International Environmental Strategies of Kitakyushu

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1 Overview of Kitakyushu and the history of overcoming environmental pollution
Location and basic information of Kitakyushu

Population: 965,000 people (2014)
Area: 487.88Km2
GDP: 3.37 trillion yen (2011)
Major companies in Kitakyushu area

- Yawata Works of NIPPON STEEL & SUMITOMO METAL
- Mitsubishi Chemical
- Yasukawa Electric
- TOTO
- Toyota Motor, Nissan Motor
Beginning of modernization of Kitakyushu’s industry

Beginning of Yawata Works operation in 1901
(the first national works in Japan)
The situation of Kitakyushu in the 1950s
Rivers were contaminated by human sewage or industrial wastewater and were covered with waste materials. (1960s)
Factors in overcoming environmental pollution: Partnership among various parties involved

Citizens
- Visit to private companies by citizens
- Workshop on countermeasures of air pollution with a college professor

Partnership
- Environmental monitoring and improvement of environmental infrastructure
- Low-pollution production processes and antipollution equipment

Local governments

Private companies
Overcoming environmental pollution by Kitakyushu
Simultaneous pursuit of environmental policies and economic policies in Kitakyushu

Environmental pollution (sulfur oxide) (mg-SO₃/100 cm²/day)

Improvement in environmental pollution along with economic development

Economic development
(Shipment value of manufactured goods: 100 billion yen)

Efforts by private companies: Energy saving

Energy consumption per production unit

- Paper/pulp
- Iron and steel
- Cement
- Petrochemistry

Energy saving
Received “Kitakyushu Report” (Japanese version) from Mr. Alter, Director of OECD

OECD Green Cities Programme

Kitakyushu Report

In 2011, selected as a green growth model city of the OECD Green Cities Programme

In 2013, OECD issued Kitakyushu Report (Green growth in Kitakyushu)

- Selected as a green growth model city together with Paris, France; Chicago, U.S.; and Stockholm, Sweden

(October in 2013

Only four cities in the world
2 Expansion of International environmental cooperation
International cooperation for various cities overseas

Contribution to improvement of world’s environment utilizing experience and know-how gained in the course of environmental recovery

Acceptance of trainees: 7,453 trainees from 150 countries
Dispatch of experts: 175 experts

Kitakyushu International Techno-Cooperative Association (KITA)  
Established in 1980

Kyushu International Center of Japan International Cooperation Agency (JICA Kyushu)  
Established in 1989
Achievement of international environmental cooperation with Dalian

- 1979  Concluded the friendship city agreement (then Luda)
- 1981  Held a “seminar on environmental pollution management” in Dalian
- 1993  Held a “seminar on technology exchange between Dalian and Kitakyushu”
  Acceptance of Dalian’s trainees on environmental preservation (implemented every year until 2002)
- 1995  Implemented “environmental preservation exchange between Dalian and Kitakyushu”
- 1996-1999  Implemented a survey on Dalian environmental model district development
- 2001-2002  Started Kitakyushu/Dalian CP model project
Environmental improvement in Dalian
(Survey on Dalian environmental model district development)

In 2001, Dalian was awarded Global 500
(Kitakyushu was awarded in 1990)
People’s Daily (dated December 17, 2009):

‘Kitakyushu has rich experiences in environmental protection and development of advanced technologies that deserve to be taught earnestly and to be used as a model for application to the present situation of China.’
Tang Jiaxuan  Chairman of 21 Century Japan-China Friendship Council  
Former State Councillor  
Head of China-Japan Friendship Association 

Visited Kitakyushu on Sunday, June 8, 2014
The Organization for the East Asia Economic Development

- Consists of 10 cities in Japan, China, and South Korea (currently 11 cities)
- Established in November 2004
- Promotes economic exchange through activities of four taskforces on Manufacturing, Environment, Distribution, Tourism

General assembly of the Organization
- The fifth general assembly of the Organization was held at Yantai in August 2014.
- Theme “Strategies to promote investment facing the future of the organization’s member cities”
- Discussed establishment of the international business task force, participation of new cities and other new efforts

*Activity results of the environment task force

Formed an alliance with Qingdao in environmental cooperation in 2007
Formed an alliance with Tianjin in environmental cooperation in 2008
Cooperated with Dalian in the eco-town project in 2009
The Organization for Environmental Cooperation among Asian Cities

The Organization for Environmental Cooperation among Asian Cities (Reorganized the following two networks in 2010)

Former Kitakyushu Initiative Network (2002)

Former Environmental Cooperation Network of Asian Cities (1997)
Project on separation/composting of garbage (2002~)

Spread to over 60,000 households
30% reduction of landfill disposal
Further spread to other cities/countries
International environmental cooperation (Phnom Penh)

Our cooperation was started in 1999 and running water in Phnom Penh dramatically improved.

(1996 =>2006)
Coverage of the water supply system  
25 % => 90 %
Water supply hours  
10h => 24h
Rate of non-revenue water (water leak)  
72 % => 8 %

October 2011
An official who had engaged in cooperation for long time received a friendship medal from the Cambodian government.
3 Expansion of international environmental business
CO2 reduction targeted in “Kitakyushu action plan on environmental model city”

- In 2009, Kitakyushu formulated the “Kitakyushu action plan on environmental model city.”
- Targeted emission reduction of greenhouse gases (CO2, etc.) in 2050 is 50% reduction in the city and **150% reduction in Asia**.
- Kitakyushu Asian Center for a Low Carbon Society was established in 2010 in order to promote projects.

Promoting projects on a low carbon society in Asian cities

### Targeted reduction of CO2 emission

- **1990**: 15.8 million ton
- **2005**: 16.3 million ton
- **2018**: 15.3 million ton
- **2030**: 11 million ton
- **2050**: 8 million ton (50% reduction)

- 150% CO2 reduction in Asia

Projects on a low carbon society started from Kitakyushu

Export of technologies/projects

Expansion of international environmental business
Utilization of environmental technologies, developed through overcoming environmental pollution and manufacturing, and intercity networks, which were built through past international cooperation

Consolidating environmental technologies of Kitakyushu and Japan and using the method of environmental business to vitalize communities and to promote a low carbon society in Asia

In September 2013, the Kitakyushu model, in which know-how of Kitakyushu was systematically summarized, was developed (the first model in Japan)
Focused area of technology transfer

**Energy management**
Management of energy in the community using the city’s Community Energy Management System as a core

The Yahata-Higashida area that is transforming into an environment-conscious community

**Water business**
Water reclamation demonstration plant combining membrane treatment of sewerage and seawater desalination

Water Plaza
- Water reuse from sewerage 1,000m³/day
- Water reuse from seawater 400m³/day

Improvement in the rate of non-revenue water 72% (1993) -> 8% (2006)

**Recycling/waste disposal**
State-of-the-art facility of waste disposal

- Shaft-furnace type direct melting system

**Cleaner Production and antipollution**
Introduction of Cleaner Production (CP)

- Evaluation and improvement of use of raw materials and fuel
- Improvement of production process
- Thorough maintenance and management
- Human resource development, etc.

Realization of energy saving/resource saving
Reduction in environmental burden + Improvement of productivity

**Measures on sewage treatment (End of Pipe: EOP)**

- Desulfurization equipment
- Electric dust collector
- Electric dust controller

**Japan’s new growth strategy**

Kitakyushu Smart Community

Private-public partnership
Transfer of environmental technology and social systems as a package

Kitakyushu’s technology was transferred to Phnom Penh

Kitakyushu Eco-Town

Home Appliance Recycling

Automobile recycling

Shin-moji Factory
Safe factory which has attained recycling of waste and effective utilization of heat energy

Economic effect (25 businesses):
- Amount of direct investment: Approx. 60 billion yen
- Employment creation: Approx. 1300 people
- CO2 reduction: Approx. 200 thousand tons/year

Water treatment
- Wastewater treatment
- Saving electricity

Electric dust controller
Five-gas desulfurization drainage treatment equipment

Japan’s new growth strategy
In cooperation with Japanese companies, the center implemented 79 projects at 45 cities in 12 Asian countries.
Case example of Surabaya

An environmental sister city relationship was established (November 2012)
Green city export to Surabaya

**Waste disposal**
From open dumping to recycling intermediate treatment

**Cogeneration & Energy saving**
Introduction of effective energy management systems

**Drainage treatment (Improvement of sewage systems)**
From simple treatment to improvement of sewage system adequate for the actual situation of the local site

**Purification of tap water**
Water supply equipment with function to purify tap water (not drinking water) was installed in communities to provide safe water.

**Survey on quantification method to reduce CO2**
Quantification of CO2 reduction concerning various projects implemented in Surabaya

**Drinking water supply project**
With solar power generation and water purification system, drinking water is supplied at a low cost.

**Export of green city**

**Export of Kitakyushu’s smart community project**

**City-to-city cooperation**
Kitakyushu → Surabaya
Support of Surabaya to formulate a low-carbon city plan

IGES Kitakyushu Urban Centre, NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc., AMITA HOLDINGS CO., LTD., etc.

Ministry of the Environment “Feasibility Studies on Joint Mechanism Projects towards Environmentally Sustainable Cities in Asia” (from 2013)

**The area of energy**
- Cogeneration to factories
  - PT SIER (Company operating the industrial park), PIER industrial park, prospective customer companies, national electric power company (PT PLN), gas company

**Management of the area of waste**
- Separation of general wastes, recycling, garbage composting
  - Cooperating: Nishihara Corporation

  - Power generation by waste incineration
    - Cooperating: Hitachi Zosen Corporation

  - Producing raw materials and fuel made from various industrial wastes for the cement factories
    - Amita Corporation

**Cases of Ministry of the Environment**
- Ministry of Environment, Industries Bureau, (Japanese) companies (waste generators), a cement company (PT Semen Indonesia), a paper-manufacturing company
- Dept. of Cleanliness and Landscaping (DKP), Environment Dept. (BLH), a fertilizer company (PT Petrokimia)
- Ministry of Energy and Mineral Resources, Ministry of Public Works, Ministry of Environment, Dept. of Cleanliness and Landscaping (DKP), final disposal site management company (PT Sumber Organik)

**Cooperation**
- Sharing results achieved and implemented in other businesses with this business

**Energy saving and dispersed power system of buildings**
- Installation of LED lighting to hotels

- Cogeneration
  - Construction Bureau, Surabaya Institute of Technology, hotels, commercial facilities, office buildings, hospitals, universities, city halls

- Dept. of Cleanliness and Landscaping (DKP), Environment Dept. (BLH), a fertilizer company (PT Petrokimia)

**JICA cases**
- Ministry of the Environment “Feasibility Studies on Joint Mechanism Projects towards Environmentally Sustainable Cities in Asia” (from 2013)

- Ministry of Environment, Industries Bureau, (Japanese) companies (waste generators), a cement company (PT Semen Indonesia), a paper-manufacturing company

- B3 waste generator

- Amita Factory (East Java)

- Cement company (East Java)
Case example of Hai-phong

Expansion of water business in Hai-phong

October 2011
Water business comprehensive agreement was concluded based on exchange/cooperation agreements

April 18, 2014
A sister city relationship was established.

Hai-phong has decided to introduce U-BCF of which Kitakyushu holds the patent.

(Left: Head Vice Chairman of Hai-phong)
Support of Hai-phong to formulate green growth promotion plan

IGES Kitakyushu Urban Centre, Nikken Sekkei Civil Engineering Ltd., NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc., etc.

Ministry of the Environment “Feasibility Studies on Joint Mechanism Projects towards Environmentally Sustainable Cities in Asia” (2014)
Possible reduction in CO2 emission by implementing and spreading the pilot project: Approx. 120 thousand ton/year (target year 2020)

Low-carbon cities development

Formulation of green growth promotion plans

Nikken Sekkei Civil Engineering Ltd.
MI Consulting Group

Energy

Power generation by waste heat at cement factories, energy saving at commercial facilities and factories, introduction of LED into road lighting

Hai-phong People’s Committee

Foreign Affairs Department, Authority of Planning and Investment

Department of Industry and Trade, energy saving centers, manufacturing factories (cement, food, paper manufacturing, etc.), large-scale business facilities (hospitals, hotels, office buildings, etc.), infrastructure

Preservation of Cat Ba island

Comprehensive resource recycling (introduction of biogas, solid fuel, use of liquid fertilizer), solar power generation projects at farms for tourism, etc.

Nikken Sekkei Civil Engineering Ltd.
MI Consulting Group

People’s Committee, Department of Industry and Trade, energy saving centers, large-scale business facilities (hospitals, hotels, office buildings, etc.), infrastructure

Waste

Separation and composting of household wastes, producing raw materials and fuel made from industrial wastes for the cement factories

Installation of solar power generation projects at farms for tourism, etc.

Department of Construction, Department of Natural Resources and Environment, Industrial park management (HEZA), Urban Environmental Company, Local disposal companies

NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.
Nishihara Corporation

Amita Corporation

NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.
AMITA Institute for Sustainable Economies Co., Ltd.

Foreign Affairs Department, Authority of Planning and Investment

Department of Industry, Department of Natural Resources and Environment, Department of Construction, Department of Culture, Sports and Tourism, Urban Environmental Company, Cat Hai Province, people related to agriculture and fishery, residents, etc., tourist facilities, related governmental agencies
4 New Movement
City-to-city cooperation to improve China’s air environment

Tianjin - Shanghai - Wuhan - Tangshan
Kitakyushu project on improvement of air environment of Japan and China

Comprehensive adjustment/Promotion type: Setup of city-to-city cooperation team

**Targeted areas**

1. Measures against stationary source
2. Measures against mobile source (including off-road vehicles)
3. Measures against VOC
4. Measures against dust from construction work
5. Forecast/alarm system
6. Analysis on contamination source
7. Monitoring
8. Other areas requested by each city

**Projects to be implemented**

1. Accepting visits to Japan for training
2. Dispatching experts
3. Planning collaborative research, etc.
4. Planning model projects, etc.

* Visits to Japan for training and dispatching experts were implemented for the moment (fiscal 2014)
Kitakyushu promotion conference to improve air environment of Japan and China

1. Industry:
   Kitakyushu Environment Industry Promotion Conference
   Kitakyushu International Techno-cooperative Association
   The Kitakyushu Chamber of Commerce & Industry

2. Research institutions
   University of Occupational and Environmental Health
   The University of Kitakyushu
   Kyushu Institute of Technology
   Kyushu University

3. Government
   Environment Bureau
   Industry and Economics Bureau

4. Citizen’s organizations, etc.:
   Environment Museum (Experience in overcoming environmental pollution, environmental education), etc.
5 Summary
Summary of International Environmental Strategies of Kitakyushu

1901
- Government operation of Yawata Works
- Developed as a steel town

1950
- Worsening environmental problems
- Antipollution movement by women’s associations

1960s ~
- Efforts made by the city:
  - Establishing Environment Pollution Control Bureau
  - Enacting a pollution prevention ordinance
  - Concluding pollution prevention agreement with companies
- Efforts made by companies:
  - Improving production processes
  - Treatment facilities to remove contaminated materials
  - Greening of factories
  - Low-pollution production technology

1980s ~
- Establishment of KITA (in 1980)
- Establishment of JICA Kyushu International Center (in 1989)
- Cooperation in solving environmental problems overseas
- International environmental cooperation

1990s ~
- Survey on Dalian environmental model district development (ODA project 1996-2000)
- Establishment of Environmental Cooperation Network of Asian Cities (in 1997)
- Establishment of The Organization for the East Asia Economic Development (in 2004)
- Designated as an environmental model city (in 2008)

2000s ~
- Establishment of Kitakyushu Initiative Network based on matters adopted by ESCAP (in 2002)
- Establishment of Kitakyushu Asian Center for Low Carbon Society (in 2010)
- Selected as OECD green growth model city (in 2011)

2010s ~
- City-to-city cooperation utilizing networks
- Efforts in forming low-carbon society
- Expansion to international environmental business
Advantages of international environmental cooperation

Advantages on a global scale
- Contributing to improvement of environment and reduction in CO₂ on a global scale

Advantages of city-to-city cooperation
- Contributing to improvement of local environment and health improvement
- Contributing to development of local human resources
- Establishment of network with various cities
- Strengthened tie with international organizations

Advantages for local governments
- Improvement of ability to send information and enhancement of name recognition
- Raised awareness of citizens
- Information provision to companies in the city
- Improved ability of officials/dissemination of technology

Contribution to local environmental business
Thank you for your attention.

Teitan

Black Teitan