

Chapter VII

International Environmental Cooperation between Kitakyushu and Asian Cities: Fostering Environmental Industries

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Summary and Recommendations

Zealous pursuit of economic growth and industrial development in the twentieth century left Kitakyushu with disastrous air pollution and water contamination. To overcome the city's terrible pollution, popular calls for change, spearheaded by women's groups, united citizens, businesses, research institutions and the government. These efforts have met with great success. The city is dedicated to sharing its experience to challenge new environmental problems in Kitakyushu.

To promote the environmental sustainable development, Kitakyushu has actively participated in international environmental cooperation, focusing on Asian countries facing severe environmental pollution over these 20 years. Kitakyushu's technical assistance has received international attention and even awards, including Local Government Honors from the United Nations Conference on Environment and Development, Rio De Janeiro, Brazil in 1992.

- 1 . The partnership between citizens, businesses, research institutions and the government is making a significant contribution to fostering environmental industry in Kitakyushu such as Eco-Town Project. At the same time, Kitakyushu has been utilizing production technology called "Cleaner Production," or simply "CP," which features lower environmental impact and increased production efficiency.
- 2 . Initially, only the transfer of EOP technology to developing countries was emphasized, but it became clear that providing such technology to businesses without adequate financial and production foundations would do nothing to lessen their environmental impact. Therefore, Kitakyushu concluded that the transfer of CP technologies is propitious. The city implemented research on the steel, cement, textile/dyeing, paper/pulp and chemical industries in Japan. The results of this research were reported in "Environmental Protection Production Technology—Cleaner

Production Technology” (published by Daily Industry), the first full-scale publication on CP in Japan. With accumulating knowledge of CP, Kitakyushu is actively engaged in CP transfer to developing countries.

- 3 . The City of Kitakyushu is engaged actively in fostering environmental industry and playing a leading role in this area within Japan.

Kitakyushu devised a strategy relying on three basic points to promote Eco-Town Project started in 1997: “basic research and personnel training,” “Applied Research on technology” and “business set-up.”

Kitakyushu is promoting international environmental cooperation in each country based on its overcoming experience of pollution and the achievement in environmental industry.

- 4 . Kitakyushu’s cooperation with Korea mainly focuses on acceptance of trainees (since 1994), dispatch of technical experts (since 1995), holding of seminars and training for municipal workers (since 1997).

A member of OECD, Korea is no longer regarded as a developing country; our relationship with Korea is one of cooperation rather than one of support. To cultivate human resources for medium and small companies, Kitakyushu’s trainings are based on the “municipality-to-nation” level while earlier cooperations were based on the “nation-to-nation” model. Trainings include 4 courses such as “Cleaner Production and environmental advanced technology”. Additionally, Kitakyushu is contributing to Incheon and other local governments in solving environmental problems, utilizing its knowledge of environmental protection and environmental management. Currently, business exchange between Korea and Kitakyushu is increasing through environmental cooperation.

- 5 . Main contents of environmental cooperation between Dalian, China are holding of seminars (since 1981), acceptance of trainees (since 1990) and support for construction of Dalian Environmental Demonstration Zone (1996-2000). Especially, the preliminary study for the Dalian Environmental Demonstration Zone Project was the first case of a municipal level cooperation leading to national-level cooperation. The model projects are mainly based on Cleaner Production, which will promote CP industry in China in the future.

Cooperation between Chongqing, China and Kitakyushu includes acceptance of trainees (since 2000), acceptance of study missions (in 2000) and holding of seminars (in 2000). Moreover, in 2002, at the request of Japan Bank for International Cooperation (JBIC), Kitakyushu conducted a survey of a “System of Waste Reduction, Appropriate Disposal and Recycling” in Chongqing, based on an agenda formation survey. This would be able to foster resource-oriented society and environmental industries such as solid waste management.

6 . Environmental cooperation with Semarang started fully in 1998. Personal exchange between the two cities and partnership between the two local governments resulted in the JICA Development Partnership Program, which funded the Demonstration River Purification Project (2001-2004) to treat waste water from tofu factories. In this project, technology for waste water treatment has been developed in collaboration with local university and materials such as pipes and pumps are procured employing local consultants and executing companies. Accordingly, technology for waste water treatment has been improved, which helps to foster technology suitable to the city.

As for environmental cooperation with Surabaya, Indonesia, Kitakyushu has dispatched experts and held seminars since 1996. In 2003, Kitakyushu conducted a research for reduction of solid waste and establishment of recycling program based on an agenda formation survey, a scheme newly proposed by JBIC. In future, environmental industry would be improved toward resource-oriented society.

7 . The goal of inter-city environmental cooperation is to create conditions that foster the growth of environmental industries in place of direct intervention on behalf of such industries. Namely, as local government and regional environmental management gain in strength, public awareness of environmental issues grows, creating demand for environmentally-friendly products and services. In that sense, Kitakyushu Initiative for a Cleaner Environment, listed in the Implementation Plan of the World Summit on Sustainable Development held in Johannesburg, South Africa in September 2002, would be a good example.

Additionally, ASPRO (Asian Partnership Programme Towards shared Prosperity), registered on the Promissory Document in the summit, projects to foster environmental cooperation and economic exchange between regions with the goal of developing sustainable communities. Kitakyushu has a long-term dedication to collaborating with other cities to develop the industries of sustainable development.

1. Overview

The City of Kitakyushu actively seeks to assist city and regional administrations in developing nations to improve environmental conditions, taking as a foundation the experience and techniques developed through its own process of environmental recovery. The city's campaign in international environmental cooperation began after the government of Dalian, China requested lectures on environmental management in 1981, and has since expanded in both content and scope to include several cities in East and South East Asia.

The importance of regional partnerships received emphasis at the Johannesburg Summit,

and leaders urged positive action from all stakeholders. From now on, the efforts of citizens and private enterprise—all stakeholders—to improve environmental balance in their regions must receive international support. Kitakyushu intends to move forward with current local policy initiatives and inter-city cooperation projects, promoting environmental-friendly industries to accomplish both environmental and economic goals.

2. Efforts of Kitakyushu

1) Background

Zealous pursuit of economic growth and industrial development in the twentieth century left Kitakyushu with disastrous air pollution and water contamination. Pollution was so bad that it provoked Japan's first air quality alert, and not even bacteria could live in heavily contaminated Dokai Bay. Beginning in the 1960s, popular calls for change, spearheaded by women's groups, resulted in citizens, businesses, research institutions and the government uniting to overcome the city's terrible pollution. These efforts have met with great success. The city is proud of its achievements in environmental recovery and is dedicated to sharing its experience.

While striving to overcome its pollution problems, Kitakyushu began to utilize a production technology called "Cleaner Production," or simply "CP," which features lower environmental impact and increased production efficiency. To promote the environmental sustainable development, Kitakyushu has actively participated in international environmental cooperation, focusing on Asian countries facing severe environmental pollution. These efforts have received international attention and even awards, including Local Government Honors from the United Nations Conference on Environment and Development, Rio De Janeiro, Brazil in 1992 and a Sustainable Development Awards at WWSD, Johannesburg, South Africa in 2002.

2) CP and International Environmental Cooperation in Kitakyushu

Private enterprises have been instrumental in the Kitakyushu's fight against pollution. Together they developed a technology called Cleaner Production, or CP, which combines productivity improvements with improvements in low-pollution production methods. The Pilot Plant Project entails the introduction of CP technology to factories in Dalian and information sharing between private enterprises of both cities with the help of environmental experts from Kitakyushu. Seminars on CP have been held in Dalian and Beijing in the hopes of spreading this technology throughout China.

In 1989, research work on CP implementation was launched under the leadership of the newly founded Kitakyushu International Techno-Cooperative Association (KITA). The results of this research were reported in the “1992 Kitakyushu Industrial Technology Survey,” followed by the “Kitakyushu Environmental Technology Survey ’98,” which focuses on environmental technology. Separately, systematic, in-depth research was implemented on the steel, cement, textile/dyeing, paper/pulp and chemical industries in the rest of Japan. The results of this research were reported in “Environmental Protection Production Technology—Cleaner Production Technology” (published by Daily Industry), the first full-scale publication on CP in Japan.

Building on an increasing public awareness of CP in the Kitakyushu area, the “Japan Cleaner Production Society” was established in May 1998, comprising businesses, the local government, research institutions and NGOs. The activities of this society were guided by three themes, “evaluation and systemization of CP in Kitakyushu,” “Examination of the Hibiki CP Plan” and “Kitakyushu Food Self-Sufficiency Plan.” The results were reported at the general meeting of the commemorative lecture of the society in 2001.

Initially, only the transfer of EOP technology was emphasized, but it became clear that providing such technology to businesses that lack adequate financial and production foundations is not enough, doing nothing to lessen their environmental impact. Therefore, Kitakyushu concluded that the transfer of CP technologies is most propitious when combined with the strengthening of business foundations. With the understanding of CP implementation in Japan, and the specialized needs of developing environmental industries in other countries in mind, Kitakyushu has began conducting international environmental cooperation.

Major initiatives in China, Indonesia and Korea include:

Research on Cleaner Production in Dalian Zone Project (China, 1996 ~ 1999)

At the request of the Japan International Cooperation Agency (JICA), the feasibility of CP introduction in four major plants (representing the steel, chemical, cement and dyeing industries) was studied.

Air pollution control support project in developing countries (1995 ~ 2002)

At the request of Ministry of the Environment, air pollution control measures for the steel, cement, fertilizing and petrochemical industries are being formulated.

River clean-up improvement pilot project in Semarang, Indonesia (2001 ~ 2004)

Through a JICA Development Partnership Program, tofu-manufacturing techniques from Japan have been transferred to Semarang as part of CP introduction to improve water quality in that city's rivers.

Technical Training programs for small and medium businesses in Korea and short-term dispatch of technical experts (1994 ~)

Kitakyushu is operating training programs to increase productivity and advanced environmental technology among small and medium businesses in Korea. Also, at the request of Korean companies, Kitakyushu dispatches technical advisors to take a direct hand in plants.

Kitakyushu's first priority in international environmental cooperation for urban industries in developing countries is the implementation of CP. Where environmental improvement cannot be achieved even with CP introduction, EOP support is provided. A distinctive feature of the Kitakyushu Initiative is that experienced advisors introduce CP techniques.

3) The Kitakyushu Method and the Promotion of Environmental Industry

Kitakyushu devised a strategy relying on three basic points to promote environmental industries: "basic research and personnel training," "Applied Research on technology" and "business set-up." This approach is unique within Japan. The Kitakyushu Science and Research Park, one of the four major projects in the Kitakyushu area, is responsible for the "basic research and personnel training." The Park is founded on cooperation between the city government, the Faculty of International Environmental Engineering at Kitakyushu University, the Science and Technology Research Center of Waseda University, and other academic institutions. "Applied Research" and "business set-up" are conducted through Kitakyushu Eco-Town Project. The Applied Research Area currently has a total of twenty facilities, including research institutions of Fukuoka University, seventeen research facilities working on a wide range of recycling and waste management applications as well as Eco-Town Center, which provides research support and environmental education for the public.

In addition to the Science Park and the Eco-Town project, Kitakyushu also supports the "Comprehensive Environmental Industrial Complex, Hibiki Recycling Area." This area includes comparatively large-scale recycling plants for plastic PET bottles, office equipment, home appliances, fluorescent tubes, medical waste as well as medium and small-scale plants for the processing of cooking oil, organic solvents and waste plastics. Also, in April of 2002, seven separate automobile scrapping companies moved to this

location in order to take part in high-efficiency automobile recycling. Waste paper recycling and construction waste recycling projects have been also launched.

Investment in “Applied Research” and “business set-up” was 22.7 billion yen as of the end of 2001, employing 287 researchers among 722 people. More business slated to locate in Kitakyushu will bring these figures to about 42.0 billion yen and 900 positions within two years.

Table: Promotion of Environment-related and Recycling Industries

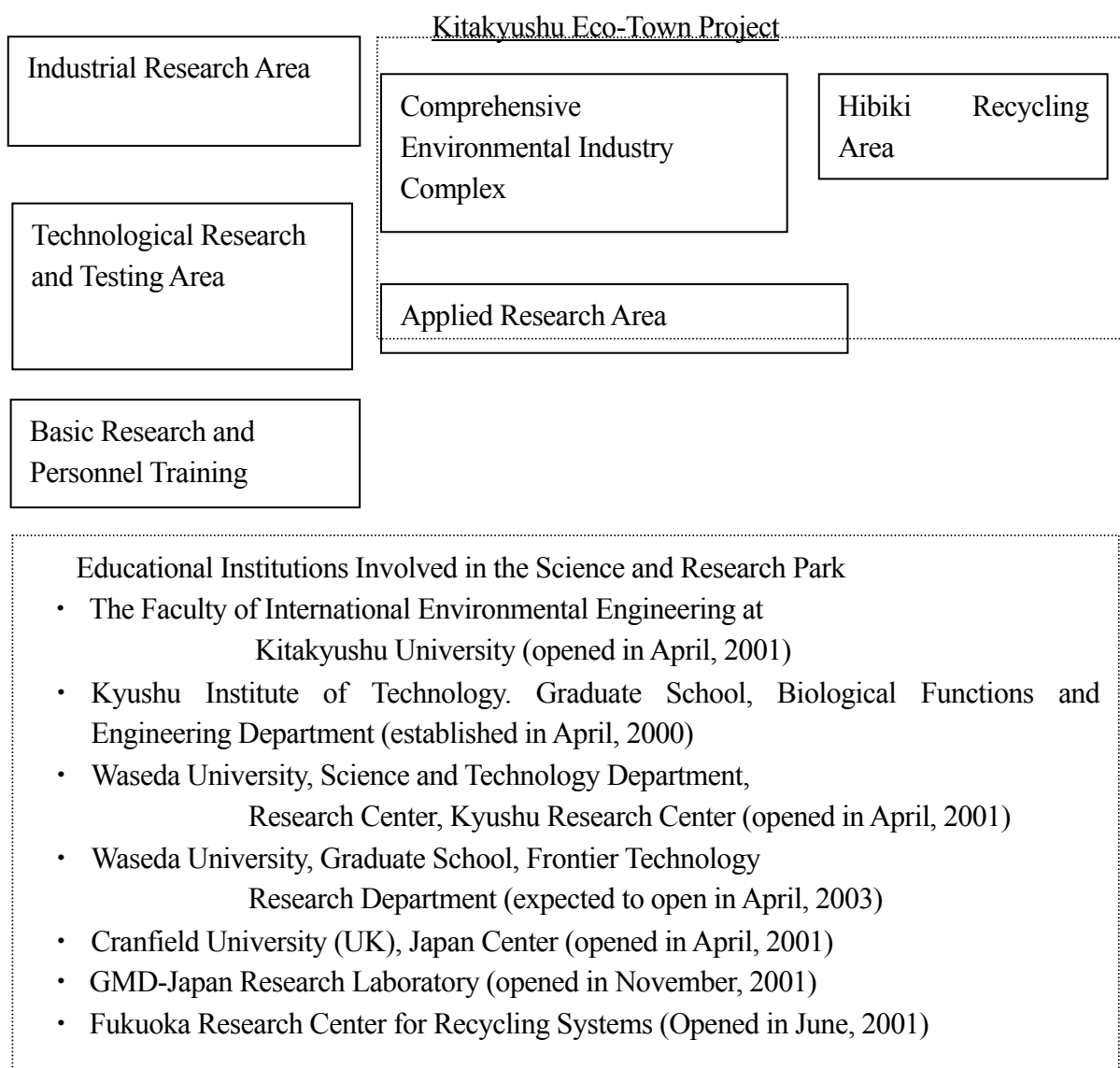


Table: Applied Research Area (Development Project)

Research Facilities:

1. Fukuoka University Institute for Recycling and Pollution Control
2. Kitakyushu Eco-Town Center

Projects:

1. Waste Re-utilization Development
2. Dome-shaped Disposal Site Development
3. Disposal Site Maintenance
4. Biodegradable Plastics Production
5. Leak-Proof Waste Disposal Site Development
6. Chlorine-Proof Water Isolation Layer Technology Development
7. Waste Recycling Development
8. Exploration of Disposal Site Stabilization Using Molten Slag
9. Waste Concrete Recycling Technology Development
10. Glass Recycling
11. Airborne Ash Neutralization
12. Oil-Contaminated Soil Rehabilitation
13. Recycled Construction Materials Evaluation
14. Increasing the Efficiency of Final Disposal Sites
15. Waste Neutralization Systems Development
16. Tofu Food Refuse Recycling
17. Styrene Foam Recycling

Table: Detail of the Eco-Town Project

●Comprehensive Environmental Industrial Complex Project

Recycling Projects:

1. Plastic PET Bottles
2. Office Equipment
3. Automobiles
4. Home Appliances
5. Fluorescent Tubes
6. Medical Waste
7. Mixed Construction Waste

●Hibiki Recycling Area Development Plan

1. Frontier Zone
 - A. Solvent Recycling Project & Recycling Plastic Petroleum Chemicals
 - B. Cooking Oil Recycling Project
 - C. Project for Recycling Zone
2. Automobile Recycling Zone
Automobile scraping businesses that were scattered throughout the city moved to this zone and aim at more complete and efficient automobile recycling.

4) Promoting Environmental Business Internationally

The goal of this project is the promotion of environmental industries in developing nations; but in place of direct intervention on behalf of such industries, we encourage using inter-city cooperation to create conditions that foster the growth of environmental industries. Namely, as local government and regional environmental management gain in strength, public awareness of environmental issues grows, creating demand for environmentally-friendly products and services. It is thought that such practices among private enterprises in one location will naturally spread to businesses in partner cities.

As an example from this city, the Kitakyushu Interdependent Business Consortium (KICS)—a group comprising over forty environmental consulting, waste-water treatment, air-pollution prevention, environmental monitoring and detoxifying equipment manufacturing, and recycling firms—actively participates in overseas environmental business development. In 2001, KICS and the Dalian Environmental Protection Industry Association established a relationship and agreed to cooperate on business exchanges. Also, from 2000 to 2002, a business mission of KICS members traveled to Dalian and Chongqing to participate in the Chinese International Environmental Protection Exhibition and Conference (CIEPEC), offering technical seminars and business negotiation opportunities that proved very popular. In 2002, KICS and CIEPEC jointly held a seminar on environmental technology. There is every reason to believe that such cooperation projects will continue to grow.

3. Environmental Cooperation between Kitakyushu and Overseas

1) Environmental Cooperation with Korea

For the past few years, Kitakyushu has been engaged in international environmental cooperation with Korea. This cooperation has included the acceptance of Koreans as trainees since 1994, the dispatch of Japanese advisors to Korea since 1995, and the operation of environmentally oriented education programs and seminars for local governments since 1997. In Korea, popular election of local government officials began in 1995, and is now essential in meeting the policy demands of the public. Therefore, Kitakyushu began conducting seminars and educational programs for Korea in order to meet the desire for public servants knowledgeable about environmental issues. The Korean government pays living and travel expenses incurred under the program. These activities have been highly successful and well regarded.

A member of OECD, Korea is no longer regarded as a developing country; our relationship with Korea is one of cooperation rather than one of support. Local governments are actively working on environmental issues, a process which leads to the development of new environmental industries. Furthermore, the human networks formed by this cooperation are expected to foster business interchanges and lead to mutual economic growth.

1)-1 The Acceptance of Trainees and the Dispatch of Advisors

The exchange of Korean trainees and Japanese advisors (retired industrial planners) between Kitakyushu and small and medium Korean businesses began at Korea's request, Kitakyushu's industrial infrastructure and know-how being the major drawing points.

While earlier cooperations were based on the "nation-to-nation" model, Kitakyushu's current relationships are on the "municipality-to-nation" level.

Table: Small-/Mid-Sized Business Technical Training Courses	
1994	<p>(1) Steel Materials Processing and Characteristics (Approximately Two Months) Lectures and practicums on steel manufacturing, casting, rolling, refining, welding, cutting and processing, steel materials testing, steel materials processing and quality control, deterioration countermeasures for steel products, automation, etc. These are conducted in cooperation with fifteen businesses including Sumitomo Kokura Iron Works, Nissan Kyushu Plant.</p> <p>(2) Productivity Improvement Technology (Approximately Two Months) Composed of introductions to productivity, IE, QC, sequence control, plant arrangement, VE, distribution management, progress management, computer-invoking design and manufacturing and study tour, enlisted the help of Takada Manufacturing, Nippon Steel Yahata Iron Works and seventeen other businesses.</p> <p>(3) Industrial waste disposal technology (Approximately One Month) Comprises lectures on recycling technology and study tours of 33 facilities related to resource recovery technology including Kitakyushu Institute of Environmental Sciences and the Engineering Department of Fukuoka University.</p> <p>(Total number of trainees: 29)</p>
1995	Course (1) restructured as Steel Materials and Automation
1996	Course (1) Restructured as Metal Processing and Productivity Improvement
1997	<p>New Course Established: Equipment Maintenance Management Nine trainees were accepted for the seventy-day course providing the technical knowledge and remedial techniques needed for maintenance and management systems. Nishi-Nippon Sugar manufacturing, Dai-ichi High Cycle Manufacturing and seventeen other businesses lent their support to this course.</p>
1999	<p>Course Extensions [Industrial waste disposal technology]: 53 days Others: 73 days</p>

As of 2001, 265 trainees have been accepted into the four courses.

Once introductions to Korean businesses have been made, Kitakyushu sends a research group to discuss the appropriateness of its course with company heads and concerned employees. Advisors dispatched to small and medium businesses in Korea focus on training in productivity improvement at the management and supervisor levels.

Table: Results of dispatch

	Number of Advisors Dispatched	Topics Addressed
1995	6	<ul style="list-style-type: none"> • Automobile Parts Manufacture • Manufacture of Die for Automobile Parts • Precision Molding Design and Manufacture • Electronic and Electric Parts Manufacture • Synthetic Rubber Adhesive Manufacture
1996	4	<ul style="list-style-type: none"> • Pump and Burner Manufacture • Reduction Equipment Manufacture • Automobile Parts Manufacture • Motor and Gear Manufacture
1997	4	<ul style="list-style-type: none"> • Silicic Acid Soda Manufacture • Industrial Furnace Design and Manufacture • Electronic Equipment Parts Manufacture • Electronic Parts and IC molding Manufacture
1998	5	<ul style="list-style-type: none"> • Automobile Parts Manufacture • Silicic Acid Soda and Adhesive Manufacture • Electronic parts and IC molding Manufacture • Hydrogen, Carbon Dioxide and Oxygen Manufacture • Valve Manufacture
1999	6	<ul style="list-style-type: none"> • Power Distributing Transformer Manufacture • Molding for Home Appliance and Automobile Parts Manufacture • Valve Manufacture • Automobile Parts Manufacture • IC lead frame and Molding Manufacture • Satellite Receiver Manufacture
2000	4	<ul style="list-style-type: none"> • Eject/Radiate Mold/Form Metal Manufacture (schedule

		management) • Developing and Commercializing Air-pressure Machinery • Molding Design, Measurement, CAM Work • Vacuum Molding Manufacture
2001	6	• Molding Manufacture (process management) • Productivity Improvement • Floor Space Index Improvement in Warehouse and Inventory Control Facilities • Factory Arrangement Improvement • Valve Manufacture Plants (Productivity improvement) • Centrifugal Pump Impeller Design • Development and Commercialization of 4/3 Way Valve

Total number of businesses: 36

Total number of advisors dispatched: 35

Total number of training days: 395 (as of 2001)

1)-2 Technical Cooperation with Incheon

The City of Kitakyushu and the City of Incheon concluded a Sister City Pact in 1988. In 1993, the five participating cities in the Pan-Yellow Sea Cities Conference issued a joint statement of support for the “exchange of industrial and environmental protection technology,” which led to the Agreement for Cooperation on Industrial Technology.

Table: Technical cooperation with Incheon

Year	Content
1996	Incheon Exchange Project Seminars
1997-1999	An eight-day casting and molding technology training course to improve the manufacturing process and to establish basic knowledge of technological infrastructure in an eight-day course. 1997: 11 trainees in one course 1998: 21 trainees in two courses 1999: 15 trainees in two courses
2000-2001	“Mechatronics” training course for management sections from small and medium businesses, based on the Agreement on Industrial Exchange. Number of trainees: 15 (2000), 13 (2001)
2000	Productivity Improvement Technology/Inverting Control seminars for

	technical managers.
2000	Consultation on environmental problems, environmental training, participation in Pan-Yellow Sea Cities Environmental Protection Seminars.
2001	Technology guidance for small and medium businesses in 3S Electronics, Kyojo ENG, I.H.S. to improve productivity and quality control.

1)-3 Implementation of Environmental Training among Cities

Since 1997, Kitakyushu has been using its experience in environmental protection and environmental management to train civil employees of Korean cities facing severe environmental problems. These weeklong seminars are usually held in Kitakyushu, but financial concerns after the Asian Financial Crisis have forced a few relocations to Korea.

Table: Environmental training for civil employees of Korea

Year	Venue	Participants	Cities Represented
1997	Kitakyushu	18	5
1998	Korea	230	2
1999	Kitakyushu	25	16
2000	Kitakyushu	14	7
2001	Korea	15	16

After the 2001 training session, suggested by the head of Environmental Bureau, research group from the Pohang City Environmental Bureau visited Kitakyushu to study our environmental master plan.

1)-4 Pan-Yellow Sea Environmental Protection Seminars

Several cities from China, Korea and Japan conduct Pan-Yellow Sea Environmental Protection Seminars to develop common understanding of environmental problems in the region. Participating cities include Kitakyushu, Fukuoka and Shimonoseki in Japan, Incheon, Pusan and Ulsan in Korea and Dalian, Qindao, Yantai and Tianjin in China.

Table: Environmental protection seminars for cities of Pan-Yellow Sea Countries

Year	Venue	Theme
1995	Dalian (China)	Introduction of each city's environmental problems.
1996	Incheon (Korea)	Methods of cooperation in environmental protection.
1998	Shimonoseki (Japan)	Improvement of environmental quality (management industrial wastewater)
2001	Yantai (China)	Cleaner Production

1)-5 Other Exchanges with Korea

In addition to the ongoing activities described above, several other exchanges between Korea and Kitakyushu have taken place. In 1997, "Seminars for Productivity Improvement Technology in Korea" were held in Siheung City. Forty-seven people enrolled in the five-day seminar, including members of management sections, field managers and technical advisors from small and medium businesses. Lectures and panel discussions with themes like, productivity improvement technology, TPM, QC, and etc., were conducted. In 2000, eighteen people from two medium-sized businesses took part in TPM training in Kitakyushu. In the same year, a Korean television broadcasting company making a documentary film on water quality in Masan decided to use Kitakyushu's Dokai Bay as a model for future improvement, and collected footage and materials during a short visit. In 2002, Lee Jung Ju, the president of the Korean Urban Land Management Consortium and nineteen of its other members paid a courtesy call to the Director -General of the Kitakyushu Environmental Bureau to discuss possibilities for future cooperation with Kitakyushu and to visit Eco-town. Also, Kitakyushu sent a delegation to the Society of Asian Waste Management Advisors 2002 meeting in Seoul, Korea. Also, Kitakyushu will host the next meeting in 2004.

1)-6 Business Exchange

The number of business links between Japan and South Korea has been on the rise recently. In April 2003, Kitakyushu municipal administration and business representatives participated in the Incheon Environmental Technology Exhibition at the invitation of the City of Incheon, where they introduced local technology. Also, in August 2003, twenty four students enrolled in a public lecture series sponsored by Seoul University Graduate School entitled the "Korean CEO Environmental Business Forum," visited Kitakyushu met with

KICS representatives and made a field visit to Eco-town

2) International Environmental Cooperation with China

2)-1 Environmental Cooperation with Dalian

Kitakyushu's environmental cooperation with Dalian ranges from the seminars held since 1981, to training courses held since 1990, to support for the Dalian Environmental Demonstration Zone Project in 1994-, and beyond. The preliminary study for the Dalian Environmental Demonstration Zone Project was the first case of a municipal level cooperation leading to national-level cooperation as an ODA project. Moreover, JICA (national level) and the Kitakyushu (municipality level) are making use of the ongoing experience in cooperation between the two cities in a cooperative study to decide the future of ODA projects.

In June 2001, Dalian was awarded the United Nations Environment Programme "Global 500" in recognition of the dramatic environmental improvement it achieved. In appreciation for its cooperation in environmental improvement in Dalian, the Chinese national government gave the Mayor of Kitakyushu a National award. Listed below are the City's achievements to date.

2)-1-1 Environmental Seminars

- October, 1981 "Environmental Pollution Control Seminar" (air, water pollution), Dalian
- October, 1993 "Kitakyushu-Dalian Technical Exchange Seminar"(environmental technology, productivity improvement technology, etc.), Dalian
- January, 1995 "Kitakyushu-Dalian Environmental Exchange Seminar" (environmental protection technology), Dalian
- September, 2000 "Environmental Technology Seminar" (introducing businesses with environmental protection technology), Kitakyushu
- March, 2001 Seminar on Environmental Exchange between Cities in Japan and China (PR for the achievements through cooperation with Dalian to all over the nation), Beijing
- September, 2002 Environmental Technology Seminar (presentation of businesses in Kitakyushu), Dalian

2)-1-2 Training

- 1990 ~ 1995 Training for factory managers (1 month, 63 trainees)
- 1993 ~ 1997 Training for corporate technical advisors (1 month, 23 trainees)
- 1993 ~ Training for Environmental Protection Agency workers
(1 trainee per year for six months, nine trainees)

2)-1-3 Joint Projects

- 1995 ~ 1997 Publication of “Environmental Education Text”
- 1996 ~ 1997 Publication of “Glossary of Japanese-Chinese Environmental Terms”
- 1996 Publication of “Manual for Analysis of Water Pollutants”
- 1996 ~ 2000 Improvement projects for the combustion of small coal boilers

2)-1-4 Development Study on Dalian Environmental Demonstration Zone Project

Following Kitakyushu’s proposal, the Chinese government designated Dalian as an Environmental Demonstration Zone, and gave high priority to the project. The Zone’s objectives include establishing Dalian as a pilot city for metropolitan environmental improvement, pursuing environmentally friendly development through the reform of city infrastructure, rationalizing industrial and energy systems, and protecting ecosystems. Dalian expects to implement measures in 2010, in order of priority. Kitakyushu is promoting comprehensive environmental cooperation with China, involving not only the local government, but also businesses and citizens, in cooperation with the state, JICA and other institutions concerned. In order to assist the realization of the Zone, Kitakyushu made a development study and created the master plan for environmental improvement in cooperation with JICA.

<Goals>

- The Creation of an international city featuring sustainable, environmentally-friendly development.
- To achieve environmental standards similar to those of Kitakyushu by 2010

<Content>

- Completion of the ODA preliminary study (December, 1996 ~ March, 2000)
- Setting of Environmental Standards (March, 2000)

<Characteristic>

- The first case in which international cooperation at the municipality has lead to

national-level cooperation with ODA.

- JICA (national level) and Kitakyushu (municipal level) are collaborating for the first time in a study to make use of the ongoing experience in cooperation between these two cities.
- Yen loans (total: ¥ 8.5 billion) are distributed to especially important projects, including the following five.

Table: Yen Loan Projects in Dalian Environmental Demonstration Zone Project

Year	Plant	Project	Amount of money
1999	Dalian Pharmacy Plant	Plant Transfer	¥ 5.3 billion
	Power Plant in Yandao Chemical Industry Area	Flue Gas Treatment at Thermal Power Plants	
	Chunhai Power Plant	Improvement of Boilers at Thermal Power plants	
2000	Dalian Iron Works	Electric Furnace Pollution Countermeasures	¥ 3.2 billion
	Dalian Cement Plant	Airborne Dust Countermeasures	

2)-1-5 CP Model Plants Project

This project aimed at dissemination of Cleaner Production technology, or CP technology in Dalian, as well as promotion of technology exchange between Dalian and Kitakyushu. CP technology, which enables both productivity and environmental improvement, has been utilized by many enterprises in Kitakyushu ever since they started tackling with pollution. Company members in Kitakyushu participated in the project as environmental specialists.

Furthermore, CP technology transfer seminars were carried out in Dalian and Beijing to disseminate the project widely in China.

- August, 2001 The first dispatch of advisors
- October, 2001 The second dispatch of advisors
- August 2001-February, 2002 Acceptance of trainees
- September, 2002 Summary Report
- January, 2003 CP transfer seminar (Dalian and Beijing)

2)-1-6 Business Exchange

Recently, improvements in the environmental policy in Dalian have triggered a demand for

environmentally friendly industries. Relationships between these businesses and Kitakyushu's own environmental industry are expected to form the core of relations between these two cities. A brief history of business exchanges between Kitakyushu and Dalian follows.

Table: Business Exchange with Dalian

January, 2000	Kitakyushu-Dalian Environmental technology Exchange Seminar Nine Kitakyushu businesses participated in this seminar on technology of Dalian Cement, one of the Yen Loan Projects.
September, 2000	The Kitakyushu Environmental Technology Business Party visits to Dalian and Chongqing The party participated in the China International Environmental Protection Exhibition 2000 to introduce Kitakyushu's environmental technology. Seminars on environmental technology in Kitakyushu were also held.
November, 2001	Initiation of ties between the Kitakyushu Interdependent Business Consortium for Sustainable Development (KICS) and Dalian Environmental Protection Industry Association.
September, 2002	Kitakyushu Environmental Business Party Visit to Dalian and Chongqing. Twelve Kitakyushu businesses participated in the China International Environmental Protection Exhibition 2002 to introduce their technology. Seminars on environmental technology in Kitakyushu were also held. (number of inquiries: 288, number of negotiations: 23)

2)-2 Environmental Cooperation with Chongqing

Cooperation with Chongqing started in November 1991 after the Chongqing Economic Reform Committee visited Kitakyushu on a business exchange. Since then, Kitakyushu and Chongqing have worked together on infrastructure projects such as Chongqing's monorail (now under construction with Yen Loan financing). Building on this cooperation, in October 1999 the Chongqing Economic Committee established the Chongqing Technology and Economy Office in Kitakyushu to facilitate closer networking between the two cities. Then, in July 1999 a delegation of municipal environmental officials selected by the Chinese Government visited Kitakyushu to establish environmental cooperation. Agreeing to their request, Kitakyushu launched a formal cooperation in 2000. Moreover, in 2002, at the request of Japan Bank for International Cooperation (JBIC), Kitakyushu conducted a

survey of a “System of Waste Reduction, Appropriate Disposal and Recycling” in Chongqing, based on an agenda formation survey. Although the cooperation with Chongqing began so recently, future exchange would be expected.

Efforts to date are outlined below.

2)-2-1 Acceptance of Trainees

- October, 2000 Acceptance of Chinese Trainees for JICA Technical Cooperation Courses
- December, 2000 Acceptance of Chinese Trainees for JICA Pollution Management Courses
- December, 2001 Acceptance of 11 Chongqing Trainees for CP Technology
- May-December, 2002 Acceptance of 1 Trainee from Chongqing Environment Protection Bureau

2)-2-2 Acceptance of Delegations from Chongqing

- December, 2000 Acceptance of Chongqing Waste Incinerator Delegation (13 members)

2)-2-3 Seminars

- March, 2001 Chongqing-Kitakyushu Environmental Seminar (8 Kitakyushu Representatives, 30 Congqing Businesses Representatives)

2)-2-4 JBIC Survey “Establishment of Waste Disposal in Chongqing”

The aim of this project was to cooperate with city residents to design an appropriate waste management system that would see a reduction in waste volume and an increase in recycling volume. In the period from April to December 2002, Kitakyushu conducted five surveys on the condition of Chongqing’s current waste disposal system held seminars both for citizens and the civil administration. An improved waste management system for solid waste reduction and recycling was proposed.

2)-2-5 Business Exchange

- September, 2000 Dispatch of Environmental Technology Business Party (28 members)
- May, 2001 Research on Environmental Industries in Chongqing
(2 members, research on coal ash and environmental industry)
- January, 2002 Research on Environmental industries in Chongqing
(5 members, research on coal ash and environmental industries)
- September, 2002 Dispatch of Kitakyushu Environmental Technology Party
- December, 2002 Dispatch of Kitakyushu Environmental Business Party
(6 booths were made)

2)-2-6 Japan-China Friendship Center for Environmental Conservation

Japan-China Friendship Center for Environmental Conservation is a comprehensive research and administrative institution under the direct control of the National Environmental Protection Agency. It also plays a role as a contact point for international environmental technical cooperation and international exchange. The center was jointly established on May 5th, 1996 by a Japanese government grant of ¥ 10.5 billion and RMB 66.3 million in Chinese government funding.

In addition to the city-to-city cooperation observed above, the City of Kitakyushu has been dispatching its personnel to the center to implement cooperation with China, taking advantage of its know-how, since the phase in 1996. The center receives technical support from the Japan International Cooperation Agency (JICA). JICA is based on a partnership between the Ministry of the Environment, the Ministry of Economy, Trade and Industry (the former Ministry of International Trade and Industry), local governments and others, and conducts the “Project Type Technical Cooperation,” combinations of dispatch of Japanese experts, the training in Japan of Chinese technical advisors and provision of materials and equipments.

The target of the project itself is “to develop technology for pollution monitoring and control, build information networks, design policy for education and advertisement” and to serve as a “contact point for environmental cooperation projects between Japan and China.” Specifically, members of the project work on ISO14001 and RM manufacturing, establishing acid rain monitoring networks, researching urban air pollution by yellow sand, and on dioxide problems.

Table: Activities of the Japan-China Friendship Center for
Environmental Conservation

Period	Context
September, 1992 ~ August, 1995	Construction of Japan-China Friendship Center for Environmental Conservation
February, 1996 ~ January, 2001	Phase II (dispatch of 2 advisors)
April, 2002 ~	Phase III (one advisor currently dispatched)

An evaluation of Phase II conducted in September, 2002 found that it was both highly effective and visible, and that it could play a leading role in building relationships. In light of the positive outcome of Phase II, it was decided to implement Phase III, and advisors from Kitakyushu are now being dispatched.

3) Environmental Cooperation with Indonesia

Kitakyushu is currently promoting cooperation with Semarang, the provincial capital of Central Java, and Surabaya, the provincial capital of East Java. In 1998, Kitakyushu and Semarang formed the “Environmental Partner Cities” in order to foster environmental cooperation between the two cities. This program helps to develop comprehensive interchange between the cities, including residency exchange, while implementing various environmental projects.

Cooperation with Surabaya, also based on Environmental Cooperation Network of Asian Cities, is being jointly conducted with the same aims as the Semarang cooperation.

3)-1 Semarang

In 1998, Semarang held the “Semarang Conference on Sustainable Development,” where the introduction of CP in small and medium businesses and the improvement of citizen participation in environmental management were discussed. Of particular concern in Semarang are the many rivers that have been heavily polluted by wastewater from tofu factories. Conference participants concluded that the best strategy for dealing with this problem would be to start with demonstration projects in small rivers, and then move on to larger ones. Kitakyushu has played an administrative role in this project, dispatching specialists from its Institute of Environmental Sciences and who teach at local institutions

to improve Semarang's environmental monitoring capabilities.

Following the Semarang Conference, citizens of Kitakyushu and Semarang have initiated a busy interchange through KITA, various NGOs and their respective local governments. KITA organized a study group for citizens to go to Cebu, Bangkok, and Semarang. During the tour, KITA held environmental seminars in each city to allow for an exchange of opinions between residents of these communities. In Semarang, the final destination of the tour, a seminar for citizens was followed by a conference for the administrative body. Consequently, these activities, including interchange between the citizens, cooperation between NGOs and the partnership between the cities have been building up to the present river cleaning demonstration project.

Main Cooperation Activities

1992	Research was conducted on environmental measures suitable for developing countries (JICA Institute for International Cooperation).
August, 1996	Kitakyushu nominated Semarang as an Invited Guest to the World Bank Seminar.
December, 1996	Semarang participated in the World Bank Seminar in Kitakyushu and Penang.
December, 1997	The Director of Semarang Environmental Bureau, also acting mayor, attended the Kitakyushu Conference on Environmental Cooperation Among Asian Cities.
July, 1998	Preliminary survey for the Semarang Conference on Sustainable Development.
October, 1998	Dispatch of a research group from the International Centre for the Study of East Asian Development (ICSEAD) to examine the future policy on international environmental cooperation.
November, 1998	Semarang Conference on Sustainable Development; Kitakyushu dispatched nine advisors from tofu factories. Kitakyushu and Semarang concluded an agreement on environmental improvement cooperation.
November, 1998	KITA organized local environmental seminars for citizens and NGOs.
October, 1999	Kitakyushu invited municipal workers from Semarang, Ho Chiminh City and Surabaya to training seminars on environmental control administration and environmental

	monitoring and analysis supported by the JICA Local Framework Research System
October, 1999	A delegation from Semarang, including the mayor's wife and five NGO representatives, attended the Kitakyushu Citizens-NGO International Environmental Seminar.
October, 1999	Participation in Art and Environment: Drawings by Children of Asian in Kitakyushu.
March, 2000	Kitakyushu dispatched two municipal workers and one KITA staff member to the Semarang Institute of Environmental Sciences for environmental analysis to develop human resources in applying JICA Advisors Dispatch Project with Public Participation.
2001	JICA adopted the Environmental Improvement Project for Demonstration Rivers in Semarang as one of the Development Partnership Programs.

The Tofu Project

In Semarang, there are nearly 300 tofu plants of various sizes, the wastewater from which is a significant source of river pollution. In order to help in the resolution of this problem, Kitakyushu has utilized the JICA Development Partnership Program.

The JICA Development Partnership Program financially supports logistically feasible NGO and local government projects. In 1999, the Demonstration River Purification Project became the first project to be approved for funding by the Partnership Program and was launched the following year. The main purpose of this project was to improve tofu manufacturing processes used in Semarang factories. Kitakyushu's own tofu makers have traveled to Semarang to help in this reform. With the introduction of better productivity in tofu factories, what was once dumped into rivers can be collected and made into food products (okara).

However, even with improvements in manufacturing methods, wastewater is still generated and must eventually be treated. To minimize the amount of pollutants getting into rivers, a wastewater treatment facility is currently being constructed. At this facility wastewater from multiple factories will be purified before being discharged into rivers.

Another important goal of the project has been the establishment of regular monitoring of the health of Semarang's rivers. In order to improve these capacities, Kitakyushu has been improving analysis methods and raising public awareness about the effects of waste dumping in and around rivers. In the future, environmental industries such as consulting on manufacturing technology and wastewater treatment are expected to take off.

3)-2 Surabaya

Kitakyushu' cooperative relationship with Surabaya began in 1996. Since then, they have worked several research studies on waste-related issues.

Main Projects through Cooperation

August, 1996	Kitakyushu nominated Surabaya as a invited guest for a World Bank seminar.
December, 1996	Surabaya attended the EDI/FASID Environmental Seminar in Kitakyushu and Penang.
March, 1997	A research survey on environmental problems in Surabaya was conducted by specialists in Kitakyushu.
July, 1997	KITA dispatched a survey party to develop training courses.
December, 1997	The head of Surabaya Development and Planning Board attended the Kitakyushu Conference on Environmental Cooperation Among Asian Cities. The Environmental Cooperation Network of Asian Cities was established.
October, 1998	Kitakyushu dispatched a survey party from ICSEAD to examine policy on international environmental cooperation.
November, 1998	The Semarang Conference on Sustainable Development was jointly held by Kitakyushu and Semarang. The Deputy Mayor of Surabaya City attended.
October, 1999	Kitakyushu accepted municipal workers and conducted a JICA Government Training Course for Surabayan City officials
October, 1999	Surabaya participated in the Art and Environment: Drawings by Asian Children.
March, 2000	Kitakyushu dispatched specialists in waste disposal, conducting a JICA Advisor Dispatch Project with Public Participation.
November, 2000	Kitakyushu for solid waste management conducted a JICA Government Training Course.

The collection, transport and disposal Surabaya's increasing waste volume are heavy environmental and financial burdens for the city. Moreover, much of the material that enters the waste disposal system could be put to further use. Research has shown that almost half of the total garbage volume in Surabaya is kitchen waste. To reduce the amount of kitchen waste, a compost program will be carried out.

Scavengers represent another important issue that must be taken into consideration in Surabaya. Scavengers make their living by collecting recyclable and reusable materials from dumping sites. Although their efforts comprise a kind of informal recycling market, their working conditions and income are very unstable. Widespread recycling and reductions in waste volume would further jeopardize the livelihood of Scavengers. It is therefore essential that waste management reform efforts also provide for the needs of these citizens.

In the case of Surabaya, current efforts are mainly focused on waste-related issues, but other problems, such as air and water quality, also need attention. Surabaya will need to draw up a master plan for environmental management in the near future. The following are some attributes of this master plan.

As the Surabaya city administration promotes environmental improvement, it will be essential to carry nonofficial influence to foster the environmental industry. Through the implementation of the program, it is expected that demands for environmental businesses such as recycling technology and selling recycled goods will appear.

Currently, thirty percent of the city's total waste collection is outsourced to private sector companies, a figure that should increase in the future.

At present, environmental monitoring in Surabaya is carried out only in limited places. Therefore, environmental monitoring should be expanded in the near future.

4. Review of City-to-City Environmental Cooperation

1) Basic Objectives of Kitakyushu's International Environmental Cooperation

Since 1981, Kitakyushu has taken the initiative in various international cooperation activities in order to make use of the technology and know-how acquired in its own fight to improve the environment, with developing countries. Those activities include acceptance of trainees from overseas, organization of international conference, dispatch of experts, environmental surveys in developing countries, and international environmental consulting activities. In recent years, the demand for international cooperation from cities in Southeast Asia that are facing environmental problems has increased dramatically.

Kitakyushu created the "Kitakyushu Master Plan for International Environmental Cooperation" in January 2000, in order to demonstrate the mid- and long-term perspectives of the desired approach to international environmental cooperation in the 21st century, as well as the means to achieve that objective. The basic concept of the plan is the creation of a sustainable city with limited impact on the environment, and has the following three objectives:

Contribution to the protection of the global environment (improvement of the environment in developing countries for the protection of the global environment)

Contribution to the creation of a living-friendly environment (collection and dissemination globally of information of knowledge)

Contribution to vitalization of the region (business-based cooperation)

The above objectives represent Kitakyushu's commitment, as a local government, to internationally promoting "Environmental Improvement by Local Communities" in response to increasing demands for international cooperation from cities in Southeast Asia that are facing environmental problems cooperation based on environmental business to solve worsening environmental issue in Asia, not only volunteer-based cooperation comprehensive cooperation that involves not only technical support for each field, but also know-how concerning operation/maintenance of equipment and planning/enforcement of environmental policy.

2) Outcomes of Inter-city Environmental Cooperation

A large number of cities in Asia faces severe environmental stresses from a variety of origins, including overburden in solid waste management, destruction of biodiversity, and is

exposed to hazardous chemicals, due to worsening of air quality, worsening of quality and lessening of amount of water resources, and changes in lifestyles to mass production and mass consumption.

A proper understanding of the state of the environment is the first step for cities to begin to address their own critical issues. This is accomplished by the acceptance of trainees and dispatch of experts, among other activities. Based on fundamental studies, issues to address between discussions with the target city are narrowed down and concrete cooperation projects, such as full-scale studies and seminars, are promoted. Then, as will be indicated, the different methods of environmental cooperation activities are carried out with local governments.

Cooperation with Korea first began in 1994 with training for the private sector in the processing of metal parts and equipment technology, with a direct bearing on improvement in industrial production. One environmental training course on cleaner production (CP) and environmental advanced technology includes training on cleaner production and industrial solid waste management systems. According to a questionnaire from the trainees, evaluated the course highly indicating that they were acquiring skills for difficult technology, as compared to other training courses in industrial production. In addition, the Korean trainees had great interest in Kitakyushu Eco-Town. Korea is looking towards the creation of a resource recycling society; this in particular will necessitate technological demand. In this way, the development of environmental business can be expected.

In the area of capacity building, employees of local governments in Korea participate in fee-based training. This demonstrates the importance of improving the capacity of local governments in environmental improvement and environmental industry.

International environmental cooperation with Dalian has been carried out since 1981. In support of the Dalian Environmental Model Zone, an environmental protection plan was created in March 2000 and a development study was concluded. Contents of the plan include pollution countermeasures for air, water and solid waste, as well as plans for comprehensive urban environmental improvement including industrial relocation. In addition, infrastructure related measures such as dust collectors and measurement analysis machinery, as well as soft measures including improvement of operational and management know-how, restructuring, and capacity building of personnel are also included in the plan. In March 2000, yen-based loans were decided based on the creation of the Japan-China Environmental Development Model City Project.

Cooperation with Dalian that began on a local governmental basis has developed into concrete exchange and cooperation with the private sector. As a result, Dalian was the recipient of the UNEP Global 500 Award in 2001, due to the improvement of its environment.

Cooperation with Chongqing is mainly focused on solid waste management and includes field surveys on the state of the environment and guidance for improvement. In 2002, a feasibility study on the establishment of a solid waste treatment system for Chongqing was carried out under the JBIC scheme. In the final report of the field survey, the following were proposed: (1) Creation of a comprehensive solid waste treatment system; (2) Creation of solid waste reduction and recycling model through public participation; (3) Promotion of special environmental business area in order to create a resource recycling society; and (4) Improvement of environmental governance for the creation of a resource recycling society. In order to implement this plan, cooperation will be promoted through linkages with the local government and the private sector.

With the practical application of the JICA Development Partnership Study, a facility was constructed for the treatment of wastewater from a tofu factory as a model for river pollution prevention. With the employment of local businesses and use of materials that could be procured locally, contributions were made to the cultivation of environmental industries in Semarang. Together with the construction of wastewater treatment facilities, environmental education activities were also carried out to raise awareness of residents on the illegal disposal of waste into the river. River clean-up activities were carried out by local NGOs with tangible results including the posting of signs to stop the illegal disposal of waste and environmental education at local elementary schools.

Field surveys were carried out in Surabaya on solid waste management, a pressing problem in Surabaya. This was conducted making use of the JBIC scheme, similar to Chongqing. The field surveys found that door-to-door collection of waste is carried out, however, pick-up rates are low due to the distance between transfer stations and the final disposal site. As a result, large amounts of waste accumulate at the transfer stations. One cause may be that cost distribution is not appropriate, since cost accounting for solid waste management is not carried out. Other problems facing Surabaya include sanitary management of the final disposal site the necessity of constructing a new final disposal site in a little less than one year in order to accept the maximum permissible limit of waste. The field surveys demonstrated the need for cost accounting and for clear cost distribution, as well as the promotion of separation and recycling in order to reduce waste, considering the local customs and culture.

The outcomes of the field surveys can be linked to infrastructure type projects such as the establishment of a composting center, as well as soft projects including environmental education and public participation to reduce waste.

3) Effects on Environmental Industry through International Environmental Cooperation of Kitakyushu

3)-1 Possible Impacts on Other Nations and Cities through International Cooperation of Kitakyushu

Cooperation between Dalian and Kitakyushu, which has been based on friendly interaction, is the starting point of inter-city cooperation in Kitakyushu. In the development research on the Dalian Environmental Demonstration Zone Project by Kitakyushu and JBIC, the inter-city cooperation developed into the one at a governmental level between China and Japan. The aim of establishing the demonstration zone is to intensively improve environment in the area designated for the zone in Dalian. Therefore, manufacturing methods of representative companies in Dalian were revised from the perspective of Cleaner Technology, which led to the yen loan of 8.5 billion yen. Currently, CP technology is becoming the main stream of production technique. In China, CP Promotion Law has been in effect since January 2003. Kitakyushu is now requested for CP technology seminars and development researches by different cities in China. Environmental industry related to CP in China and Dalian is expected to increasingly thrive in the future.

In Chongqing, domestic solid waste management is becoming an issue along with increasing population and diversification of their life style due to significant development of the city. Also, the city is challenged by industrial solid waste problems, including coal slug, iron and steel slug and coal ash in terms of environmental protection.

To solve these problems, Kitakyushu carried out a research based on proposal to establish solid waste management system in cooperation with Chongqing. This could foster environmental industry that promotes solid waste management and recycle-based society.

In Semarang, Indonesia, as described before, a model project for river pollution caused by waste water from tofu factories is in operation as one of the development partners projects. This project aims at developing technology for waste water treatment jointly with a local university, and procuring materials such as pipes and pumps with local consultants and executing workers. This approach allowed technology for waste water treatment suitable for the local condition. However, it would take longer to evolve into environmental industry

since they do not have financial resources enough to disseminate this kind of technology.

3)-2 Possible Effects on Development of Environmental Industry of Kitakyushu through International Environmental Cooperation

In Japan, The Basic Law for Establishing a Recycling-based Society was introduced in 2000 and five more recycling laws were formulated or revised in each material. Based on “Kitakyushu Eco-town Plan” and its implementation plan, approved by Ministry of International Trade and Industry (currently Ministry of Economy, Trade and Industry) in July 1997, the city is developing various kinds of businesses through Kitakyushu Eco-town project with the target year set at 2005. Since Asian countries are having difficulty to secure solid waste disposal sites, as well as Japan, they are greatly interested in recycling of resources.

The City of Kitakyushu, as a pioneering city, has been promoting eco-town project with an ideal to become “international base for resource-oriented society and environmental industry” in Asia as a part of the second-stage eco-town project aiming at 2010.

The following is the outline of the objective.

1. City where environmental industries, including recycling businesses, are accumulated.
2. City where range of research & development and capacity development facility for resource recycling are accumulated.
3. City where local enterprises develop their environmental technology and businesses on a global basis.
4. City as a base for environmental industry aiming at international resource recycling.
5. City that demonstrates the future of urban recycling-oriented system toward Asian countries

As automobile parts for repairs, used paper and waste plastic are internationally distributed, it is hoped that environmental industry in Kitakyushu would be promoted through international environmental cooperation.

4) Roles of Local Governments in Intercity Environmental Cooperation

In the field of environmental international cooperation, needs and assets of intercity environmental cooperation beyond national borders are described as follows.

- (1) Improvement of environmental administrative capacity and competence of local governments

Local governments can take an active role in the reduction of environmental pollution and implementation of environmental improvement measures. This is because, in many cases, local governments possess the political will and responsibility for land use, transportation, building, solid waste management, and often energy supply and management. Moreover, local governments can incorporate various policy measures and disseminate information through face-to-face communication and campaigns in order to encourage the independent activities of residents and businesses. That is to say, local governments have know-how to promote general environmental governance of local communities as a core of various partnerships in the local communities.

In the Kitakyushu Initiative for a Cleaner Environment, a program adopted by the Environmental Ministers at Ministerial Conference on Environment and Development 2000, following terms are indicated as policy guidance concerning environmental measures in order to show the local initiative of Kitakyushu itself and the outcome of intercity cooperation.

1. To strengthen local initiatives
2. To enhance partnerships
3. To strengthen environmental management capability at the local level
4. To improve the environmental technology base
5. To promote public and private sector investment in the environment
6. To promote environmental information and education
7. To strengthen international environmental cooperation based on local initiatives

The Kitakyushu Initiative for a Cleaner Environment, endorsed at the September 2000 ESCAP conference on the environment, mandates the achievement of measurable progress towards environmental recovery for signatory cities in the Asia-Pacific region based on the model provided by the pollution control and environmental recovery achievements of Kitakyushu. At present, the Institute for Global Environmental Strategies (IGES) is conducting pilot projects in nine cities including Surabaya (Indonesia), Weihai (China), Ulaanbaatar (Mongolia), Cebu (Philippine), Korat and Nonthaburi (Thailand) at the request of the ESCAP and other organizations.

(2) Ensuring long-term stability in international cooperation through consensus building

When citizen's groups, NGOs, and the private sector carry out international cooperation separately, regional policy needs are not always met and regional administrations often experience difficulty in improving social services. But when consensus on international

cooperation projects is reached between cities, substantial environmental improvement based on an over-reaching perspective that takes into consideration environmental conditions and policy needs in developing countries becomes possible. Furthermore, as regional authorities accord a central importance to the environment in their policy-making, long-term stability in environmental policy is assured. This kind of inter-city environmental cooperation encourages openness on environmental problems among citizens and local businesses. This generally increases the ability of municipalities to coordinate environmental policy among stakeholders, which provides a basis for the continuing evolution of environmental policy.

5) Kitakyushu's International Environmental Cooperation Projects

At the Global Conference on Sustainable Development held in Johannesburg, South Africa in September of 2002, all stakeholder groups—citizens, NGOs, corporations, and local governments—committed themselves to concrete action to achieve sustainable development. Furthermore, the Conference adopted the Kitakyushu Initiative for a Cleaner Environment. In Kitakyushu, citizens and business leaders, not just the city administration, realize the necessity of developing sustainable methods. This is to achieved by creating a balanced government and improving regional environmental management policy. To realize these goals Kitakyushu created ASPRO (the Asian Partnership Programme Towards Prosperity). Endorsed in the action plan adopted at the Johannesburg Conference, ASPRO projects cross national borders to foster environmental cooperation and economic exchange between regions with the goal of developing sustainable communities. Kitakyushu has a long-term dedication to collaborating with other cities to develop the industries of sustainable development.

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