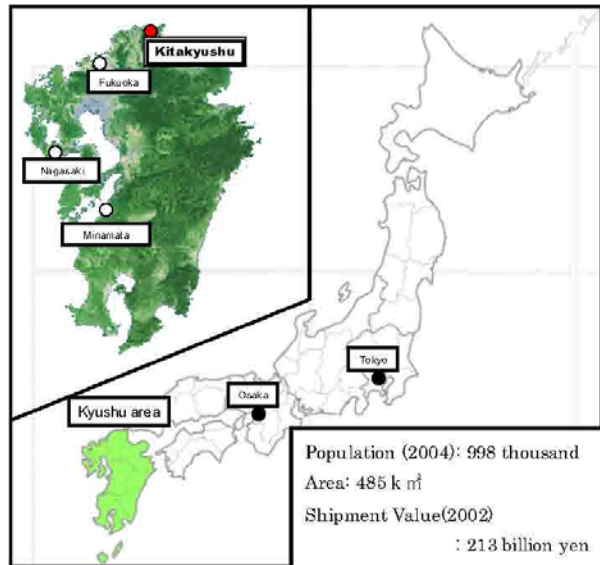


## Kitakyushu Eco-Town Plan by the City of Kitakyushu

### BACKGROUND

Kitakyushu City, with land area of about 485sq.km., is located in the north part of Kyushu area. Kitakyushu had been one of the foremost areas in Japan for heavy industries like iron manufacturing, and gained valuable experience in overcoming serious environmental pollution later on.

After a period of high economic growth during the 1950s through the 1970s, heavy industries such as iron manufacturing in Kitakyushu declined due to intensive competition in the iron industry on the international market. However, the air and water were polluted. Dokai Bay was highly contaminated by industrial and domestic wastewater and was subsequently called 'Sea of Death'. The miserable environmental pollution in the city has diminished over time through considerable effort in getting back the clear sky and the blue sea.



Smoggy sky (1960s)



Blue sky restored (present day)



Dokai Bay once called the 'Sea of Death' (1960s)



Dokai Bay regained its original beauty (present day)

By way of this experience, Kitakyushu has a clear strategy for developing the city through promoting a structural shift from heavy industries to environmental industries. The need for resource efficiency and appropriate waste management has been increasing due to the scarcity of raw materials and landfill areas. Thus, the Japanese government has advocated and promoted various activities associated with a recycle-based society.

### GOVERNMENT

The Eco-Town Project covering the entire eastern part of the Hibiki Landfill Area in Japan was firstly approved by the Ministry of Industrial Trade and Industry (MITI, which later became the Ministry of Economy, Trade and Industry in 2001(METI)) in 1997. METI promotes this project to local governments and provides subsidies for the construction of high-tech model recycling facilities and for marketing efforts in the environmental industry. In August 2002, "the Eco-Town Project Second Stage Plan" was developed and is being run under the 3R policy of Reduce, Reuse and

Recycle. While the first stage of this project (1997 – 2002) had focused on the “Recycle”, the second stage (2002 – 2010) emphasizes “Reuse”.

**Aim** of the Kitakyushu Eco-Town Project is promote zero emission through reutilizing the wastes of one industry as the raw materials of another industry.

**Objectives** of the Kitakyushu Eco-Town Project are:

- To develop and promote environment/recycling industries
- To introduce advanced technologies for recycling
- To create new environmental towns at the local level

**Approaches** of the comprehensive deployment of the Kitakyushu Eco-Town Project were planned from basic research to technological development, demonstration research, and commercialization (**Annex A**).

## ENTREPRENEUR

- Local government

Koichi Sueyoshi, the Major of Kitakyushu City, summarized the city’s role in the Eco-Town Projects as follows:

- (1) To develop hard infrastructure, including sewage, road and land.
- (2) To support the software side of the projects, such as subsidies and PR activities.
- (3) To coordinate and support through appealing for waste segregation to other cities and towns, holding meetings, providing waste as material for research activities, and briefing the citizens.
- (4) To provide ‘one-stop service’ to achieve speedier procedures.

Examples:

Transfer of environmental technologies to developing countries – Kitakyushu City accepted 4,052 international trainees in total (as of March 2005) from 143 countries and has dispatched specialists to other countries.

Support for Dalian Environmental Demonstration Zone Project implemented by Kitakyushu International Techno-Cooperative Association (KITA) – Kitakyushu City contributed to environmental improvement in Dalian City, China, by adopting ‘The Dalian Environmental Demonstration Zone Plan’. Dalian City eventually received the UNEP ‘Global 500 Award’ in 2001.



Received  
'UN Local Government Honors'



Signing ceremony for  
'The Dalian Environmental  
Demonstration Zone Plan'

➤ Business sectors

They transformed the direction of their business from heavy industry to a complex industrial structure in order to solve the problem of unused lands and excessive production capacity. Private companies emerged from stringent circumstances by seeing the situation as a chance to rejuvenate their operations and taking risks to invest in the new industries at that time.

➤ Research institutions

The objective of the institute is to implement research on waste management, cycling, and pollution control technology with the cooperation of industry, academia and government.

➤ Citizens

The Eco-Town Centre in the Kitakyushu Eco-Town is the only public facility and is the venue to interact with not only the local citizens but also regional visitors and overseas tourists. The objective of this centre is for citizens having a better understanding of the Eco-Town. The Eco-Town requires companies and research institutions to disclose their facilities and information there. The centre was set up by the Kitakyushu City and its operation was funded by the companies.

The City set up the Kitakyushu Committee to Think about Wastes and Recycling in order to consider waste reduction and recycling of wastes, e.g. from separation of cans and bottle to collection of PET bottles and then construction of PET bottle recycling plants.

The citizens played an active role at various exhibitions and events related to the environment, such as the "Environment Museum". Environmental volunteers, who had received one-year training on environmental education, drew up their own environment programmes and presented them to no matter children or adults. Zero emission tours that introduced how waste segregation and intermediate treatment are implemented at the recycling centres, was also organized.

## TECHNOLOGIES

The first stage of the Eco-town project is composed of the Comprehensive Environmental Industrial Complex, the Hibiki Recycling Area, and the Practical Research Area,

(1) **Comprehensive Environmental Industrial Complex (19ha)**

The area is located in the Hibikinada area in the coastal zone of the city. It aims to create a circulating system for energy and materials by concentrating recycling industries into this site. Eight projects were involved in the area as shown in **Annex B**.

(2) **Hibiki Recycling Area (5.5ha)**

This area located next the Comprehensive Environmental Industrial Complex aims to support small and medium sized recycling companies advance to environmental industries by renting land to them for a certain term. Most of the small & medium sized recycling companies located at this area are local companies which cover the local market concerning recycling. This project site is categorized the Automobile Recycling Zone (3ha) and the Frontier Zone (2.5ha). As of March 2004, some companies have been located in this area as shown in **Annex C**.

(3) **Practical Research Area**

This area aims to promote the research and development of cutting-edge environmental technologies, by mobilising various research organizations to demonstrate recycling and waste treatment technologies. As of March 2003, 19 research organizations from various fields, such as universities and private companies, have located in the area, and about 250 researchers, including part-time researchers, were engaged in the research projects listed in **Annex D**.

The Second Stage Plan was adopted to further endeavour towards a material circulating society. It strives for developing the next generation of the environmental industry utilizing new energy technology, micro/nano technology, etc. On-going projects are listed in **Annex E**.

## ADDITIONAL INFORMATION

### SINCE 1970S ...

1971

- Establishment of the Environmental Pollution Control Bureau (currently the Environmental Bureau)
- Enactment of ‘The City of Kitakyushu Pollution Control Ordinance’
- Promotion of ‘Green Kitakyushu Plan’

1989

- Studies on the direction of development of the Hibikinada Area

1992

- Formulation of the “Fundamental Strategy for the Development of Hibikinada Area”

1994

- Formulation of the “Master Plan for the Development of Hibikinada”

1997

- The ‘Kitakyushu Ecotown Plan’ (which emphasizes the promotion of environmental and recycling industries) was approved by Ministry of International Trade and Industry.
- “Kitakyushu Eco-Business Promotion Committee” was inaugurated (consists of 10 members from business, academia and government, including the mayor of Kitakyushu)

1998

- “Implementation Outline for the Kitakyushu Eco-Town Project” was decided on.

2002

- The ‘Eco-Town Project Second Stage Plan’ was formulated in August 2002.

## AWARDS / REPUTATION GAINED

1990

- Kitakyushu City received the ‘Global 500 Award’ from the United Nations Environment Programme (UNEP).

1992

- Kitakyushu City received the ‘UN Local Government Honours’ during the ‘United Nations Conference on Environment and Development’ (UNCED: Earth Summit) held in Brazil.

2000

- The ‘Kitakyushu Initiative for a Clean Environment’ was adopted at the 4<sup>th</sup> Ministerial Conference on Environment and Development of United Nations Economic and Social Commission for Asia and the Pacific (ESCAP/MCED)

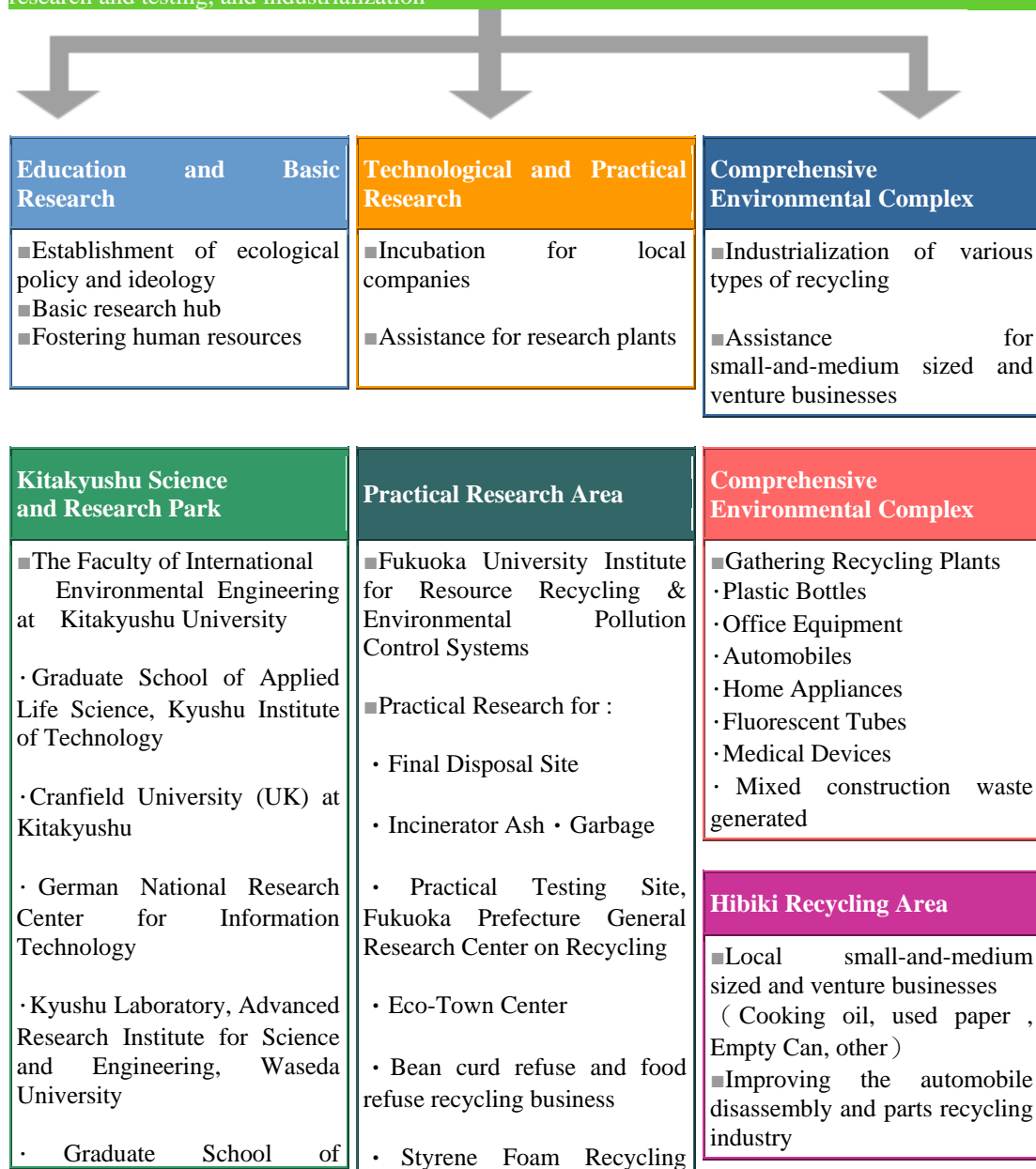
held in Kitakyushu in September 2000.

2002

- Koichi Sueyoshi, the Mayor of Kitakyushu City, received 'Earth Summit 2002 Sustainable Development Award' at Johannesburg Summit.
- The 'Kitakyushu Initiative for a Clean Environment' was incorporated in the 'Plan of Implementation' of the World Summit on Sustainable Development (WSSD: Johannesburg Summit), which was held in Johannesburg in the Republic of South Africa in 2002, as a leading edge initiative.

### Annex A – Approaches of the Eco-Town Plan

**Strategy Promotion of Eco-business in the City of Kitakyushu**  
 Comprehensive development from basic research to technical development, research and testing, and industrialization



Information, Production and Systems, Waseda University  ·Fukuoka Research Center for Recycling Systems  ·Fukuoka University Graduate School of Engineering Recycling and Eco-Technology	Project	Second Stage Plan Area
		■Recycling and reuse plant ·Pachinko ·Printer toner cartridge ·Discarded wood and plastics ■Wind power

## Annex B – Comprehensive Environmental Industrial Complex

Project	Operating Company	Technologies	Capacities	Operation Year
Plastic PET Bottle recycling Project	Nishi-Nippon PET-Bottle recycle Co., Ltd.	Based on the “law for recycling of containers and packaging”, plastic (PET) bottles are sorted by municipals and recycled. The resin produced from recycling can be used to create materials for textiles and other products.	11,000 tons/year	Oct 1998
Office equipment Recycling Project	Recycle Tech Co., Ltd.	Discarded office equipment such as copiers, fax machines, printers, and computers is disassembled and sorted into categories. High-quality parts and materials are recovered for reuse.	5,400 tons/year	Dec 1998
Automobile Recycling Project	West Japan Auto Recycling Co.	High-quality iron scrap, recyclable materials and parts dismantled from automobile are salvaged for reuse. Oil and Freon gas from the used automobile are treated properly.	12,000 cars/year	Feb 2000
Home Appliance Recycling Project	Nishinihon Consumer Electronics Recycle Co., Ltd.	Based on “law for recycling of specific kinds of home appliances”, discarded electric household appliances such as air conditioners, televisions, refrigerators, and washing machines are disassembled and sorted into categories.	About 500,000 units/year	Apr 2000
Fluorescent Tube Recycling Project	Japan Recycling Light Technology & System	Separating used fluorescent light tubes, glass, and metallic substances mainly from office waste and recycling those materials.	5,270 tons/year	Jan 2001
Medical Wastes Recycling Project	Aso Mining Co.,Ltd. Kitakyushu Office	Used medical instruments are pulverized, sorted after being treated at high frequency, and made into collection vessels. They are also recycled into solid fuel and concrete materials.	6,600 tons/year	Sep 2002
Construction Waste Recycling Project	Hibiki Ecosite	Waste discarded from construction sites is sorted by hand or machine and recycled into materials such as concrete, wood and metals. Waste wood is shredded and recycled into board-manufacturing materials. Waste plasterboard is also recycled.	130,000 tons/year	Nov 2002

	Yakin Kawasaki Co., Ltd.	To recycle the waste metals such as chrome, nickel, and steel produced in the stainless steel manufacturing process. Slag and other materials produced within the facility are also recycled at the reduction furnace	66,600 tons/year	Aug 2002
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### Annex C – Hibiki Recycling Area

Project	Operating Company	Technologies	Capacities	Operation Year
Automobile Recycling Zone	Automobile Recycling Project	Seven automobile scrapping companies in Kitakyushu City will move as a group to achieve more efficient recycling of used automobiles.	Kitakyushu ELV Cooperative Association	Apr 2002
Frontier zone	Cooking Oil and Fat Recycling Project	Used cooking oil and fats from the food industries are refined and made into construction paints and feed for animals.	Kyushu and Yamaguchi Oil & Fat Cooperative Association	Feb 2002
	Detergent and Organic Solvent Recycling Project: Waste Plastic Recycling Project	Organic solvents produced through washing semiconductors and refining chemicals and medicines are distilled and made into recycled, high purity solvents.	Takano Kosan Co., Ltd.	Feb 2002
	Project for Recycling Used Paper into Livestock Litter	Recycling, after shredding of used paper from offices, into livestock litter.	Nishi-Nippon Paper Recycle Co., Ltd.	Mar 2001
	Empty Can Recycling Project	Empty cans are separated into steel and aluminum. High purity and quality steel manufacturing material, which makes the “Can to Can” concept possible, is produced.	Kitakyushu Akikan Recycle Station	Aug 2000

### Annex D – Practical Research Area

Research Project	Research entity
Fukuoka University Institute for Resource Recycling & Environmental Pollution Control System	Fukuoka University in association with Kyushu University, Kyushu Institute of technology, Saga University, private enterprises, and others
Dome-shaped Waste Disposal Sites Experiment and Research Facility	Fujita Corp.
Eco-Town Research Demonstration Facility,	Shirai Laboratory, Graduate school of Kyushu institute of Technology

Kyushu Institute of Technology	
Research Facility for the Development of Leak-Proof Waste Disposal Sites	Yokogawa Bridge Corp.
Fly Ash Neutralization Research Facility <input type="checkbox"/>	Miyoshi Oil & Fat Co. Ltd, Fukuoka University, Environmental Technology Service Co. Ltd.
Research Facility for Waste Neutralization System	Wash-out Waste Landfill System Research Group represented by Shinko Pantec Co. Ltd.
Research Demonstration Facility for Technology Development of Final Disposal Site Stabilization in the Early Stage Research Demonstrations, connected with stabilization technology utilizing on-site	Nishinohon Environment Research Co. Ltd, Fukuoka University, Kubota Corporation
Nippon Steel Corporation, Kitakyushu Environmental Technology Centre	Nippon Steel Corporation
Research Demonstrations concerned with Producing Lactic Acid from Food waste	Kitakyushu Foundation for the Advancement of Industry Science and Technology, Ebara Corporation, Organo Corporation, Environment Technos Co. Ltd., Electric Power Development Co. Ltd, Musashino Chemical laboratory, Ltd.
Research Demonstrations concerned with Empty Can recycling Utilising Induction Heat Type Dry Distillation Furnace	R-Nissei Co. Ltd, Nisei kogyo Co. Ltd., Fuji Electric, Holdings Co. Ltd.
Recycling Project for Tofu and Other Food Residue	Kitakyushu Food Recycling Cooperative Association
Styrene Foam Recycling Project <input type="checkbox"/>	Nihi-Nihon Styrene Foam Recycle Co. Ltd.
Industrial Waste Research Facility, Kitakyushu Eco-Town Centre	Kitakyushu Eco-Town Centre
Development of Advanced Recycling Technology for Shochu (Distilled Sprits) Lees	Kyushu Medical Co. Ltd.
Research Demonstration Facility for Advanced Reuse Technology of Disposed FRP Fishing Boats	Fisheries Research Agency
Research Demonstration Facility for the Development of Cleaning/Recycling Technology for Toxic Ash	Sumitomo Metal mining Co. Ltd.

### **Annex E – The Eco-Town Second Stage Plan**

<b>Project</b>	<b>Operating Company</b>	<b>Outline</b>
Wind Power Generation Project	NS Wind Power Hibiki Co.	The first wind power generation business project in Japan. The power generation capability is the largest class in western Japan.
Pachinko Machine Recycling Project	Yuko Repro Co. Ltd.	Pachinko and slot machines discarded from pachinko parlours are sorted in a highly systematic manner. The machine parts are reused and the metal and wood materials are collected.
Waste	Eco-Wood Co. Ltd.	Waste wood and plastic are mixed together to produce

Wood/Plastic Recycling Project		highly water-/weather-resistant construction materials.
Printer Toner Cartridge Reuse Project	Beston Kitakyushu Co. Ltd.	Used toner cartridges are collected, disassembled, cleaned, and then reassembled. Recycled toner cartridges are sold after being refilled with toner and undergoing a quality inspection.
Beverage Container Recycling Project	Coca-Cola West Japan Co. Ltd.	Beverage containers are collected from company-owned trash cans installed next to vending machines. The containers are sorted/collected by material, such as aluminum and PET bottle, and supplied to steel manufactures as recycled material.

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