



Overview of Circulation oriented Society policies and Eco-town policies and extensive challenges in Japan and Asia

Masanori Shoji

Manager, Office for Recycling Promotion, Policy Planning Division
Waste Management and Recycling Department, Minister's Secretariat
Ministry of the Environment

1997

• Establishment of the Eco Town Program

The Eco Town Program was established in 1997 based on the Zero Emission Concept to promote the development of advanced environmentally-harmonizing town, thereby forming an environmentally-harmonizing socio-economy in the local community.

1997-2005

• Approval of Eco Town Zones and Financial Support for Construction of Facilities

MoE and METI jointly approved Eco Town Plans created by local governments taking the region's local characteristics into consideration. Ministries then provided comprehensive and multifaceted support to local government and private organizations.

From 2010

• Advancement Program for Eco Towns

To address the various problems and challenges that Eco Towns are facing, demonstration projects, considered effective for advancing the Programs, are being implemented.

From 2014

• Program to Create Low-Carbon Zone that Coexists with Sound Material-Cycle Society in Eco Towns

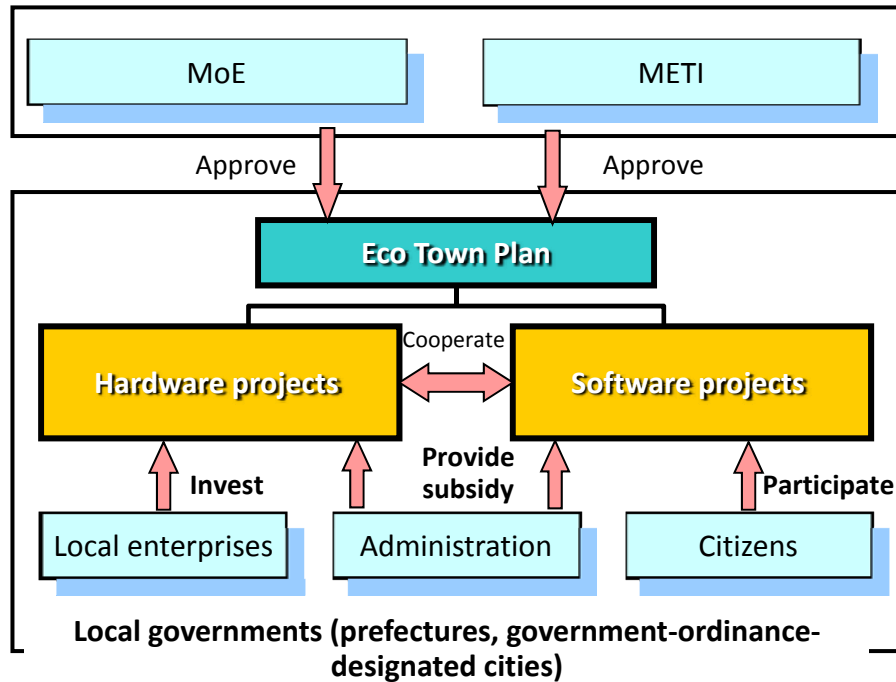
From 2014, we will implement the programs necessary for forming an advanced model zone that can achieve a sound material-cycle and lower carbon emissions.

1997–2005

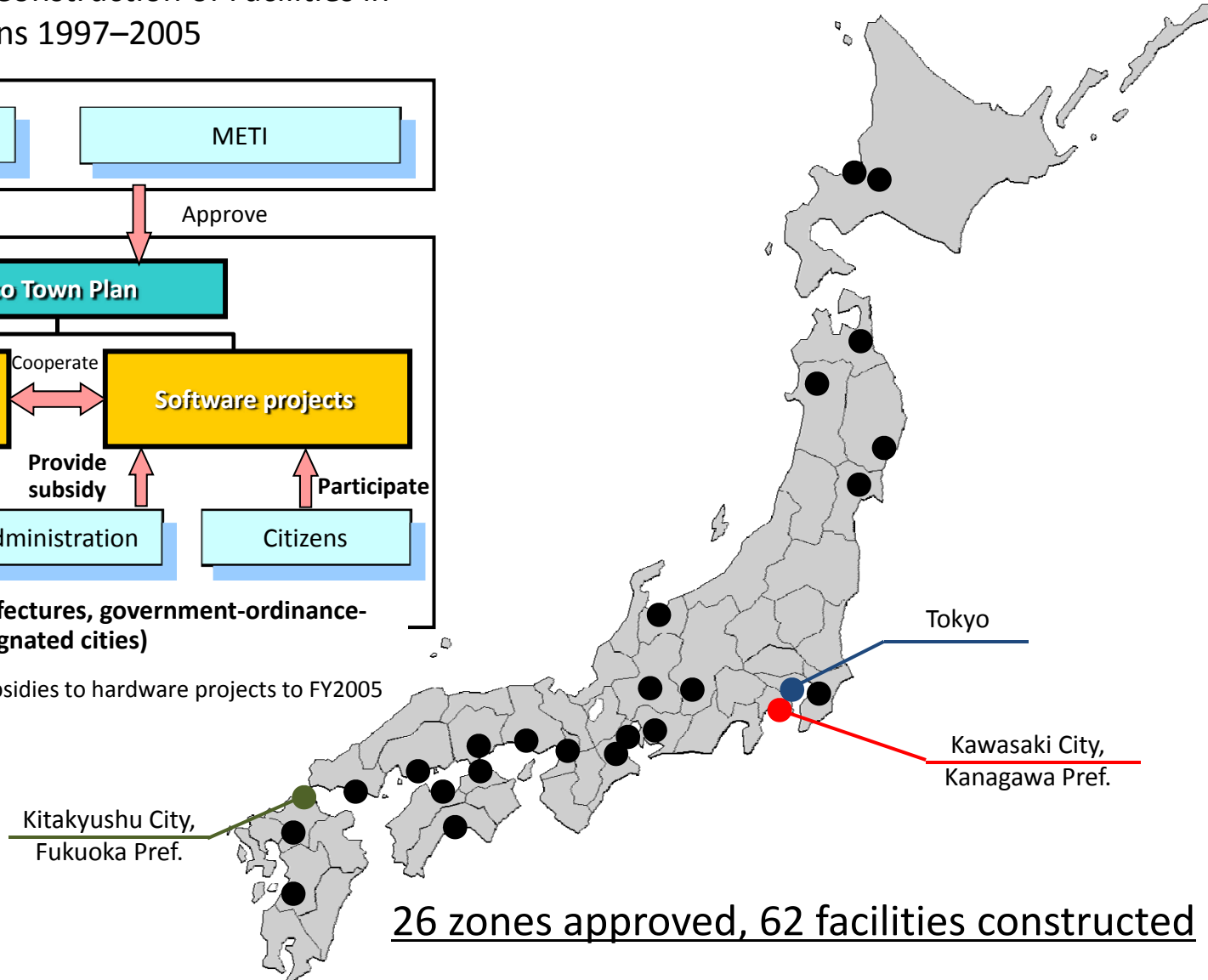
**Approval of Eco Town Zones and Financial Support
for the Construction of Facilities**

Eco Town Zones in Japan

Subsidy Program for Construction of Facilities in Eco Towns 1997–2005



* MoE and METI provided subsidies to hardware projects to FY2005



26 zones approved, 62 facilities constructed

Eco Town Zone - Case 1: (Kawasaki Eco Town)

Manufacturing facility for ammonia material from waste plastics

Manufacturing facility for recycled cement

Recycling facility using waste plastics as reducing agent for iron ore/Manufacturing facility for concrete frame panel from waste plastics/Recycling facility for waste home appliances

Kawasaki Zero Emission Industrial Complex

PET to PET recycling facility


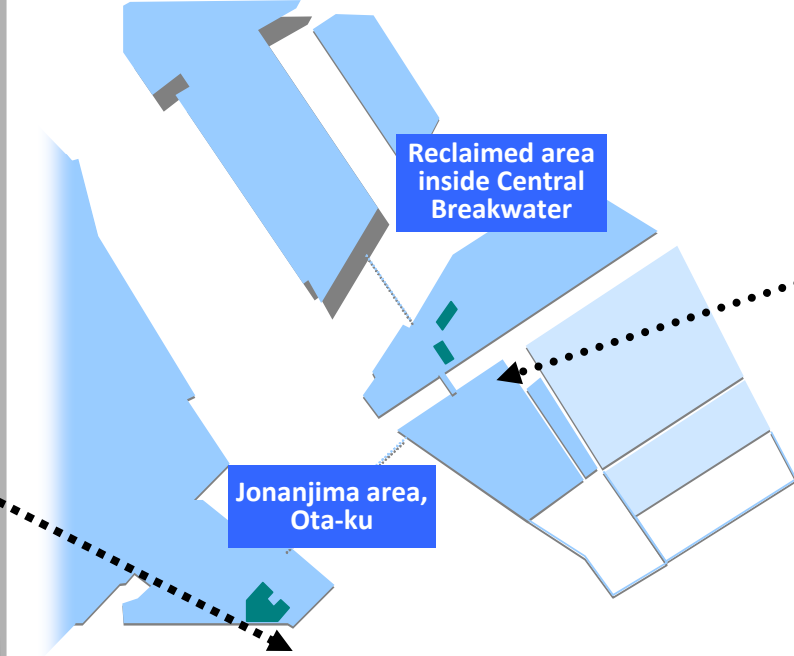








Facility to recycle hard-to-recycle waste paper

Within approx. 1.5 km radius

Eco Town Zone - Case 2: (Tokyo Super Eco Town)

Reclaimed area inside Central Breakwater

Jonanjima area, Ota-ku

<p>Recycling facility for mixed construction waste</p>  <p>Takatoshi Co., Ltd. Started operation in Dec.2004</p>		<p>PCB waste treatment facility</p>  <p>Japan Environmental Safety Corporation Started operation in Nov. 2005</p>		
<p>Recycling facility for mixed construction waste</p>  <p>Recycle Peer Co., Ltd. Started operation in Apr. 2005</p>		<p>Gasification melting power</p>  <p>Tokyo Waterfront Recycle Power K.K. Started operation in Aug. 2006</p>		
<p>Recycling facility for waste information equipment</p>  <p>Re-Tem Corporation Started operation in Jul. 2005</p>	<p>Recycling facility for waste information equipment</p>  <p>K.K. Future Ecology Started operation in Apr. 2004</p>	<p>Facility to convert food waste into feed</p>  <p>Alfo Ltd. Started operation in Apr.2006</p>	<p>Biogas power generation facility using food waste</p>  <p>Bioenergy K.K. Started operation in Apr. 2006</p>	<p>Recycling facility for rubble and mud</p>  <p>Seiyu Kogyo K.K. Started operation in Jul. 2009</p>



From 2010

Advancement Program for Eco Towns

Background to Implementing Advancement Programs for Eco Towns (Problems and Challenges)

- Change in the environment surrounding Eco Towns
 - Reduced urgency of waste problems
 - Establishment of various recycling laws (urgency reduced concerning final disposal sites)
 - Improvement of facilities in response to recycling laws
 - Structural changes in domestic industries (transfer of manufacturing bases overseas)
 - Change in the competition environment due to hollowing out of industries
- Problems and Challenges of Eco Towns
 - Low operation rate (shortage of procurement)
 - Customers are limited (higher standards for recycled materials demanded by domestic consumers)
 - Fierce competition from foreign rivals
- Direction of Eco Towns in Recent Years
 - Contribution to the realization of low-carbon society
 - Contribution to the realization of low-carbon society through recycling
 - Response to new problems concerning waste and recycling
 - Recycling of small electrical appliances

- Demonstration projects to resolve the problems facing Eco Towns (model projects)
 - In order to address the various problems and challenges that Eco Towns are facing, demonstration projects, which can effectively bring about the advancement of the Programs, are being implemented. Through this process, the possibility of advancement can be verified.
 - Evaluation and verification of the problems and challenges that exist in the Eco Town Program supply chain, concerning material procurement, treatment technologies, quality improvement and expansion of sales network.
 - Verification of the possibility of material procurement
 - Finding new suppliers, procuring various materials
 - Technical verification
 - Improvement of treatment efficiency, quality, and cost efficiency (ensure quality of supplied products meets the demands)
 - Verification of measures to increase demands
 - Finding new customers, meeting the needs of the customers concerning quality
- Evaluation of the roles that Eco Towns have played
 - Conduct qualitative and quantitative evaluation of the roles that Eco Towns have played and their indirect contribution
 - Environmental burden reduction
 - Resource recycling within the zones

Outline of FY2012 Eco Town Advancement Program

- In FY2012, model projects were implemented in Eco Towns in Akita Prefecture, Kawasaki City, and Osaka Prefecture.

Model zone	Project objectives	Demonstration tests
Akita Pref. Eco Town	<ul style="list-style-type: none">• <u>Recycling of waste plastics derived from small home appliances</u>• Recycling of small amounts of unused waste plastics from business activities	<ul style="list-style-type: none">• Verification of advanced automatic selection of waste plastics derived from small home appliances• Verification of efficient selection and recycling methods of mixed waste plastics from business activities
Kawasaki City Eco Town	<ul style="list-style-type: none">• Recycling of small home appliances• <u>Verification in reducing burden</u> of present waste treatment by recycling small home appliances	<ul style="list-style-type: none">• Verification of the methods to recover small metal scrap from small home appliances• Verification of recycling and treatment methods for small home appliances• Verification of change in characteristics of burned ash (reduction of heavy metals) in city
Osaka Pref. Eco Town	<ul style="list-style-type: none">• <u>Develop new users</u> of bioethanol• <u>Verification of fuel quality</u> for new usage (fuel cells)	<ul style="list-style-type: none">• Verification of usability for fuel cells (quality evaluation of bioethanol, quality evaluation of ethanol modification, and verification of bioethanol production of appropriate quality)

From 2014

**Program to Create Low-Carbon Zones that Coexist
with a Sound Material-Cycle Society in Eco Towns**



Background and Objectives

- Eco Towns, created based on the Zero Emission Concept as a basis for establishing the regional recycling zone, contribute to resource recycling within the zone. However, they do not contribute to creating a low carbon zone due to insufficient use of district heating.
- In order to form an advanced, double-zero emission model zone in which recyclable resources are used and also carbon emissions are reduced, it is necessary to thoroughly review energy usage in the existing Eco Towns, construct new facilities, repair existing facilities and improve and fully utilize facilities that use district heating, thereby significantly reducing CO2 emissions.

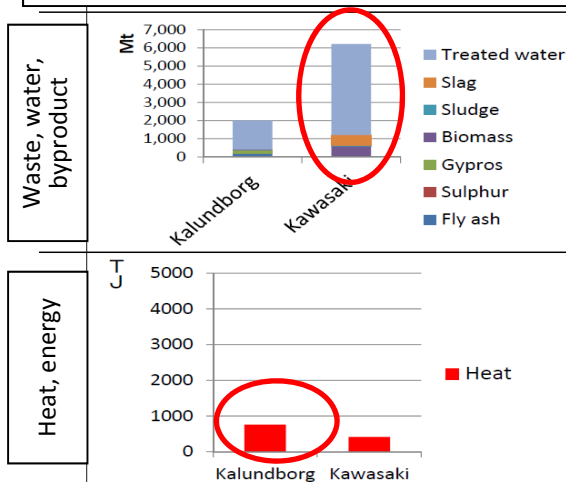
Program Outline

- (1) Support for feasibility study (FY2014)
- (2) Support for Creating Double-Zero Emission Plan (FY2014)
- Support for demonstration tests of energy saving projects, including software development (from FY2015)
- Subsidy program for the construction of double-zero emission facilities (from FY2015)
- Subsidy program for repairs to achieve double-zero emissions in existing facilities (from FY2015)

Program Scheme

- (1) (2): targeted at private businesses (1/2) local public bodies (fixed amount)

Supply volume to/from other industries in the zone



- Like advanced Eco Towns overseas, Eco Towns in Japan contribute to sound resource recycling. However, recycling of heat and energy (mutual supply) is not sufficient (see figure on the left) (Population of Kawasaki City: 1.4 million, Kalundborg in Demark: 20,000)
- Kalundborg, which is known as the world center of Eco Towns, has established a system to fully utilize waste, heat, and energy.



Create double-zero-emission Eco Towns in Japan that we can be proud of by reducing carbon emissions!

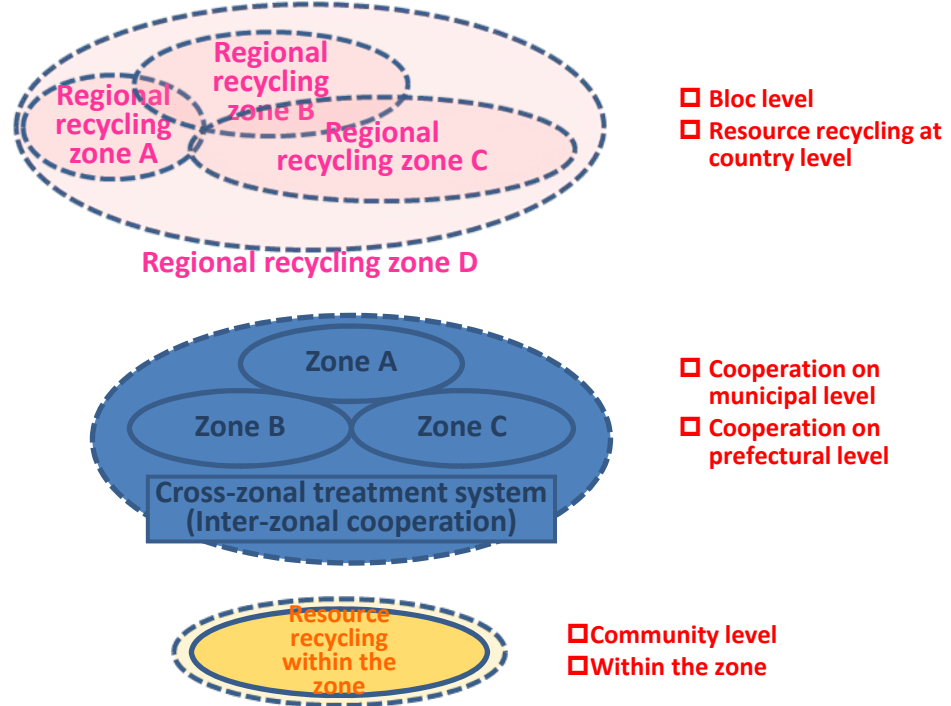
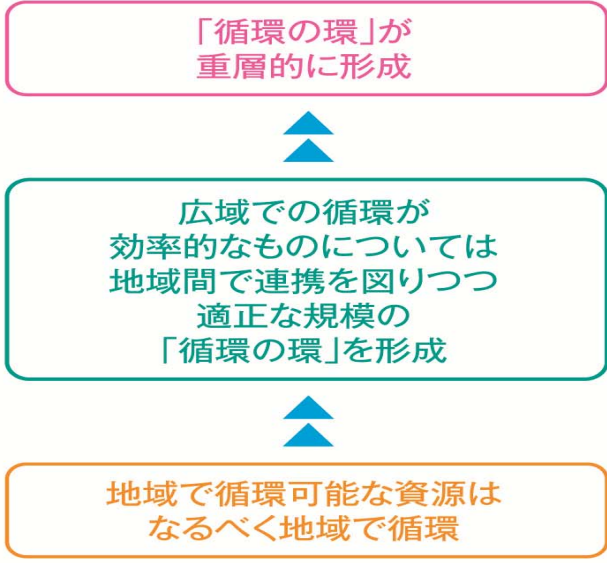


Cooperation between Eco Towns and Regional Recycling Zones

What Is a “Regional Recycling Zone”?

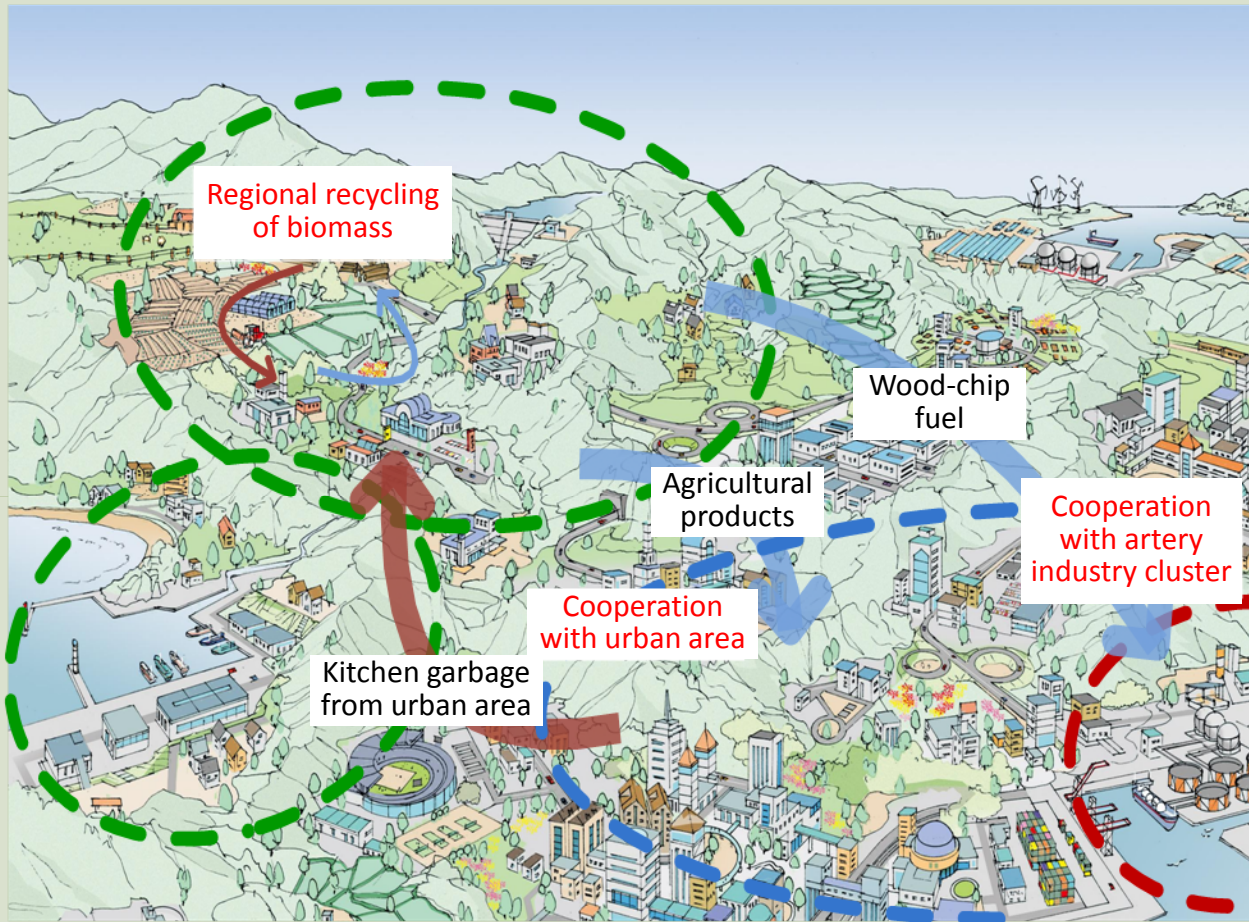
- To form a sound material-cycle society, it will be important to establish a cycle of appropriate scale to match regional characteristics and the nature of the recyclable resources.
- The term “regional recycling zone” represents a concept to use recyclable resources within the zone wherever possible, and, when this is difficult, expand the area of recycling to build a multilayered regional recycling network.

地域循環圏の機能



“Regional Recycling Zone” Type 1

Satochi-Satoyama-Satoumi Regional Recycling Zone



Flow of recyclable resources

- Promotion of recycling within urban area, agricultural area, and fishing area
- Cooperation between the urban area and rural area (e.g. food recycling loop)

Examples of recycling facilities

- Woody biomass utilization facility (facility to make pellets and chips)
- Livestock excreta gasification facility
- Fishing waste recycling facility

Creation of environmental businesses and new jobs

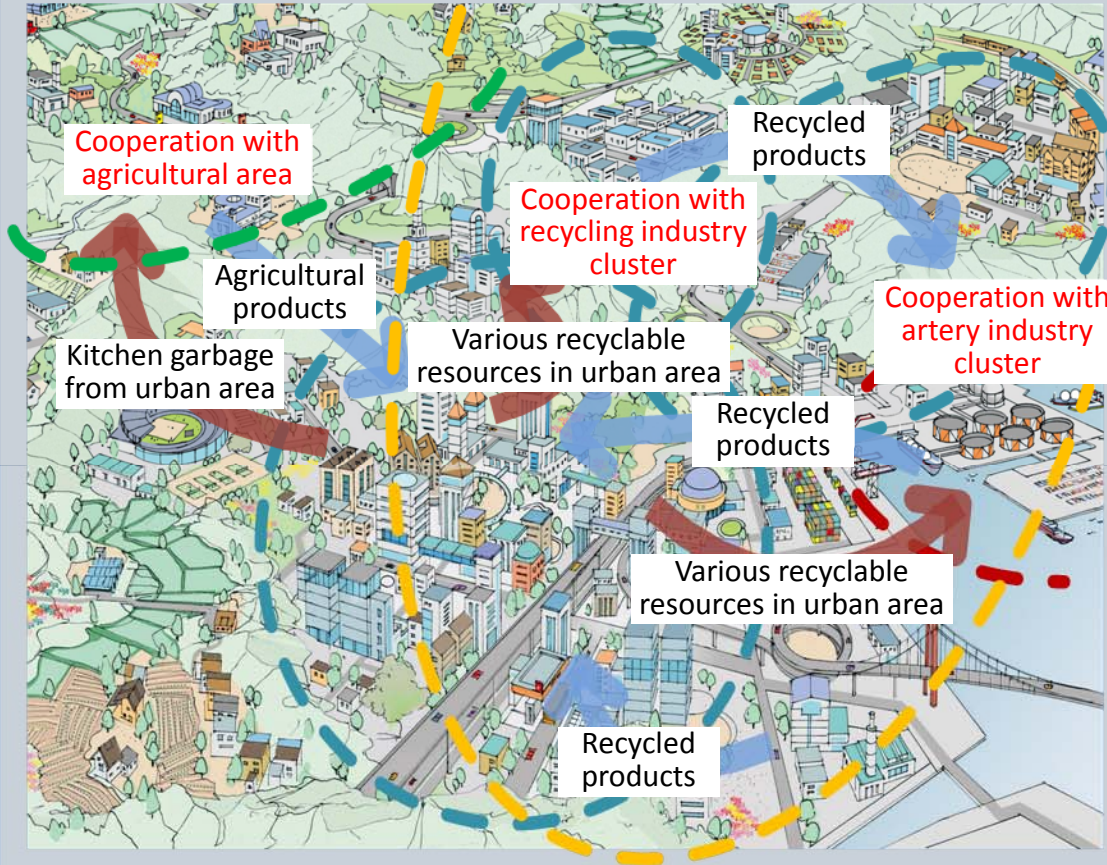
- Creation of businesses through cooperation among urban area, agricultural area, and fishing area
- (Production of high value-added agricultural and marine products)
- Biomass utilization business
- Promotion of primary industry

New environmental activities

- Utilization of resources in abandoned bamboo forest, use of abandoned cultivated land
- Improvement of landscape, revitalization of eco-tourism and green-tourism, revitalize sight-seeing areas

“Regional Recycling Zone” Type 2

Regional Recycling Zone in Urban and Suburban Areas



Flow of recyclable resources

- Promotion of recycling large amounts of recyclable resources from urban areas in cooperation with the existing infrastructure and the artery and recycling industrial clusters in a more effective way

Examples of recycling facilities

- Cooperation with recycling industry's cluster
- Facilities making manure or feed from food waste
- Food waste gasification facility
- Facility to sort or use waste plastics to make industrial materials (sorting center)
- General garbage disposal facility and sewage treatment plant
- Private waste treatment facility

Creation of environmental business and new jobs

- Joint treatment of general and industrial waste
- Consolidation of waste treatment facilities operated by local governments (to cut expenditure)
- Cooperation with urban transport and fields using energy

New environmental activities

- Use of Eco Action Point and Ecomark products
- Utilization of reusable containers by citizens and NPOs; cooperation/exchange with rural areas
- Revitalizing environmental activities of local communities
- Promoting procurement of green products
- Increasing recyclable resources collection points, including recycling stations and collection boxes; improvement in council services

“Regional Recycling Zone” Type 3

Regional Recycling Zone of Artery Industry



Flow of recyclable resources

- Effective use of infrastructure of artery industry: cement and steel making industry, smelting industry, papermaking industry, chemical industry and power generation industry
- Accept various types of waste and recycled products as industrial materials or energy

Examples of recycling infrastructure

- Various manufacturing facilities (as industrial materials)
- Various large boilers
- Smelting facilities (recovering rare metals)

Creation of environmental business and new jobs

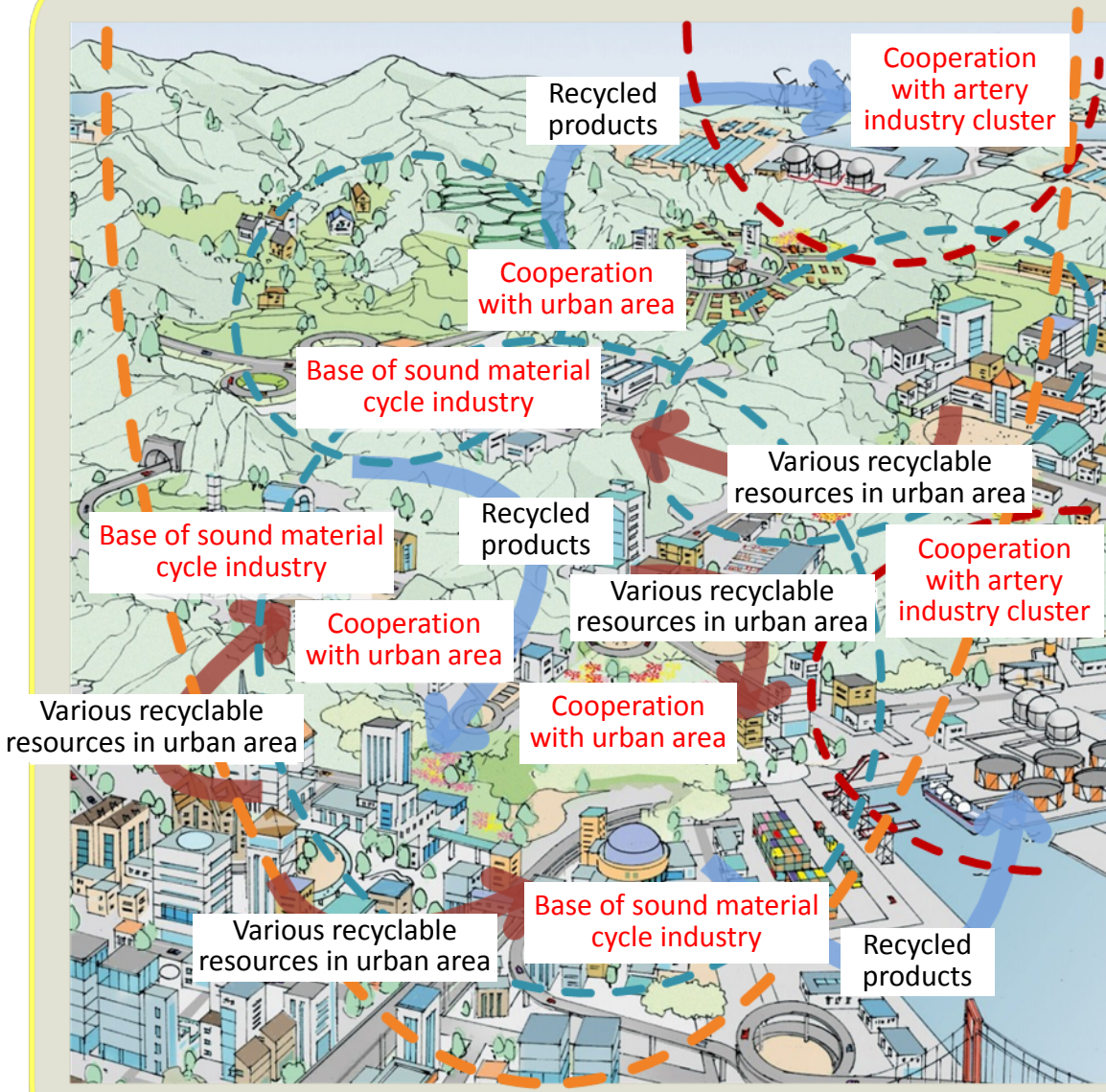
- Reflection on product design that can contribute to 3R
- Rare metal recovery business
- Cooperation with recycling industry cluster, including Eco Town

New environmental activities

- Promote efforts in achieving zero emissions

“Regional Recycling Zone” Type 4

Regional Recycling in a Sound Material-Cycle Industry (Wider Area)



Flow of recyclable resources

- Promotion of use of recyclable resources cooperating with urban area and artery industry, focusing on resource recycling system in a wider area. This is achieved by utilizing the function of the industrial cluster of the recycling industry, such as in an Eco Town.

Examples of recycling facilities

- Facilities in Eco Towns
- Home appliances and OA equipment recycling plants, vehicle recycling plants, small electronic equipment recycling plants
- Plastic recycling facilities (sorting center, RPF, PET bottle recycling, etc.)
- Recycling facilities of construction waste
- Various food recycling facilities (making fertilizer, feed, gas)

Creation of environmental business and new jobs

- Creation of new environmental business utilizing private sector
- Creation of new business concerning the advanced usage system of waste products (home appliances, OA equipment, automobiles, etc.)
- New business concerning the base for advanced use of recycled small electronic equipment (pre-assembly and treatment)
- New business concerning the base for advanced use of foods and plastics

New environmental activities

- Promotion of demonstration projects and research on new recycling technologies
- Enhancement of Eco Town and Biomass Town programs
- Fostering human resources who will form a sound material-cycle society utilizing the infrastructure of a recycling industry cluster



Thank You for Your Kind Attention.