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Today's Topic

1. Introduction: Strategy for Realizing Sustainable Development in Asian Region

2. Kitakyushu City's Activities for International Environmental Cooperation

3. Kitakyushu City and MI Consulting

4. Kitakyushu Model

5. JCM Project Development of Kitakyushu by using Intercity Cooperation
   - Low-Carbon Development of Entire Cities: Surabaya, Hai Phong, Iskandar, Rayong

6. Green Growth Promotion Plan of the City of Hai Phong based on Kitakyushu Model

7. Kitakyushu and Rayong JCM Project (The Concept of Eco-Industrial Town in Thailand)

8. Advantages of Intercity Cooperation

9. Future Prospect of Kitakyushu City's Activities for Realizing Sustainable Society in Asia

10. Future Expansion of the Kitakyushu Model

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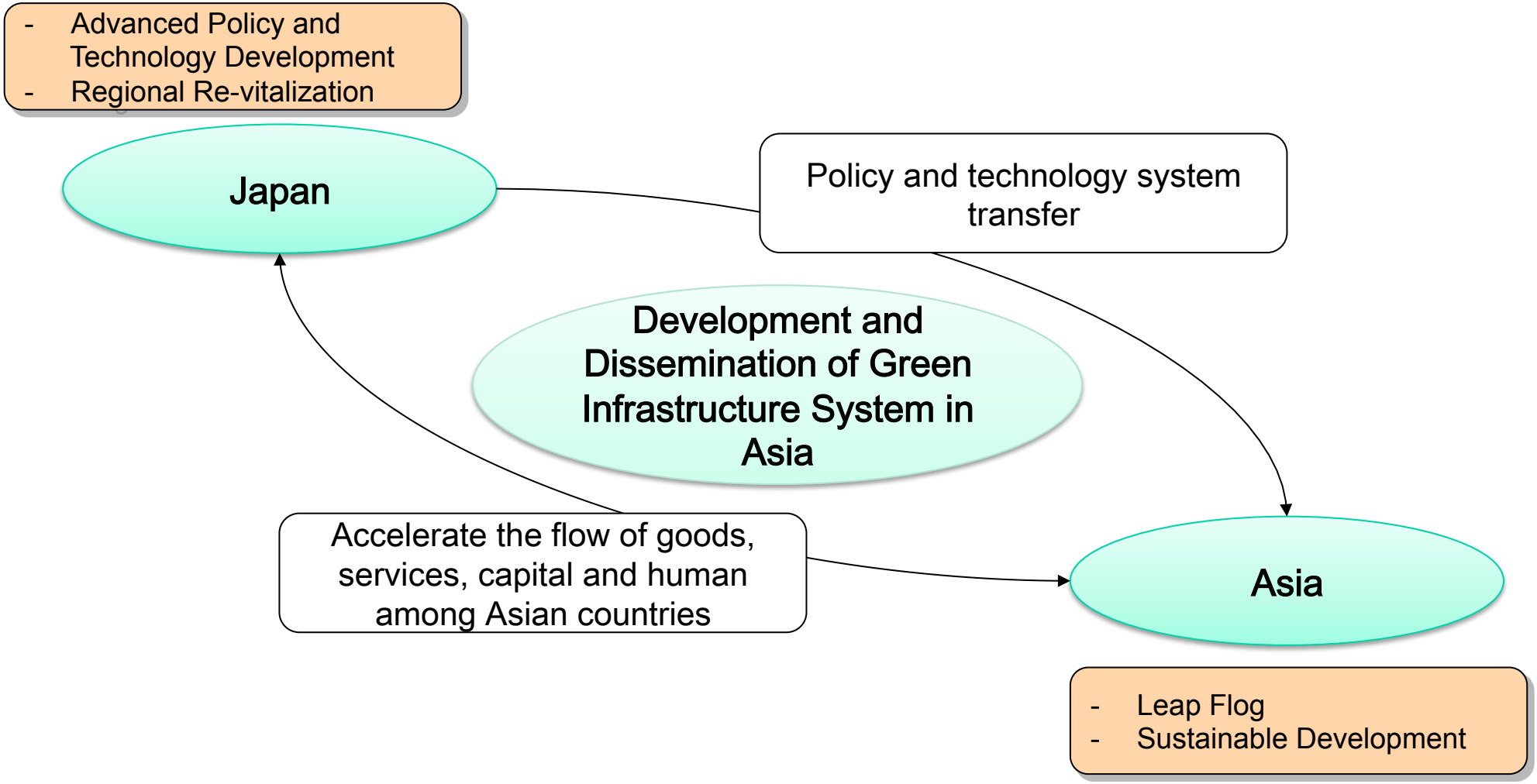
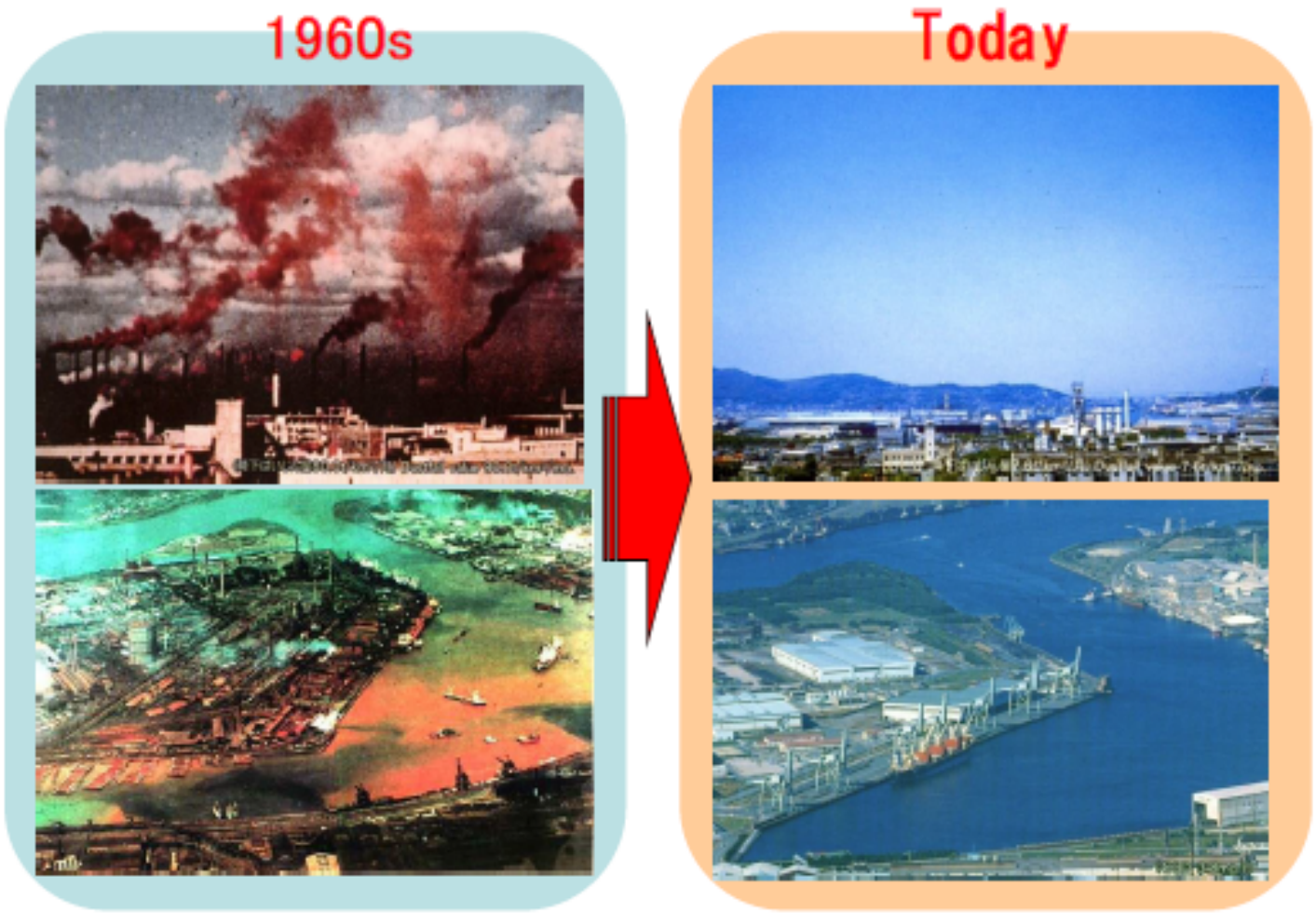
Introduction:
Strategy for Realizing Sustainable Development in Asian Region



Outline of an Economic and Environmental Win-Win Strategy in Asia

Kitakyushu City's Activities for International Environmental Cooperation

Kitakyushu City's Experience



Source: Kitakyushu City

Kitakyushu City's Activities for International Environmental Cooperation

Partnership with other Asian nations for mutual prosperity

Accepted trainees: 7,059 persons from 146 nations; Dispatched specialists: 165 persons to 25 nations
Promotion of cooperation networking between Asian cities and environmental improvement projects

UN ESCAP Ministerial Conference on Environment and Development (2000)

Kitakyushu Initiative Network
(62 cities in 18 nations)

Contribution to environmental improvements in Dalian, China
(Dalian City received the Global 500 Award in 2001.)

Exchanged memorandum for cooperation on eco-town with Tianjin City
(At the Prime Minister's official residence)

Water supply project at Phnom Penh

Air pollution survey in Mongolia

Driving forward the waste composting project with Surabaya City, Indonesia
(Adopted by over 20,000 families)

Source: Kitakyushu City

Kitakyushu City and MI Consulting

MIC has concluded a "**Comprehensive Collaboration Agreement Relating to the Promotion of Urban Infrastructure Exportation" with Kitakyushu**, and is actively engaging in our role as **a strategic partner** (July 27th, 2015).

With the following agreement, MIC devotes efforts to exporting infrastructure integral to Kitakyushu while leveraging both the advantages of Kitakyushu's strong ties with Asian cities and urban development knowhow, and our knowledge related to the Kitakyushu Model and project management expertise.

Vision of Comprehensive Collaboration Agreement Relating to the Promotion of Urban Infrastructure Exportation

① To expand the Kitakyushu Model in the fields of urban development and disaster prevention measures as well, and create a knowledge database for supporting infrastructure export to overseas cities

② To utilize the Kitakyushu Model and provide comprehensive support in the establishment of master plans promoted by local governments and development companies in partner countries, and expand business opportunities for Japanese corporations

③ To support the various aspects of project management in relation to the commercialization of projects promoted together with the private sector by Kitakyushu

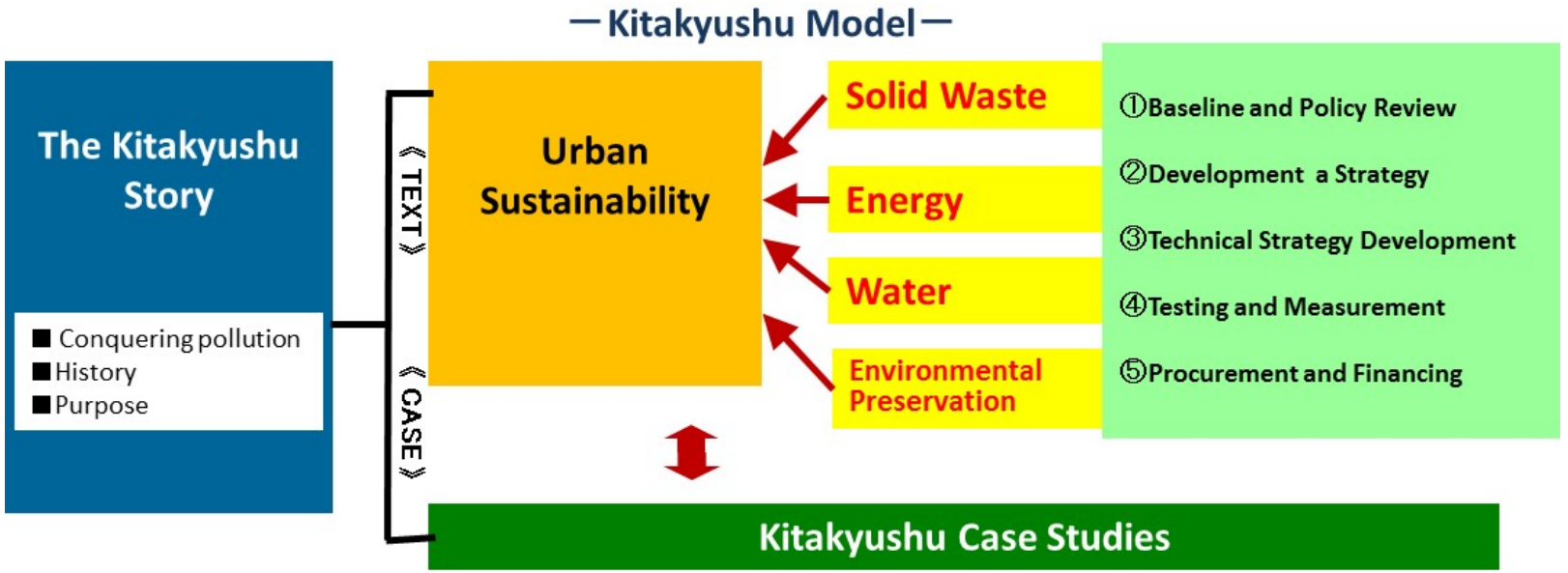
Kitakyushu Model

Objective of the Kitakyushu Model

■ Kitakyushu, which faced and overcame pollution for the first time in Asia, became a leading environmental city in Japan.

■ Kitakyushu is developing the Kitakyushu Model (support tool) that systematically arranges information on the technologies and know-how of Kitakyushu from its experience in overcoming pollution to its quest as an environmental city.

■ Kitakyushu is utilizing the Kitakyushu Model to promote the export of customized infrastructure packages to cities overseas, and grow together with Asia.



Source: Kitakyushu City

Kitakyushu Model

Applications of the Kitakyushu Model

■Support tool to examine future ideal city image and for cities to take appropriate measures and procedures to achieve this.

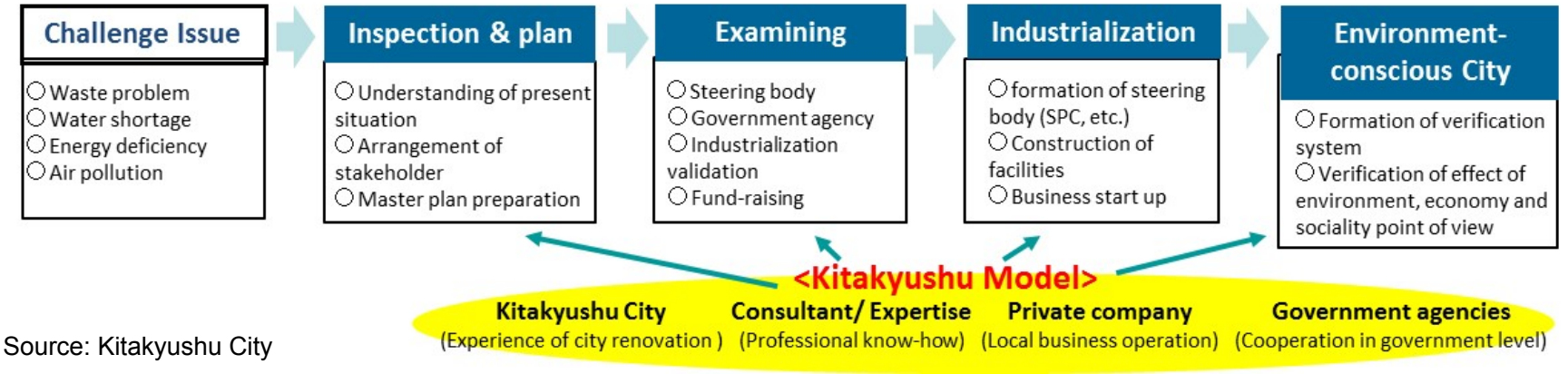
■Support tool to examine management systems for waste, energy, water and sewage services, and environmental protection.

■Support tool to develop sustainable master plans that integrates waste, energy, water and sewage services, and environmental protection.

"Experience of Environment-Conscious City" + "High-Techs of Private Companies"
= "Provision of Comprehensive Urban Solution"

◎ Provision of comprehensive urban solution using Kitakyushu model
◎ Creation of environment-conscious city by urban environment infrastructure development of public-private cooperation

<Provision of comprehensive urban solution using Kitakyushu model>



Source: Kitakyushu City

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JCM Project Development of Kitakyushu by using Intercity Cooperation

Surabaya, Indonesia: 2nd largest city in Indonesia with a population of 3 million

< FY 2013- 2015 > Low Carbon City Planning Project in Surabaya, Indonesia

Target areas: Energy, waste management, transportation, water resources
Participating Japanese companies: 13

Green Sister City agreement signed(Nov 2012)

Haiphong, Viet Nam: Major port city in Viet Nam with a population of 1.9 million

< FY 2014, 2015 > Green Growth Promotion Plan of the City of Hai Phong
Target areas: Low-carbon city planning, energy, waste management, conservation of Cat Ba island
Participating Japanese companies: 10

Sister city agreement signed (Apr 2014)

Iskandar, Malaysia: 2nd largest economic zone in Malaysia

< FY 2014, 2015 > GHG Emissions Reduction Project in Iskandar (Pasir Gudang)
Target areas: Waste-to-energy, energy savings and industrial waste recycling in Industrial Estate
Participating Japanese companies: 4

Consultation with Mayor of Pasir Gudang City (Feb 2015)

Rayong Province, Thailand: Major heavy chemical industrial zone in Thailand with 2 large industrial parks

< FY 2015 > GHG Emissions Reduction Project in Rayong Province
Target areas: Waste-to-energy project, energy savings, total recycling of industrial waste at Industrial Zone
Participating Japanese companies: 4

MOU signed with Department of Industrial Works (Dec 2014)

Source: Kitakyushu City

Green Growth Promotion Plan of the City of Hai Phong based on Kitakyushu Model

Hai Phong is aiming to create a Green Port City through self-implementing actions

Hai Phong's Actions

Residents

Government

Businesses

Green Growth Promotion Plan of the City of Hai Phong

- ✓Vision
- ✓Basic policies
- ✓Specific measures
- ✓Pilot projects

Hai Phong Green Port City

Settling on Broad Policies concerning Green Growth by Hai Phong City

Kitakyushu Model (Experience, Know-how)

The mayor of Hai Phong City was received this plan by the mayor of Kitakyushu on May of 2015

Source: Kitakyushu City

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Pilot Projects in Green Growth Promotion Plan of City of Hai Phong

Waste	①Separation and composting of household waste
	②Waste Heat Recovery Power Generation & Utilization of Industrial Waste
	③Recycling of E-Waste
Energy	④Energy savings and introduction decentralized energy systems in factories & buildings
transportation	⑤Introduction of low-emission buses
	⑥Promotion use of public transportation
Cat Ba Island	**⑦Development of comprehensive resource recycling system**
	⑧Energy saving and introduction of renewable energy & EV buses in Cat Ba Island
Water & Sewage, Rainwater Drainage	**⑨U-BCF expansion project**
	⑩Handicraft village wastewater measures
	⑪Introduction of sewerage registry system
Environmental Protection	⑫Restoration of Tay Nam canal
	⑬Development of air and noise monitoring systems
Green Production	**⑭Installation of high-efficiency furnaces in foundries**
	⑮Promotion of green agriculture

Source: Kitakyushu City

Waste: Waste Heat Recovery Power Generation & Utilization of Industrial Waste

Having the waste heat recovery power generation equipment installed and utilizing the alternative fuel and resources from industrial waste in VICEM HAIPHONG CEMENT

Waste emitters

Waste

Sludge, dust & soot, cinders, waste oil, waste solvent, waste acid, waste alkali, slag, used catalysts, metal waste, waste plastic, other

AMITA:
Waste treatment operator

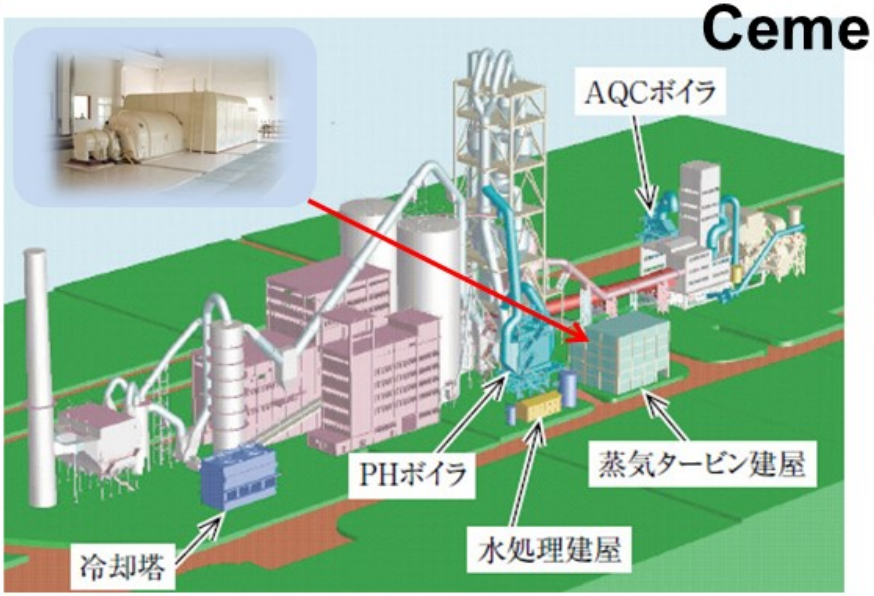
Blending

Alternative fuels /resources

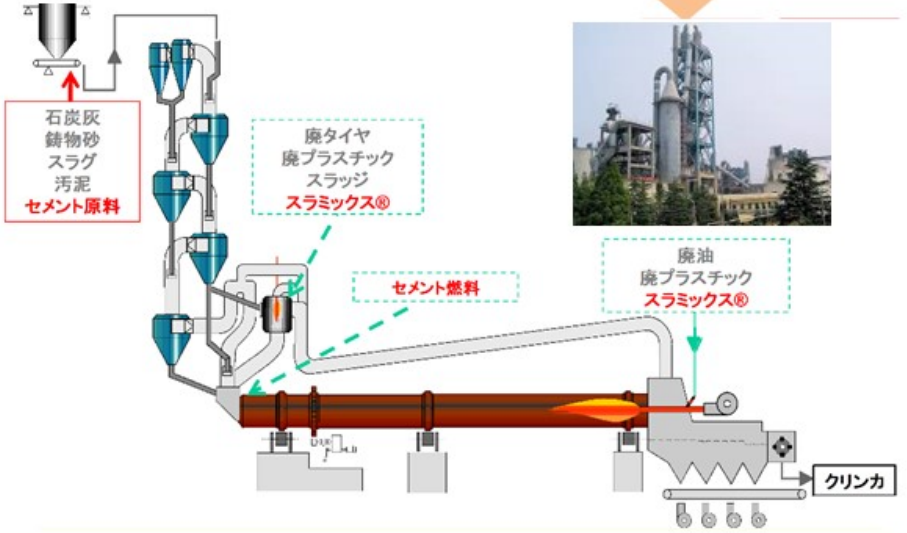
- ✓ Promoting the waste heat recovery power generation
- ✓ Raising the ratio of biomass as fuel

Cement company

Raising the effect of reducing the CO_2 emissions



Source :https://www.khi.co.jp



Source: Kitakyushu City

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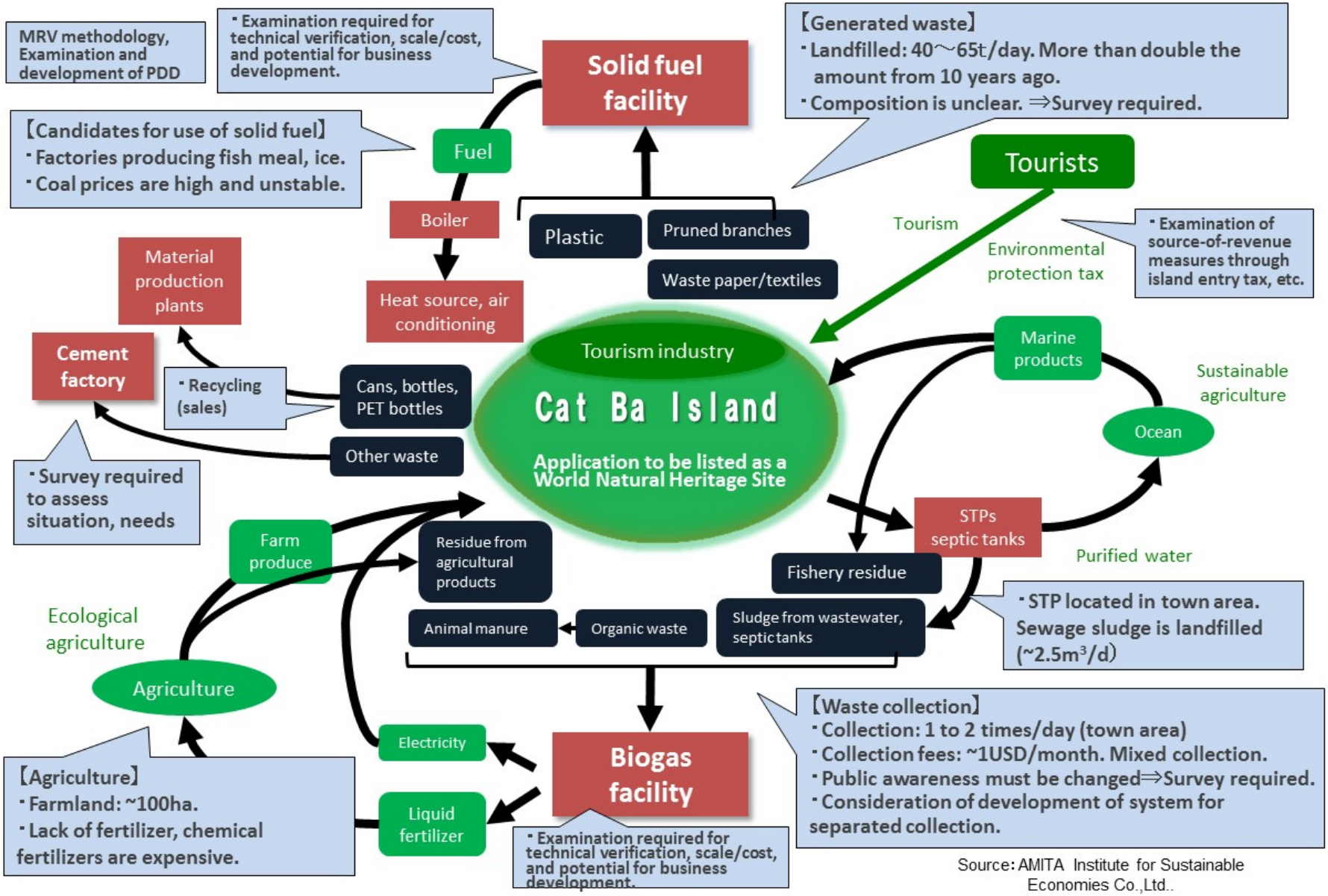
Cat Ba Island: Development of Comprehensive Resource Recycling System



Source: AMITA Institute for Sustainable Economies Co.,Ltd..

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Water & Sewage, Rainwater Drainage: Expansion of U-BCF Project

Kitakyushu is currently carrying out activities to expand the use of the Upward Biological Contact Filtration (U-BCF) system that is effective in improving the safety of tap water and has low operating costs.

【Step 1】

JICA Grassroots Technical Cooperation Project (FY2010-2012)

Establish U-BCF demo plant in Haiphong, Viet Nam.

【Step 2】

Introduction of small-scale treatment plant (Dec 2013)

Introduce U-BCF in Vinh Bao water purification plans (5,000m3/day).

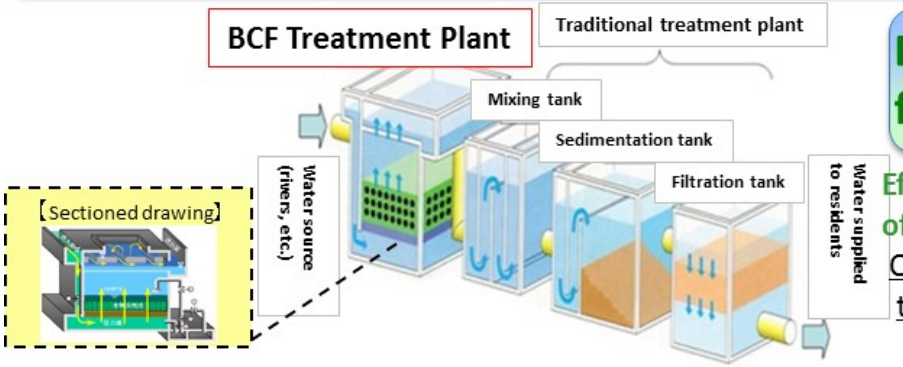
Self-financed by Haiphong.

【Step 3】

Introduction of full-scale treatment plant (FY2015-2017)

Introduce U-BCF in An Duong water purification plans (100,000m3/day).

Grant aid from JICA will be used.



Expand the use of the U-BCF system from within Haiphong to all areas in Viet.

Effective in reducing chlorine dosage (THM) with treatment of raw water using the purifying effects of microbes

Comparison with most common advanced water treatment technologies (activated carbon with ozone injection)

- Construction costs: ~1/2
- Running costs: ~1/20

Source: Kitakyushu City

Green production: Introduction of Highly-efficient Electric Furnaces in Iron Foundries

Haiphong has the largest cluster of iron foundries in Viet Nam

With over a 1000-year history, the district of My Dong is referred to as the "cast metal village."

My Dong District
140 casting companies

Existing cast metal industrial estate (22 companies)
Comparatively large-scale factories

【Manufactured materials】
- Iron (FC, FCD): 90 companies
- Aluminum alloys: 30 companies
- Copper alloys: 20 companies

4 companies relocated, established facilities

【Manufactured materials】
- Iron (FC, FCD): 90 companies
- Aluminum alloys: 30 companies
- Copper alloys: 20 companies

New industrial estate: 20 companies
Remaining 16 companies relocated or established facilities from other parts of My Dong district, other than from the existing industrial estate.

- ✓ Most factories (120) use coal furnaces. There are only 20 factories that use electric furnaces. Companies using coal furnaces want to introduce electric furnaces to improve quality and production, and cut costs.
- ✓ Most electric furnaces are made in China. Although inexpensive, there have been many cases of furnaces malfunctioning, excessive consumption of electricity, and short service life (about 8 years). Companies want to use Japanese electric furnaces. However, many companies have abandoned this idea because of the high cost.


Coal furnace (Made in Viet Nam)


Electric furnace (1.5 tons. Made in China)

Effects from introduction of Japanese electric furnaces

Preconditions: Production amount (dissolved amount) :
①(1 t+1t) × 1、(2t+2t) × 1、②2t × 1

Reduce CO_2 emissions
Conversion from Chinese electric furnaces:
① ~ 726 ton/Y (1t+1t) × 1、(2t+2t) × 1
② ~ 242 ton/Y (2t × 1)

Cost reductions
Reduce electricity costs by converting from Chinese electric furnaces(1)
① ~ 52,275 USD/Y (First Year)
② ~ 16,584 USD/Y (First Year)

Recover capital in approx. 10 years
Simple maintenance
No malfunctions
Long service life

Source: Kitakyushu City

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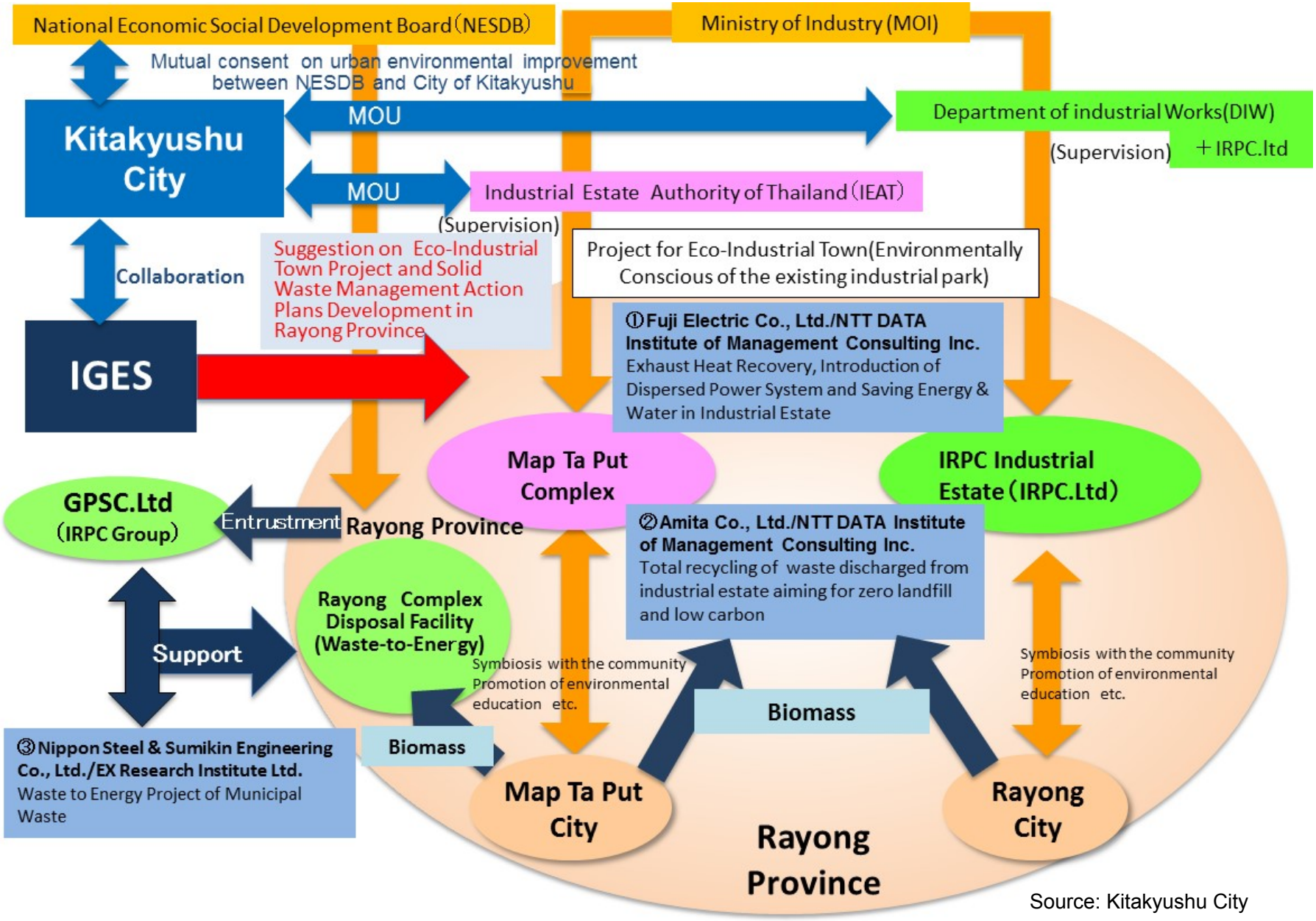
Kitakyushu and Rayong JCM Project (The Concept of Eco-Industrial Town in Thailand)



Source: Kitakyushu City

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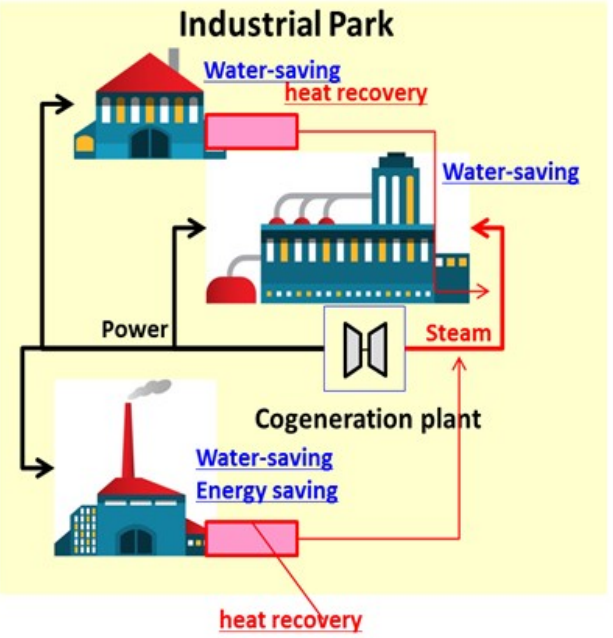
Exhaust heat recovery, distributed power introduction and energy-saving and water-saving in industrial park

Project summary

To establish an advanced model in industrial park towards the Eco-Industrial Town. The model achieves both reduction of energy costs and of CO2 emissions in cooperation of multiple factories by using technologies below: Waste heat recovery and utilization, distributed power introduce, water conservation.

●We held workshop to introduce the JCM system at the industrial park, mainly in companies that are interested, we are studying, such as the following.

	A company	B company
Business	Oil Refinery	Artificial sweetener manufacturing
Considering energy-saving technology	① binary power generation ② solar panels ③ energy-saving air-conditioning equipment	① cogeneration system ② energy-saving air-conditioning equipment



Future work

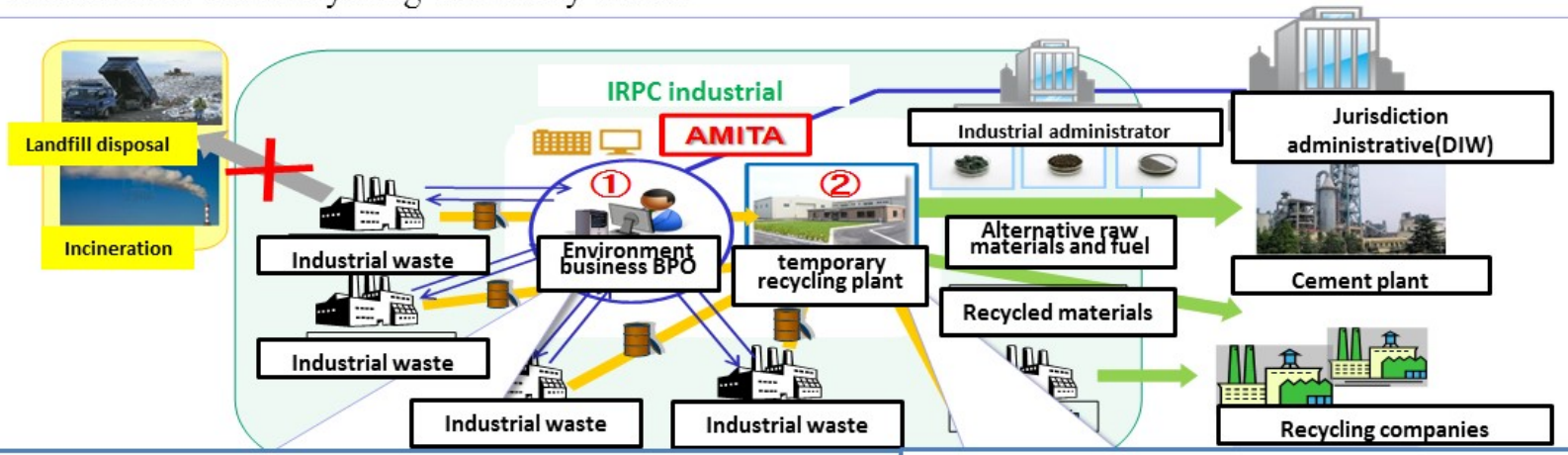
●With the two companies and, calculation of such costs and payback period to energy-saving technology introduction, to perform the calculation of CO2 emission reductions, to carry out consultations towards the project realization

● In addition to the above, towards the excavation of newly of project implementation feasibility companies, individual company visits.

Source: Kitakyushu City

Recycling industrial wastes with low carbon emission project

Aiming to establish advanced models for both reduction of waste disposal cost and reduction of CO2 emissions. By using the software, promote the optimal matching and usage of waste generated raw fuel. It achieve a total recycling of factory waste.



① Environment business BPO
Provides the mechanism responsible for the business associated with waste management. (Management of waste generated information, negotiation of a waste processing and collection, negotiation of government)
Efficient waste management, legal compliance, proper management, risk reduction

② Temporary recycling plant
analyzing the waste generated from industrial within companies, and formulated, and recycled to the alternative fuel that can be used in the cement industry.
Proposal of optimal recycling method, Promotion of 3R

Implementation to reduce the environmental impact from soft and hard both sides

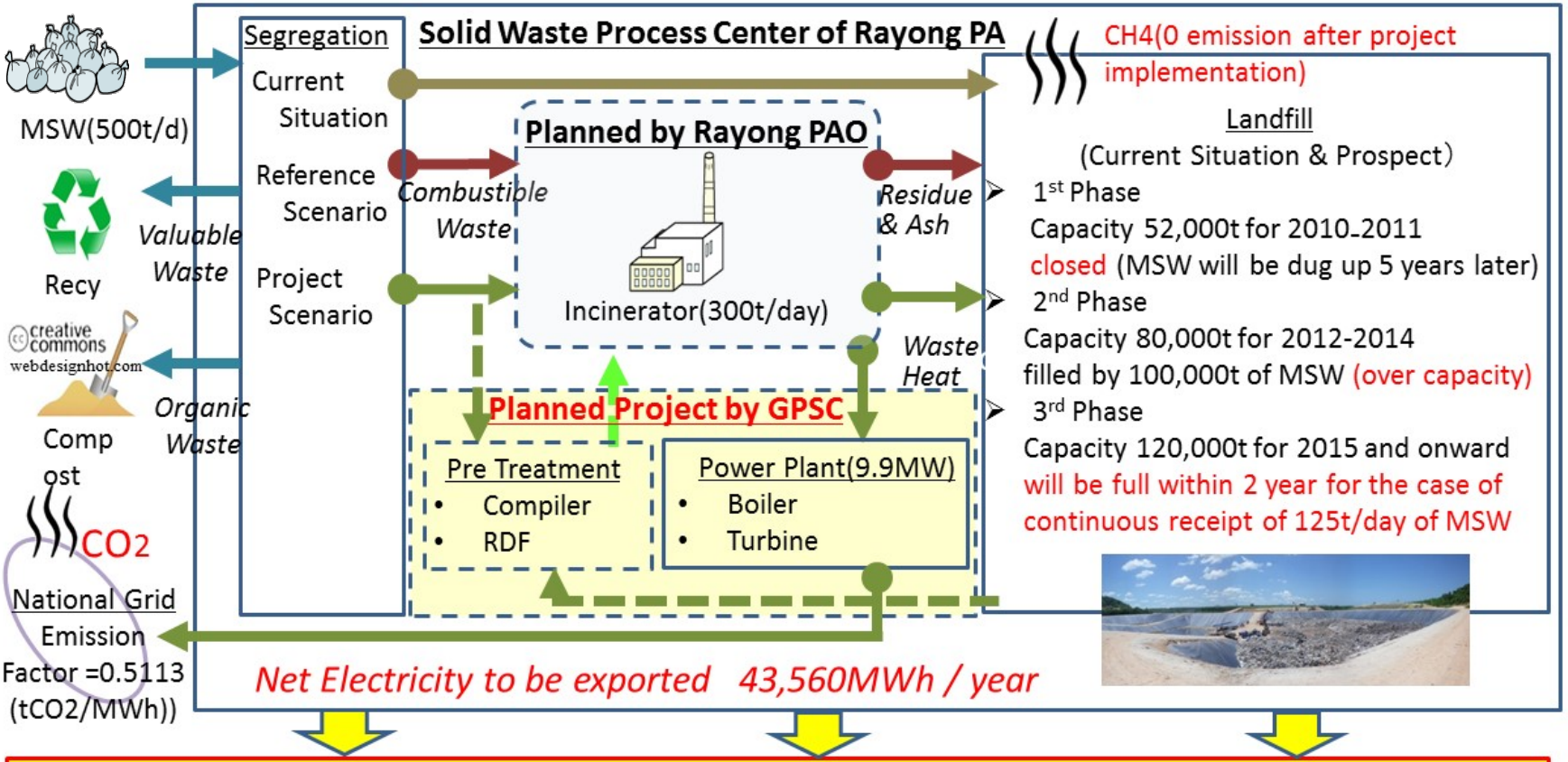
Eco Town of the industrial park

Expectd GHG emission reduction approximately 1,169t／year

date	partners	content
2015/5.19~22	・IEAT, DIW, IRPC	・Explanation and Discussion for JCM ・Researching for waste management and recycle system
2015/6/29	・IEAT	・Workshop「Industrial waste recycling technology」
2015/7/13~17	・Japanese Companies in Thailand	・Explanation and discussion for JCM ・Researching for waste management and recycle system
2015/9/4	・IRPC Industrial Park	・Workshop「Zero Emission in IRPC Industrial Park 」
2015/10/21~29	・Companies in IRPC Industrial Park	・Researching for manifest system and waste sampling

Source: Kitakyushu City

Waste to Energy from Solid Municipal Waste



To achieve 22,272CO2/year of GHG emission reduction through employment of Japanese high efficient facility

Progress

- ✓ Contract with Rayong PAO (for project implementation)
- ✓ Establishment of Special Purpose Companies
- ✓ Land Preparation & Approval on Land Utilization
- ✓ Power Purchase Agreement with Electricity Authority
- ☐ Energy Permit (in process)
- ✓ Selection of Procurement Management Company
- ☐ Pre-Qualification for Interesting Parties as EPC (in process)
- ✓ Stakeholders Meetings
- ☐ Negotiation for JCM Registration (on going)

Source: Kitakyushu City

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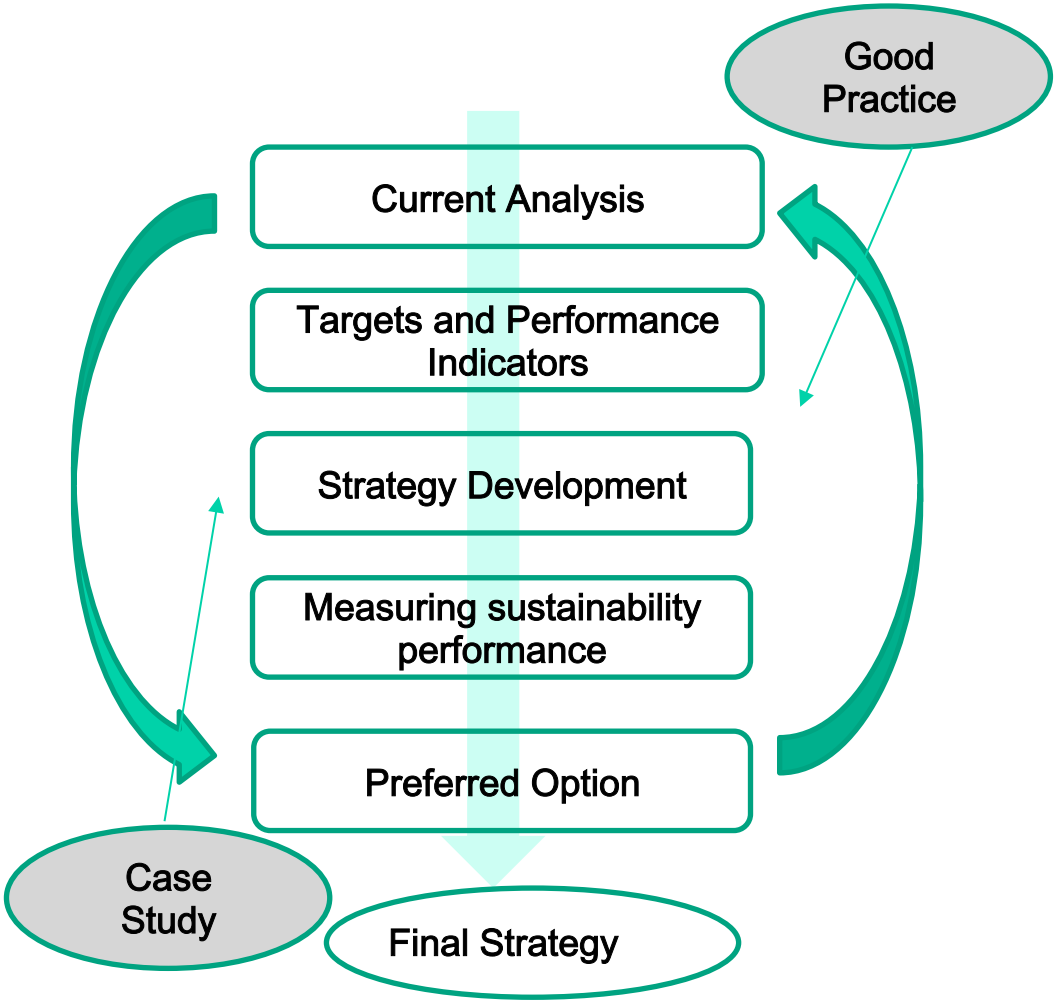
Capacity Development Through The Workshop in Rayong

＜Workshop implementation based on the Kitakyushu Model＞
The Kitakyushu Model should provide the guidance for cities to build local capacity in pursuing and maintaining their sustainability effort. The workshops have been implemented based on stainable framework, which is a basis of the Kitakyushu Model.



The Kitakyushu Model is designed to be used in an interactive way, leading to implementation of the most relevant strategies that will make a significant positive impact on the urban environment and communities of the subject town or city

Trough three workshops, we analyzed current situation and problems. Target and performance indicator were also set. Based on those steps, strategies were developed. In addition, process of prioritization was introduced to the workshop to consider which items should be prioritized

Good Practice and Case Study shared by Kitakyushu city and feedback from participants were important components to refine strategy over and over again and to make final strategy development in the end .

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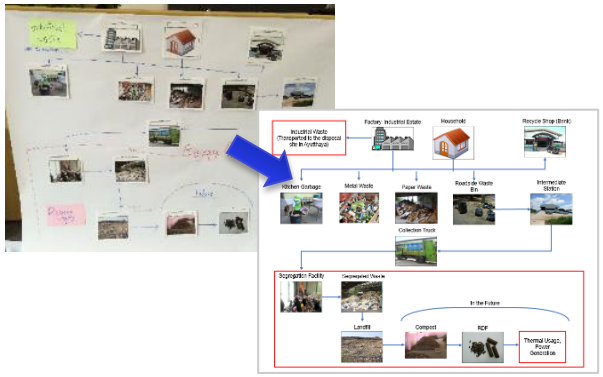
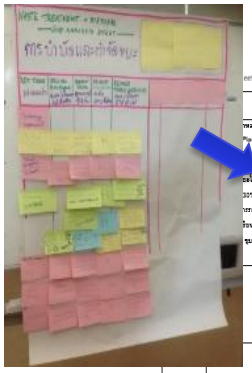
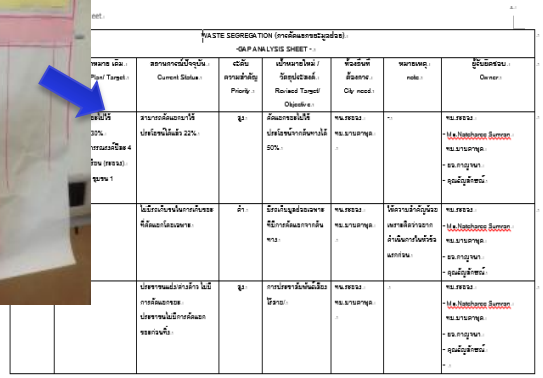
Capacity Development Through The Workshop in Rayong

<Visualization of Waste flow >



<Cap Analysis>



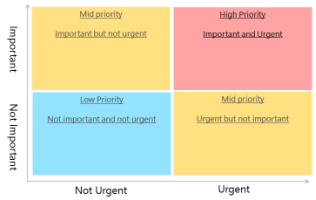


<Strategy Development>

<Presentation Strategy Development>

<Priority Review>

How to set up Priority



To set up priority, we have to consider urgency and importance

For mid priorities, for example, operability (e.g. low barrier to implement) could be one aspect to evaluate higher priority.

<Introduction of Good Practice from Kitakyushu>

Visiting lesson for grade 4 elementary school students (example for Kitakyushu City)

Staff members that conduct actual collection work visited elementary schools in Kitakyushu City and conducted an environmental lesson on topics such as how to sort garbage, how to put out your garbage, and the structure of garbage collection vehicles

Schools lessons conducted at: 120 schools (results for 2014)
(Number of elementary schools in Kitakyushu City: 135 schools)

(1-4) Environmental activities with citizens (example for Kitakyushu City)

- ✓ Citizen urban beautification activities sponsored by the Environmental Bureau held two times per year (May, October)
  Number of participants in 2014: approximately 100,000
  Volume of garbage collected: approximately 300 tons
- ✓ Urban beautification activities conduct by civic groups supported by the Environmental Bureau
  Free provision of garbage bags and free collection of garbage gathered by the Environmental Bureau
  Number of times conducted in 2014: approximately 400 times
  Volume of garbage collected: approximately 90 tons
- ✓ Etiquette awareness parade
  Urban beautification activities conducted through the cooperation of the Environmental Bureau, schools, and the police
- ✓ Lessons on how to put out your garbage for international students
  Visits to schools attended by international students to provide guidance on how to put out your garbage and waste processing

Advantages of Intercity Cooperation

<Japanese businesses>

- ✓ Barriers to entry into overseas markets can be lowered because there is a relationship of mutual trust between municipalities.
- ✓ Technical proposals can be developed in line with master plans and other programs, as a result of involvement from the earliest stages of planning.
- ✓ Experiences and know-how of local governments in Japan, such as in waste, water, and sewage, can be used.

< Japanese local governments >

- ✓ The successful business activities of Japanese companies overseas can lead to the stimulation of the local/regional economy.
- ✓ Quality solutions from Japanese companies can be provided for issues in partner cities.
- ✓ Comprehensive projects can be developed as a result of involvement from the earliest stages of planning.

Advantages of Intercity Cooperation

<Businesses in Asian Countries>

- ✓ Japan's low-carbon technologies can be introduced where there are reservations about costs through the application of the JCM.
- ✓ The introduction of Japanese technology can lead to a reduction in operating costs due to its durability and low failure rate.
- ✓ There is a sense of security when technology is introduced as a result of mutual support between cities.

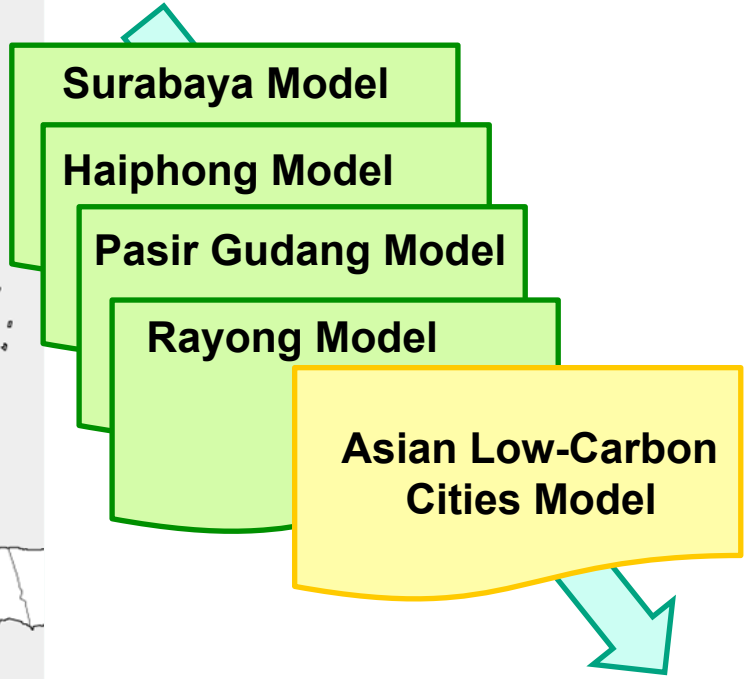
<Local governments in Asian Countries>

- ✓ Objectives can be achieved at lower administrative costs with initiatives of the private sector in public-private partnerships (PPP).
- ✓ Reduction of CO_2 emissions can lead to the simultaneous mitigation of pollution and improvement in lifestyle quality.
- ✓ Long-term follow-up can be received through intercity cooperation.

Future Prospect

- ✓ **Develop models for "Citywide Low-Carbon Development" based on achievements in the cities of Haiphong, etc., and expand models to other cities in Asia.**
- ✓ **Promote the creation of cross-field models and expand models to other cities in Asia (for example, recycling-type intermediate processing and waste-to-heat, waste heat recovery power generation and development of raw materials from industrial waste at cement factories, other).**
- ✓ **Through these activities, we will aim at making up an Asian Low-Carbon Cities Model.**

Source: Kitakyushu City



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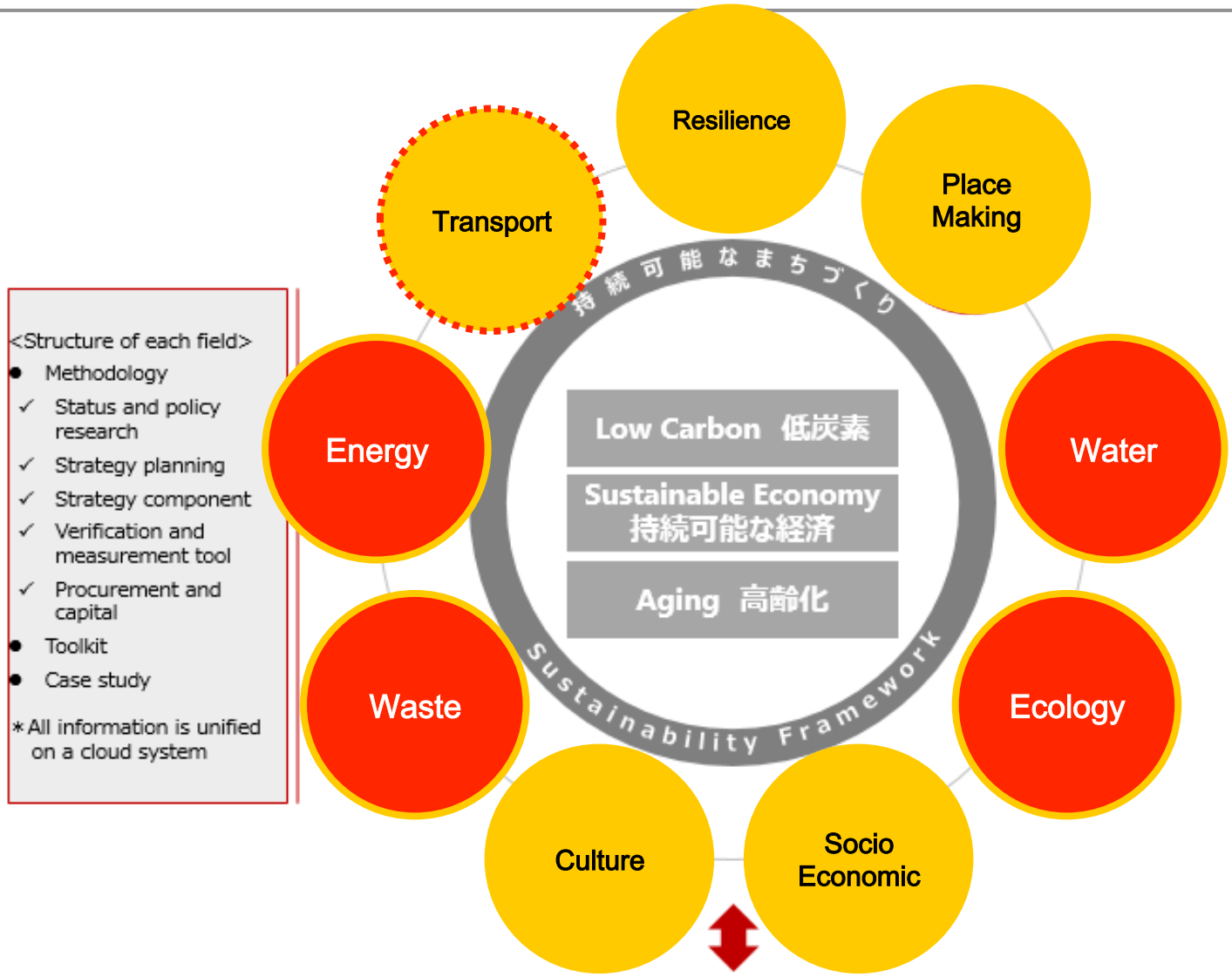
Future Expansion of Kitakyushu Model



<Structure of each field>

- Methodology
  - ✓ Status and policy research
  - ✓ Strategy planning
  - ✓ Strategy component
  - ✓ Verification and measurement tool
  - ✓ Procurement and capital
- Toolkit
- Case study

＊All information is unified on a cloud system

Example of Kitakyusyu

Thank you very much !!

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