

Kitakyushu City's Activities for Low Carbon Society in Asia

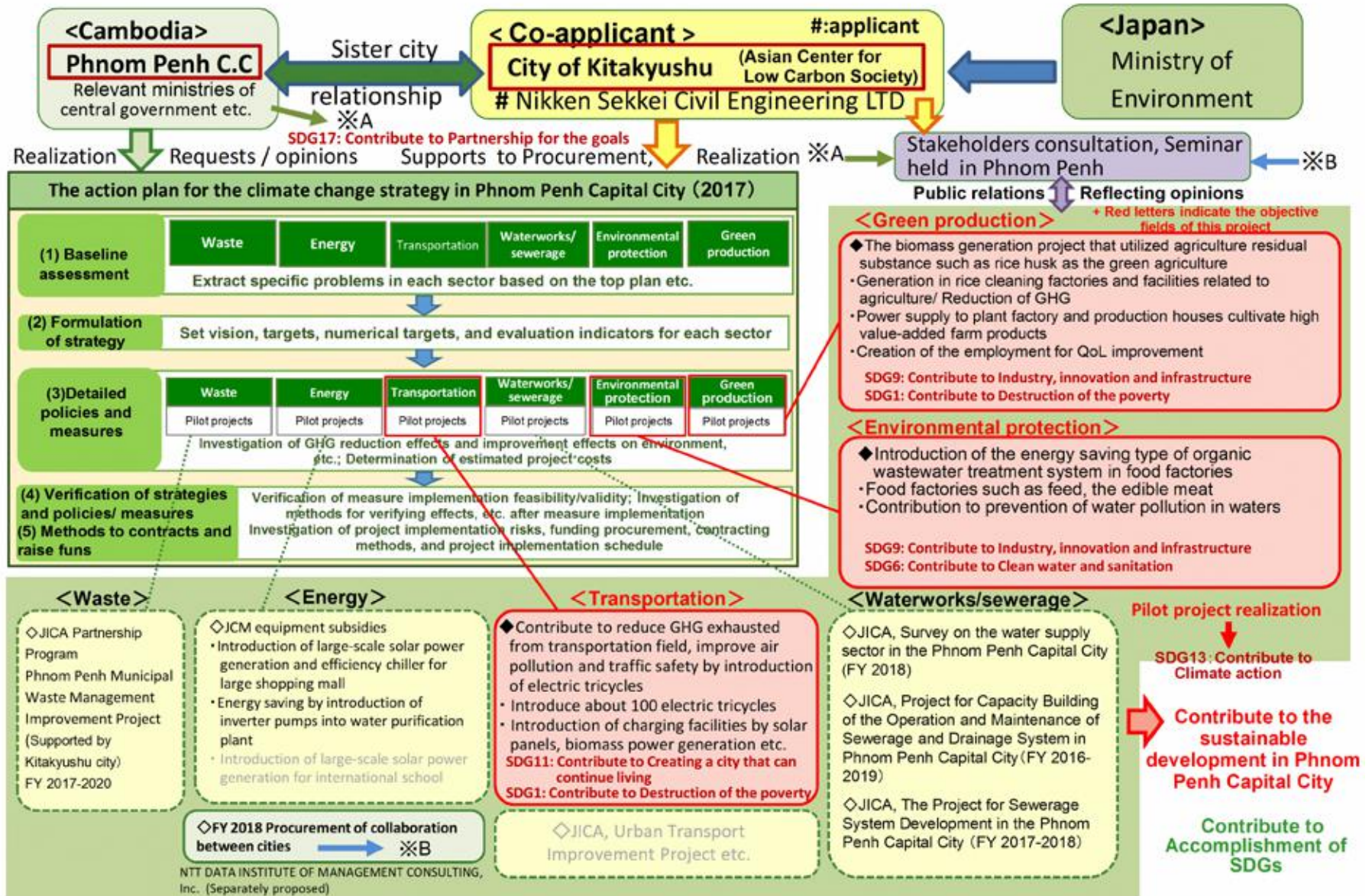
Oct 2018

Kitakyushu Asian Center for Low Carbon Society

1 Cambodia Phnom Penh

Outline of the project

In this project, feasibility study of JCM will be conducted with focus on <Transportation field>, <Green production field> and <Environmental protection field> to realize the projects set in the action plan.



Transportation Field : Taxi business by electric tricycles

- In this project, the gasoline-powered tricycles and LPG tricycles will be replaced with electric tricycles to suppress air pollution and reduce CO2 emissions.
- Consider using renewable energy such as photovoltaic power generation and biomass power generation as a power source for electric tricycles to reduce CO2 emissions to Zero .

Charging stand

Biomass Power Generation



Solar Power Generation



Battery Chargers

Electric Tricycles



Batteries become low



Replace the used battery with the charged battery.

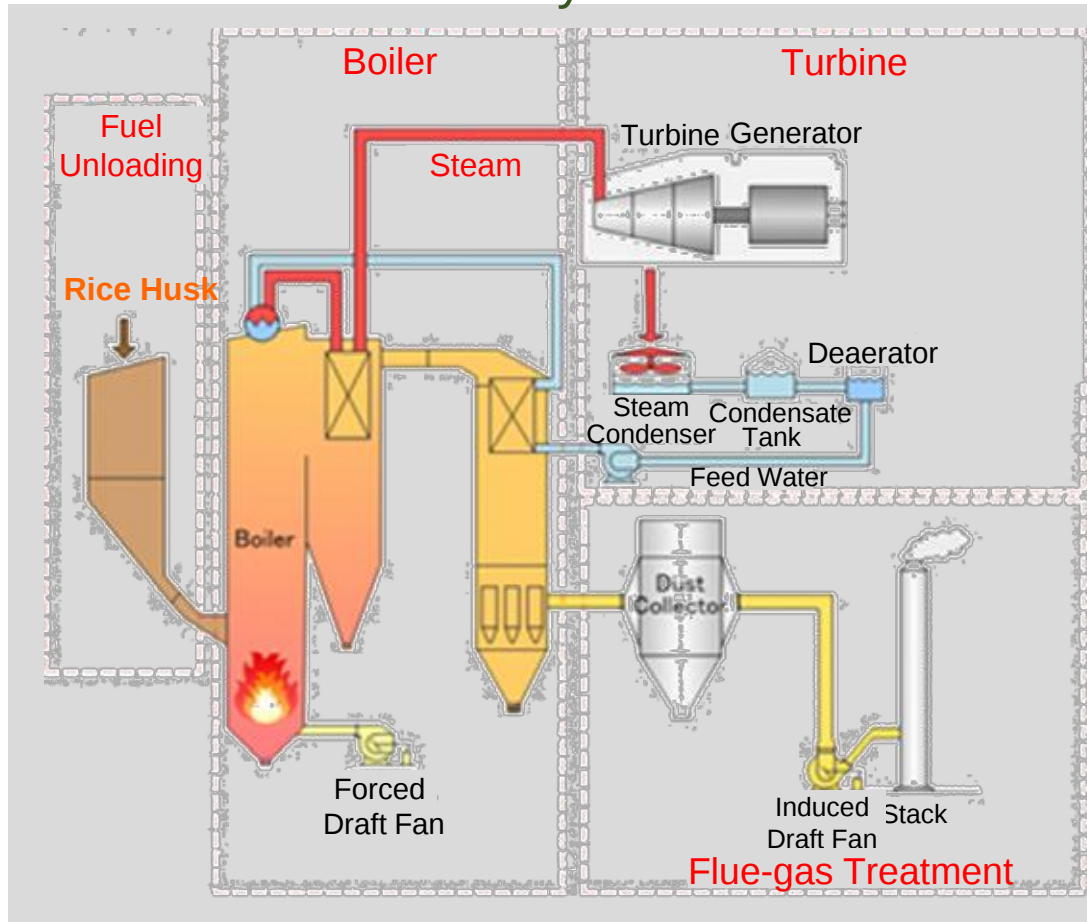


Electric Tricycle
(Terra Motors)

Green Production Field : Agricultural biomass power generation project

- Reduce CO2 emissions by doing the biomass power generation business using agricultural residues such as rice hulls as fuel and reducing the electricity and fossil fuels consumed in rice mills, farms, etc., in this project.
- Direct combustion - steam turbine is assumed. The biomass is combusted in a boiler to generate steam, and the steam generates electricity by a turbine generator.

■ Direct Combustion System

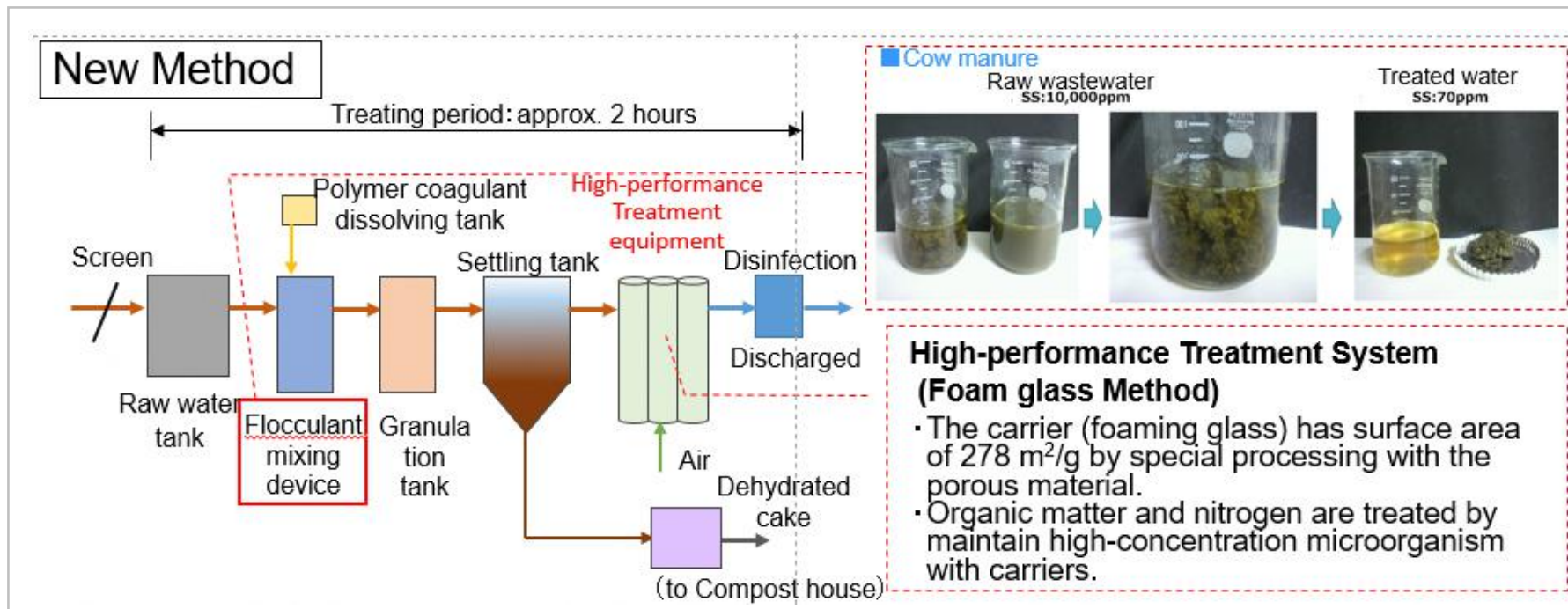


- Direct combustion is a system in which rice husks are burned directly to make the steam which will rotate the turbine to generate



Environmental Conservation Field : Organic wastewater treatment business

- Because the demand for pork is high in Cambodia, the foreign companies have expanded into Cambodia, and performed business development continuously and comprehensively from feed production business to the stock-raising industry and the meat processing business.
- Even though such these large scale companies have economic power, they may not treat industrial wastewater appropriately to give priorities to profit.
- Therefore in this survey, the stock raising and food processing makers which discharge industrial wastewater are targeted, wastewater treatment facilities (new method) which meets standard of effluent and is economical, energy saving type and easy to accept to installing them into these factories will be investigated.
- This project is intended to contribute to the improvement of water quality improvement and public health of local waters as well as the CO2 reduction.



Future developments

Transportation Field : Taxi business by electric tricycles

- Collaborate with the local Japanese company (operation of application arranging taxi, logistics, etc.) and the Japanese electric three-wheel manufacturer to examine feasibility of taxi business and transportation business by electric three-wheel.
- Consider combining with the biomass power generation project.

Green Production Field : Agricultural biomass power generation project

- We are consulting with some rice mills at the moment. We aim to introduce rice husk power generation facilities whose scale is from 500 KW to 2,000 KW .
- Establish a business structure that will minimize the initial cost burden of the local rice mills (The representative company will establish SPC and then SPC will become the partner participant and sell power to the rice mill).

Environmental Conservation Field : Organic wastewater treatment business

- We visited local livestock companies and confirmed that there was a problem with wastewater treatment (Wastewater is stored in some ponds and sludge is precipitated and then discharged to a river).
- Continue to discuss and consider feasibility of introducing energy-saving organic wastewater treatment facility.

2 Myanmar Mandalay

1. Back Ground of Mandalay – Kitakyushu inter-city collaboration projects

Mandalay City and Kitakyushu have built environmental cooperation relations since 2012.

Step1: Technical cooperation since 2012

- **Achievements of International cooperation projects**
(Environment and Water supply sector)
- **Collaboration with IGES-UNEP projects**
Participate strategy-planning as specialist



Step2: Top talks

Aug-2014, Mayor of Mandalay city visited Kitakyushu by JICA Partnership Program.
Jan-2017, Head of Cleansing Dep. of MCDC participated Workshop on Waste Management at Kitakyushu and discussed about '**Promote City-to-City Collaboration projects**'
Jan-2018, Committee Member of MCDC visit Kitakyushu for study Waste Management



Planning to promote City-to-City Collaboration on following 4 Sector.

**Waste
Management**

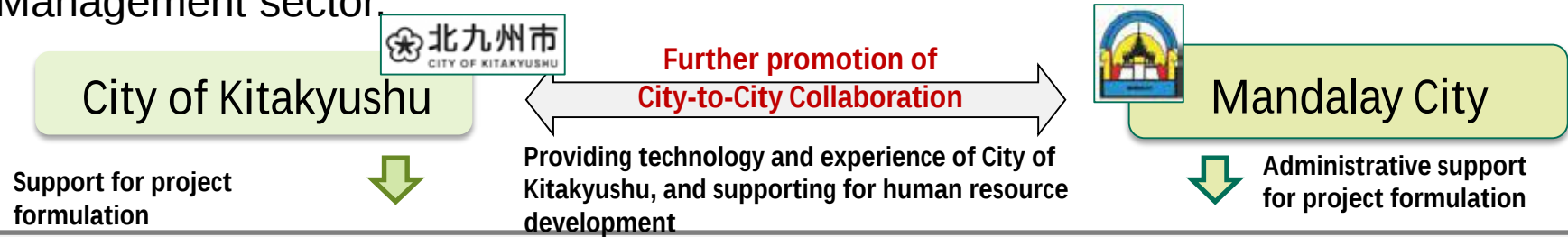
Energy

**Environmental
Protection**

**Water &
Sewerage**

2. Overview of Mandalay – Kitakyushu inter-city collaboration projects

This year, city to city collaboration project has focus on Energy sector & Waste Management sector.



< Energy Sector >

【 NTT Data Institute of Management Consulting 】

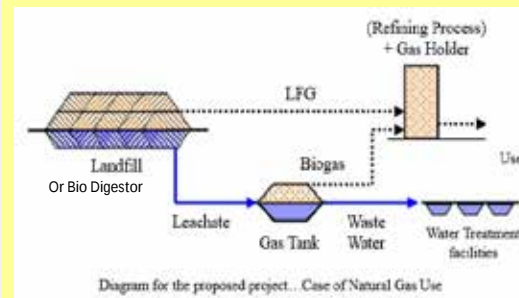
Realize project which reduce amounts of CO2 emission by introducing energy conservation equipment and renewable energy system into large facilities, and Primary industries.



< Waste Management >

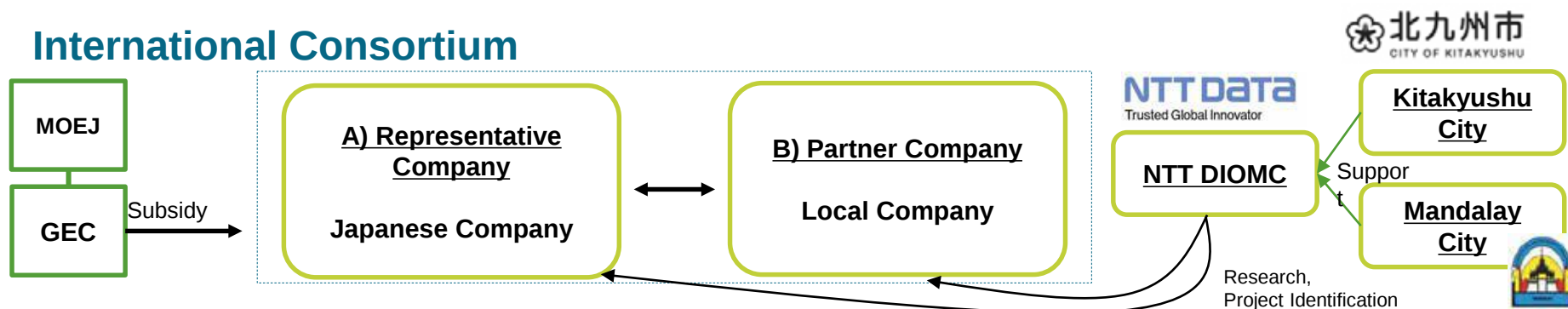
【 EX Research Institute 】

To realize GHG emission reduction through project implementation, in which collecting biogas by high efficient bio digester & utilizing as alternative fuel for NGV and etc. Moreover, this project support appropriate waste management in Mandalay.



3. Project Overview in Energy Sector

International Consortium



Installed Technology

1 Energy Saving Equipment.



Inverter Air conditioning System



High Efficiency Chiller System

2 Power Generation system



Solar Power Generation



Co-Generation System

Research Progress

【Activity - 1】
Low carbonization for relatively large facilities

Large Commercial facility Developer



Hotelier Association

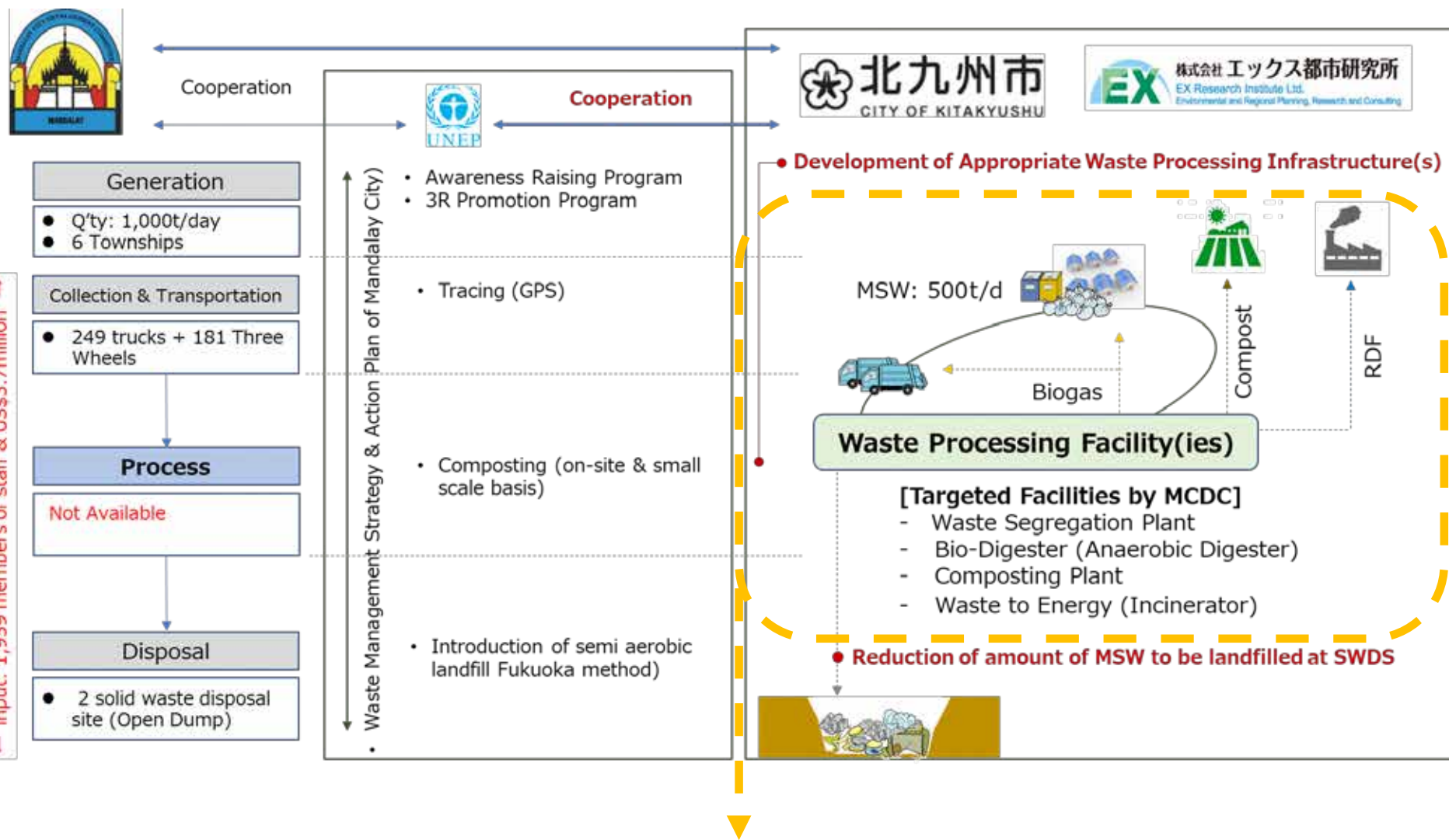
【Activity- 2】
Low Carbonization for Primary Industries

Fish-raising Industry



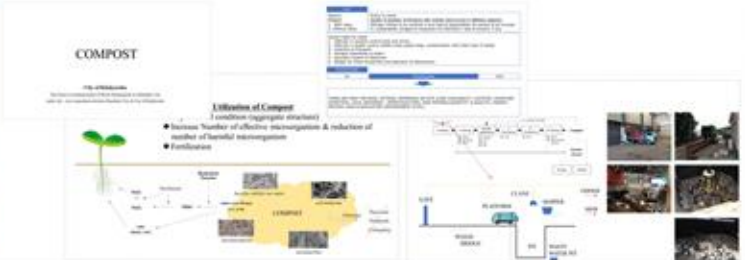
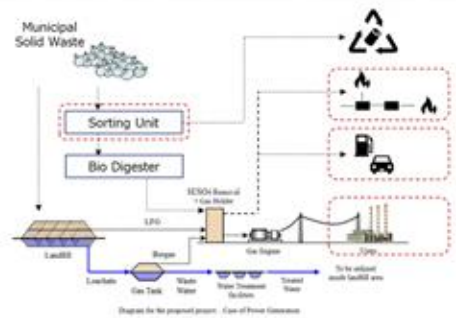
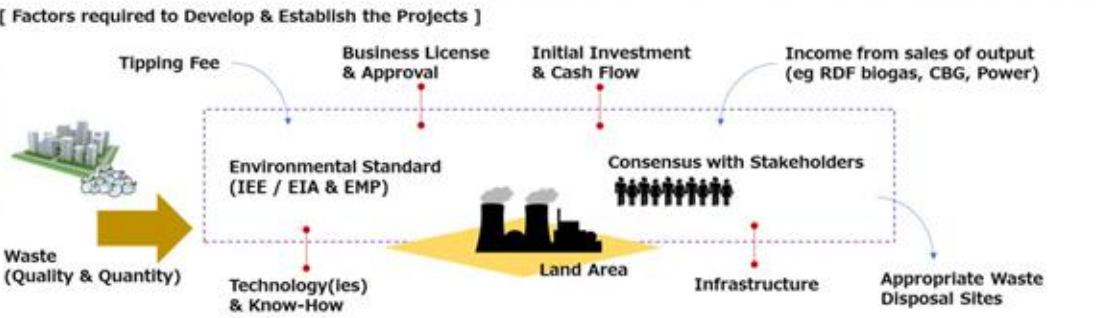
Fisheries processing

4. Project Overview in Waste Management Sector



City of Kitakyushu is in full support to develop project(s) with JCM subsidies

4. Project Overview in Waste Management Sector

	Subject	Actions taken as of October 25
1	To support integrated waste management of Mandalay City	Supported UNEP/CCET to organize workshop on waste management by associated and dispatchment of expert to the workshop (May 23 & 24, 2018)
		
2	To support development of waste management related infrastructure	1. Conducted literacy research to study laws & regulation, policies for the possible infrastructure development 2. Introduced technologies (waste segregation plant, biogas digester) for waste processing, including arrangement of site tour to Thailand 3. Co-working to realize any project under consideration
		[Factors required to Develop & Establish the Projects]  

Realization of Low Carbon Society, possibly with JCM subsidies

3 Philippines Davao

Green Sister City with Davao, the Philippines

MOU agreement on green sister city cooperation for low carbon society; Resource recycling; Capacity Building



Map of the Philippines



Left : SARA Z. DUTERTE, MAYOR of DAVAO
Right : KENJI KITAHASHI, MAYOR of KITAKYUSHU
In KITAKYUSHU November 2017

JCM City-to-city Cooperation Project between Kitakyushu and Davao

Support to develop a local climate action plan for low carbon society in Davao



Support for a development of Local Climate Change Action Plan of Davao City

- § A development of GHG inventory (supported by IGES)
- § A development of mitigation measures (supported by Kitakyushu City and IGES)
- § A development of adaptation measures (supported by Ateneo De Davao Uni.)

An implementation of concrete mitigation measures

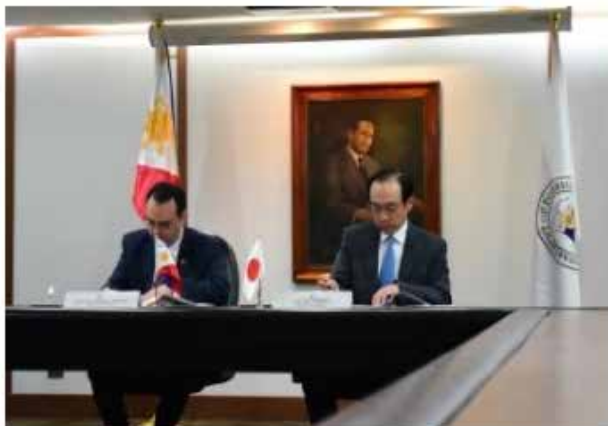
Study on a feasibility of renewable energy project (for the JCM Model Project)

- § Waste-to-Energy (WtE) project
- § Feasibility study on other low-carbon projects (renewable energy and energy saving projects)
- § Coordination with related-stakeholders for an implementation, technical study, evaluation of the amount of CO2 reduction, etc.
- § Supporting for a preparation of applying the JCM Model Project

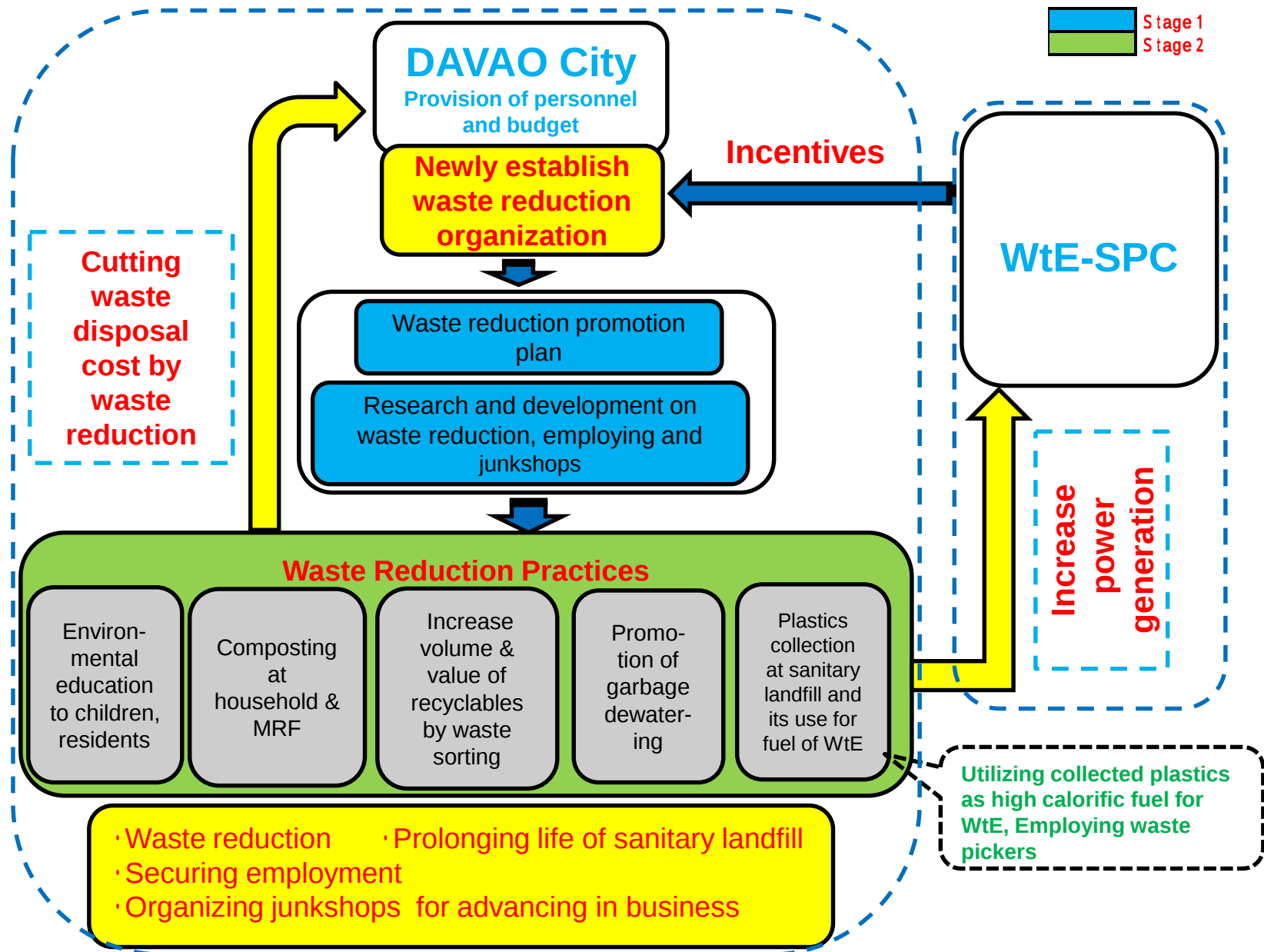
The Signing Ceremony of the Exchanges of Notes for the Waste-to-Energy Facilities in Davao City

On March 20th 2018, Ambassador Koji Haneda, with Department of Foreign Affairs Secretary Mr. Alan Peter Cayetano, attended the signing ceremony of two Exchanges of Notes.

The first Exchange of Notes signed will provide a JPY 5.013 billion (PHP 2.5 billion) grant for the development of waste-to-energy facilities in Davao City. Japan's grant will be used to construct and manage waste-to-energy facilities to significantly reduce solid wastes and convert it into usable energy. This project is expected to serve as an innovative example of sustainable waste management to other cities in the Philippines.



Solid Waste Reduction Mechanism in Davao

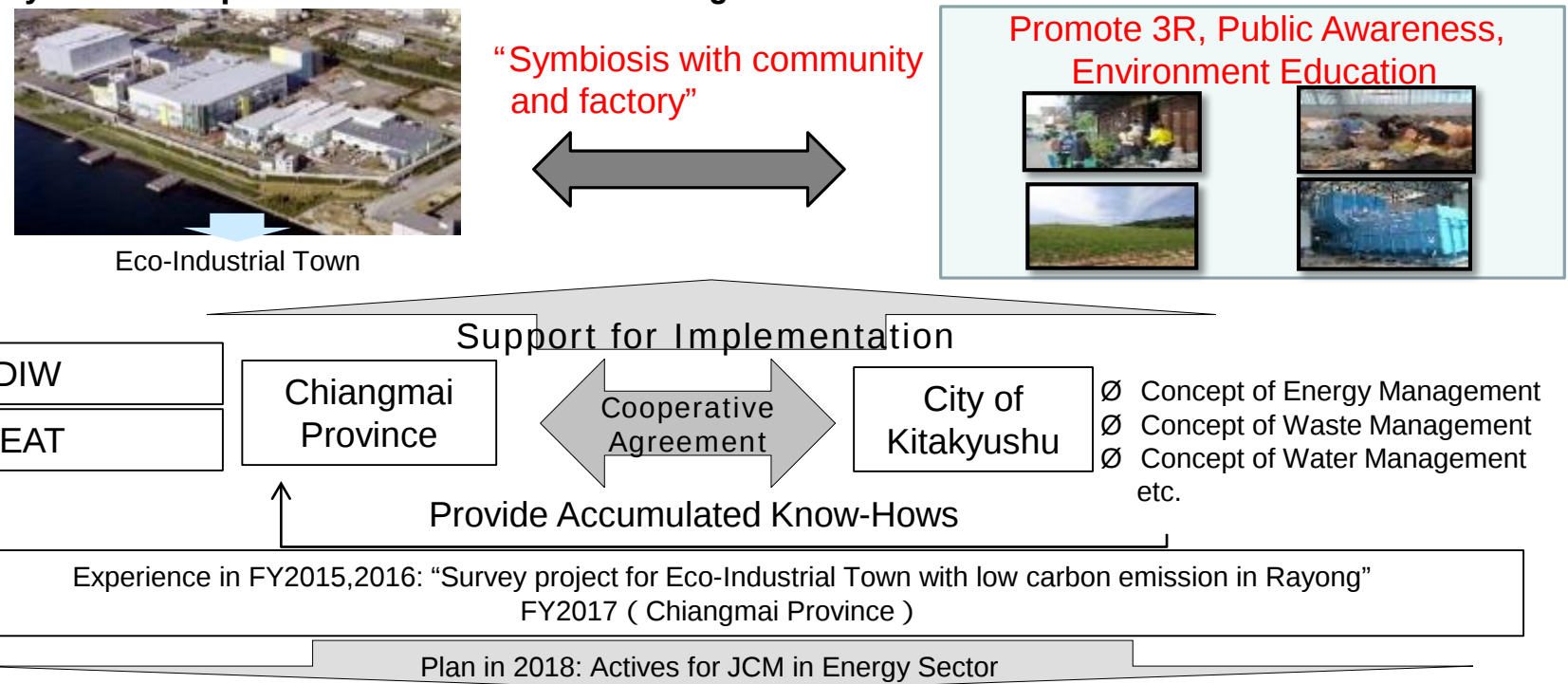


4 Thailand Chiangmai

Outline of “Kitakyushu – Chiangmai Province, IEAT and DIW Cooperation Project”

Vision: Implementation of Eco-Industrial Town

Optimization of energy use, waste management, water management, etc. Symbiosis with local community
Eco-friendly industrial park and surround area through realization of safe and secure environment



Activity 1: Creation of Eco-friendly Transportation System and Central Purchasing of Energy Saving Devices & Sharing of High-efficiency Equipment Project

- Eco friendly transportation system for newly developed industrial estate
- integrated procurement of saving energy equip. and sharing use of efficient equipments.



Integrated Procurement of saving energy equip.

Activity 2: Creation of Replacement Project from fossil fuels to Biomass emitted from facilities

Replacement Project from fossil fuels to Biomass emitted from facilities

u Bio-gasification and power generation in paper manufacturing factory in place of heavy oil

u Usage of biomass in place of coal at the cement factory

u Biomass usage generated from large hotel, large industrial estate

Progress of Discussion with Sa Kaeo Industrial Estate (1/2)

- Ø In the first field survey, we held a meeting at IEAT office on 19th - June. This year's activities plans are discussed and we reconfirmed the collaboration between IEAT and Kitakyushu.
- Ø For Sa Kaeo industrial estate, possibility of cycle share as environmentally friendly transportation system and possibility of bulk purchasing of high efficient equipment and joint use of cogeneration will be studied.

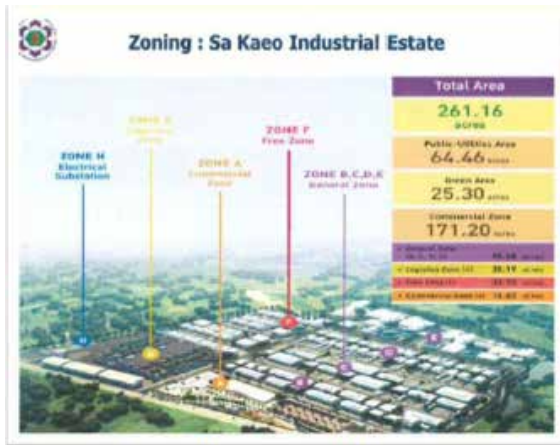
19th Jun 2018: Meeting₂ with IEAT in Bangkok



Progress of Discussion with Sa Kaeo Industrial Estate (2/2)

- Ø In the second field survey, on 23th – August, we visited Sa Kaeo industrial estate, which takes 3.5~ 4 hours from Bangkok by car, and site tour was conducted.
- Ø We discussed the possibility of cycle share and the possibility of bulk purchasing of high efficient equipment, etc. We also discussed the schedule and recent status of the Sa Kaeo industrial estate.

Concept of Eco Industrial Town Project in Sa Kaeo Industrial Estate



Eco friendly industrial estate



Water-saving toilet



Solar power exterior lighting system



Introduction of Co2 zero emission transportation with EV bus and solar power system



Electric bike sharing system

Progress of Discussion with Private Company EA

- Ø Thailand private company: EA (Energy Absolute) visited City of Kitakyusu on 4-5th June and site tours are conducted.
- Ø In the first field survey, we visited EA's office on 21st June and explained outline of JCM financing programme.
- Ø In the second field survey, 20th August, we visit EA's office and deeply discussed JCM financing programme such as schedule, applicable technology, CO2 emission reduction etc.

23th Aug 2018: Site Visit
in City of Kitakyushu



21st Jun 2018: Meeting with EA at Bangkok



5 Vietnam Haiphong

Sister City with Haiphong City in Vietnam

Sister City Agreement (April in 2014)



“Green Growth Promotion Plan” of the City of Hai Phong



The Chairman of Hai Phong City received this plan from the Mayor of Kitakyushu in May 2015

15 Pilot Projects in Green Growth Promotion Plan

Waste	(1) Separation and composting of household waste
	(2) Waste heat recovery power generation system in cement factory and production of raw materials for cement from waste
	(3) E-Waste recycling
Energy	(4) Promotion of energy savings for factories and buildings etc.
Transportation	(5) Introduction of low-emission buses
	(6) Promote use of public transportation
Cat Ba island	(7) Development of comprehensive resource recycling system
	(8) Energy savings, introduction of renewable energy and introduction of EV buses in remote island
	(9) U-BCF expansion
Water, sewage, and storm water drainage	(10) Handicraft village wastewater measures
	(11) Introduction of sewerage registry system
	(12) Restoration of Tay Nam canal
Environmental conservation	(13) Development of air and noise monitoring systems
	(14) Installation of high-efficiency electric furnaces in foundries
Green Production	(15) Promotion of green agriculture



Waste separation work



Solar power generation system



EV bus

New Movement in Viet Nam, The Eco Industrial Park

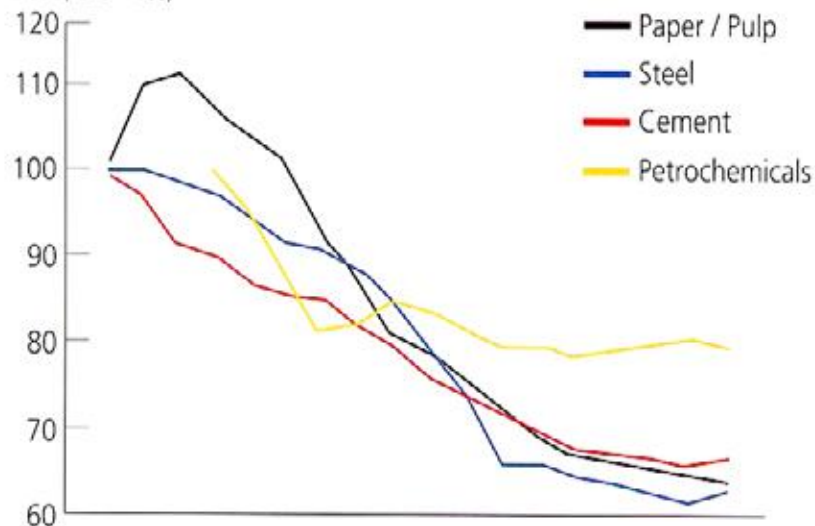
The Eco Industrial Park has tenants that join Cleaner Production, effectively utilizes resources, improves economic and environmental social effects, and collaborate with production for the realization of industrial symbiosis approach.

Companies in the Eco Industrial Park will realize

Cleaner Production

Energy Consumption per Unit of Production (by Weight)

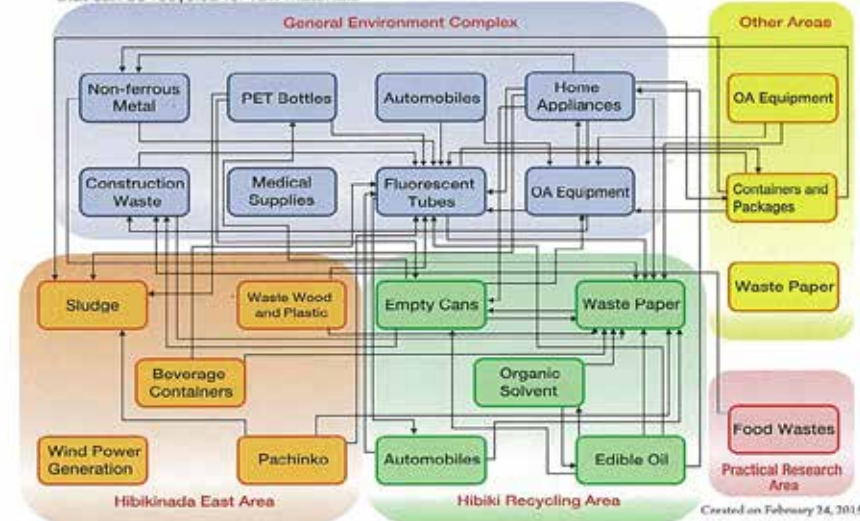
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Utilizing resources effectively

Collaboration at Kitakyushu Eco Town

Aiming for near-zero greenhouse gas emission, we collaborate with our suppliers to trade waste that can be recycled for raw materials



industrial symbiosis approach

Goals of The Eco Industrial Park

1. Improve the economic effect of tenants in industrial zones through activities that join **Cleaner Production methods**, efficiently use resources, and establish efforts for industrial symbiosis.
2. **Improve the environmental conservation** around industrial zones **through minimizing the sources of pollution and waste**, promoting the use of **clean technology** and encouraging the introduction of **environmentally friendly Cleaner Production methods**.
3. Establish a competitive business community of industrial zones in the market, protect the environment in the neighboring residential areas of the industrial zone, aim for **sustainable development goals**.

The Eco Industrial Park Development Goals

- Cleaner Production methods
- use resources efficiently



Goals

Improve the economic effect of tenants

- clean technology
- minimizing the sources of pollution and waste
- encouraging Cleaner Production methods



Goals

Improve the environmental conservation

- competitive business community of industrial zones in the market
- protect the environment in the neighboring residential areas

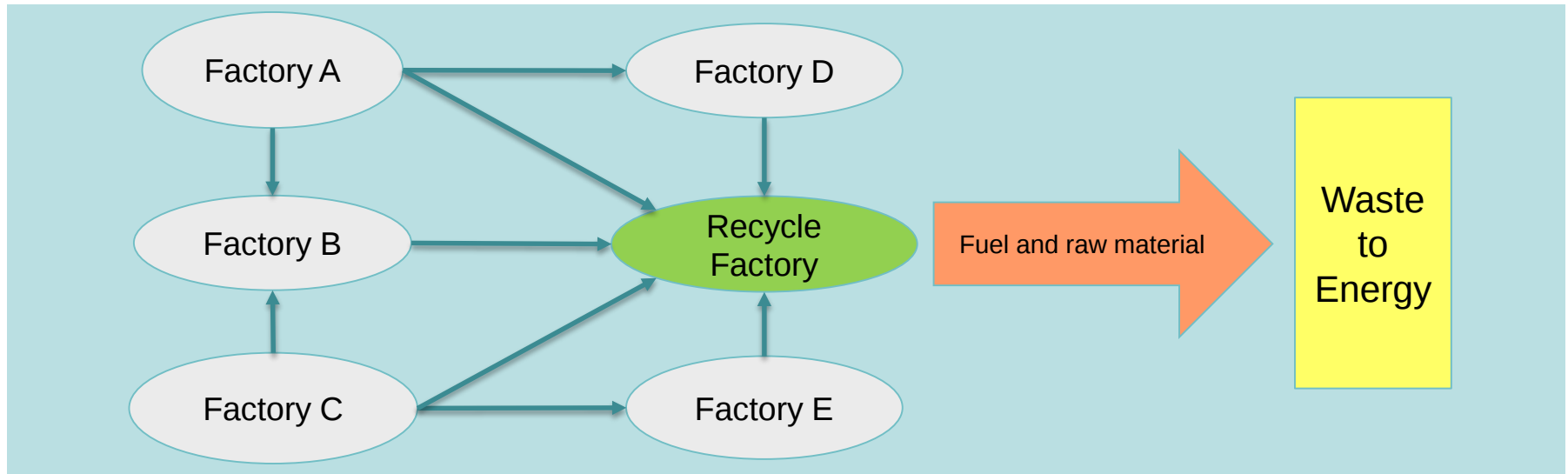


Goals

sustainable development goals

The Eco Industrial Park Plan in Vietnam by Kitakyushu

- u Ministry of Planning and Investment in Vietnam (MPI) started model projects to realize Eco-town in Vietnam and selected several areas (Support by UNIDO)
- u Inventory of industrial wastes are prepared, waste re-utilization and circular utilization will be tried in the above model projects.
- u There is a possibility that an industrial estate in Hai Phong will be selected as one of the field.
- u In eco-town in Vietnam, generated industrial wastes will be re-used or recycled as much as possible and wasted material will be reduced.
- u City of Kitakyushu which has enough experience to realize Eco-town is requested to support MPI and model project. In the model project, various wastes from an industrial estate will be used as fuel or raw material for other factory.
- u Waste to energy project will be considered as one of the element of Eco-town.



Holding a Seminar in Hai Phong

Hosted by Hai Phong city (HEZA)
Co-sponsored by City of Kitakyushu
Supported by MPI

<Date>

u November 6th, 2018

<Location>

Place organized by HEZA

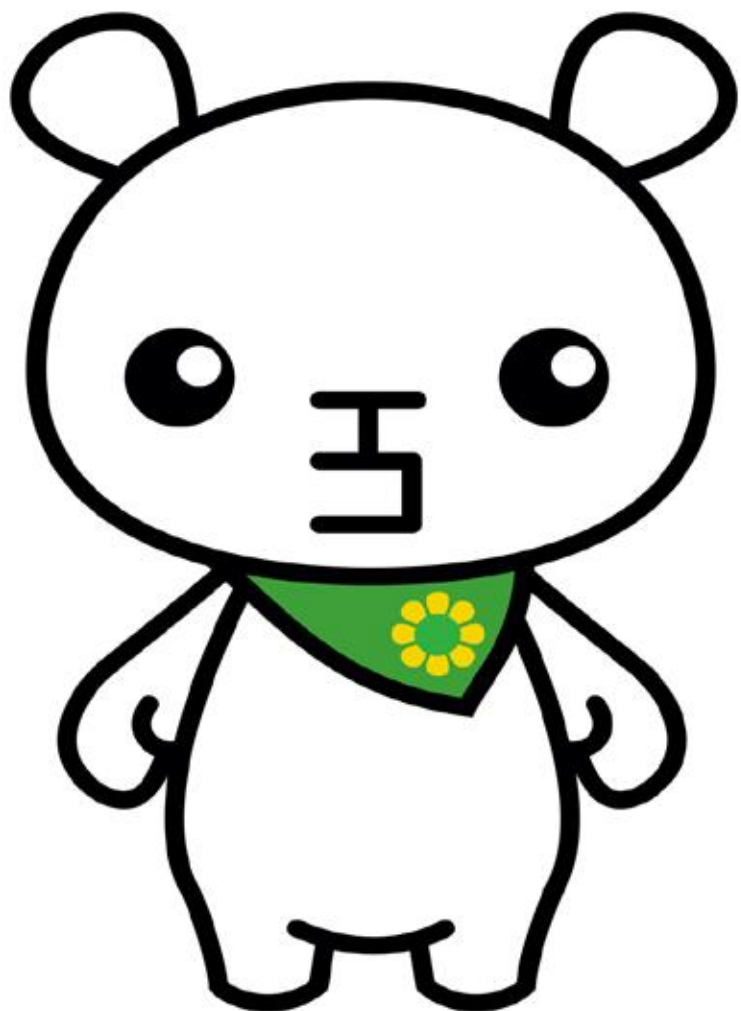
<Purpose>

- u Spreading the concept of The Eco Industrial Park to the companies in Hai Phong
- u Developing projects utilizing low-carbon technologies and contributing prevention of global warming problem, considering the use of JCM

<Participants>

- HPPC's leaders
- Leaders and staff of MPI, HEZA, DOFA, DEEP C
- Companies in Hai Phong
- Representatives of Industrial Zones Authorities, Enterprises of Industrial Zones,
- Journalist of television and communication agencies.





Thank You
Hiroshi YASUTAKE, Deputy Director
City of Kitakyushu