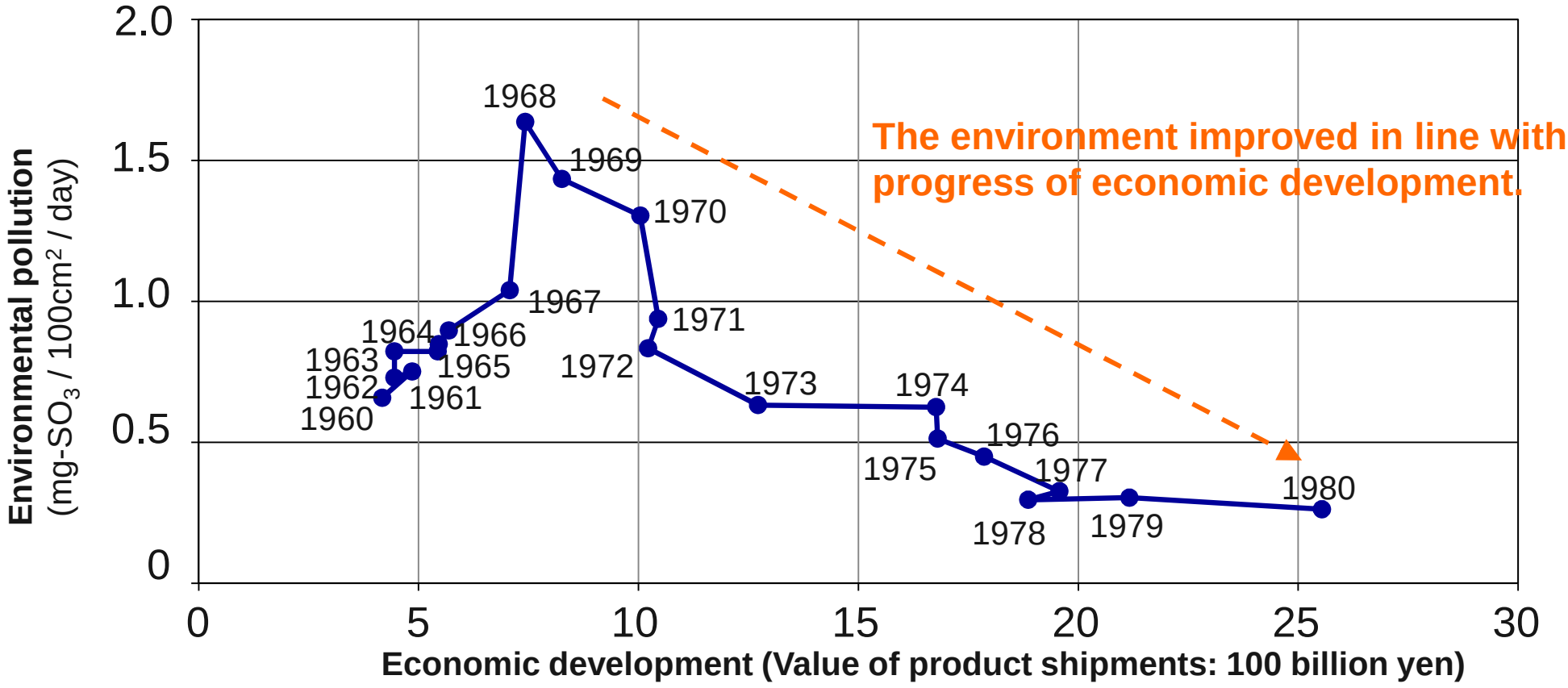


- Low carbon
- Biodiversity
- Resources recycling and 3R (Reduce, Reuse, Recycle)
- Aquatic and aerial environment
- Super energy-saving society, etc.

- Response to the super-aging of society
- Health and nursing care
- Disaster prevention, safety, and security
- Social capital
- Social solidarity, fairness, etc.

- Accumulation of knowledge and information
- Knowledge and economy
- Employment and income
- New industry
- Minimization of social cost, etc.

Creation of both environmental value and economic value
(in the case of Kitakyushu City, based on analysis by the World Bank)



- Until 1968, environmental pollution worsened in line with economic development.
- In and after 1968, environmental pollution declined despite major economic development.
- Creation of both environmental value and economic value

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Hierarchical model for social system innovation [1)]

Landscape (macro-level)

Social paradigm (Culture, sense of value)

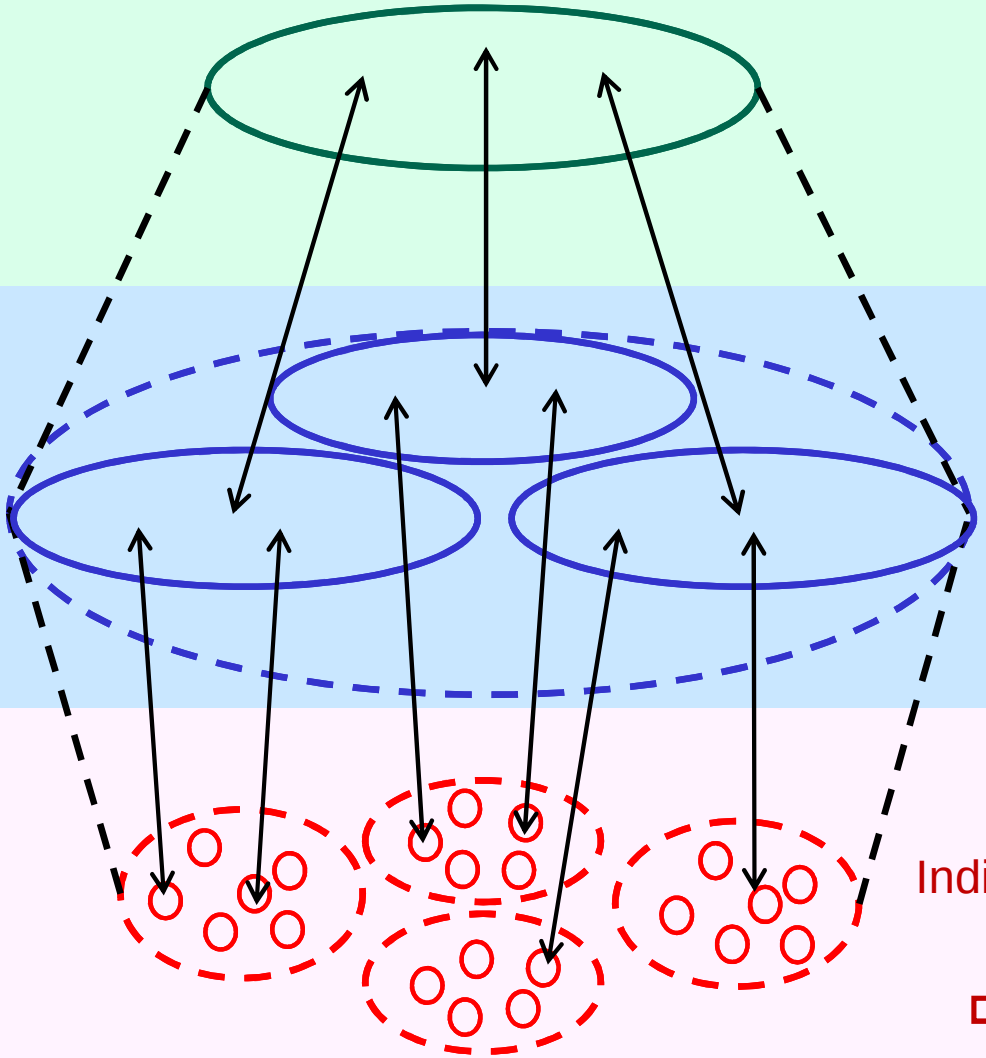
Regimes (meso-level)

Social framework (Systematization, institutionalization)

Niches (micro-level)

Individual and experimental approach

⇨ Start of change



1) Multi-level Perspective, Geels & Kemp 2000

Hierarchical framework in terms of the creation of values in the “FutureCity”

Landscape (macro-level)

Contribution to the establishment of green civilization through global expansion

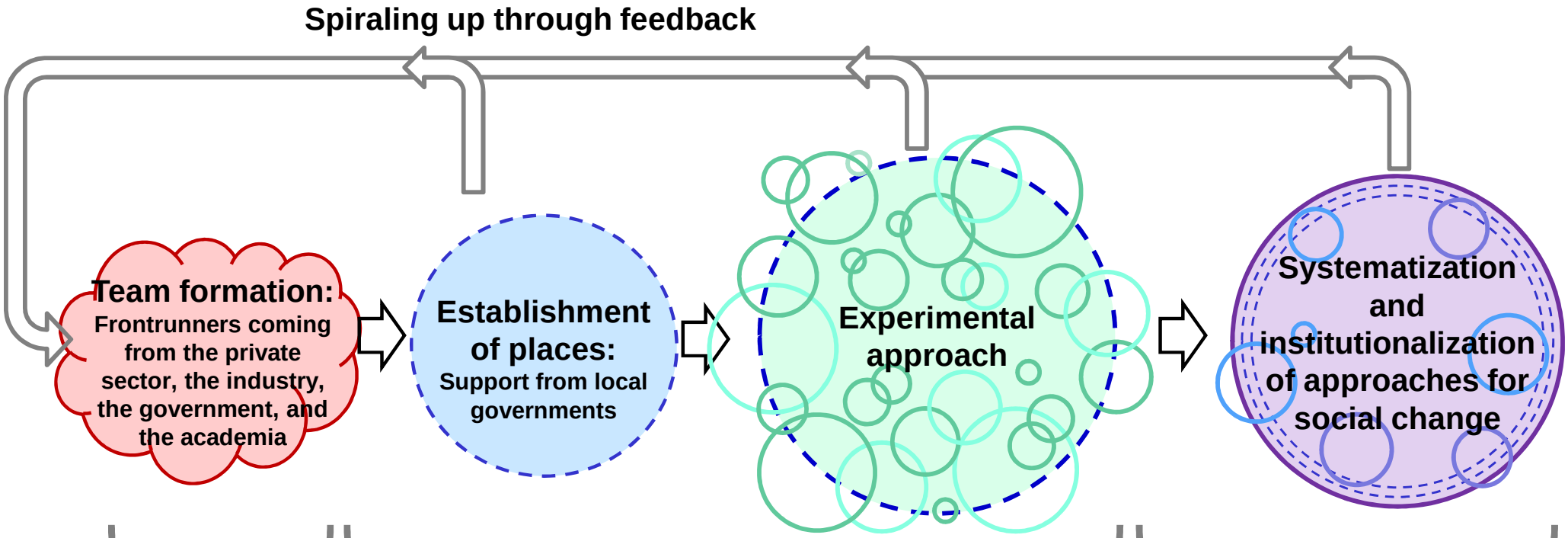
Regimes (meso-level)

Promotion of green innovation by accumulating the best practices and systemizing the creation of values

Niches (micro-level)

Support for new approaches in relation to the creation of values by frontrunners

Processes of social system innovation in the "FutureCity" 1)



Phase I: Understanding of circumstances

Phase II: Clarification of dynamics of social change

Phase III: Development of frameworks of social change

Phase IV: Visualization of the future image of a city

Phase V: Reconciliation between short-term plans and medium-to-long-term plans

Phase VI: Practice

Phase VII: Civic participation and social embeddedness

1) Transition Management in Urban Context. by C Roorda, N.Frantzeskaki, D.Loorbach etc.

How is the system of creation of values included?

Systematization of the creation of values by developing a self-sustaining virtuous cycle

⇨ The public and private sectors invest their resources (human resources, goods, and money) in related activities and at the same time promote deregulation.

⇨ Accumulation and integration of information, services, businesses, etc.

⇨ New approaches for achievement of greening (Niches)

⇨ Creation of new values

⇨ If new values are created, human resources, goods, and money are further funneled from inside and outside the area.

⇨ Development of a self-sustaining virtuous cycle and systematization of the creation of values (Regimes)

Challenges that need to be overcome to promote the creation of values

1) Development of an effective promotion (governance) system

2) Promotion of civic participation

3) Development of financing mechanisms (PPP (Public Private Partnership), PFI (Private Finance Initiative))

4) Reporting of achievements to society (successful and unsuccessful cases)

5) Global expansion

6) Progress management (PDCA (Plan, Do, Check, Act))

Japan Revitalization Strategy (which was approved in a Cabinet meeting in June 2013) and “FutureCity” Initiative

1. Three action plans under the Japan Revitalization Strategy

(1) Plan for the Revitalization of Japanese Industry

(2) Strategic Market Creation Plan

(3) Strategy of Global Outreach

2. Positioning of the “FutureCity” Initiative

⇨ Fulfillment of horizontal coordination functions in promoting the urban policy under the above mentioned measure

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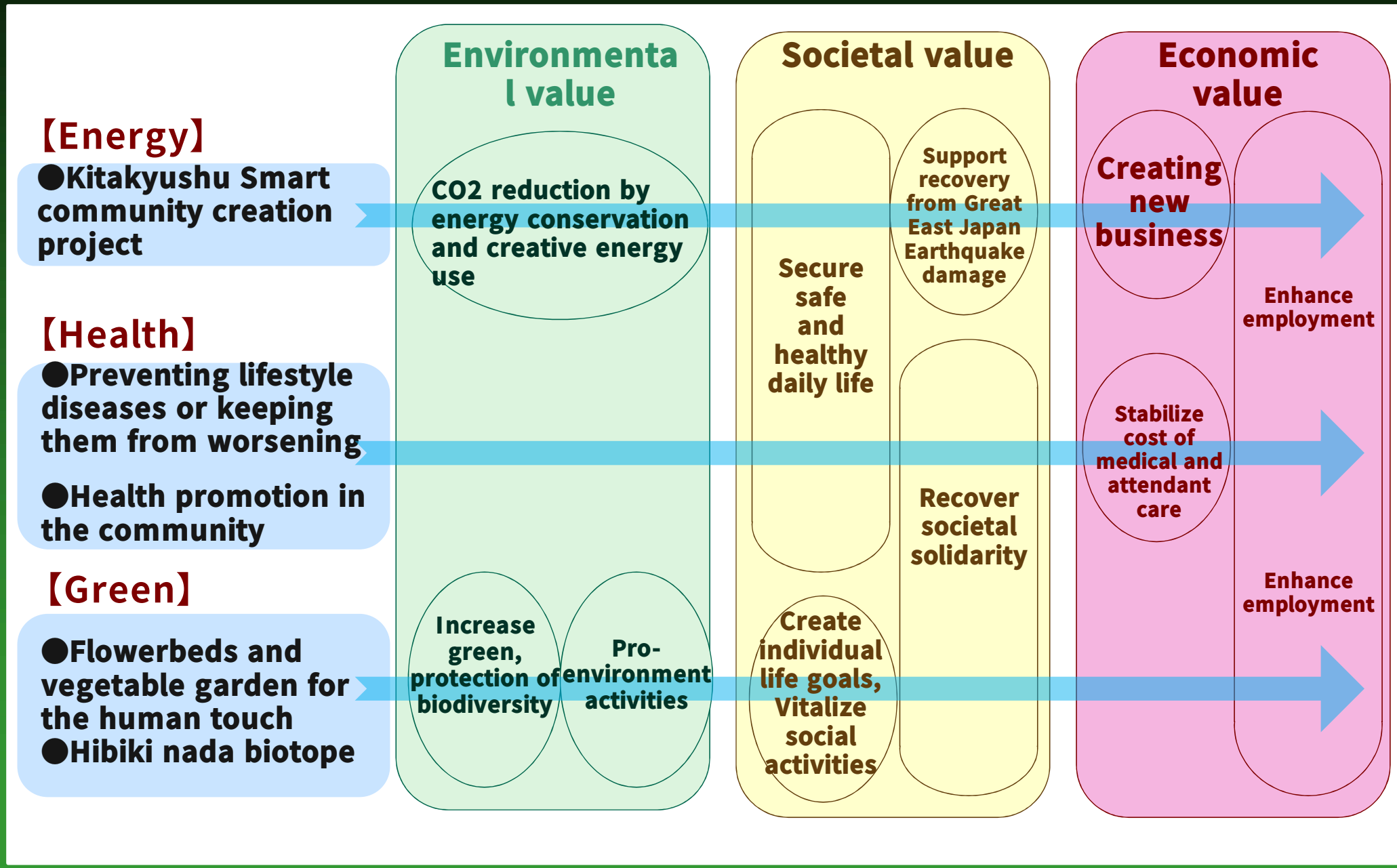
Efforts to create values in the “FutureCity”: Affected areas

City name	Efforts	Field
Kamaishi City	Promotion of local production and local consumption of energy	Environment, economy, society
	Creation of industries by taking advantage of various energy environments	Economy, society
	Development of an industrial welfare city	Society
Kesen broad area	Development of a compact city	Environment, society, economy
	Development of advanced models for medical care, welfare, and nursing care services	Society
	Promotion of the agriculture, forestry, and fisheries industries through the use of cutting-edge technology and know-how	Environment, economy
Higashi-matsushima City	Removal of rubble created by the earthquake and tsunami by using a method unique to Higashimatsushima (reconstruction project)	Environment, society
	Implementation of the Matsushima natural energy park initiative	Environment, society, economy
	Promotion of safe and healthy housing	Society, economy
Iwanuma City	Creation of an environment-friendly compact city	Society
	Preventive medicine promotion project through the introduction of medical information networks	Society
Shinchi Town	Development of “smart hybrid networks” in diversified, distributed and self-sustaining energy supply systems	Environment, society
	Creation of new industries by taking advantage of various renewable energy sources	Environment, society, economy
	Provision of various regional information services to improve the quality of life for elderly people	Society, economy
Minamisoma City	Revitalization of the primary industry (EDEN plan)	Environment, economy
	Development and operation of renewable energy facilities	Environment, society, economy
	Development of a town that is easy to live in for anyone and that can be passed on to future generations (co-housing)	Society

Efforts to create values in the “FutureCity”: Other areas

City name	Efforts	Field
Shimokawa Town	Development of comprehensive forest industry systems	Environment, economy
	Development of models of collective living	Society
Kashiwa City	Development of the Kashiwanoha AEMS Center, expansion of the multi-transportation sharing system	Environment
	Point program for participation in local activities, carbon offset system based on “white certificates”	Environment, economy, society
	Creation of total healthcare stations, public health supporter training course	Society
	Comprehensive support for venture companies originating from universities and research institutions	Economy
Yokohama City	Yokohama Smart City Project	Environment, economy
	Project for sustainable residential property models	Environment, Economy, society
	Y-PORT (Yokohama Partnership of Resources and Technologies) project	Environment, economy
Toyama City	Development of factories for cultivation of medical plants to realize a “Medical City Toyama”	Environment, society, economy
	Development of LRT networks	Environment, society, economy
	Development of the town of health and communication.	society, economy
	Development of the interchange space for residents by local community.	society, economy
Kitakyushu City	Kitakyushu smart community creation project	Environment, economy
	Forest-in-town project	Environment, society, economy

Value creation structure at Kitakyushu City(in Fukuoka Pref.)



Kitakyushu City : Creation of smart community project

Case of demonstration experiment on the leveling of electricity demand in the model area (Higashida)

- Introduction of **dynamic pricing**
  - Low price at the time of low electricity demand
  - High price at the time of high electricity demand
  - Different prices for different seasons and different time zones

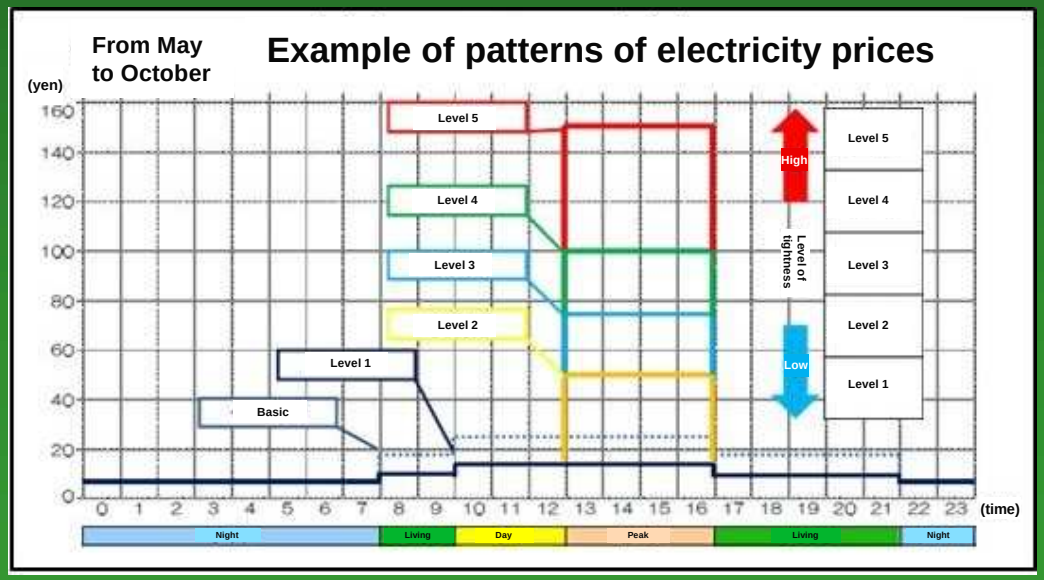
⇨ Shifting of electricity usage

- Introduction of smart meters

⇩

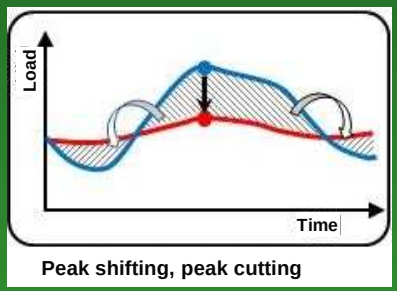
Leveling of electricity demand (Reduction of consumption energy, peak shifting, and peak cutting)

⇨ Visualization of energy demand

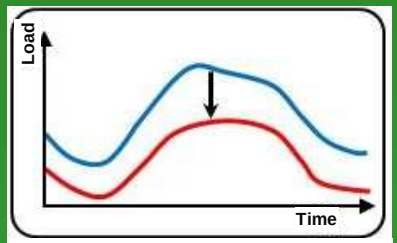


Effects

The price difference is about 20 times between peak time and nighttime.



Peak shifting, peak cutting



Reduction of consumption energy

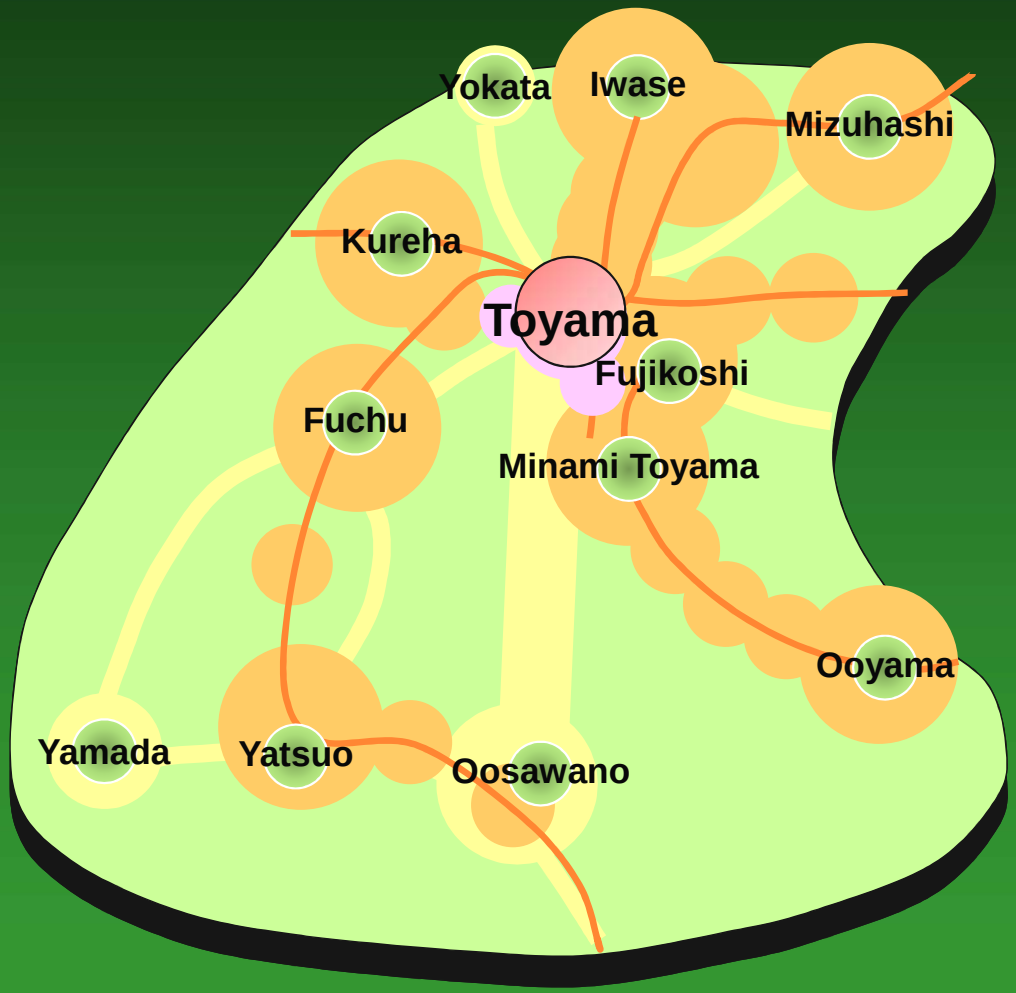
Achievement of a peak cut of 20%

⇨ New energy-saving scheme on a community scale

Toyama City：realizing compact city based on new concept

Building the compact city with neighborhood centers networked through public transportation

⇨ City plan for the future by connecting neighborhood downtown centers



Neighborhood center: **Walkable**

Connection: **Public transportation networking centers**

⇨ New scheme to promote making it more compact

Efforts for reconstruction in Minamisoma City (in Fukushima Pref.): Plant factory project through the use of renewable energy

Construction: City (Reconstruction grants)

Operation: Agricultural business operators

Tohoku-Electric Power Co.

Power system

Payment for electricity purchased

Sale of electricity (400kW)

(Feed-in tariff system)

Plant factory

Use of solar power generation
- **Pumps for hydroponic farming**
- **Air conditioners, etc.**

Electricity supply (100kW)

Payment for energy

Cooperation and support for the creation of the so-called "sextiary industry"

Fukushima Reconstruction Solar Co. (which is invested by Toshiba Corp., etc.)

Project for promotion of the use of resources in rural areas, including small hydroelectric generation (Ministry of Agriculture, Forestry and Fisheries)

Solar power generation (500kW)

- Of electricity generated, about 100kW is supplied to plant factories.
- The rest is sold.

Support for growth through experience and interaction

- Children in affected areas acquire the ability to think and act by themselves.
- Interaction is promoted between local people and people in other areas.

Plant factory project

(1) Initial cost:
The city is responsible for development. (Reconstruction grants)

(2) Management of plant factories:
Facilities are lent to farmers in the city free of charge.

(3) Running cost:
Business operators shoulder maintenance and operation costs, etc.

(4) Schedule:
- Starting of construction work: November 2012
- Completion of construction work: March 2013 (tentative)

Reference:
Minamisoma Solar Agri-Park project (Fukushima Reconstruction Solar Co.)

⇨ New scheme to create industries

Value creation example in overseas cities

1. Hamburg City：Hafencity Project
2. Stockholm City：Hammarby Sjostad Area
3. Portland City：Urban redevelopment project
4. Greater Manchester Metropolitan County：industrial structure adjustment
5. Putrajaya City：Green City Project

Hamburg City: Creation of values under the Hafencity project

Redevelopment of old warehouse districts

⇨ Construction of vigorous cultural, commercial, and residential facilities, etc.

⇨ Creation of new values

Hamburg City was awarded the title “European Green Capital 2011” for its greening efforts.

1) ・Hamburg City expropriates lands in old warehouse districts from land owners and sells and transfers them.

・Based on funds acquired, a special fund is set up.

2) This fund is used for investments in environment-friendly infrastructure and costs for attracting private-sector investments.

⇨ Regional heat supply infrastructure with low carbon emissions as one investment destination

・Continuous investment in shifting heat sources and fuels ⇨ Energy saving and low carbon emissions in the whole region

・Example: Fuel batteries based on bio-methane gas, wood-fired boilers, etc.

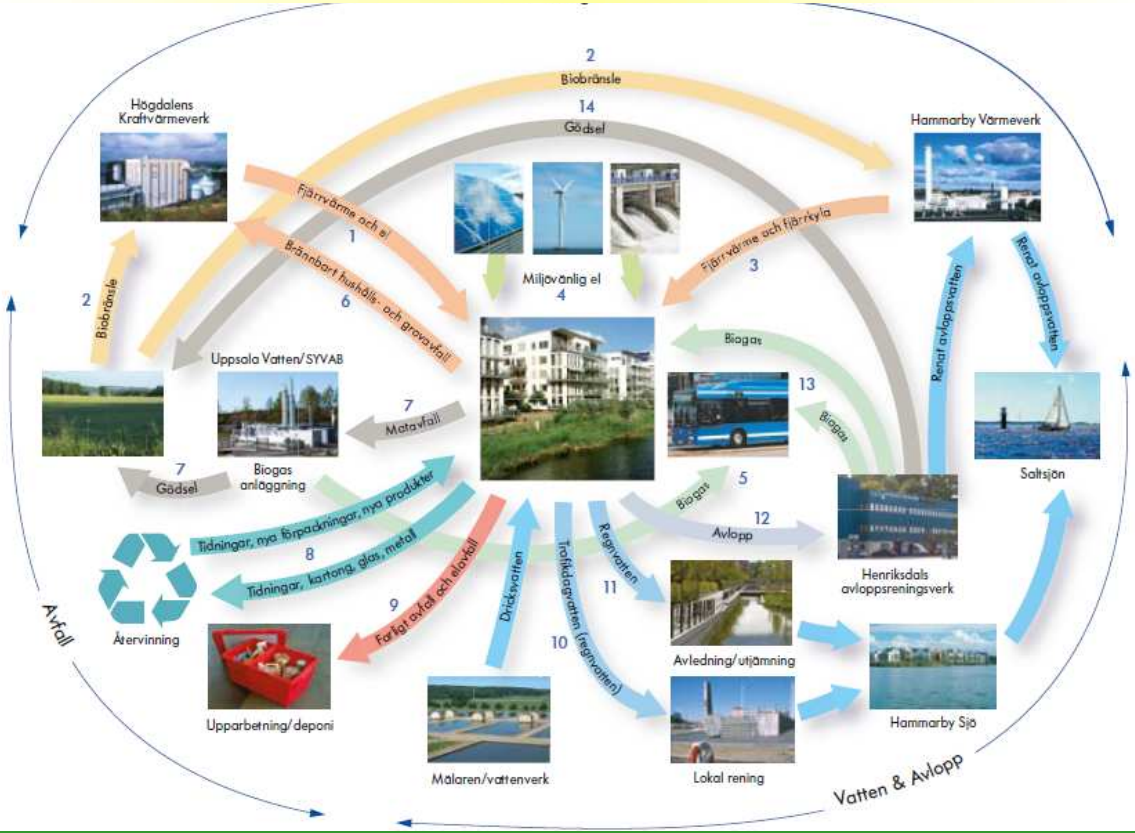
Reference: “Toshi chiiki no jiritsutekina hatten ni kokensuru kominrenkeijigyo no jigyo sukiimu” (Business scheme for public-private partnership that contributes to self-sustaining development in a city or local area), the first and second reports of the papers submitted to the convention of the Architectural Institute of Japan in FY 2013
Ryota Kuzuki, Shuzo Murakami, Toshiki Kato

Stockholm City: Creation of values in the Hammarby Sjostad area

Redevelopment of oceanfront properties held by the city

- ⇨ Creation of a self-sustaining and circulation-type city
- ⇨ Creation of new values as the “Hammarby Model”

Planned target: Halve the effects on the environment in comparison with other areas constructed in the early 1990s



⇨ System to use local renewable energy as an infrastructure development activity

- Regional heat supply based on bio-fuel power generation and exhaust heat
- Local cooling and heating systems through the use of heat of water reclaimed from sewage and heat pumps
- Power generation from bio-gas from sewage sludge and garbage

⇨ Model of a self-sustaining and circulation-type city as the “Hammarby Model”

Portland City: Creation of values through urban redevelopment project

Comprehensive redevelopment project for the central part of the city

⇨ Achievement of sustainable development in terms of the environment, economy, and community

⇨ Comprehensive efforts involving both economic measures and urban redevelopment

1) The Portland Development Commission (PDC) procures 90% of development funds by issuing bonds with increased tax revenues from fixed assets in the future as collateral (Tax Increment Financing).

2) The PDC carries out infrastructure development (green space, roads, residential districts, etc.) and invites private-sector investments.

Example: Housing renovation for energy saving

Induction of private-sector investments and job creation

⇨ Development model for a local area that is self-sustaining and vigorous

Greater Manchester Metropolitan County: Creation of values through industrial structure adjustment

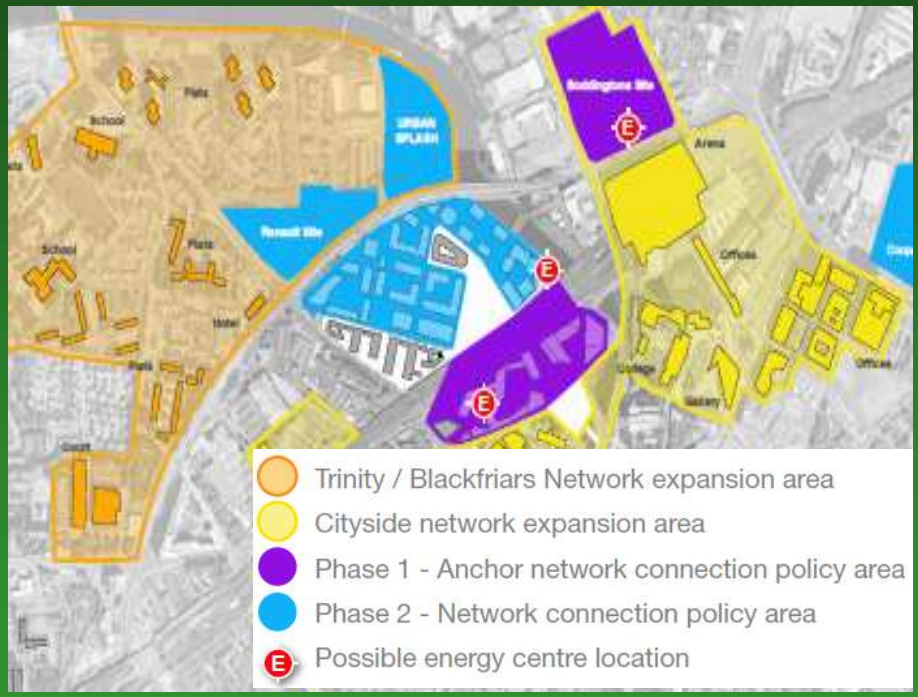
Creation of a city in line with industrial structure adjustment

⇨ Fund set up jointly by the city and the private sector

⇨ Application to the public service fields (urban transportation, energy, environment, public order, health and hospitals, etc.)

1) A fund to create a local city for each business field is set up. The GMCA carries out infrastructure investment and development activities by using this fund.

2) The GMCA collects an increased portion of national tax revenue from infrastructure development in the form of grant from the central government. (Earn Back Model)



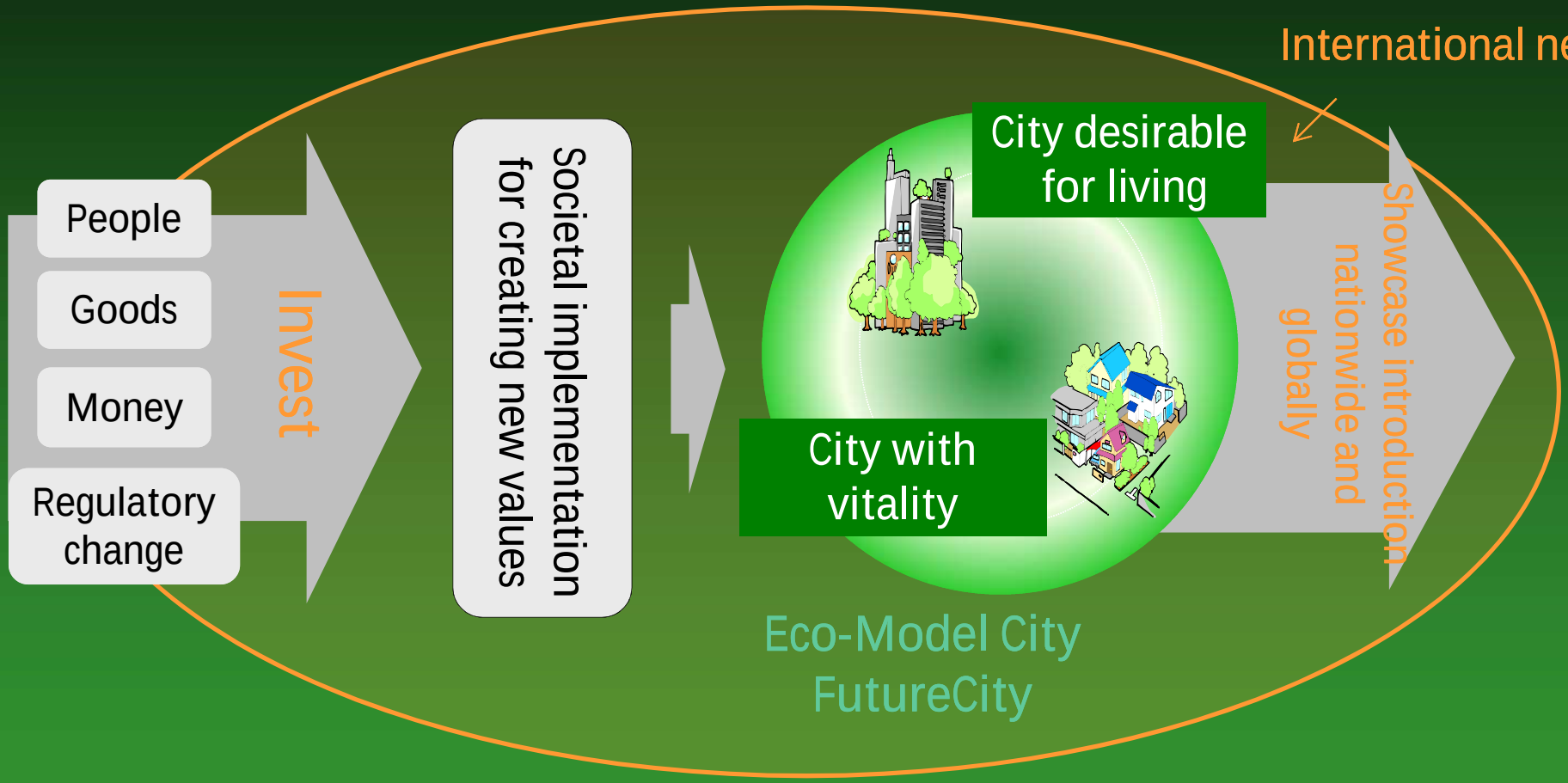
Examples of efforts in the energy field

- Introduction of local renewable energy, including wind, solar, and biomass sources
- Introduction of distributed energy systems, including bidirectional power interchange

⇨ Model for revitalization of local economy through a virtuous cycle of local resources and funds

(GMCA: Greater Manchester Combined Authority)

Building global network：toward expansion of green innovation



⇨ Disseminate and share the outcome through alliance of cities nationwide and globally

⇨ Encourage the green innovation unique to the features of each city

“Eco-Model City” ／“FutureCity” and international contribution

Japan is facing many challenges in advance of other countries around the world.

There are universal challenges that countries around the world will face in the near future.

Japan is expected to make efforts to deal with such challenges in advance of other countries around the world.

The “Eco-Model City”／“FutureCity” Initiative is expected to serve as leverage to overcome such challenges.

Achievements will be reported globally.

Thank you very much for your attention.