Kitakyushu Asian Center for Low Carbon Society opened in June 2010.

Utilization of the environmental technologies developed through the solution of pollution problems and manufacturing processes, and the inter-city network established by international cooperation in the past

Accumulating environmental technologies in Kitakyushu City and throughout Japan, for building low carbon societies in Asia through environmental business skills
Aims of the Center

Needs of newly developing countries: Constructing green cities, not only transferring technologies

Total power as a leading runner of an environment-friendly city (Kitakyushu City)

- Experience with overcoming pollution problems
- Advanced social system (Kitakyushu Eco-Town, etc.)
- Excellent environmental technologies

Responding to diversified needs of Asian cities and companies
Ex.: Eco-Cities and Smart Cities

Greenhouse gas reduction Bilateral credits

Custom-made Export of green cities

Establishing a base Asian region for demonstration experiments and human resource development

Base for environmental business in the Asian region

Priority fields in technological transfer

Energy management
Regional management of energy by placing city and regional electricity plants at the core

- Yahata Higashida District, where an environmentally conscious town is under construction
- Kitakyushu Smart Community Project (shikoku) low

Water business
Water recycling demonstration plant combining sewage water membrane treatment and seawater desalination

- Water Plaza
  - Water created from sewage: 1,000 m³/day
  - Water created from seawater: 400 m³/day

Greening and waste treatment

- Most advanced facilities for waste treatment
  - shaft-gasification furnace

Cleaner production and prevention of pollution
Introduction of cleaner production (CP)

- Reduction of environmental loads + higher productivity

New development strategies in Japan
One of the 21 national strategic projects: Developments in Asia
(Overseas development of packaged infrastructures)
Market scale: 19,700 billion yen (Target to achieve by 2020)
International Environmental Cooperation in Surabaya

Waste management in Surabaya, Indonesia’s 2nd largest city, started from 2004

Spread of organic waste composting techniques from Kitakyushu to over 20,000 households in Surabaya

30% reduction of waste

Koji Takakura of JPEC teaching about the composting technique

City in 2001
Streets overrun by garbage

Surabaya’s streets today
Increased greenery in parks and along roads using compost
Partnership between Surabaya and Kitakyushu

A joint statement was made in March 2011 on a strategic environmental partnership between Surabaya and Kitakyushu.

“Green Sister City” agreement was signed in November 2012 between Surabaya and Kitakyushu.

Exporting Green Cities (A Case Study from Surabaya)

Waste disposal
Surabaya has requested assistance for waste disposal project development. Additionally, Nishihara Corporation is looking into operations related to improving the livelihoods of waste recyclers and waste pickers. (Overseas development support for smaller businesses, utilizing the Ministry of Foreign Affairs and the ODA)

Wastewater treatment (river cleanup)
A master plan related to wastewater management for the Kali Mas river, with a focus on the Gundy area, is being developed. Basic dispersal wastewater treatment is being expanded under the management of model community residents, and an operation for constructing and managing medium-sized treatment facilities is underway. (JICA Grassroots Cooperation Project)

Drinking water supply operations through solar power and small desalination/water purification equipment
In areas that do not yet have electrical and waterworks infrastructure, Toray Industries, Inc. and Suido Kiko Kaisha, Ltd. will be using solar panels and water purification equipment (reverse osmosis filters) with desalinization capabilities to provide inexpensive clean drinking water. Installation and maintenance centers for drinking water supply equipment will be built in Surabaya. (JICA BoP project)

Ministry of Economy, Trade and Industry: “Infrastructure and Systems Export Promotion Research Project”

Investigating methods for quantifying CO₂ reduction
As for operations being conducted in Surabaya, methods for quantifying reducible volumes of CO₂ are being investigated. (IGES)

Tap-water purification
Ishikawa Engineering Corporation, which successfully implemented well-water purification systems, is currently looking into operations involving the installation of water supply equipment in the community that could purify tap-water (though not drinkable) and provide safe, reliable water.

Project for cogeneration (steam + electricity) & energy conservation
Surabaya Industrial Estate Rungkut (SIER) Export of technology and knowledge from Yahata Higashida Smart Community project

Exporting Green Cities (A Case Study from Surabaya)
We hope for this to be our first overseas export from the Kitakyushu Smart Community Creation Project. We intend to develop a successful model in Surabaya and spread it to other parts of Asia with the same issues (insufficient power or low-quality power).

- Master plan development related to advancements in the environment and energy (for the Surabaya Industrial Estate Rungkut [SIER])
- Export of technology and knowledge from Yahata Higashida Smart Community project
- Feasibility of establishing a local management company to offer the following energy and energy conservation services:
  - A cogeneration operation to provide high-quality, efficient power and steam
  - Energy maintenance services for industrial estate factories to provide steam systems and energy-conserving systems
  - Development of an advanced sewage and waste treatment service centered around the industrial estate

The Surabaya Industrial Estate Rungkut (SIER)
The SIER, which was established with 50% investment from the Indonesian gov't, 25% from State of East Java, and 25% from the City of Surabaya, is an industrial estate some 300 ha in size, and home to about 300 companies.

Project for Cogeneration and Energy Conservation at Surabaya Industrial Estate, Indonesia

Nippon Steel & Sumikin Engineering Co., Ltd., Fuji Electric Co., Ltd., & NTT Data Institute


- Building strategic environmental partnerships
- Local power companies
  - Power
  - Steam

We are examining future business plans that include up to 10% of foreign matter containing selected organic materials. Nevertheless, the amount of material finally disposed of in landfills can be reduced about 85%.

Composting center facilities (daily volume of 100 t)

We are examining future business plans that include up to 10% of foreign matter containing selected organic materials. Nevertheless, the amount of material finally disposed of in landfills can be reduced about 85%.

The compost proceed is used for experimental crop production. (Trawas: 400 m²)

Pilot Project for Establishing Recycling-Oriented Intermediate Waste Processing Facilities in Surabaya

Nishihara Corporation

Ministry of Foreign Affairs: “Project to Increase Adoption at Governments of Developing Countries through Government Development Assistance and Foreign Economic Cooperation Business Costs” (Dec. 2012) (26)

Assuming approx. 1,200 tonnes/day:

<table>
<thead>
<tr>
<th>Items</th>
<th>Items</th>
<th>1 Day</th>
<th>Per Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organics</td>
<td>77.2</td>
<td>923.4t</td>
<td>28,163t</td>
</tr>
<tr>
<td>Plastics</td>
<td>13</td>
<td>156t</td>
<td>4,742t</td>
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<tr>
<td>Paper</td>
<td>4</td>
<td>48t</td>
<td>1,459t</td>
</tr>
<tr>
<td>Metals</td>
<td>0.3</td>
<td>3.6t</td>
<td>109t</td>
</tr>
<tr>
<td>Other</td>
<td>5.5</td>
<td>66t</td>
<td>2,006t</td>
</tr>
</tbody>
</table>

This business model involves the collection of general garbage collected in cities, sorting and processing it in accordance with recycling demand, and selling it through continuous establishment of local “recycling-oriented intermediate valuable and organic waste processing facilities with wholesaling capabilities” and the development of such sites as “super depots.”

We examine operations for intermediate processing of waste in cooperation with waste-pickers who collect valuable items, such as plastics and metals, from waste under poor work conditions, and for the sale of valuable materials and compost.
Problems faced by Surabaya

1. The city has no sewage system, so domestic sewage is simply discharged from septic tanks into rivers with only basic treatment, or discharged directly untreated.
2. Garbage is illegally dumped in rivers and canals.
3. The city is affected by inflows of industrial sewage.
4. The entire city is located in a plain, with very little water flow in canals, so water stagnates and becomes polluted easily.
5. Rivers follow gentle slopes are not swift-moving, so sediment accumulates easily.

Development of Sewage Improvement Plans

Surabaya, Indonesia’s second-largest city with some 30 million people

- Efficient sewage improvement methods applicable to Surabaya’s track record
- Items required for appropriate management of sewage operations
- Methods of educating the public for facilitating sewage operation management
- Utilizing the participation and technology of Japanese firms ... and more

Sewage Improvement Projects in Surabaya

In the island region of East Java province, where electrical and water infrastructure are undeveloped, we plan to utilize solar-powered, hybrid water purification equipment with desalinization capabilities to conduct a study on introducing systems that can cheaply supply clean drinking water and improve the local living environment.

Indonesia BoP Project

The Kitakyushu Asian Center for Low Carbon Society is in charge of the community development and business hub development that will play a key role in creating business models, as well as coordinating with the government of Surabaya.

Our aim in conducting this study is to create new public-private partnerships in emerging nations from a perspective that emphasizes the construction of low-cost business models and the development of technologies appropriate to local needs while protecting local culture.
**Issue of Sectoral Master Plan**

Various sectoral master plans (regional development, railway construction, sewerage and etc.) are planned by Japanese government, JICA and international cooperation organization of Australia.

1. These master plans were prepared by East-Java state government as a contact window and Surabaya city as an operation site, however, Surabaya city government is not so much involved with the plans. Accordingly, for example, voluntary involvement of Surabaya city in the master plan of wastewater prepared by International Development Agency of Australia is not so much expected as following reasons;
   * Procurement of a vast land necessary for the proposed sewerage disposal system is difficult.
   * No specific proposal is proposed regarding construction of sewerage pipeline in the congested streets and roads.

2. Preparation of master plan of waste management is the number 1 priority of Surabaya city (mayor, city planning department, beautification department and etc.) Master plan of waste management in Surabaya city is to be prepared by a technical cooperation project with JICA from 2013, however, the city has already promoted the waste management, so, Barik-Papan and Paren-Ban became a target for the master plan.

3. Aim of Surabaya city is a unique “Green City” in Indonesia by cross-sectoral linkage with these master plans.
   * Human resources of Surabaya city is not enough to realize the “Green City”, so capacity-building program is necessary for the employees of Surabaya city.

**Issue of Individual Project**

Various projects are developed in Surabaya city in cooperation with Kitakyushu city, such as waste treatment, drainage treatment, purification of tap water and well water, to make industrial zone smart.

1. Though various sectoral projects are in development, cross-sectoral cooperation is not enough for the concept of the Green City.
   * Various projects are conducted individually in accordance with the needs of Surabaya city, however, each project is not linked organically each other because integration of every project does not exist in the upper town management plan.

2. Every project is not approached by step-by-step to evaluate project results for the next project planning and is not approached from long-term point of view
   * Waste management is the most important issue of Surabaya city and the city is conducting a pilot of intermediate waste recycling facilities, however, master plan of waste management is not prepared yet.

3. Discussion with stakeholders is very important to every project, however, responsible companies do not understand the discussion.
   * Stakeholders do not understand the importance of obtaining the consent from local residents that is necessary for requesting local community to maintain demonstration equipments of drinking water.
Support of Social Platform Formation by Intercity Cooperation

Social Master Planning
(Concept integration of city plan, Reexamination of existing plan, Additional planning)

Building concept integration of city planning
Target of Surabaya City: Green City

C Master Plan  
A Master Plan  
B master Plan

Stakeholder participate

Capacity building for foundation enhancement to grow
System design & implementation to foster citizen & company
Civil education master the mechanism and skill
Technology transfer suited for the local needs

Review of measures to increase success probability
Stakeholder participation

A Project  
B Project
C Project

Support of plan & practice of pilot project

Mutual exchange & transfer (learning, elevation / association / cooperation)

Showroom of the Green City

We are aiming at creating a Showroom of the Green City in Surabaya by the activities based on the Green Sister-City.

1. Building a Model of Green & Low Carbon City
Build a model of Green & Low Carbon City in Indonesia, by using existing “Surabaya Vision Plan 2005 – 2025” (Urban Development Plan), by using the sectoral master plan and by preparing comprehensive city plan from “green and low-carbon” point of view. Dissemination of the model in every cities in Indonesia will contribute the CO2 reduction(26%) by 2020 which is the target of Indonesia.

2. Comprehensive support (from planning to implementation)
Past development & investigation ended by formulation of master plan and its implementation was entrusted to city’s autonomy. However, the project is comprehensive project covering preparation of unified concept of town management, backup of planning & implementation of pilot project and human resource development to encourage Surabaya City and feasibility enhancement of master plan.

3. Administrative cost reduction by PPP
Each project can be implemented with less administrative cost by helping entry of private companies using PPP to avoid all the costs borne by public administration as in the past. Therefore, we will, in addition, promote regulatory & system reformation to remove the entry barrier of private companies.
In addition to international environmental cooperation, when it comes to international environmental business development, our hope is to see the advancement of a uniquely Japanese approach, different from that of other countries, that will respect and bring joy to local residents.

Asian cities
Mitigate pollution and improve quality of life while reducing CO₂

Kitakyushu
Rejuvenate communities through overseas environmental business development primarily by Kitakyushu companies.