



City of Kitakyushu Promoting a Circular Economy



November 24, 2020

Yuichi Arita, Director, Kitakyushu Asian Center for Low Carbon Society
Environment Bureau, City of Kitakyushu

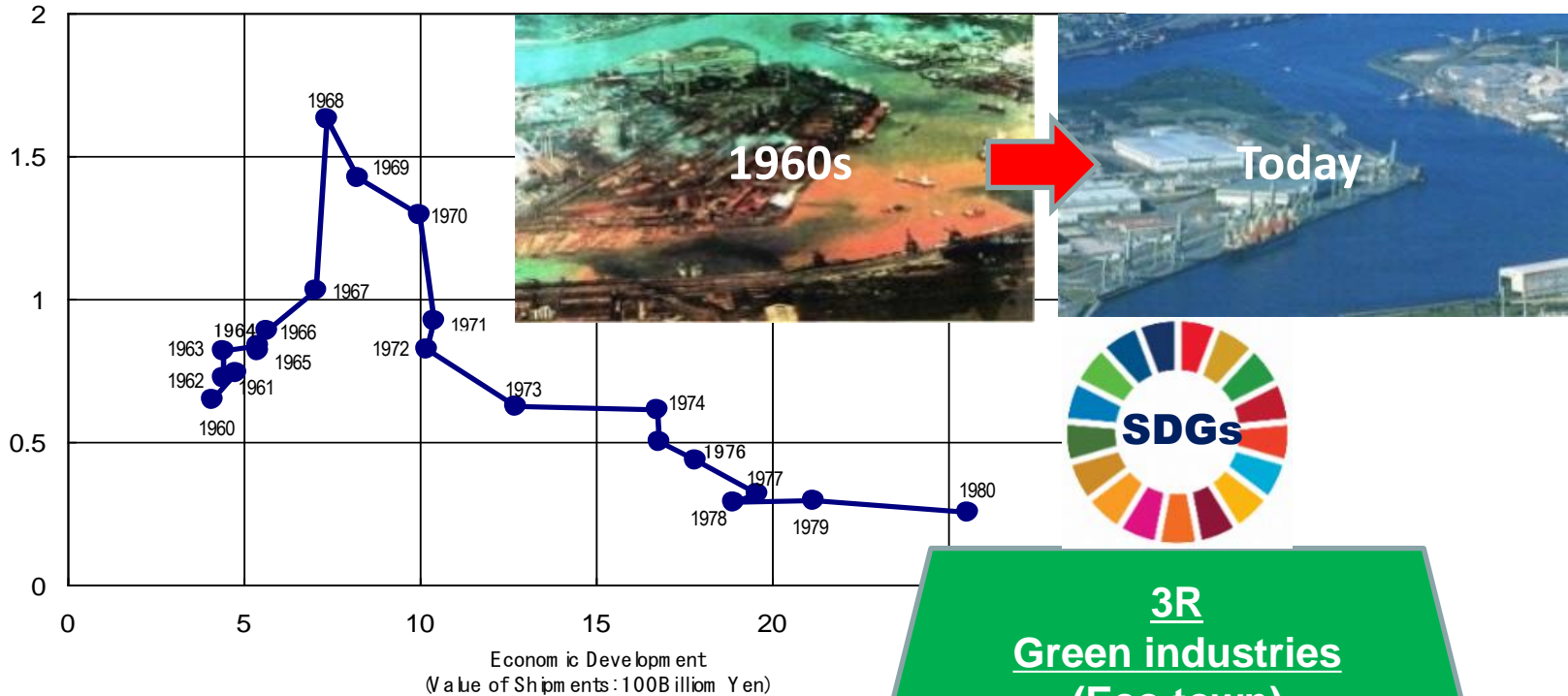


Kitakyushu Green growth & developing an economy based on recycling & green industries



Environmental Pollution
($\text{mg-SO}_3/100 \text{ cm}^3/\text{day}$)

Balance between economic development while reducing environmental impacts



International recognition

1990 UNEP "Global 500"
2011 OECD "Green growth city"
2018 OECD "SDGs model city"

3R
Green industries
(Eco town)
Renewable energy
International cooperation

Collaboration
Civil society
Industries
Local government



Promoting Recycling with Kitakyushu Eco-Town



Partnership

Government

- Various regulations
 - Support for technological development
- Implementation of model projects
- Installation of demo facilities
- Mediation between companies and universities

Residents



Citizen's solar power generation project



Technological innovation through cleaner production and end-of-pipe measures



Kitakyushu Science and Research Park

Industries

Universities, etc.

First and largest Eco-Town constructed in Japan

Plan approved: 1997 Start of operations: 1998

Number of research facilities: 9

Number of companies: 24



Fluorescent tube recycling



Automobile recycling



Photovoltaic power generation system recycling

- **Total investment:** **Approx. JPY 84.8 billion**
- **Number of employees:** **Approx. 1,150**
- **Number of visitors:** **Approx. 1.8 million (1998-2019)**

CO₂ reduction effect (Results of FY2016 survey)
433,000 tons/year



Features of Kitakyushu Eco-Town Project①



1. Creation of a social system to establish recycling businesses

Government (Support)

Entry

Create systems to collect recycling resources

- Development of laws/regulations, operation
- Secure wide-area collection routes, etc.

Provision of 1-stop services

Environmental Industry Promotion Division

- Accelerated procedures
- Technology development support
- Subsidies and funding system
- Public briefings, etc.

Companies

Recycling projects

Government (Support)

Exit

Establish a sound market for recycled products

- Green purchasing
- Tax incentives

2. "Comprehensive development" leading to basic research, technological development and commercialization

Education and Basic Research

Kitakyushu Science and Research Park

Basic research, human resources development, industry-academia collaboration

Technical and Practical Research

Practical Research Area

Practical research support, incubator for local companies

Business Development

Comprehensive Environmental Complex Hibiki Recycling Complex

Recycling projects, development of eco-business, Support for SMEs and venture companies

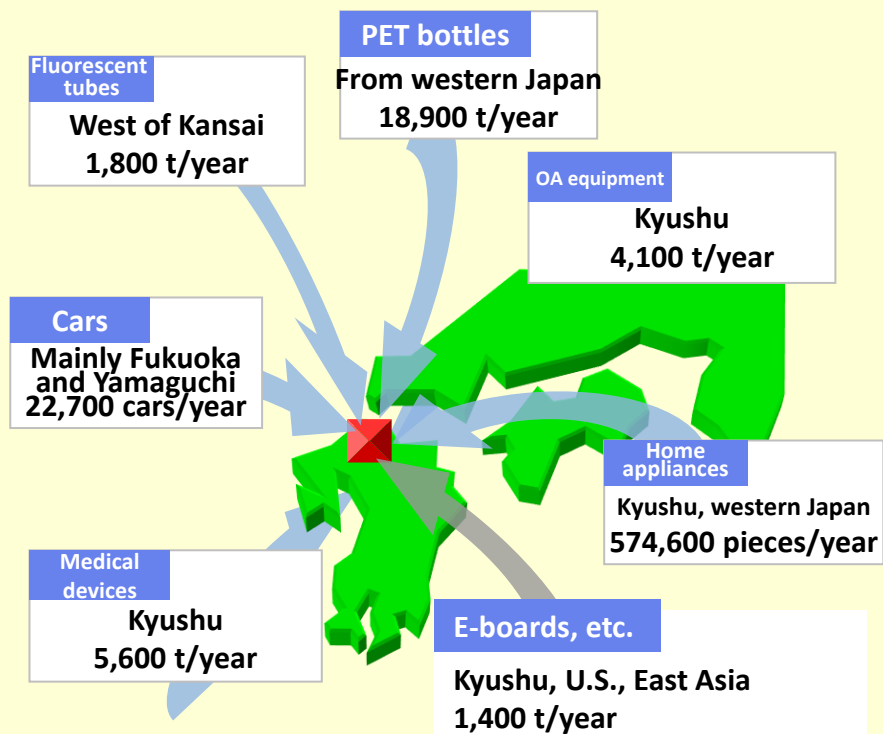
Support in each stage



Features of Kitakyushu Eco-Town Project②



3. Wide-area acceptance of waste



Secure appropriate volume of waste according to nature of business and facility scale

Transition of traditional values

- Recycling = Resource recycling business
- Target waste = Raw materials (recycled resources)

4. Base for information dissemination and environmental learning



Factory tours

- Support for tours/visitors
- Support for research activities
- Provision of information on Eco-Town



Eco-Town Center

- Space for residents to learn about the environment
- Display of technologies/products

Risk Communication

Enhance mutual understanding to avoid and reduce risk

Eliminate public anxiety, distrust and discomfort

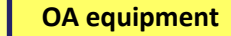
Public understanding and trust

Eco-Town/Next-Generation Energy Park

Environmental learning base

Mobile phones (JEPLAN)

Other areas



(Anchor Network Service)

MA waste	Paper, styrene foam
----------	---------------------

Small appliances

Containers

& packaging

lastic (OA)

Waste paper

(Kyushu Paper

waste

Food waste

(Merry Corp.)

Practical

Research Area

5

Created on August 5, 2020



Technological Capabilities of Companies in Kitakyushu for Waste Plastic



Recycled polyester

- Technology to “create clothes from clothes”
- Chemical treatment of polyester fiber, which accounts for 60% of all clothing, to produce recycled resin as a raw material for polyester fibers.
- Blended clothing, clothing with buttons and fasteners can also be recycled.

Implementing body: Japan Environmental PLANning



Waste wood and plastic recycling

- Mixed waste wood and waste plastic produce building materials that are highly water- and weather-resistant. Eco M Wood is ideal as a material for outdoor facilities that reproduces the texture (appearance and feel) of natural wood and does not rot, warp, crack or split, which are some disadvantages of natural wood.

Implementing body: Ecowood Co., Ltd.



Photovoltaic (PV) panels

- Reuse and recycling of PV panels that will account for 6% of waste at final disposal sites by 2040
- Establish technology that combines versatility (for crystalline Si, thin-film Si, CIS systems) and high recycling rates (95%)
- Recover glass, aluminum, plastics, crystalline Si, and metals such as copper and solder

Implementing body: Shinryo Corporation



Carbon fiber reinforced plastic (CFRP)

- Dismantle and recycle CFPR, which is being expanded in applications for the aircraft and automobile industries
- Recycling rate of 95% (including waste heat utilization during resin thermolysis)
- Develop applications for recycled carbon fibers (CF) (under development)
- Consider the early development of recycling businesses for PV panels and CFRP using shared facilities (shared furnaces) (under consideration)

Implementing body: Shinryo Corporation





Nam Cau Kien Industrial Park

Leading candidate for certification as an Eco-Industrial Park

Plans for support to be offered to help with certification as a model project

- Cooperation in dispatching experts to industrial park to address water pollution and other issues
- Training staff to have a high level of environmental awareness
- Introduction of environmentally-friendly equipment
(Use of JCM model project scheme)





Malaysia × Berjaya × Kitakyushu



Evolution from a sanitary landfill
into an integrated waste management center

1) Waste Reception & Testing



2) Municipal Solid Waste Treatment & Recovery

Expansive site

Sanitary Landfill Cells



Leachate Treatment Plant



Material Recovery Facility (Upcoming)



3) Sustainable Resource Center
Scheduled Waste Recycling



AMITA KUB-BERJAYA KITAR

4) Renewable Energy Centre
(Landfill Gas to Energy & Solar Power Plants)



5) 100% Recycling of Abandoned Vehicles

