



# Global Expansion of Decarbonization by Kitakyushu through Intercity Collaboration



January 19, 2022  
City of Kitakyushu, JAPAN



# Profile of the City of Kitakyushu



## Kitakyushu, gateway to Asia



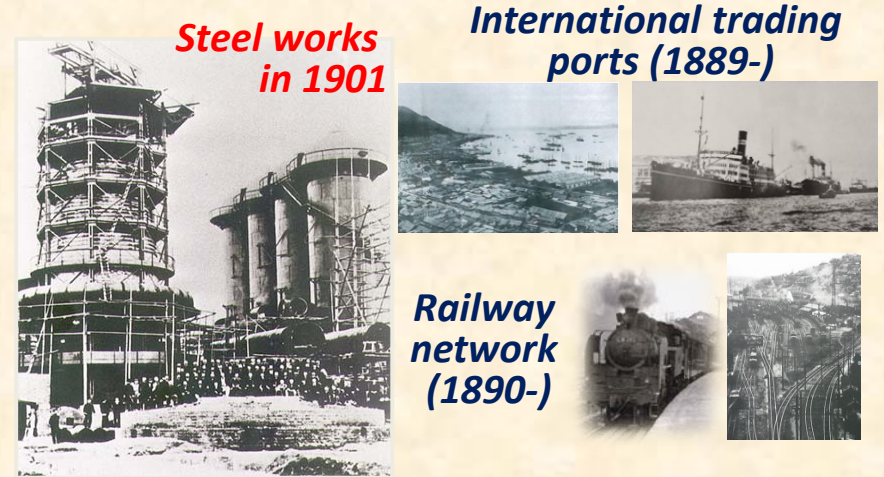
**Population: 956,000 (2016)**

**Area: 487.88 km<sup>2</sup>**

**GDP: Approx. USD 32.4 billion (2016)**

**Average age: 46 (2016)**

## Development as an industrial city



## Leading companies in Kitakyushu



Yaskawa Electric



TOTO



Toyota Motor  
Nissan Motor



Nippon Steel



Mitsubishi Materials



Mitsubishi Chemical



# Development Featuring a Balance Between the Environment & Economy Via the Power of the Local Community



☆The "local community" includes organizations (NPOs, residents' associations), companies, universities, etc.

<1950s to present> Kitakyushu overcame pollution through the power of its local community and now contributes globally through its experience (know-how)

"We Want Our Blue Skies Back" movement by residents (women's groups)

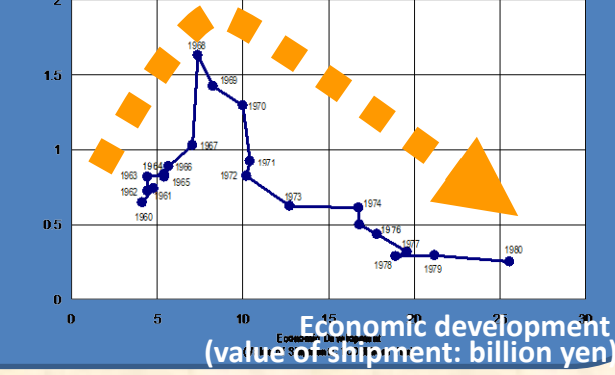
Overcoming pollution through collaboration among industry, government, academia and the public

International cooperation with cities overseas using Kitakyushu's experience in overcoming pollution

International recognition  
○ UNEP's Global 500 award  
○ UN Local Government Honours

✂ World Bank report

Air Pollution (mg-SO<sub>3</sub>/100 c m<sup>2</sup>/day) ✂



1960s



Today

<Late 1990s to present> Development as a city aiming to become a recycling-oriented and low-carbon society together with its residents

Kitakyushu Eco-Town [1997]

Eco-Model City [2008]

Environmental FutureCity [2011]

○ Selected as a Green City by OECD (Paris, Chicago, Stockholm, Kitakyushu)

<Today> Creation of an Advanced SDGs City: Connect past initiatives to SDGs action with residents playing a leading role



Help solve global challenges



# Environmental Technologies



## Cleaner Production (CP), Pollution Management (End of Pipe)

CP

- \* Change product design
- \* Modify production processes
- \* Utilize by-products and unused energy

Reduce pollutants  
Save energy  
Recover resources

End of Pipe

Electric precipitator    Flue gas desulfurization system    Wastewater treatment

## Recycling, Waste Treatment

### Kitakyushu Eco-Town Project

Home appliances    Plastic PET bottles

Automobiles    Office equipment

Japan's first and largest Eco-Town to integrate resource circulation and eco-industries

Public-private partnerships

## Energy Management Local energy managed through a regional energy-saving station

Environmentally-friendly urban development in the Higashida District    Kitakyushu Smart Community Creation Project

## Water Business

### Water Plaza: Demonstration research facility

- \* Advanced desalination system
- \* Integrates membrane treatment of sewage and seawater desalination

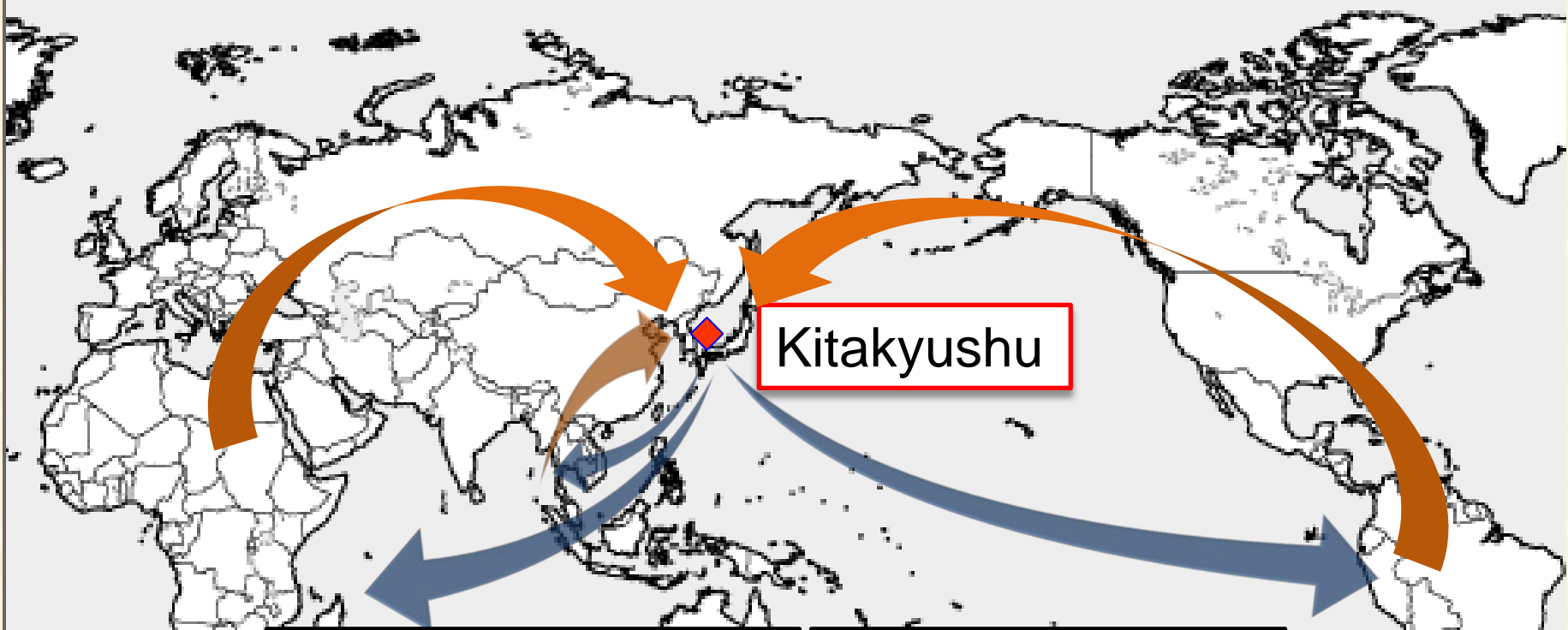
Hiagari Sewage Treatment Plant



# Providing Technology to Overcome Pollution to the World



Promoting "international environmental cooperation and business" with companies, in order to use the environmental technologies and know-how developed over the years through Kitakyushu's experience in overcoming pollution, to improve the environment in developing countries.



## Water supply & sewage

Trainees in Kitakyushu  
About 6,500 from 156 countries

Experts from Kitakyushu  
About 200 to 13 countries

## Environment

Trainees in Kitakyushu  
About 10,000 from 166 countries

Experts from Kitakyushu  
About 210 to 25 countries

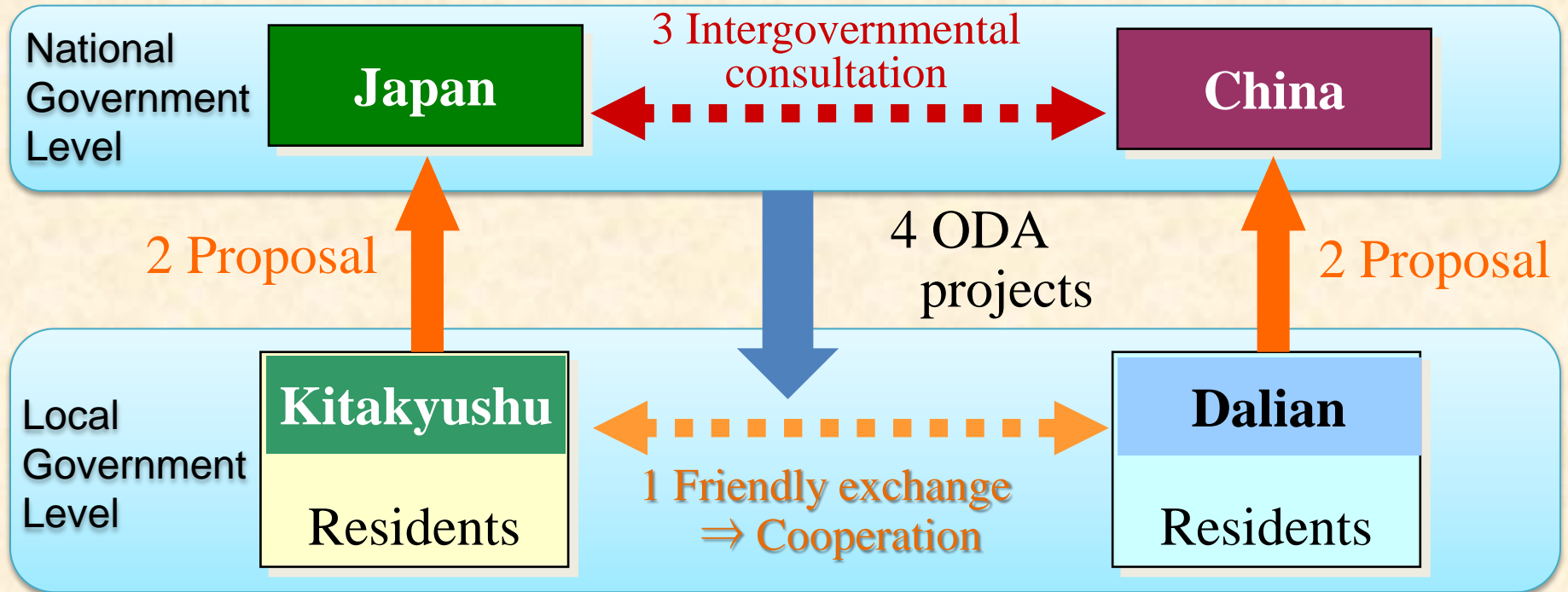




# Dalian Environmental Demonstration Zone Project (China)



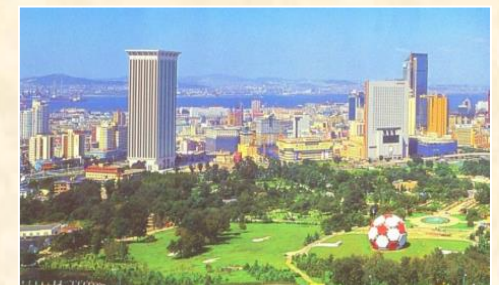
〈First local project in Japan's ODA history〉



Year	Process
1979	Friendship City agreement concluded
1981	Environmental cooperation launched
1996 2000	<b>Dalian Environmental Demonstration Zone Project</b> implementated
2001	UNEP Global 500 Award awarded to Dalian



1994



2000



# Kitakyushu Asian Center for Low Carbon Society

(Est. June 2010)



- Leverages environmental technologies developed in the process of reducing pollution and manufacturing
- Utilizes inter-city networks built through 40 years of **international cooperation**
- Consolidates the environmental technologies of Kitakyushu and Japan
- Helps local companies in Kitakyushu expand operations overseas and cities throughout Asia to become low-carbon societies by engaging **environmental businesses**

- ◆ Trainees: 9,956 from 166 countries
- ◆ Experts: 215 to 25 countries

- ◆ 84 cities in 16 countries
- ◆ 238 projects
- ◆ Procured over 25 billion yen since 2010

## ~Three organizations collaborating to help environmental businesses expand worldwide~



### City of Kitakyushu

Comprehensive, one-stop support for companies exporting environmental technology

“Promoting a low carbon society throughout Asia”

### President

Hiroshi Komiyama  
(former president of Tokyo Univ.)



International training and dispatch of experts to support the transfer of technology overseas

Research on urban environmental issues and development of intercity networks



**Kitakyushu International Techno-cooperative Association**  
【KITA】

**Kitakyushu Urban Centre, Institute for Global Environmental Strategies**

【IGES】





# Waste Treatment



## Waste separation and composting / Surabaya, Indonesia



Pollution at landfill site  
(Before project implementation)

Improve  
ment



Expert from Kitakyushu provides guidance on how to compost food waste



Compost used for greening communities



Green Sister City since 2017  
✳ Dr. (H.C.) Ir. TRI RISMAHARINI, Minister of Social Affairs (left)

## Introduction of waste-to-energy facilities (2015-) / Davao, Philippines



Decision on Grant Aid by the Japanese Government in 2018



Pollution at landfill site

Ongoing



Trash scattered around the city



Artist's rendition of waste power generation facility



Green Sister City since 2017  
✳ Mayor Sara Duterte (Eldest daughter of Philippine President Rodrigo Duterte)





# Improved Water Services



Cooperation in the water services sector since 1999

⇒ Transfer of water distribution block technology



**2005: Water declared potable  
“The Phnom Penh Miracle”**

**(1996⇒2006)**

Water supply diffusion rate:

**25%⇒90%**

Water supply time:

**10h⇒24h**

Non-revenue water:

**72%⇒8%**



Kitakyushu staff provides on-site technical guidance



“The Phnom Penh Miracle” published in 2015

**U-BCF (Biocatalytic Filtration): Advanced technology patented by the City of Kitakyushu in Japan**

Effective as a measure to treat organic substances in tap water sources using the purification effect of microorganisms



Comparison with conventional advanced treatment (Ozone treatment)

**Construction costs: 1/2**

**Running costs: 1/20**



U-BCF installed in Hai Phong, Vietnam

**Phnom Penh Artist's rendition of completed sewage treatment plant**



Construction started in April 2021



# Reduction of Greenhouse Gases in Iskandar



2013 **Creating a scenario to realize a low-carbon society**

## Blueprint for Iskandar Malaysia 2025 (by JICA)

Univ. of Technology, Malaysia; Kyoto Univ., Okayama Univ., NIES, Japan

2014 Start of F/S for low-carbon development of industrial areas in the city of Pasir Gudang, IRDA

2015 F/S on formation of JCM projects to create a low-carbon society and support for the design of a system to expand projects

## 2016 LOU between IRDA and Kitakyushu

**Forming a strong partnership !!**



Kitakyushu



Iskandar



2019-2021

Conduct F/S and offer recommendations on the development of an industry-oriented eco-town, introduction of waste-to-energy, and exploration of potential JCM projects.





# Initiatives and Achievements in Iskandar



## Planning



Compiling the achievements from eco-town and waste-to-energy projects and proposing an action plan for decarbonization of the entire Iskandar region



## Waste Recycling

(AMITA Corporation)



AMITA-BERJAYA KITAR  
Resource Management Centre



Waste to raw material for cement

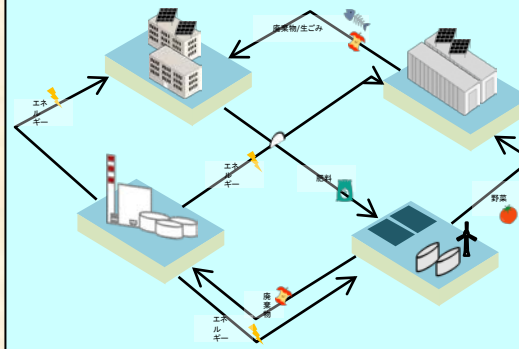
Establishing a joint venture with Berjaya, a major conglomerate in Malaysia

## W-to-E (Waste power generation)



Investigating options for W-to-E with Nittetsu Engineering with an eye on the introduction of a W-to-E system in the region

## Eco-Town Development



Aiming to develop a resource-recycling eco-town in a comprehensive environmental industrial complex

**Further accelerating the shift from a low-carbon society to a decarbonized society**

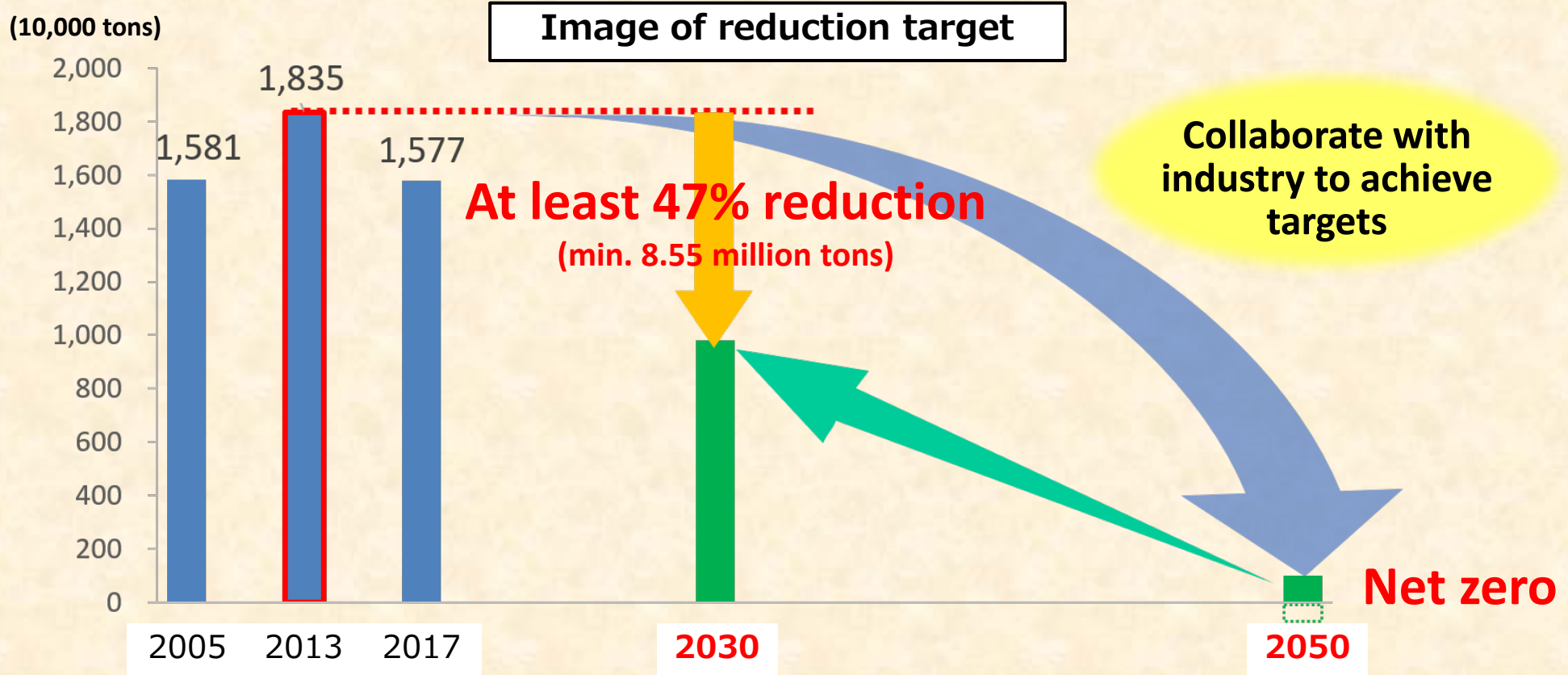


# Kitakyushu's Ambitions as a Zero Carbon City



- ◆ Achieve a positive cycle between the environment and the economy as an industrial city
- ◆ Realize a livable, disaster-resilient society for all residents by increasing the value and competitiveness of the city and local companies

2050 (Goal)	FY 2030 (Target)
<u>Aim for net zero</u> greenhouse gas emissions in city	<u>At least 47% reduction</u> from FY 2013 levels





# Establishment of "Kitakyushu Model for 100% Renewable Energy" & Expansion Locally and Beyond



## Kitakyushu Model for 100% Renewable Energy

- 1 Fastest\* conversion of public facilities to 100% renewable energy in Japan  
(\*Prefectures and designated cities)

Switch to electricity generated by renewable energy sources

Local production for local consumption of energy



City hall, schools, other

Switch complete in 2,000 facilities

800 facilities

RE already in use in 255 facilities



W to E, Mega solar power, wind power, etc.

2021

2022~

2025

- 2 Installation of solar + energy storage facilities and procurement on-site through third-party Power Purchase Agreements (PPA)

From "ownership" to "use" of equipment

Contribute to decarbonization around the world, especially in the Asian region



# Strategies to Realizing the Ambition of Becoming a Zero Carbon City



“Kitakyushu City Action Plan for Global Warming Countermeasures” (Rev. in 2021)

<Five pillars to achieve to become a zero-carbon city>

I Decarbonize energy

II Promote innovation

III Transform lifestyles

IV Develop as a resilient city capable of adapting to climate change

Building a “Kitakyushu Model” for decarbonization

V Contribute to global society

Mission of the Asian Center for Low Carbon Society

FY2050 (Goal)

**More than 150% reduction** of GHG emissions in Kitakyushu from FY 2013 levels

Exporting Kitakyushu’s know-how as a “Zero Carbon City” to the entire Asian region

FY2030 (Target)

**More than 75% reduction** of GHG emissions in Kitakyushu from FY 2013 levels

Shifting away from point-to-point support to broader, more comprehensive support in recognition of the next decade as absolutely critical



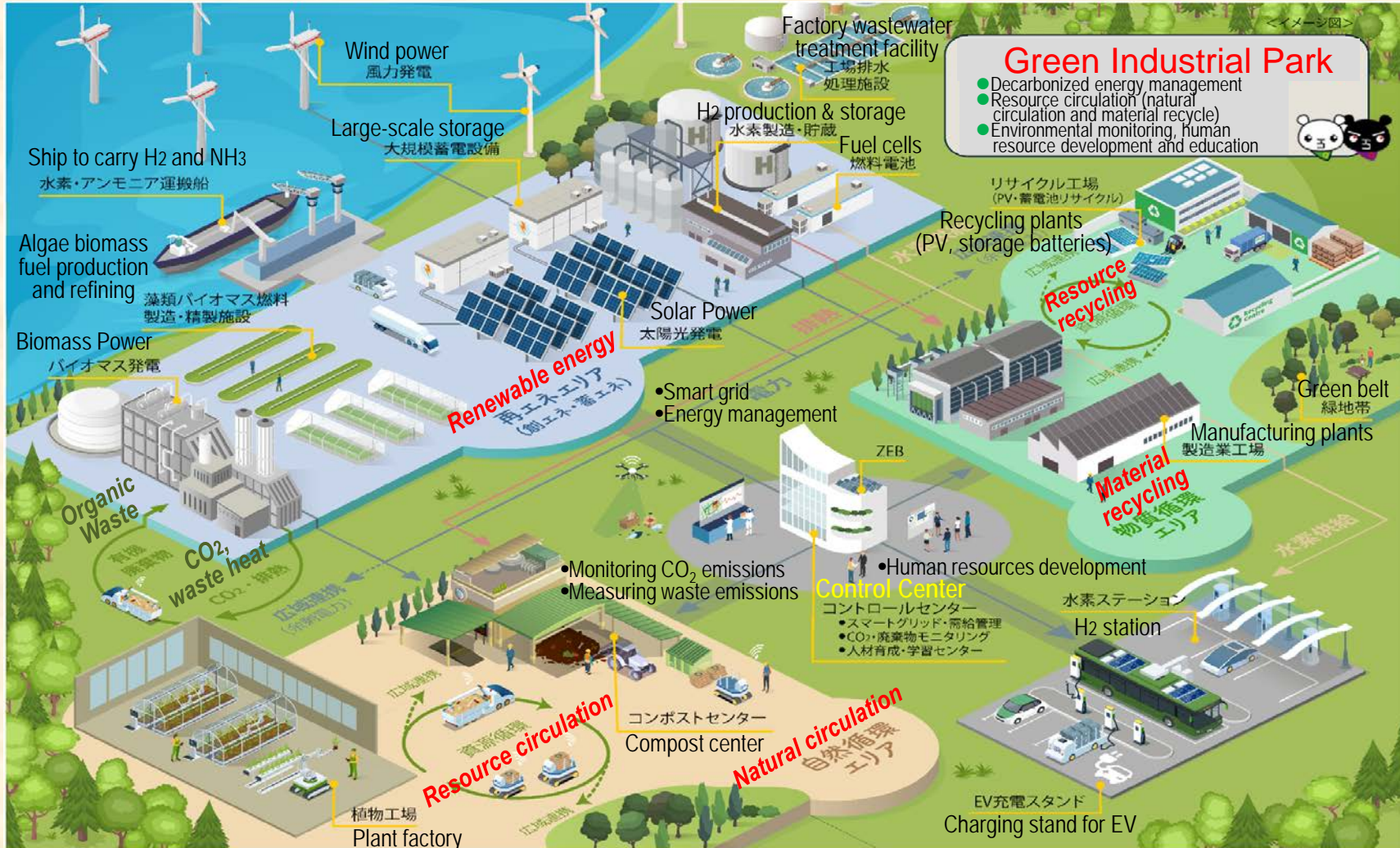
# Decarbonizing the Entire City and Industrial Zone

~ Two "zeros" and economic growth ~



## Zero Emission (recycling society) + Zero carbon (decarbonized society) & Economic Growth

Aiming to **export** an urban and industrial zone model that simultaneously realizes this mission






# Formation of an Eco-Industrial Park to Promote Decarbonization in Haiphong City, Vietnam



City-to-City Collaboration Program for Zero Carbon Society supported by the Ministry of the Environment, Japan (FY2021)

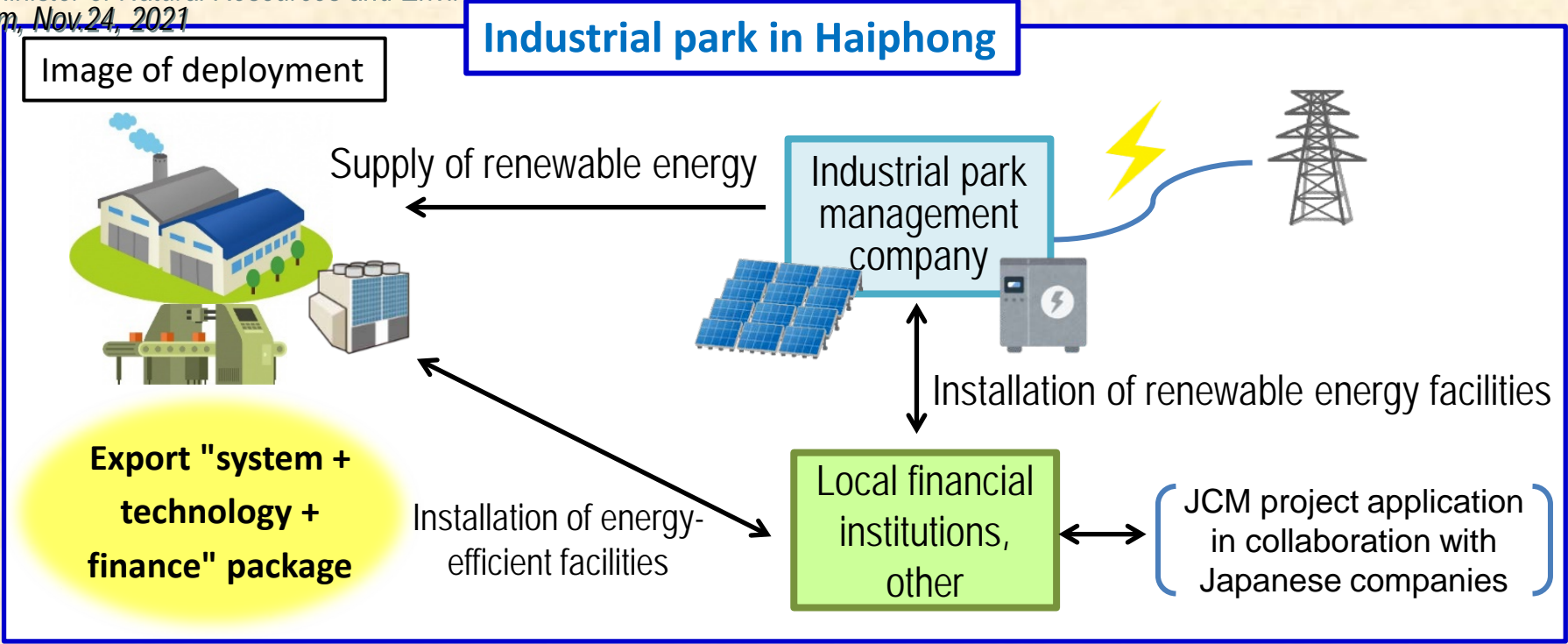
**Kitakyushu Model for 100% Renewable Energy**

**IGES** IHI  
 Tokyo Century Corporation  
 Daiseki Co., Ltd  
 DHOWA TECHNOS




Joint Cooperation Plan on Climate Change toward Carbon Neutrality by 2050 between the Minister of the Environment of Japan and the Minister of Natural Resources and Environment of Vietnam, Nov.24, 2021

Customized and deployed



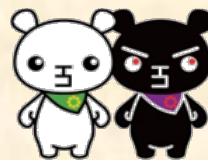
Customized and deployed

**Decarbonization domino effect!** Expanding worldwide





# Resource Recycling of Marine Plastic Waste in Thailand



## Use & Consumption

- Build a self-sustainable circulation system on the island by utilizing recycled oil, charcoal, water, and salt manufactured on the island
- Promote island tourism by actively tackling plastic problems

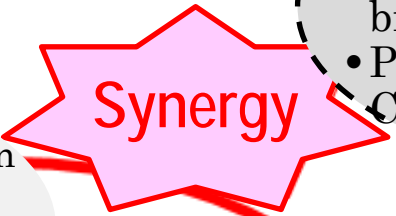
Hotel owner, ferry company

## Recycling System

- Convert system from plastics and organic waste to oil and charcoal, using superheated steam



One World Japan, Co. Ltd.



### SEA Circular Initiatives

- Reduction of plastic products brought to the island
- PET to PET recycling by Coca Cola



## Collection

- Collect waste plastic including marine litter
- Improve waste management

Strengthen cooperation on marine plastic management

Rayong Province

City to City Collaboration



## Monitoring & Verification

**IGES** Institute for Global Environmental Strategies  
*MOU with AEPW and UNEP*

- Build on the concept of plastic neutrality through recycling activities, and examine and develop methods for monitoring and verifying the amount of plastic treated



# Horasis Asian Meeting in 2022



Getting the message of decarbonization and green growth out to the world !!

## 2022 Horasis Asian Meeting in Kitakyushu

Gathering of more than 400 business and academic leaders from Asia

### ✧ Past meetings

- 2016 Bangkok, Thailand
- 2017 Calcutta, India
- 2018 Binh Duong, Vietnam
- 2019 Binh Duong, Vietnam

First time  
in Japan

# Horasis

The Global Visions Community



Agreement signed in 2019 to hold the meeting in Kitakyushu



Meeting in Vietnam in 2019

- Global think tank based in Zurich, Switzerland
- In Greek, "Horasis" means "to see", as in a "vision"
- Aims to set up a vision for a sustainable future through meetings
- Lively exchange of ideas through roundtable discussions



# Kitakyushu in the Local & International Spotlight



### SDGs Pilot Model City for OECD's study on "A Territorial Approach to the SDGs" (April 2018)

**First city in Asia**



### SDGs FutureCity Initiative, and local government SDGs model project (Selected by the Gov. of Japan (June 2018))

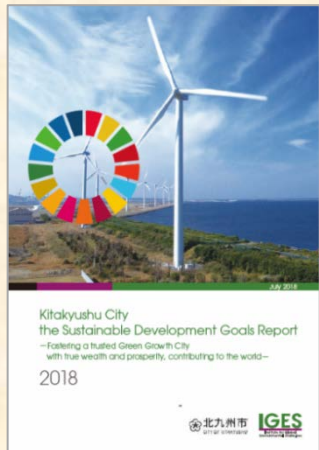


29 cities selected (of which **only 10 cities** were adopted as model projects)

*Press conference with Mayor*

### UN High-Level Political Forum in New York (July 2018)

**Presenting Kitakyushu's SDGs initiatives to the world**



### COP26 Japan Pavilion (November 2021)

**Asserting Kitakyushu's ambition of becoming a Zero-Carbon City**





# Global Expansion of Environment Improvement by Strengthening Cooperation with JICA



独立行政法人  
国際協力機構



## Promoting human security and quality growth

- Rectifying disparities
- Sharing universal values
- Strengthening measures to address global issues and aid trends
- Expanding and deepening strategic partnerships
- Gender equality and empowerment of women and girls in developing countries

Support / consignment / information, etc.

Contribution, cooperation, resource, etc.

## A city with a sustainable environment and technology, nurturing its people and culture and connecting to the world

- Developing human resources
- Creating quality lifestyles
- Promoting industry and business
- Building a convenient, livable city
- Building a city brand
  - Environmental capital of the world
  - Technical capital of Asia

## Environmental Benefits

- Improves air quality
- Fights global warming and climate change
- Improves energy efficiency, etc.

## Economic Benefits

- Supports local economies
- Creates new industries
- Promotes international trade, etc.

## Social Benefits

- Improves lifestyle
- Introduces foreign cultures
- Brings about government reform, etc.

We aim to share these benefits with residents, Japan, the Earth, and future generations!!



# Introduction of Exhibitors



健康な体ときれいな水を守る。

## シャボン玉同けん

Corporate Philosophy

“Promoting healthy bodies and clean water”



Ex.



### Eco friendly soap-based fire fighting foam

Ex.



Dannoura parking



Fukuoka Airport

### Wood / plastic recycled composite material