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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

Partnership

Citizens
- Visit to private companies by citizens

Local governments
- Environmental monitoring and improvement of environmental infrastructure

Private companies
- Low-pollution production processes and antipollution equipment

Workshop on countermeasures of air pollution with a college professor
Overcoming environmental pollution by Kitakyushu
Simultaneous pursuit of environmental policies and economic policies in Kitakyushu

Environmental pollution (sulfur oxide)
(mg-SO3/100 c m³/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

![Graph showing energy consumption per production unit for various industries over years.](chart.png)

- **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)
Visit by the key figure of China 1

Mr. Xi Jinping, Vice President of China visited Kitakyushu on December 16, 2009

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.’
Visit by the key figure of China 2

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

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

Former Kitakyushu Initiative Network (2002)

Former Environmental Cooperation Network of Asian Cities (1997)
International environmental cooperation (Surabaya)

Project on separation/composting of garbage (2002~)

Spread to over 60,000 households
30% reduction of landfill disposal
Further spread to other cities/countries

Environmental pollution at a landfill (in previous times)

Composted waste

An expert of Kitakyushu teaching composting at a community

![Graph showing amount of landfill disposal from 2005 to 2010]
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
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
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

Kitakyushu Smart 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

- Home Appliance Recycling
- Automobile recycling

Kitakyushu Eco-Town

**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)

- Electric dust controller
- Five gas desulfurization 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

Surabaya Industrial park
Export of Kitakyushu’s smart community project

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

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

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

Export of green city

Kitakyushu

city-to-city cooperation

Surabaya
Support of Surabaya to formulate a low-carbon city plan

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

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

Energy saving and dispersed power system of buildings

Installation of LED lighting to hotels

Management of the area of waste

- Separation of general wastes, recycling, garbage composting
  - Cooperating: Nishihara Corporation
  - Dept. of Cleanliness and Landscaping (DKP), Environment Dept. (BLH), a fertilizer company (PT Petrokimia)

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

- Producing raw materials and fuel made from various industrial wastes for the cement factories
  - Amita Corporation
  - Ministry of Environment, Industries Bureau, (Japanese) companies (waste generators), a cement company (PT Semen Indonesia), a paper-manufacturing company

Cases of Ministry of the Environment

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

JICA cases

- B3 waste generator
  - Amita Factory (East Java)
  - Cement company (East Java)

- Department of Cleanliness and Landscaping (DKP), Environment Dept. (BLH), a fertilizer company (PT Petrokimia)
- Ministry of Environment, Industries Bureau, (Japanese) companies (waste generators), a cement company (PT Semen Indonesia), a paper-manufacturing company

- JICA cases
  - Ministry of the Environment “Feasibility Studies on Joint Mechanism Projects towards Environmentally Sustainable Cities in Asia” (from 2013)
October 2011
Water business comprehensive agreement was concluded based on exchange/cooperation agreements

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

April 18, 2014
A sister city relationship was established.

(Left: Head Vice Chairman of Hai-phong)

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

**Kitakyushu**
- Overall administration
- IGES
  - Kitakyushu Asia Center for a Low Carbon Society

**Hai-phong**
- People’s Committee
  - Foreign Affairs Department, Authority of Planning and Investment

**Japan side**
- Sister city relationship was established (April 2014)
- Friendship and cooperation agreement was concluded (April 2009)

**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

**HOKOSHA**
- Other manufacturers and engineering companies

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

**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.

**NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.**
- The University of Kitakyushu
- NTT FACILITIES, INC.
- Other manufacturers and engineering companies

**People’s Committee**
- 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

**Department of Construction, Department of Natural Resources and Environment, Department of Agriculture and Rural Development, Industrial park management (HEZA)**

**Foreign Affairs Department, Authority of Planning and Investment, Department of Natural Resources and Environment, Department of Construction, Department of Industry and Trade, Department of Transportation, Department of Agriculture and Rural Development, Industrial park management (HEZA)**

**People’s Committee, Department of Construction, Department of Natural Resources and Environment, 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**

**Other manufacturers and engineering companies**

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**NTT DATA INSTITUTE OF MANAGEMENT CONSULTING, Inc.**
- Amita Corporation

**Nishihara Corporation**
- AMITA Institute for Sustainable Economies Co.,Ltd.

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**Ministry of the Environment “Feasibility Studies on Joint Mechanism Projects towards Environmentally Sustainable Cities in Asia” (2014)**
4 New Movement
City-to-city cooperation to improve China’s air environment
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)*

Support team of the Promotion Conference (within Environment Bureau)
Consisting of: Control and Inspection Department, Institute of Environmental Sciences, Office for International Environmental Strategies, Kitakyushu Business Promotion Office, SHANGHAI, etc.
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 ~**
- Antipollution measures
- 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)
- Survey on Dalian environmental model district development (ODA project 1996-2000)
- Cooperation in solving environmental problems overseas
- International environmental cooperation

**1990s ~**
- Environmental cooperation with a friendship city, Dalian
- 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 ~**
- City-to-city cooperation utilizing networks
- 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 ~**
- Efforts in forming low-carbon society
- Expansion to international environmental business
- Survey on Dalian environmental model district development (ODA project 1996-2000)
- Cooperation in solving environmental problems overseas
- International environmental cooperation

- 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)

- Establishment of Kitakyushu Initiative Network based on matters adopted by ESCAP (in 2002)
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Advantages of international environmental cooperation

Advantages on a global scale
- Contributing to improvement of environment and reduction in CO$_2$ 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
Thank you for your attention.

Teitan

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