FY2015 Commissioned Project
by Ministry of the Environment

FY2015
Commissioned Project of Feasibility Study for JCM Projects Formation for Realization of a Low-Carbon Society in Asia

(Support and Research Project for JCM Projects Formation through City-to-City Collaboration between Yokohama City and Batam City)

Final Report

March, 2016

Institute for Global Environmental Strategies (IGES)

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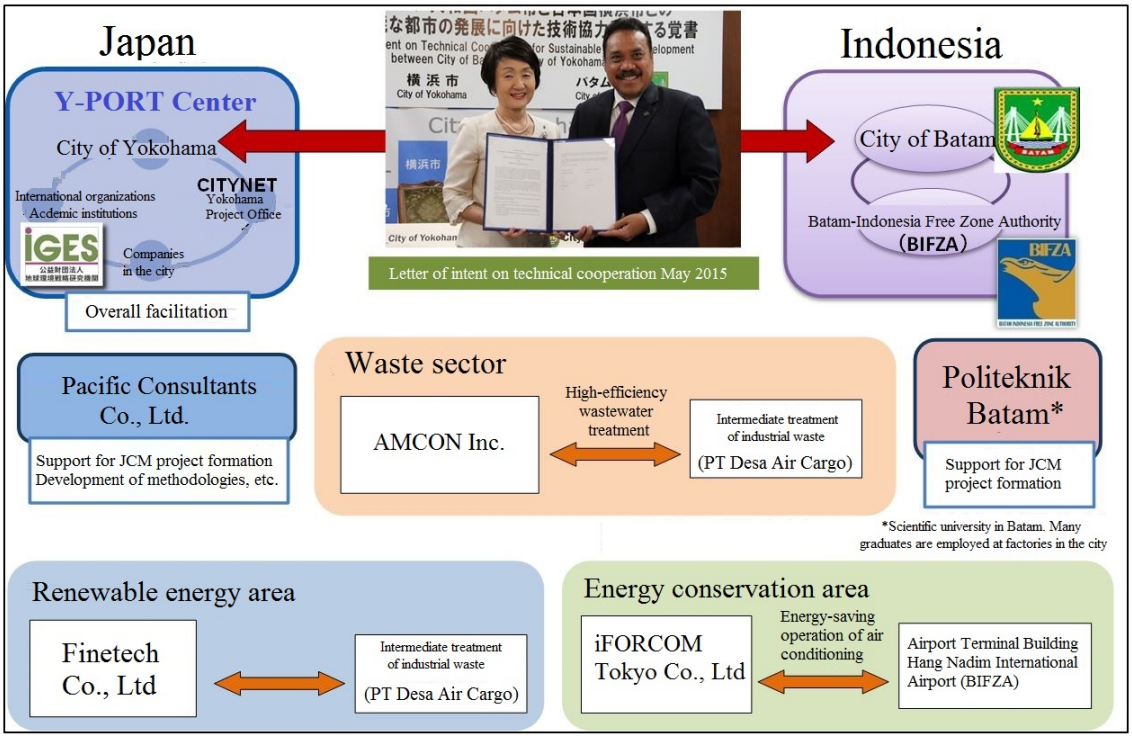
Summary

（1）Organizational Structure for Project Implementation



（2）Overall schedule

Implementation Dates	Project Identification	Location
Apr. 20-24, 2015	Inception Meeting	Batam
May 25-27	Batam City and Yokohama (Signing of MoU)	Yokohama
Aug. 17-21	Business Matching	Batam
Oct. 19-23	JCM Workshop, Asia Smart City Conference, study tours, etc. 30	Yokohama
Nov. 30-Dec. 1	Small Workshops with BIFZA selected companies	Batam
Jan. 20, 2016	Final Report Meeting (including related companies, etc.)	Batam

（3）Major Outcomes

We conducted detailed discussions relating to project development with local government bodies and private companies relating to formation of a JCM project with three small- and medium-sized enterprises from Yokohama (iFORCOM Tokyo, FINTECH, AMCON).

We also obtained information relating to new candidate companies of small and medium- and small-sized enterprises in the city. In other words the presence of Yokohama, Batam, and BIFZA, smoothly brought together information and created channels of communication that would have otherwise been difficult to achieve from counterparts simply through initial appointments among enterprises in the city. HUH For example, opportunities such as energy-conservation projects in facilities (hospital, ferry terminal, etc.) under jurisdiction of BIFZA and Batam, and biomass power generation using waste residue from palm oil manufacturing plants.

At the end of this fiscal year, it was agreed to establish a four-party Task Force Team with city-to-city collaboration between Batam and Yokohama, joined by BIFZA and IGES.

1. Objectives of this Project

The City of Batam is located on Indonesia's island province of Riau, about 20 km from the Republic of Singapore's southern shores. The city's population is currently about 1.2 million people, but after the Batam Island Development Accord (1980) and Riau State Development Economic Cooperation Accord (1990), it has been one apex of the "growth triangle" for joint development along with Singapore and Malaysia's Johor State. The population has been growing steadily, and with it, issues such as waste and water treatment. In addition, the city is designated a free trade zone (FTZ), and many factories are located here particularly in industrial parks, but energy use is not yet as efficient as it could be.

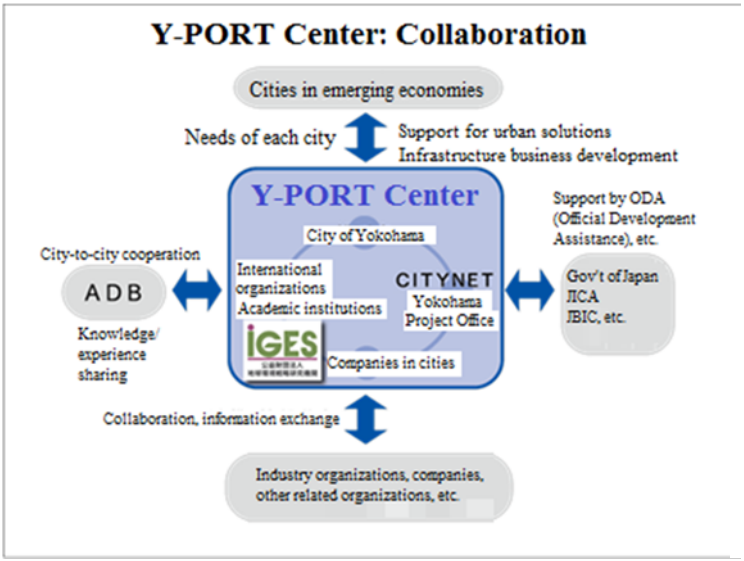
Yokohama has created "Y-PORT Project" (the label for the international technical cooperation program using Yokohama's resources and technologies) with a central project being a policy of "city businesses supporting overseas infrastructure businesses" in its new "medium term four years 2014 to 2017" plan. CHECK OFFICIAL As a part of Y-PORT projects, the Y-PORT Center promotes joint projects with city businesses, international organizations, and other partners.

Batam City was also mentioned in the "17th Economic Infrastructure Conference" (Theme: Indonesia) (March 20, 2015), organized by Japan's Cabinet Secretariat and as leading examples for the Asian region, and is a city attracting attention as a development area for Japanese companies--for example in Ministry of the Environment assistance projects for JCM projects and for overseas loans and investment (via JICA) which are being discussed for support.

In addition, as an area to actively attract factories as part of a national policy, more than the City of Batam government, the industrial sector in Batam is under the jurisdiction of the Batam-Indonesia Free Zone Authority (BIFZA; currently associated with the Riau Island State Government), which is a related sector of the Investment Promotion Agency of the central government. Also, along with the City of Batam, BIFZA has an important role in terms of public services, to the extent of even being referred to as "Batam's second government"; it is responsible for transportation infrastructure such as for airports and marine harbors, which serve as the infrastructure for industrial development and attracting factories, as well as wastewater and sludge treatment.

Thus, this project, in parallel with collaborative relationship between the local governments, attention should be paid to the collaborative relationship with BIFZA, and while recognizing cooperation with the BIFZA Japan Office, an enhanced collaborative relationship with the Batam side is also desirable.

In addition, IGES supports/endorses programs such as Y-PORT, and is undertaking this study as a major project of the Y-PORT Center, in collaboration with the City of Yokohama; this effort is based on a basic memorandum on collaboration and cooperation signed on March 3, 2015, with the purpose of "implementing joint projects for sustainable development in developing countries, and for realization of a low-carbon society."



Source: Y-PORT Center

2. Indonesia and Batam Policy and Project Environment

2.1 Batam Island General Conditions

Batam Island is at the entrance to the Strait of Malacca, an international maritime route connecting the Pacific Ocean and Indian Ocean, located strategically facing Singapore and Malaysia's Johor Baru, and said to be one of the world's busiest routes for shipping traffic coming and going. It is located 20 kilometers southeast of Singapore, a distance that can be crossed in a 60-minute ferry ride.

Batam Island has an area of 415 km^2, but development here has expanded the demand for land; as a result, in 1993, roads were constructed (including six bridges) to connect it with Lembang Island, Galang Island and other smaller islands nearby. The islands connected by these bridges is referred to as the Barelang region, and have a total area of 715 km^2, which is about 1.2 times that of Singapore, or Awaji Island in Japan. 淡路島

Because Batam Island was developed as an export-oriented industrial zone, one could say that it does not compete with other industrial zones off the island that manufacture products for domestic markets. Also, because the Barelang region has received designation as a free trade zone (FTZ), capital goods and raw materials imported to produce export products are exempt from import duties, and products that are exported are also exempt from value added taxes and export taxes.

Batam Island is known as an industrial area, but today, it is also developing industrially, but also as a port for trade, tourism, and transshipment.

The following infrastructure has been developed here.

Hang Nadim Airport	Longest runway in Indonesia (4,025 meters) Fuel storage facilities: 52,000 kiloliters
Cargo ports	Three: Batu Ampar, Sekupang, Kabil Deepest: 12 meters
Ferry terminals	Four: Batam Center, Sekupang, Nongsa Pura, Waterfront
Electrical equipment	Stand-alone power generation: 125 MW, other 375 MW
Gas supply	Natural gas is supplied by underwater pipeline from Sumatra Island.
Roads	Arterial road and six bridges connecting Batam Island, Galang Island, Rempang Island, etc.

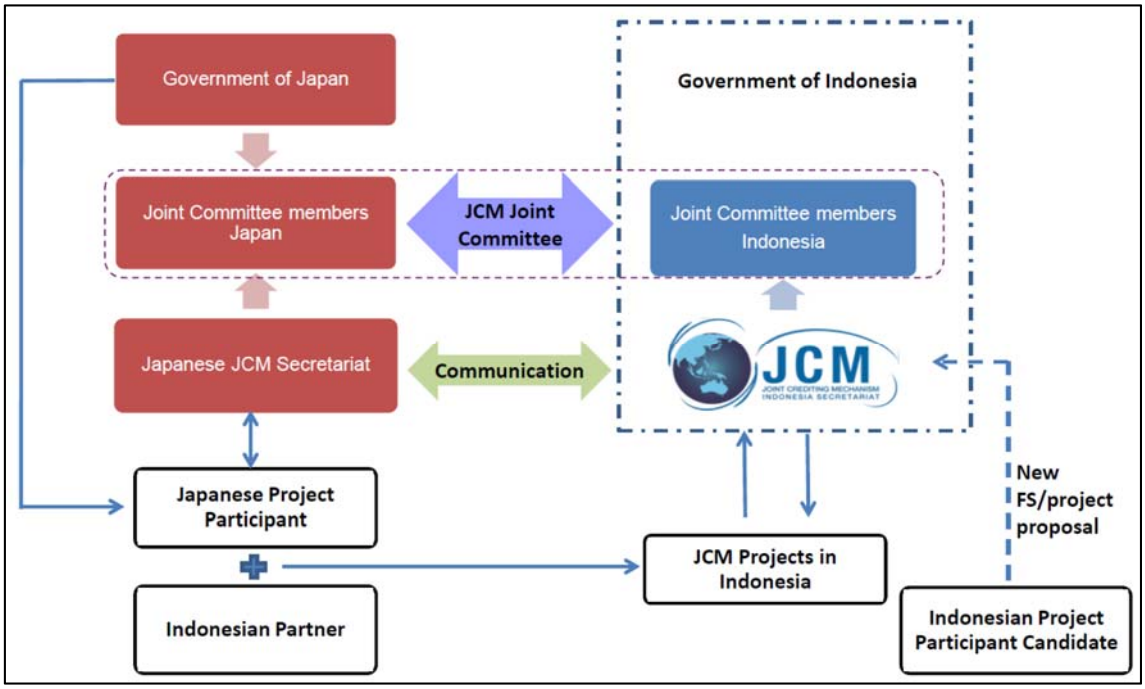
Source: BIFZA

Source: http://www.batam-island-info.com/images/batam-island-map.gif

2.2 Climate Change and Environmental/Energy Policy

Indonesia formulated its National Action Plan for Reducing Greenhouse Gas Emissions (RAN-GRK) in 2011, committing to a 26% reduction in GHGs (or 41% if it receives international assistance) by 2020 relative to business as usual (BAU).

Also, when Indonesia signed the Joint Crediting Mechanism in 2013, in the context of the important topic of decarbonizing cities (which are a major emission source), the country is expecting to use the JCM to achieve its national targets.



Source: Indonesia JCM Secretariat

2.3 Project Environment from Perspective of Japan

(1) Batam-Indonesia Free Zone Authority (BIFZA)

BIFZA, which is responsible for management and operation of key infrastructure on the island, such as the Hang Nadim International Airport, has a central role in industrial development in Batam. Its predecessor was the Batam Industrial Development Authority (BIDA), established under Presidential Degree No. 41 of 1973.

The two countries of Indonesia and Singapore agreed to cooperate in this region through Special Economic Zones (SEZs) when they signed the Batam-Bintan-Karimun Special Economic Cooperation Accord on June 25, 2006.

In August 2007, in addition to Batam Island, the two countries established industrial areas on both Bintan Island and on Karimun Island, and in 2009, Batam Industrial Development Authority (BIDA), which had been under direct jurisdiction of the Indonesian President, underwent reorganization, and similar organizations were established on each of Batam, Bintan and Karimun islands, the three organizations were put under the umbrella of Riau Islands Province. The name of BIDA, which had only applied to Batam, was changed to the Batam-Indonesia Free Zone Authority (BIFZA).

This background explains that not only is BIFZA the suitable counterpart for the Japanese initiatives, but also has a high degree of institutional and financial credibility.

Furthermore, the Chairman of BIFZA has recognized the city-to-city collaboration between Batam and Yokohama, and has a cooperative stance toward the Japanese counterparts. In June 2016, he visited Japan, and aware of the high prices of electricity in Batam, showed a strong interest in Japan's technologies, including energy saving and renewable energy.

Currently, BIFZA is headquartered in Batam and not only has a branch in Jakarta, but also offices in Singapore and Japan, and actively holds investment seminars in Japan every few months (for example, "Corporate Investment Cases and Expansion Strategies in the Batam Free Zone" was held in Nagoya on June 12, 2015, with support from the Embassy of Indonesia, Japan Office of the Indonesia Investment Coordination Agency, the ASEAN-Japan Center, and the Japan-Indonesia Economic Association).

(2) Industries Appropriate for Batam

There are diverse opportunities for industrial businesses to set up in Batam, as there are practical constraints on overseas companies from doing so. However, some industries are more suited to Batam, and the largest industries there are related to electronics and computers, including the manufacture of computer equipment and parts, audio-visual equipment, automotive parts, and printed circuit boards, etc.

Batam has an abundant labor force, and these types of industries are relatively amenable to technical training, so they are seen as being well-suited to Batam

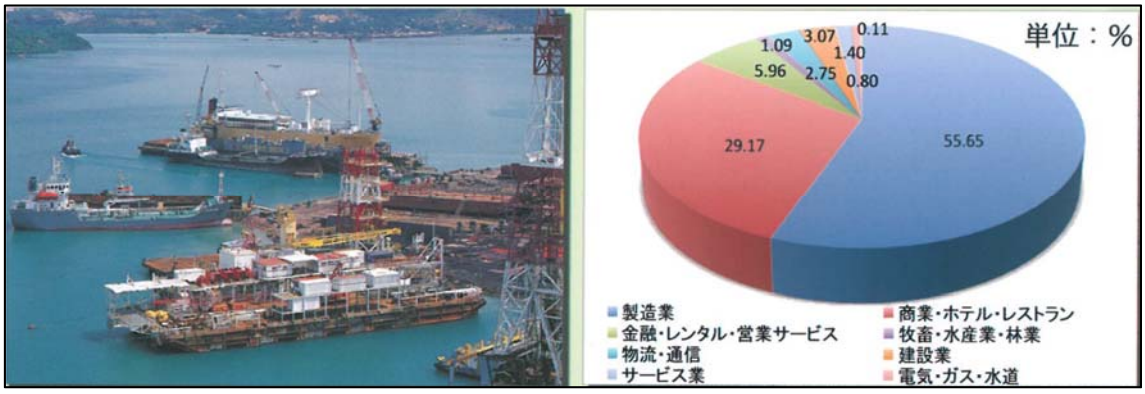
Other light industries include leather products, shoe-making, sewing, toys, daily-use items, household supplies, and health care equipment, etc.

Heavy industries present here include the manufacturing industries such as steel plating, pipe, pipe threading, oil drilling rigs, and offshore petroleum base platforms, etc. In addition, there are over 60 shipbuilding companies here, repairing old and building new ships. Chemical industries are also permitted, and there are currently chemical plants producing alcohol fats and oils, paint, pipe coatings, pharmaceuticals, and other products, although they are required to properly treat industrial waste.

Approximately 60 Japanese companies currently operate there, including Epson, Nippon Steel & Sumitomo Metal, Panasonic, Patlite, Sumitomo Wiring Systems, Tomoe Valve, Shimano, Nittoh Kogaku, Nippon Oil Sheet (NOK Corporation).

Below are some of the incentives offered for foreign investors in the Batam Free Trade Zone.

① Incentives in FTZ for 70 years from 2009
② Exemption from export duties, import duties, value-added taxes, luxury goods taxes, and consumption taxes.
③ 100% share ownership
④ No foreign currency controls
⑤ Competitive production costs
⑥ Application of preferential tariffs (Generalized System of Preferences, GSP) (USA, EU, Japan, etc.)
⑦ Tax treaties to avoid double taxation



Source: BIFZA

3. Project Identification

3.1 Inception Meeting

At the inception meet held in Batam City, after an explanation of JCM programs and subsidy schemes from the Japanese side, there was sharing and agreement on study details with the related departments of the Batam side including BIFZA, as well as sharing and agreement on the concepts of specific projects for matching.

(1) Agenda (April 21, 2015)

9:00 AM-9:15	**Opening Remarks** Amir Rusil, Assistant for City Mayor on Economy and Development , Batam City Government Tetsuya Nakajima, Executive Director for Development Cooperation, City of Yokohama
9:15 AM-9:45	**City-to-city cooperation of Y-PORT projects based on Yokohama's Innovative Urban Solution** Yasuaki Nakamura (Yokohama-city)
9:45 AM-10:15	**Master plan and priority sector/project in Batam-city/BIFZA** Amir, (Batam-city)
10:15 AM-10:30	Coffee break
10:30 AM-11:00	**JCM cooperation between Indonesian and Japan/ Roles of FS participants in JCM scheme** Dicky Edwin Hindarto (Head of Indonesia JCM Secretariat) Keni Atika (Indonesia JCM Secretariat)
11:00 AM-11:15	**Outline of the Study** Kenji Asakawa (IGES)
11:15 AM-11:35	**Introduction to potential JCM projects with Japanese technologies in the following specific sectors; solid waste, waste water treatment, and section, energy efficiency, renewable energy and transport** Sudarmanto Budi NUGROHO (IGES)
11:35 AM-11:50	**Overall discussions and/or small group discussions** Kenji Asakawa (IGES)
11:50 AM-12:00	**Closing Remarks** Amir Rusil, Assistant for City Mayor on Economy and Development , Batam City Government

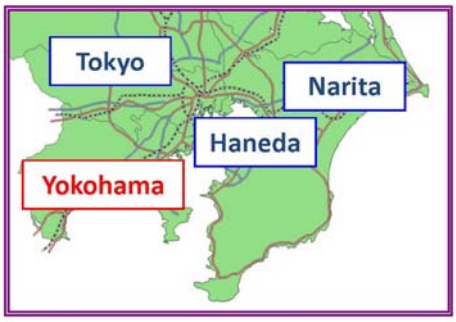
(2) Local site visit schedule (April 20-23, 2015)

20 Apr. (Mon.)	14:00 15:00	Preparatory meeting with Mr. Amir Courtesy call to Batam Mayor
21 Apr. (Tue.)	09:00 -12:30 14:00 16:00	**Inception workshop of "the Study for Developing JCM projects under City-to-City cooperation between Batam and Yokohama"** Individual meeting for project formation (Hang Nadim Airport Authority), especially Energy Efficiency project Site-visit - Batu Ampar Harbour - Septage treatment facility of Batam Centre
22 Apr. (Wed.)	11:00 12:30 14:00	Courtesy call to BIFZA Individual meeting with Batam city for project formation in MSW sector Interview with Environmental Management Authority (EMA) of Batam city on project needs
23 Apr. (Thu)	08:30 11:00 12:00 13:00	Individual meeting with BIFZA for project formation Individual meeting with PT MUSIMAS, CPO processing company, for water/waste treatment project Individual meeting with PT Desa Air Cargo, Hazardous waste treatment company, for water/waste treatment project Individual meeting with PT Eco Green, CPO processing company, for water/waste treatment project

（3）Presentation Materials【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

Overview of Yokohama City

- International port city
  Opening of port of Yokohama in 1859
- Population: approx. 3.7 million
  Largest city in Japan
- GDP: approx. 12.7 trillion JPY
  (approx. 107 billion USD)
- 21 minutes from Haneda Airport (Tokyo)



【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

External Recognition on Achievement by the City of Yokohama

LEE KUAN YEW WORLD CITY PRIZE

2014 SPECIAL MENTION: CITY OF YOKOHAMA

URBAN REDEVELOPMENT AUTHORITY SINGAPORE

CENTRE for LiveableCities SINGAPORE

WORLD CITIES SUMMIT

- The Lee Kuan Yew World City Prize is a biennial international award that honours outstanding achievements and contributions to the creation of liveable, vibrant and sustainable urban communities around the world.
- In 2014, Yokohama was selected for Special Mention, and will be awarded during the World Cities Summit in June.
- Yokohama was recognised for overcoming its urban challenges faced over the last 40 years through excellent partnership with its citizens and stakeholders. Also the Y-PORT programme was mentioned for its clever marriage of economic growth and international contribution by tying up with local businesses to export urban solutions to emerging cities.

3

Y-PORT

【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

CITYNET

The Regional Network of Local Authorities for the Management of Human Settlements

Network of 131 Cities/Organizations (24 countries/regions)

- Full Members: 84 cities in Asia-Pacific region
- Associate Members: 2 non-Asian-Pacific cities and 43 organizations
- Other Members: 1 private company and 1 honorary individual

Member Cities in Indonesia (19 cities)
Balikpapan, Banda Aceh, Bandung, Banjar, Banjarbaru, Bekasi, Bogor, Gorontalo, Jakarta, Makassar, Palembang, Pangkal Pinang, Semarang, Sidoarjo, Regency, Sukabumi, Sukabumi Regency, Surabaya, Tarakan, Tomohon

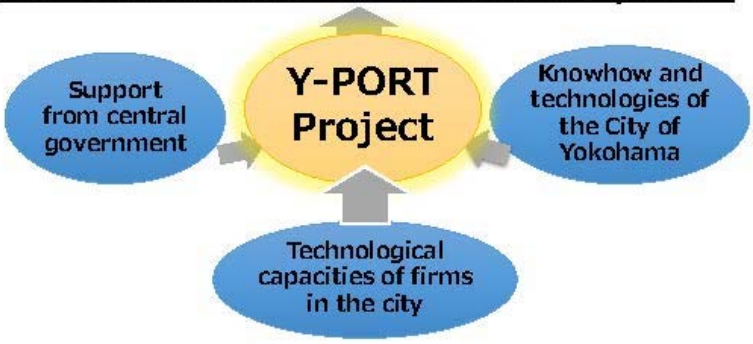
Yokohama' s International Development Cooperation – Y-PORT

Yokohama
Partnership Of Resources and Technologies

International technical cooperation based on public-private partnership and drawing on the resources and technology of Yokohama

- It is essential to provide not simple products but solutions through combining technologies and knowhow of the public and private sectors

Enhancement of international technical cooperation



【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

Comprehensive partnership agreements with major corporations

JGC

JFE Engineering Corporation

- Partnership for international technical cooperation
- Proceeding collaborations with small-medium scale companies in the City

Chiyoda Corporation

HITACHI

Yokohama' s International Development Cooperation – Y-PORT

Comprehensive Partnership Agreement with JICA (25th October, 2011)

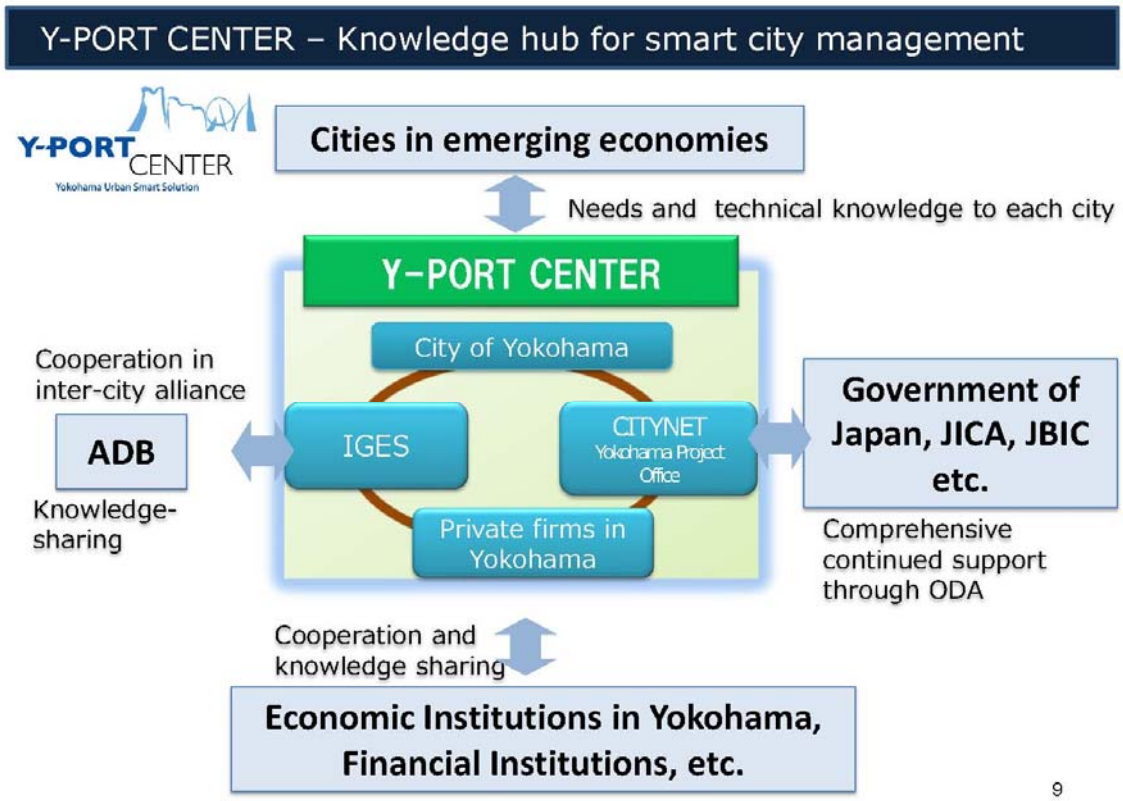
- Strengthening cooperation to solve urban problems in developing regions

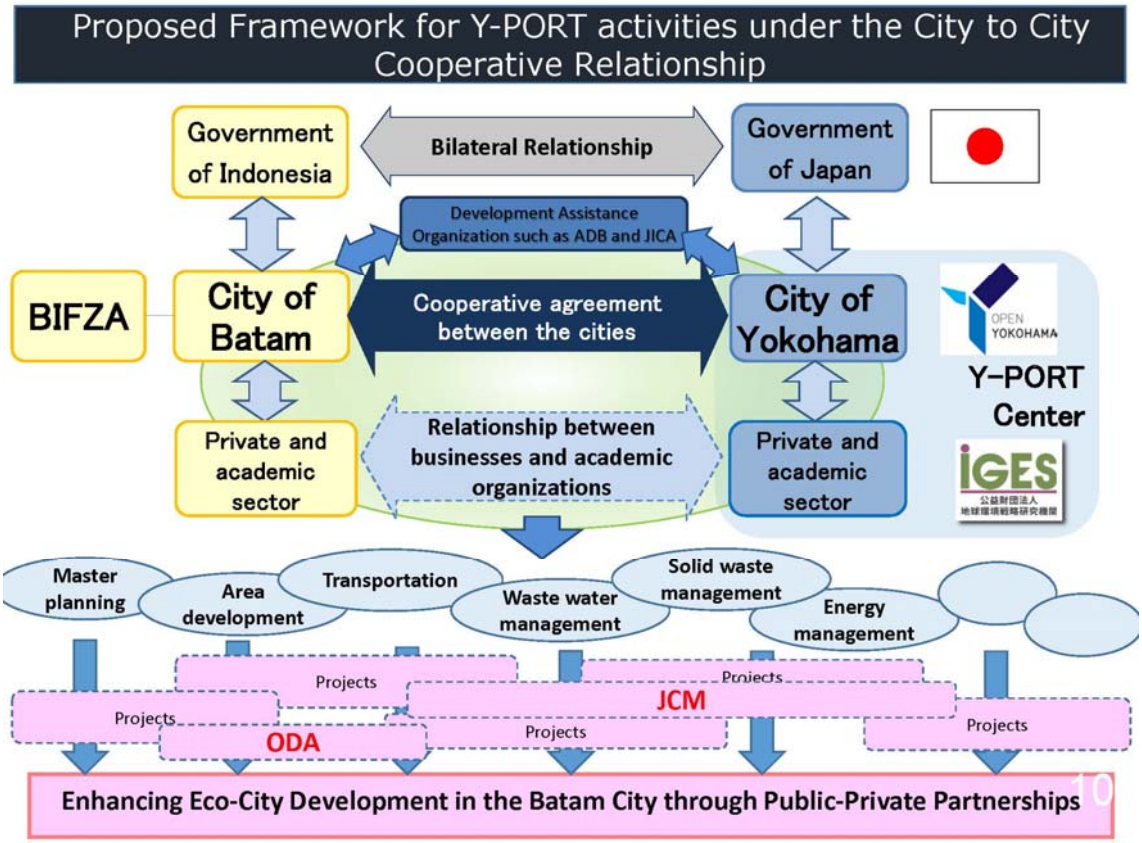
Memorandum of Understanding on Collaboration with Asian Development Bank on 16th October, 2013)

- Utilizing knowhow and technologies of the City of Yokohama and Yokohama private firms to ADB Project

** It was the first time for JICA and ADB to conclude the comprehensive agreement or MOU with a local government.*

【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】





【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

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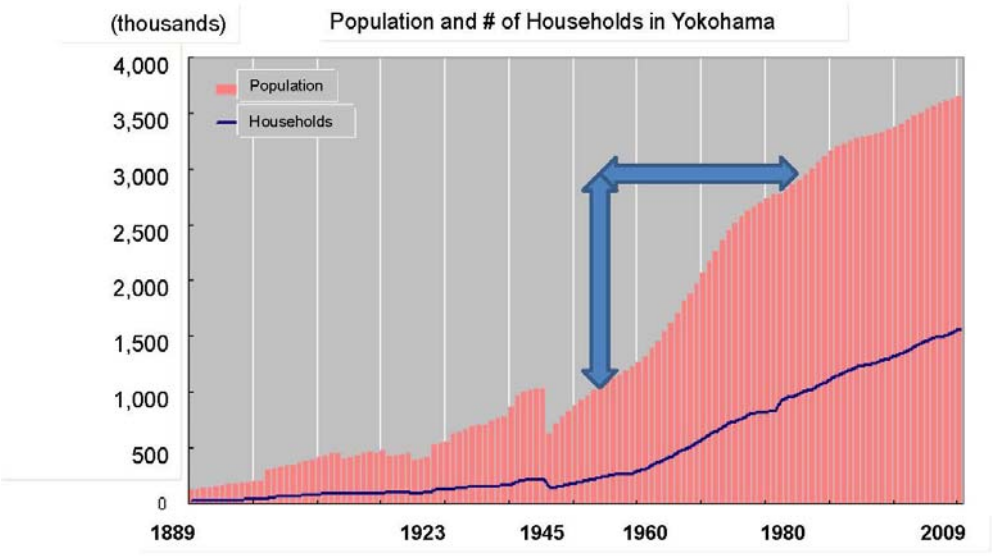
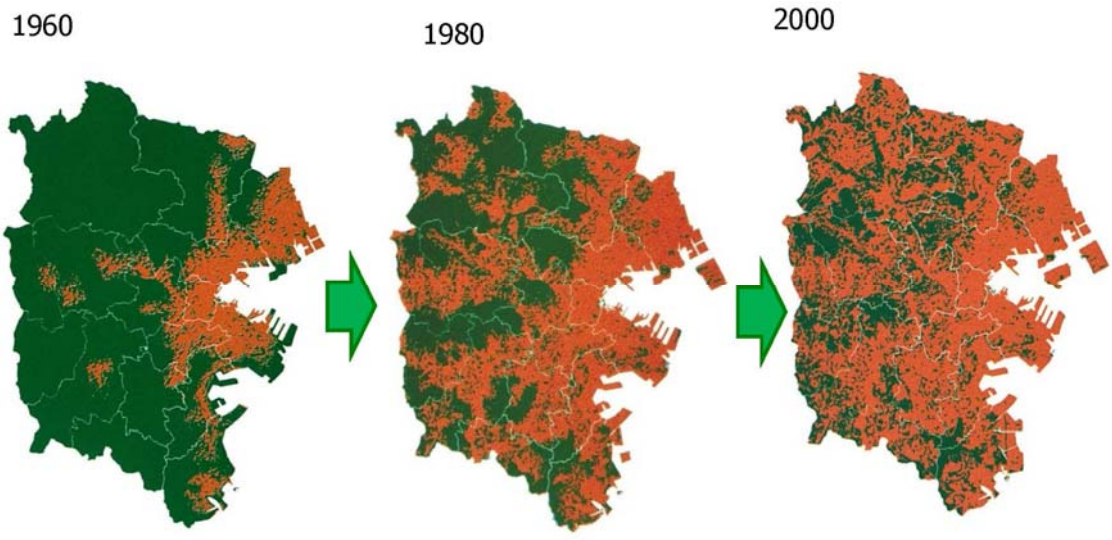
【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

City of Yokohama's Population Trend
Continuing to expand and grow



Urban Challenges: Rapid Urbanization

Urban sprawl,
Loss of forests・・・



【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

Urban agenda for Yokohama leading to Six Major Projects during the period of rapid urban growth

Particularly serious urban issues caused by rapid population expansion and urban sprawl during 1960s.

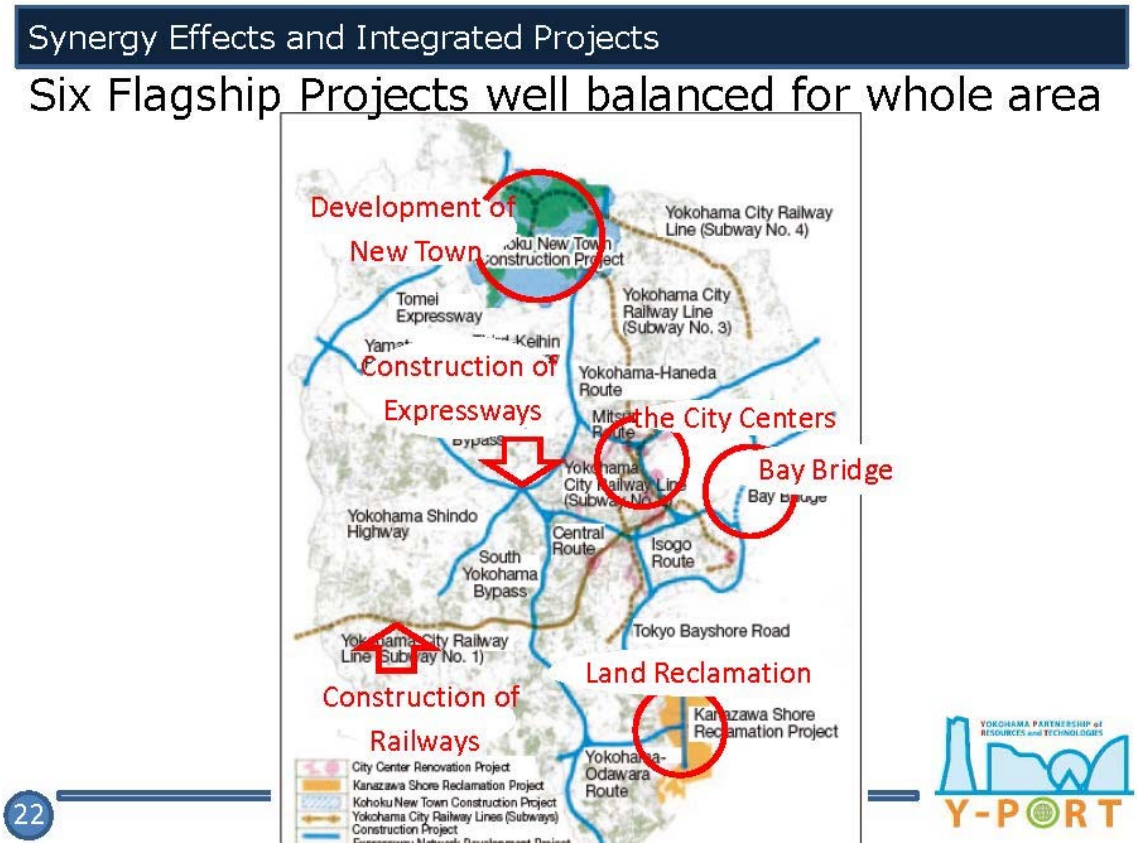
Five Major Issues

1. Increasing solid waste
2. Shortage of roads and traffic jams
3. Environmental destruction
4. Shortage of safe water resources
5. Insufficient land for public use

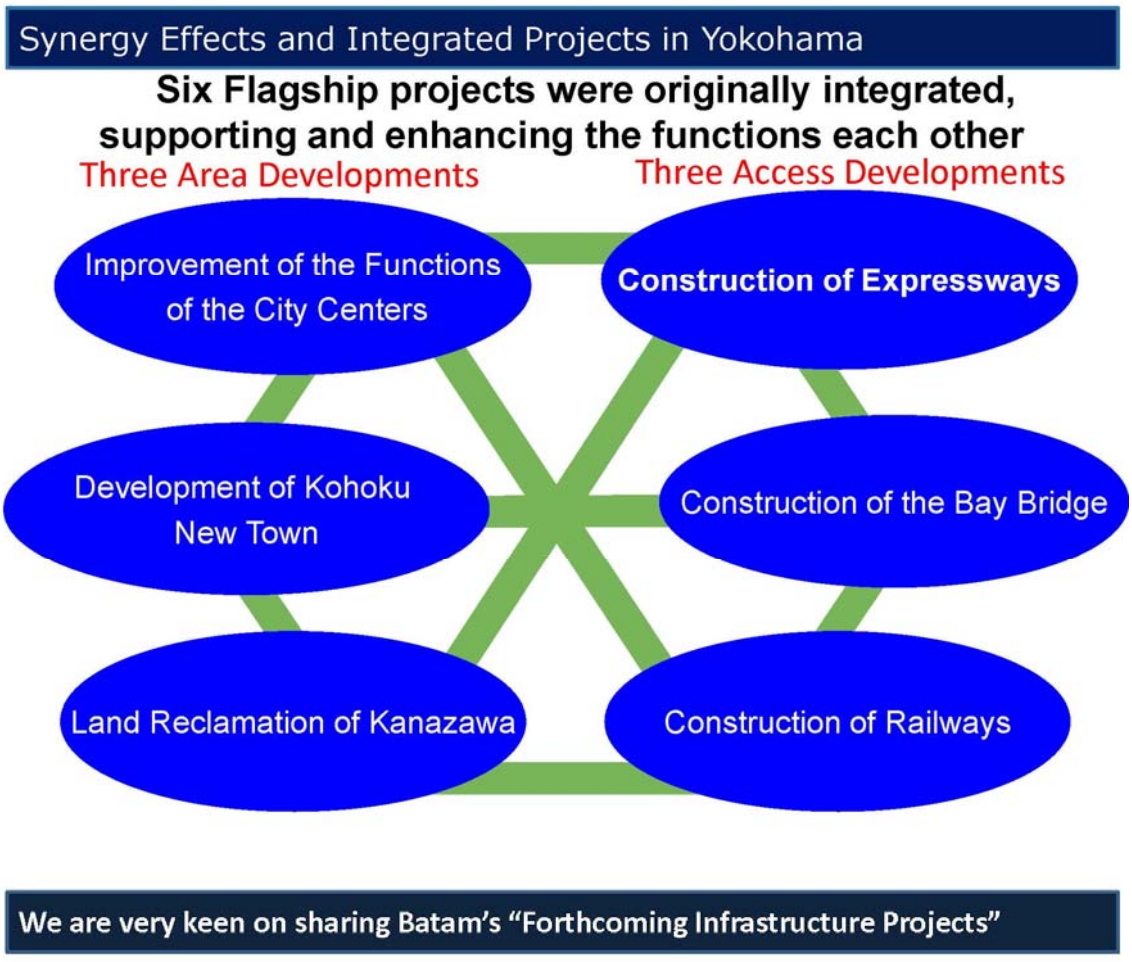
Development of Yokohama

【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】



【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】



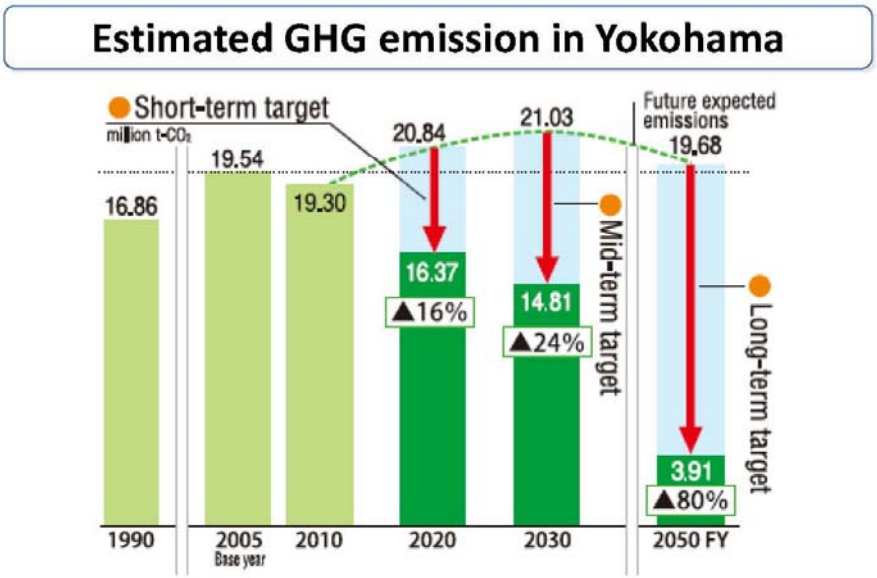
Source: Presentation materials by Batam Indonesia Free Zone Authority (BIFZA)

【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

Tackling future problems in Yokohama

◆ **Increase of GHG emission**

- Population in Yokohama expected to increase until 2020



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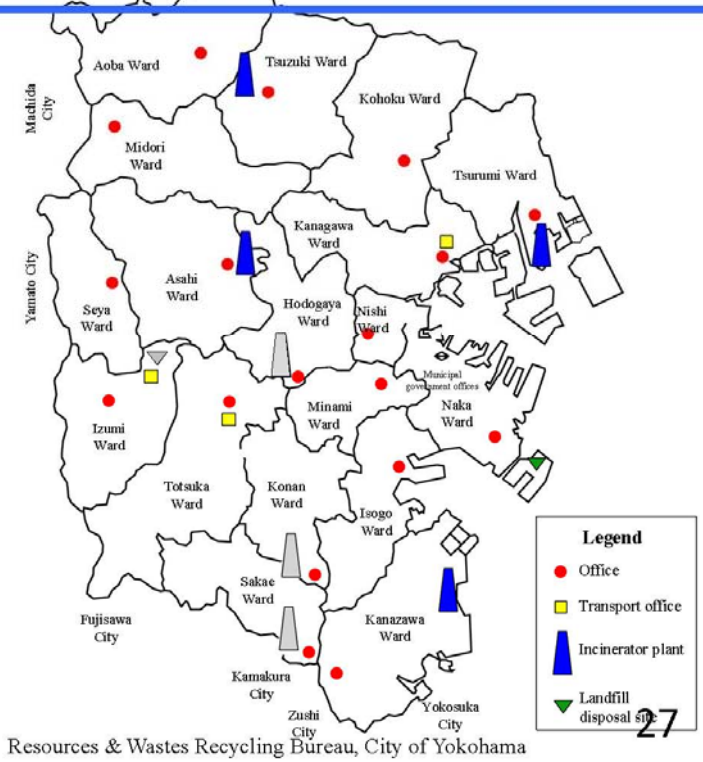
【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

<Solid Waste> Facilities in Yokohama

- ◆Collection offices
  18 in the city
  (1 in each ward)
- ◆Transport offices
  3 in the city
- ◆Incineration plants
  4 in the city
  (2 plants: closed
  1 plant : stopped)
- ◆Landfill site
  1 in the city
  (1 site: closed)



Resources & Wastes Recycling Bureau, City of Yokohama

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<Solid Waste> Yokohama G30 Plan

Reduce waste by **30%** by 2010

・Citizens, businesses and the government work together in promoting the 3Rs for waste.

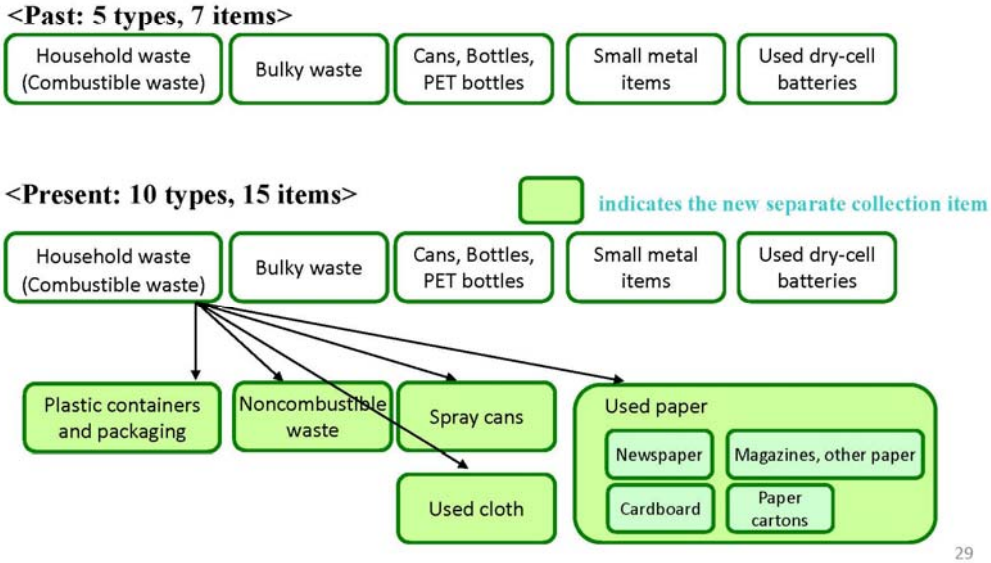
Defined Roles of Citizens, Businesses and Government

Citizens	Changing to an environmentally friendly lifestyle, rigorous sorting of garbage, etc.
Businesses	Design and production of products which reduce the emission of waste, collection and recycling of used products, etc.
Government	Creation of systems for 3Rs, raising the awareness of people, provision and exchange of information, etc.

【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

<Solid Waste> Yokohama G30 Plan

Efforts to Reduce Household Waste
- Expansion of Separate Collection Items -



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Resources & Wastes Recycling Bureau, City of Yokohama

<Solid Waste> Yokohama G30 Plan

Publicity and explanation to Citizens

- **Separation briefing session**: About 11,000 times (FY2004 & 2005)
- **Educational campaign in front of train stations** : About 600 times (FY2004 & 2005)
- **Early morning education in collection point** : About 3,300 times (FY2004 & 2005)
- **Garbage left behind due to non-separation** : About 10,900 times (FY2009)

Separation briefing

Educational campaign in front of the stations

Early morning educational instruction

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Resources & Wastes Recycling Bureau, City of Yokohama

【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

<Solid Waste> Yokohama G30 Plan

◆Target: **Cut waste emissions by 30%** by 2010 (from 2001 level)

◆Target achieved 5 years ahead of schedule

(more than 40% reduction as of 2010)

◆Effects of reduction

1. **Saved ¥3 billion** in annual running costs and huge amount for rebuilding cost for three plants
2. **Decreased 900,000 CO2 ton/year (Compering FY2009 with FY2001)**

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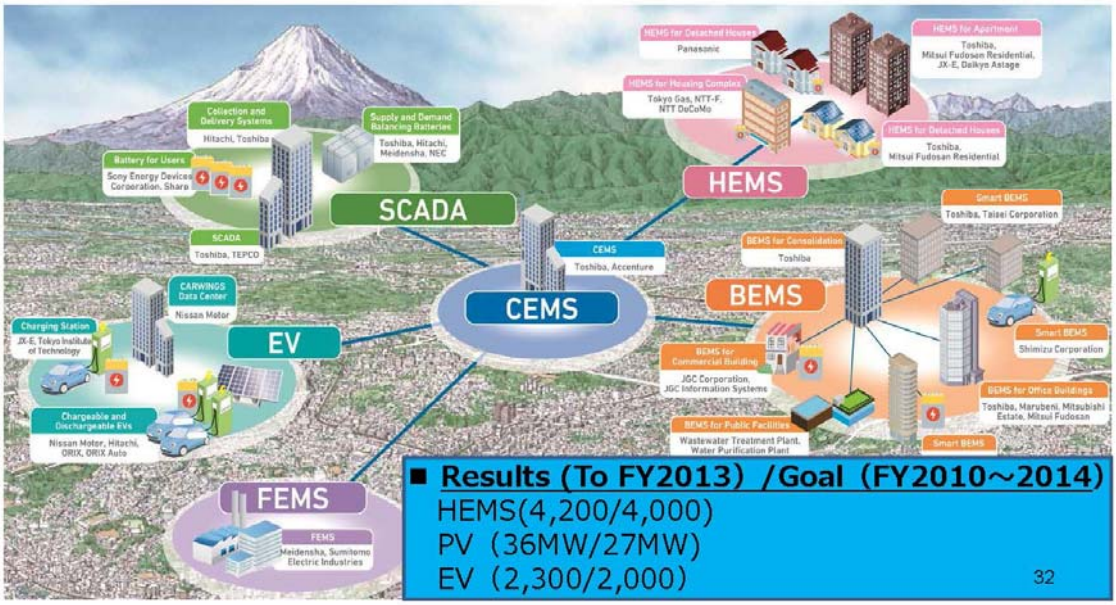
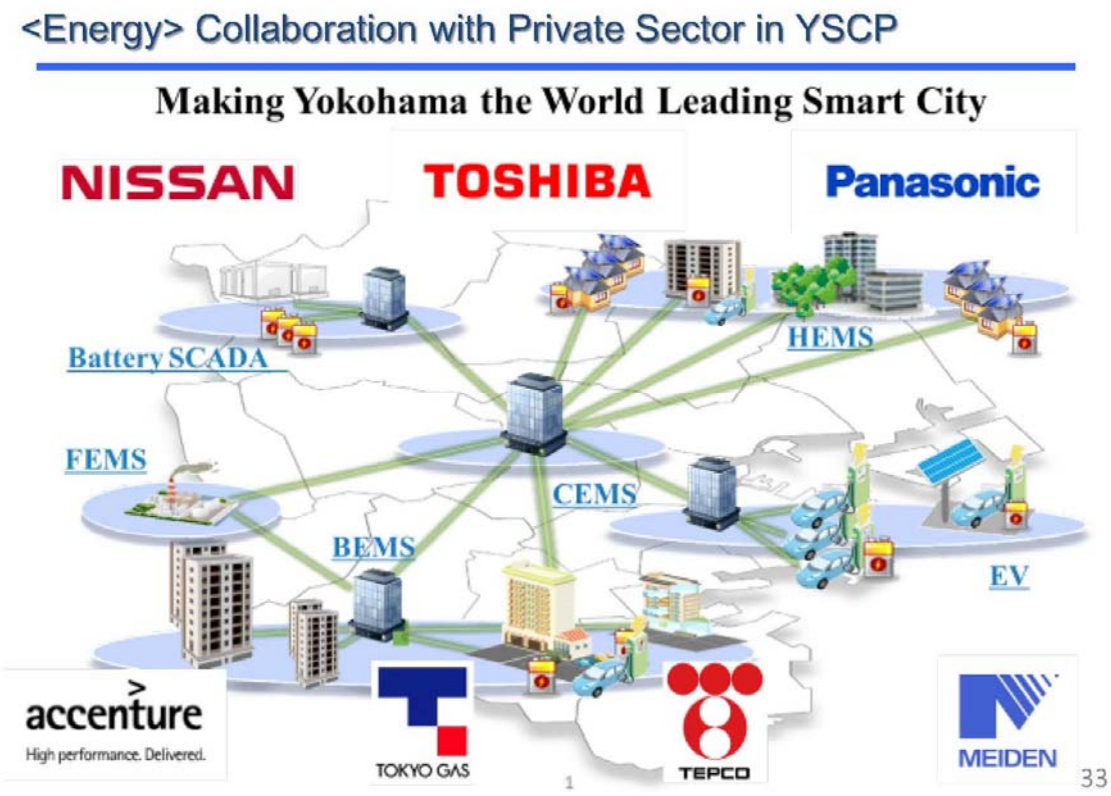
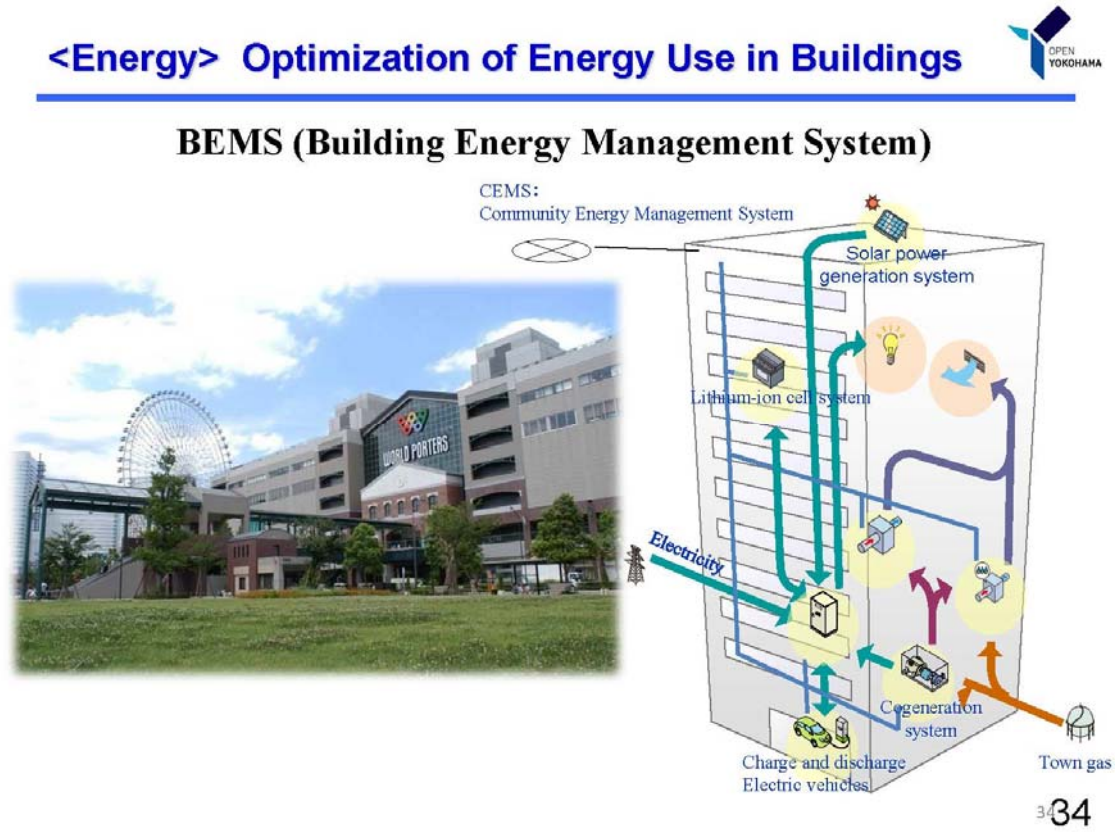
<Energy> Yokohama Smart City Project(YSCP)

coordinating varied energy management systems (CEMS, HEMS, BEMS, FEMS)



【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】





【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

<Energy> Optimization of Home Electricity Consumption

Efforts in single-family house

・**Visualization of Electricity**

Amount of electricity consumed from April to July 2011 was on average **reduced approximately 20%** from the previous year.

= Effect of introducing PV and HEMS

Efforts in Collective housing

・Application equipment of renewable energy
・Control all over collective housing by integrated control system and demonstration
・Visualization of energy and incentive setting by HEMS, and support for energy saving action in household

Smart House Isogo: Tokyo Gas Co., Ltd. (Shiomidai Isogo-ward)

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<Transportation> Installing new transportation system

EV sharing in industrial area and shopping district

Not only means of transportation, but also function of storage battery

One-way type car sharing

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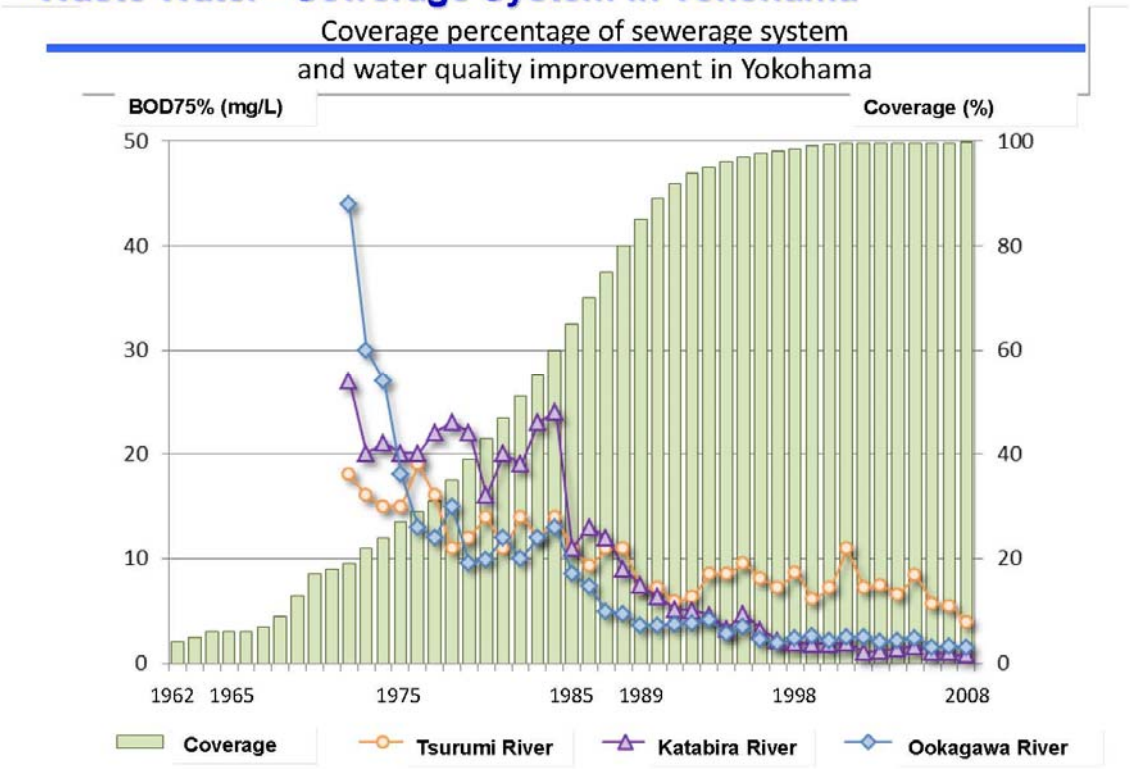
【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

<Waste Water> Sewerage System in Yokohama



<Waste Water> Viable and Phased Solution

【Yasuaki Nakamura, City of Yokohama (Y-PORT Center)】

To make forward JCM under city-to-city collaboration

Our project should be

- **Consistent with Master Plans and Sector Plans and Prioritized Projects in Batam**
- **Contributing to Human resources and Institutional development**
- **With robust partnership with private firms in both cities**

Terima kasih!!! Thank you for your attention.

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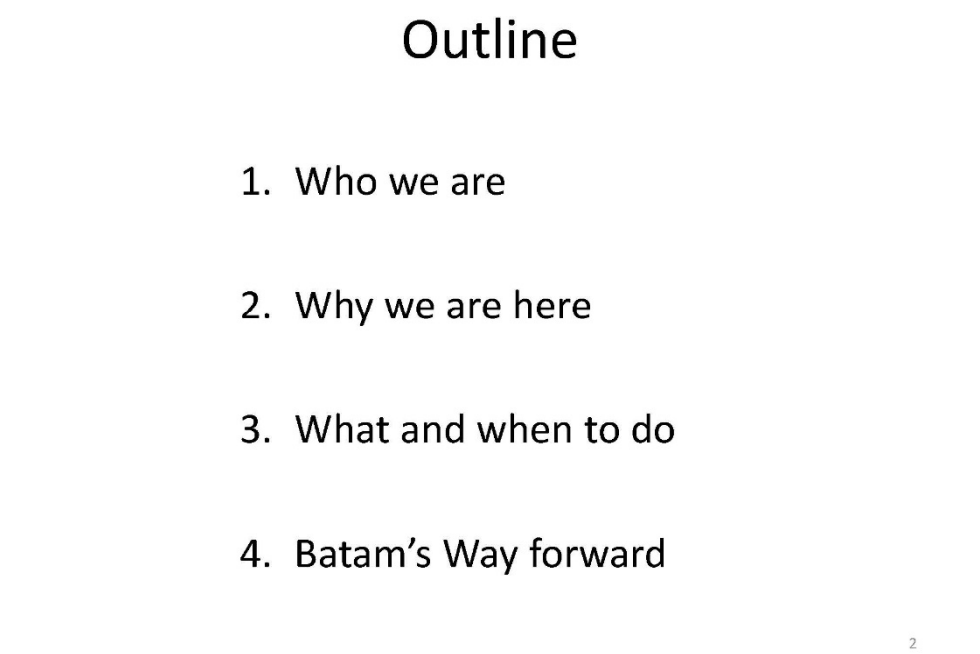
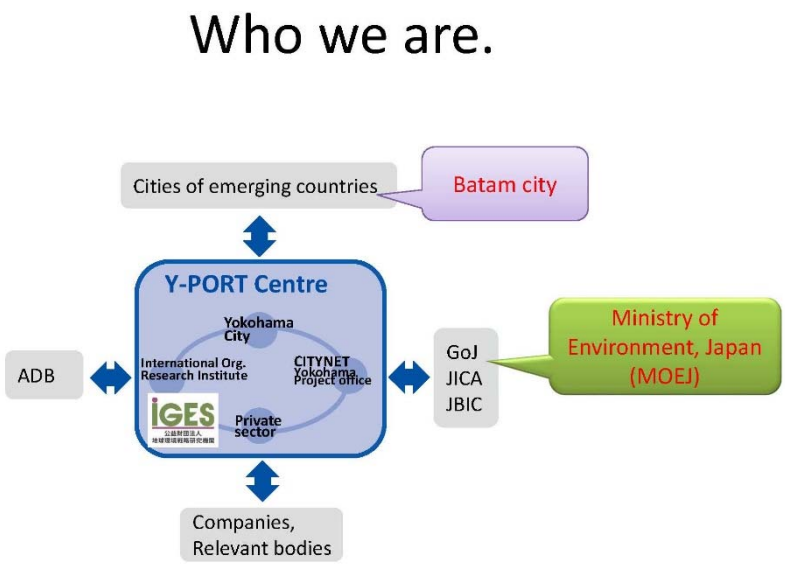
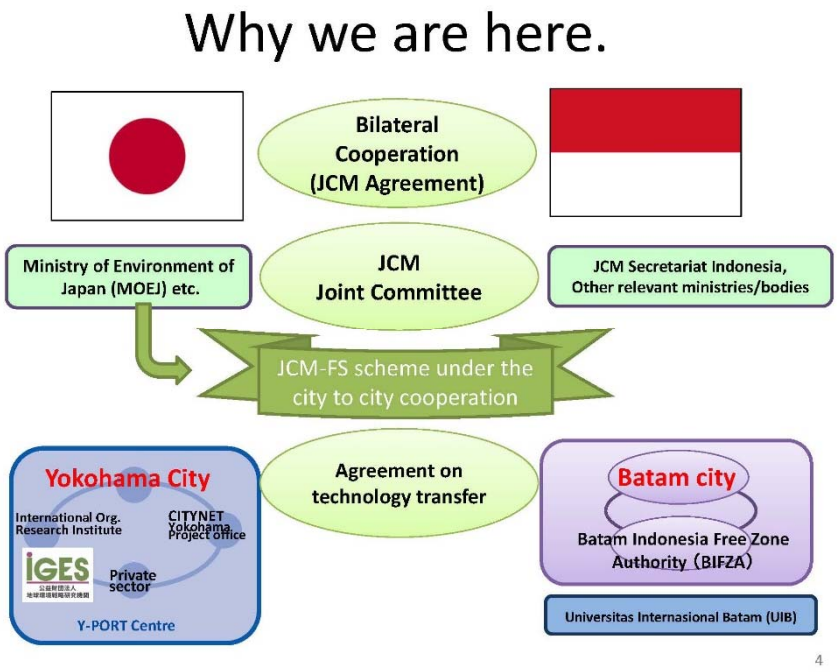
【Kenji Asakawa, IGES】

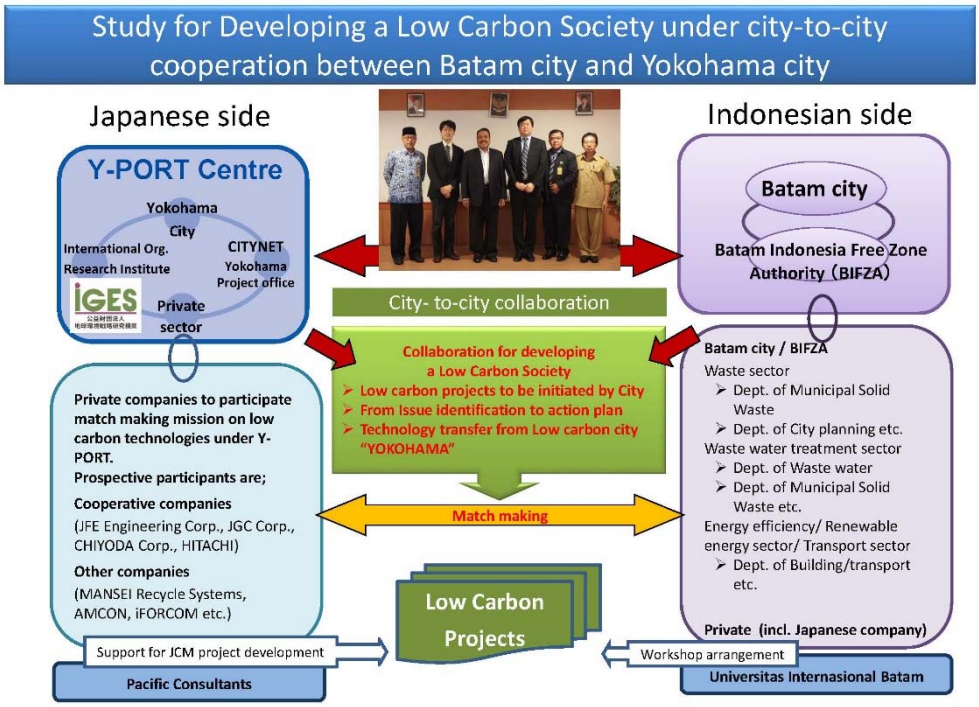


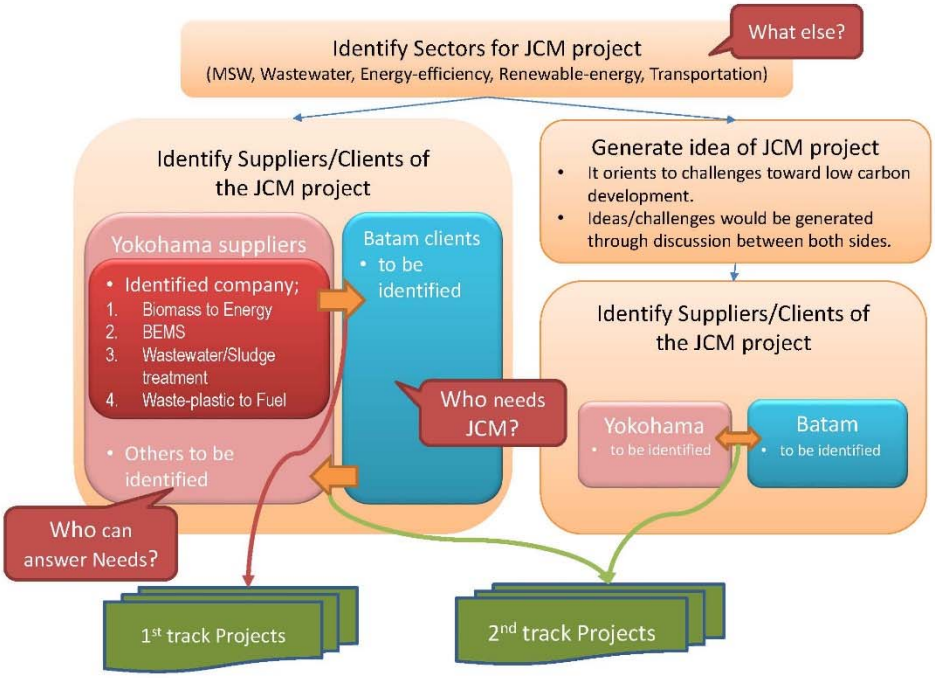
【Kenji Asakawa, IGES】



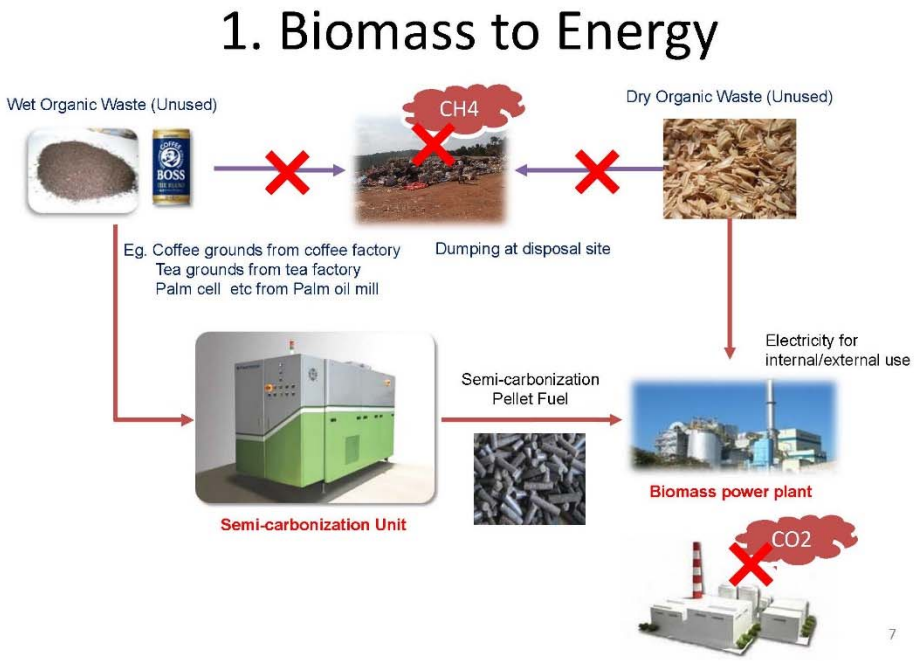


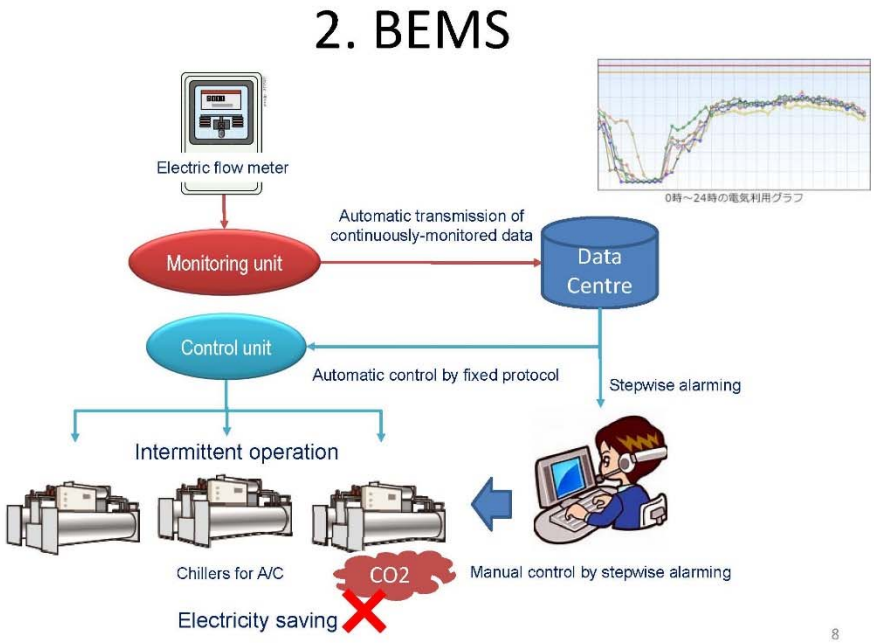
【Kenji Asakawa, IGES】



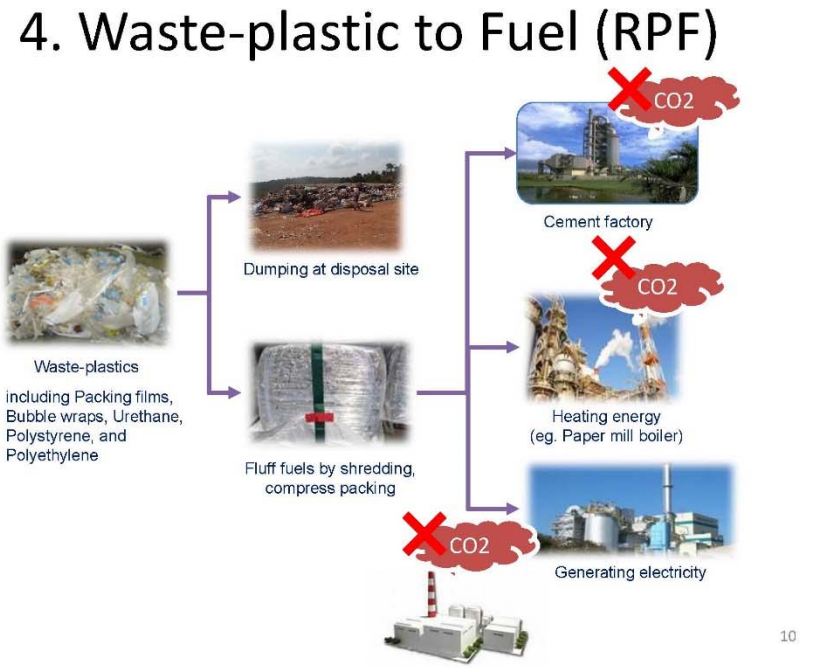


【Kenji Asakawa, IGES】





【Kenji Asakawa, IGES】



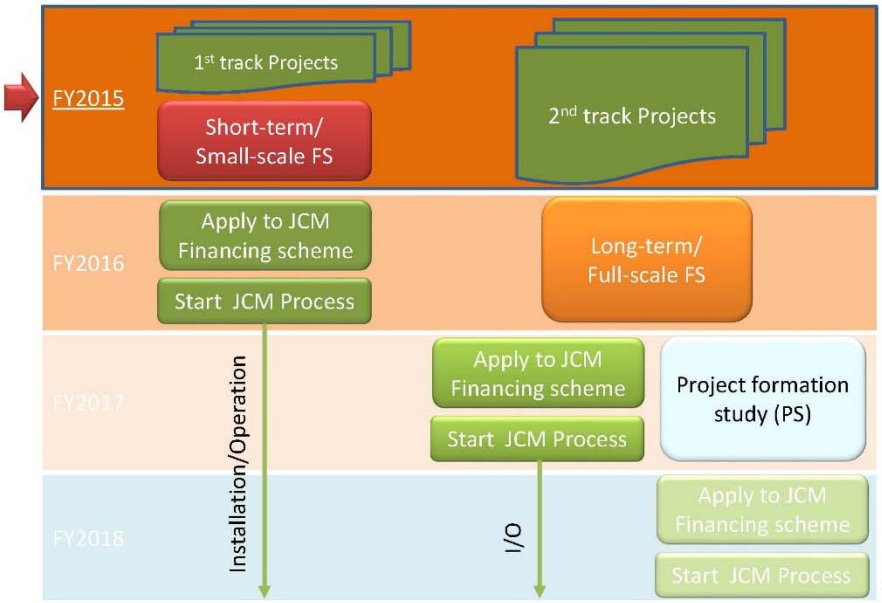
【Kenji Asakawa, IGES】

Apr. FY 2015	**Incption workshop** (1st mission trip in Batam) • Info sharing on outline of the JCM and JCM project from Japanese side and JCM project needs from Indonesian side • Site visit on potential project • Discussion for project finding and match-making process
May	Call for technical proposal from Japanese suppliers to provide solutions and follow-up The Batam Mayor's visit in Yokohama • Info exchange on JCM project needs and discussion specific Japanese suppliers • Site visit on Japanese low carbon technology
Jun.-Jul.	Identify promising projects to be identified with specific project proponent • Promising project would be identified through stakeholders of both sides • Specific project proponent would be identified through match-making
Aug.	**The 1st technical mission** (2nd mission trip in Batam) • Japanese low carbon technology suppliers will introduce their model projects
Sep.	Follow-up in both sides.
Oct.	Matchmaking mission in Yokohama • Invite potential project owner for site visit and business matching Asia Smart City Conference in Yokohama • Invite Batam-city for sharing experiences and challenges among Asian developing cities at JCM City-to-City Cooperation Seminar (TBC) • Site visit on low carbon technologies to be employed in Batam city
Nov.	**The 2nd technical mission** (3rd mission trip in Batam) • Individual meetings for developing JCM potential projects.
Dec.	• Follow-up in both sides.
Jan.	**Final workshop** (4th mission trip in Batam)

How and When we do

11

Way forward



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【Kenji Asakawa, IGES】

Thank you very much.

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240-0115 Japan
Tel: +81-46-855-3700
Fax: +81-46-855-3709
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13

Discussion

for Developing JCM projects under city-to-city cooperation between Yokohama and Batam

Moderator: Kenji Asakawa (IGES)

【Kenji Asakawa, IGES】

Discussion for JCM project formation

1. What is the goal of Batam-city as a low-carbon city?
2. What is/are challenge(s) to be overcome?
   a. Municipal Solid Waste (MSW) Treatment
   b. Waste water Treatment
   c. Energy Efficiency and/or Renewable Energy
   d. Transportation
3. What type of JCM project would solve the above challenges?

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【Indonesia JCM Secretariat】

Peran Partisipan Studi Kelayakan "Leap-Frog" JCM

Coordinating Ministry for Economic Affairs Republic of Indonesia

JCM JOINT CREDITING MECHANISM INDONESIA SECRETARIAT

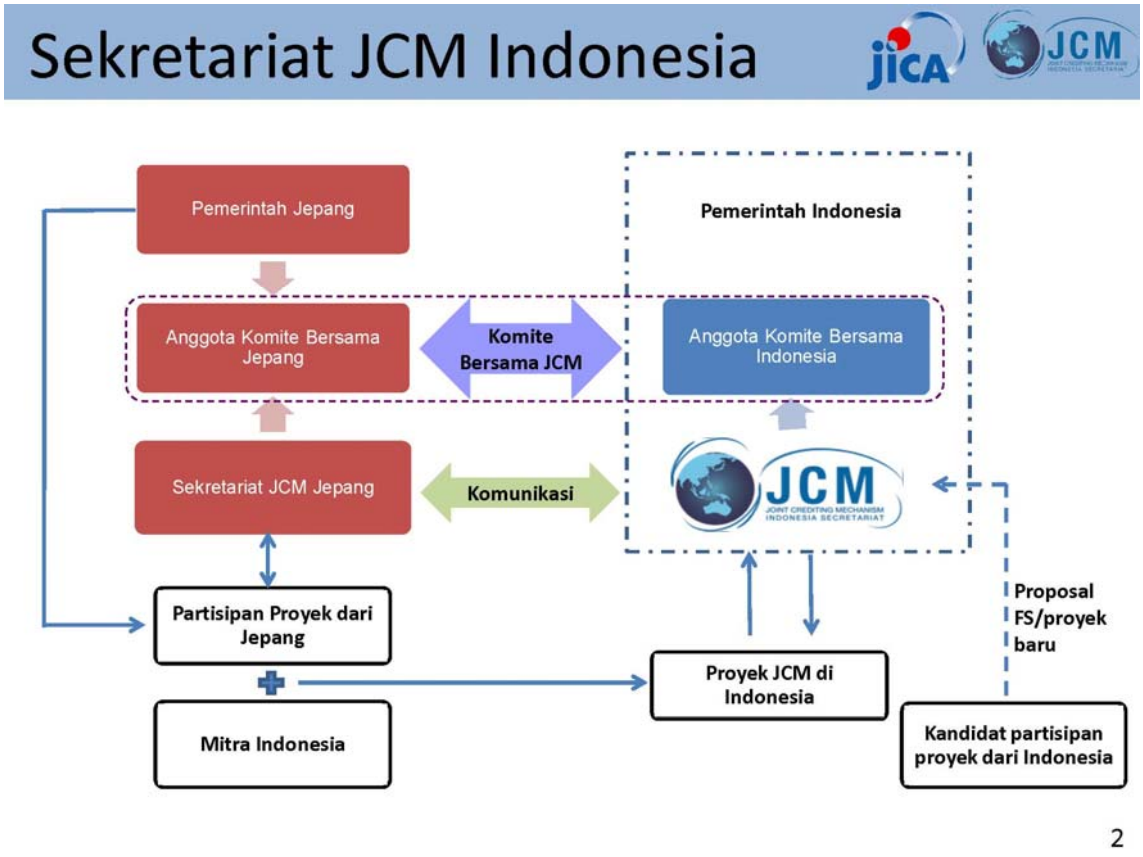
JICA

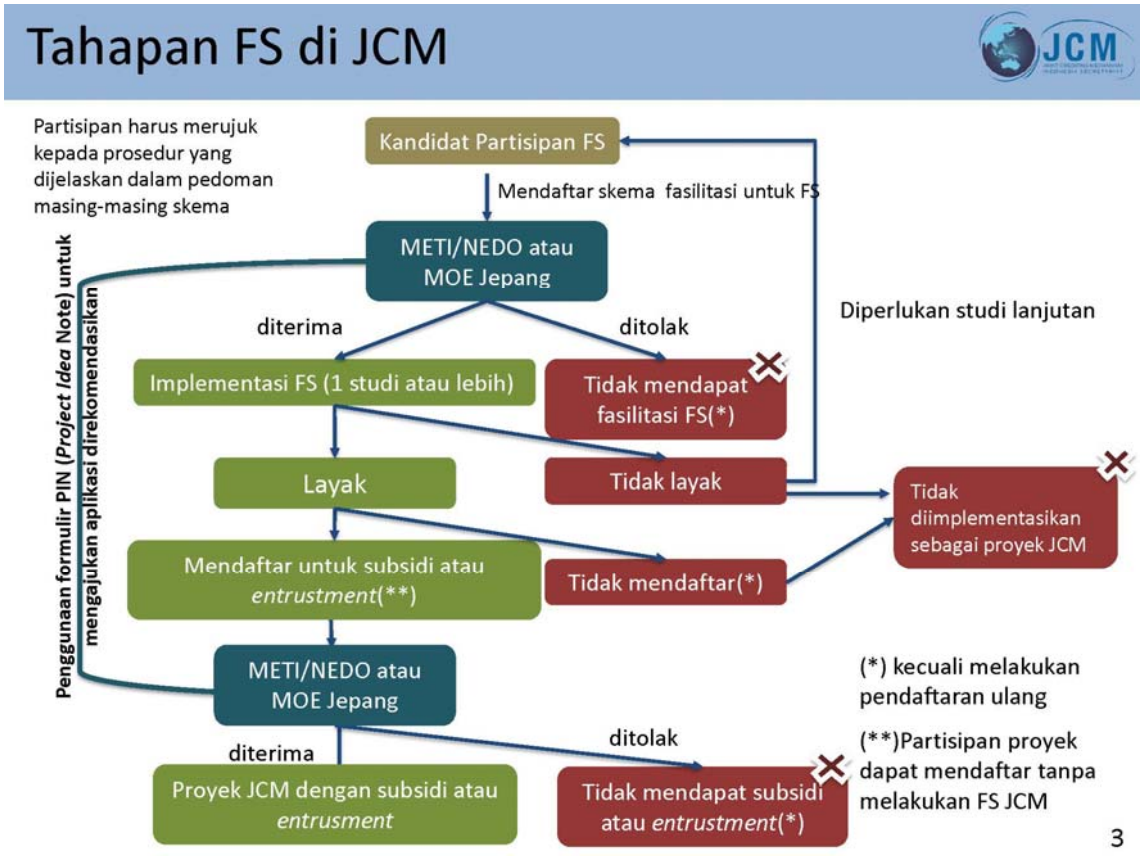
Konsep dasar JCM

- ***The Joint Crediting Mechanism*** atau Mekanisme Kredit Bersama antara Indonesia dan Jepang merupakan skema kerjasama antar pemerintah yang mendorong organisasi-organisasi swasta Jepang untuk bekerja sama dengan Indonesia dalam berinvestasi di kegiatan pembangungan rendah karbon di Indonesia dengan insentif dari pemerintah Jepang.
- **Kerjasama JCM tidak hanya dilakukan oleh Jepang dengan Indonesia, tetapi juga dengan 11 negara berkembang lainnya.**
- ***Dokumen Kerjasama Bilateral*** **tentang** ***Joint Crediting Mechanism untuk Kemitraan Pertumbuhan Rendah Karbon antara Republik Indonesia dan Jepang telah ditandatangani*** oleh Menteri Koordinator Perekonomian Indonesia dan Menteri Luar Negeri Jepang.
- **Tujuan JCM adalah:**
  1. Memfasilitasi penyebaran teknologi rendah karbon terkini, produk, sistem, jasa, dan infrastruktur serta implementasi kegiatan mitigasi, dan berkontribusi kepada pembangunan berkelanjutan di negara berkembang.
  2. Mengevaluasi secara akurat seluruh kontribusi penurunan atau pemusnahan emisi Gas Rumah Kaca (GRK) dari negara tuan rumah (dalam hal ini, Indonesia) secara kuantitatif, melalui langkah-langkah mitigasi yang diimplementasikan di negara tuan rumah dan menggunakan penurunan atau pemusnahan emisi tersebut untuk mencapai target penurunan emisi
  3. Berkontribusi terhadap pencapaian tujuan utama UNFCCC melalui fasilitasi langkah-langkah global untuk pengurangan atau penurunan emisi.

1

【Indonesia JCM Secretariat】

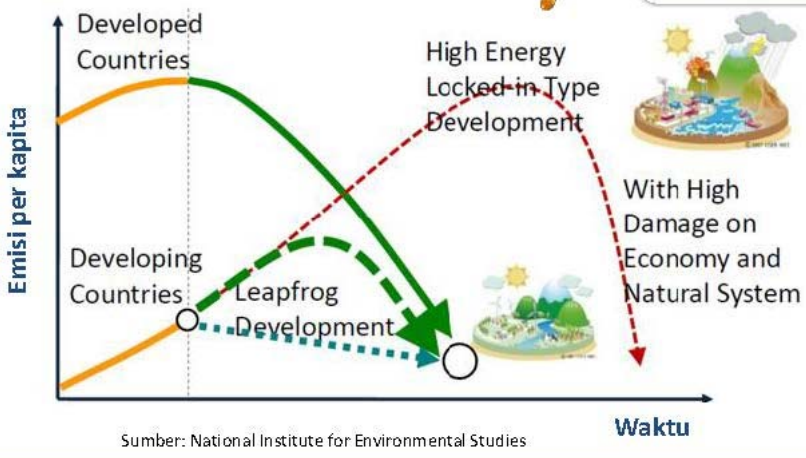




【Indonesia JCM Secretariat】

Apa itu“Leapfrog” ?

Konsep “melompat” ke arah yang berkelanjutan



Sumber: National Institute for Environmental Studies

MOEJ mendukung perkembangan leapfrog, sehingga masyarakat rendah karbon, masyarakat yang paham siklus material, dan masyarakat yang selaras dengan alam dapat tercapai seiring dengan pertumbuhan ekonomi.

4

Aspek yang harus dipertimbangkan dalam Studi Kelayakan/FS

1. Penggunaan teknologi rendah karbon terkini yang telah terbukti.
2. Aktivitas tidak melanggar hukum dan perundangan Indonesia.
3. Pemahaman yang tepat dan lengkap dari pihak Indonesia dan Jepang terkait skema JCM.
4. Pengutamaan untuk pemeliharaan dan operasi yang berkelanjutan.
5. Penghitungan penurunan emisi CO_2 yang diharapkan serta adanya program peningkatan kapasitas.

5

【Indonesia JCM Secretariat】

Studi Kelayakan di Indonesia

2010-2013 **2014**

6

Studi Kasus 1: Surabaya Leap-frog FS

Tahun Fiskal 2013:

- **Sektor Energi:**
  1. Sistem co-generation system di kawasan industri SIER
  2. Penghematan energi di gedung-gedung
  3. Lampu LED di jalan tol
- **Sektor Limbah Padat:**
  4. Pemilahan, *recycling*, dan komposting sampah
  5. Proyek *Waste-to-energy*
  6. Insinerasi limbah industri di kiln semen
- **Sektor Transportasi:**
  7. Penggantian bahan bakar pada kendaraan (bis kota, kendataan umum, taksi)
  8. Penggantian truk sampah dengan moda transportasi rendah emisi dan peningkatan manajemen operasi
- **Sektor air dan limbah cair:**
  9. Penghematan energi di instalasi pengolahan air dan stasiun pompa
  10. Pengurangan kebocoran suplai air
  11. Pengelolaan limbah di SIER dan pengelolaan lumpur di Keputih

Tahun Fiskal 2014:

- **Sektor Energi:**
  1. Sistem co-generation system di kawasan industri SIER
  2. Penghematan energi di gedung-gedung
- **Sektor Limbah Padat:**
  3. Pemilahan, *recycling*, dan komposting sampah
  4. Proyek *waste-to-energy*
  5. *Waste-to-energy* untuk limbah industri (pabrik semen dan kertas)

FS pada tahun berikutnya bisa tidak dilanjutkan, karena:

1. Dianggap tidak layak (dan tidak ada pendaftaran kembali oleh partisipan FS)
2. Studi telah memberikan data yang cukup, sehingga tidak dibutuhkan studi lanjutan

7

【Indonesia JCM Secretariat】

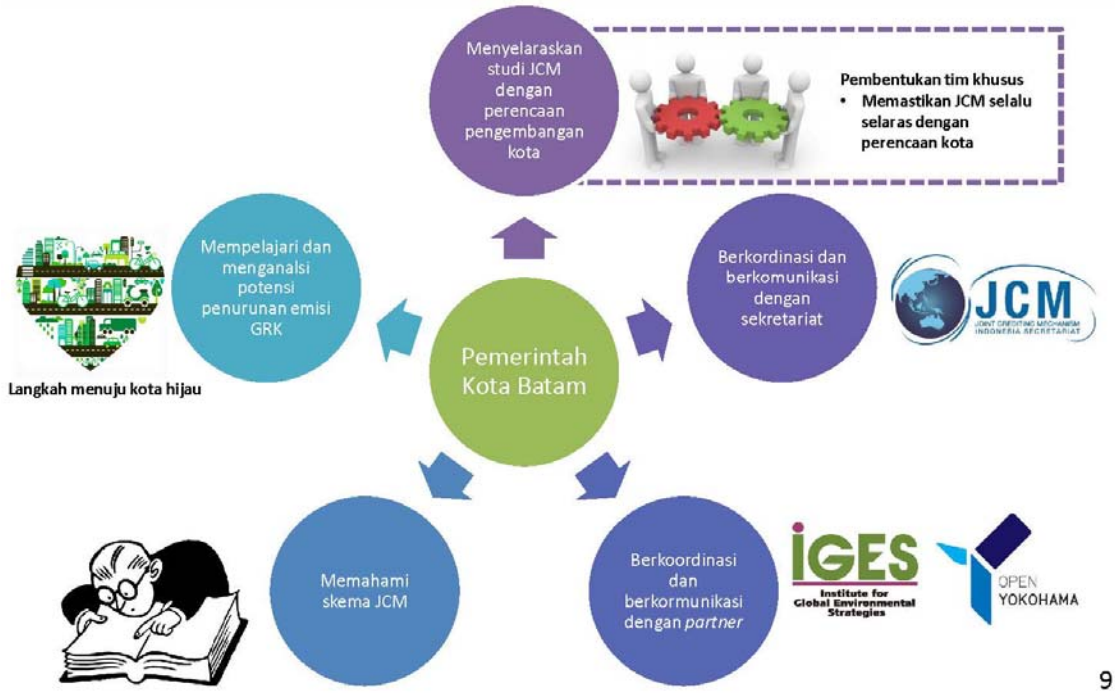
Studi kasus: FS menjadi proyek (2)

"Pembangkit Listrik dengan Pemanfaatan Panas Buang pada Industri Semen"

- *JCM Model Project* oleh JFE Engineering dan PT Semen Indonesia untuk tahun fiskal 2014 (dibawah skema MOE)
- JFE Engineering mendaftar dan diterima sebagai FS untuk tahun fiskal 2013.
  - Garis besar studi:
    1. Pengembangan metode MRV
    2. Penghitungan ekspektasi penurunan emisi CO_2
    3. Rencana jadwal proyek
  - Pembagian kerja antara JFE Engineering dan PT Semen Indonesia telah ditentukan dengan jelas dalam periode FS. Oleh karena itu, saat tahap proyek, kedua belah pihak telah mengerti kewajibannya masing-masing.

8

Peran Pemerintah Kota



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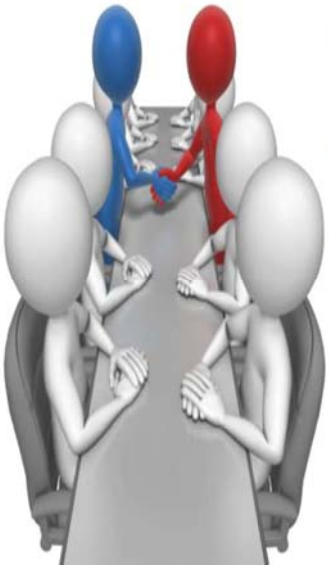
【Indonesia JCM Secretariat】

Komunikasi dalam Proses Studi Kelayakan JCM (1)

- **Pentingnya pemahaman dan informasi yang sama mengenai JCM di antara partisipan FS**



- Pada beberapa kasus, entitas Indonesia tidak mengetahui bahwa studi kelayakan yang mereka sedang/akan lakukan merupakan program JCM.
- Pihak Jepang harus memastikan transfer informasi yang baik mengenai JCM ke mitra Indonesia mereka.
- Pemahaman yang tepat mengenai JCM oleh kedua belah pihak mendukung peningkatan pemahaman kewajiban masing-masing dan mempermudah perjanjian pembagian kerja serta implementasi proyek.

10

Komunikasi dalam Studi Kelayakan JCM (2)

- **Komunikasi antara partisipan FS dan Sekretariat JCM**

Sekretariat dapat: "Memantau perkembangan aktivitas studi kelayakan JCM"

(*JCM Rule of Implementation* Para 14 poin (b) artikel (ii))

- Tiap tahun (umumnya pada Februari/akhir tahun fiskal Jepang), semua hasil FS pada tahun fiskal tersebut dipresentasikan kepada Pemerintah Indonesia.
- Tiap 4 bulan, para partisipan FS sangat direkomendasikan untuk mengirimkan garis besar perkembangan studi yang terbaru kepada sekretariat melalui e-mail (secretariat@jcmindonesia.com).
- Apabila dibutuhkan, dapat dilakukan diskusi antara partisipan FS dan Sekretariat.

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【Indonesia JCM Secretariat】

【Dicky Edwin Hindarto, Indonesia JCM Secretariat】

Perkembangan Kegiatan Joint Crediting Mechanism (JCM) di Indonesia

JCM JOINT CREDITING MECHANISM INDONESIA - JAPAN

Coordinating Ministry for Economic Affairs Republic of Indonesia

JICA

Dicky Edwin Hindarto
Kepala Sekretariat JCM Indonesia

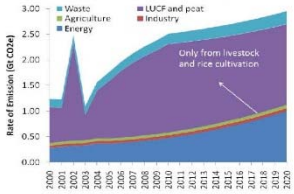
Struktur Presentasi

1. Bagaimana proyek JCM beroperasi?
2. Tahapan proyek JCM
3. Pola pembiayaan di proyek JCM

【Dicky Edwin Hindarto, Indonesia JCM Secretariat】

Semuanya bermula dari isu perubahan iklim

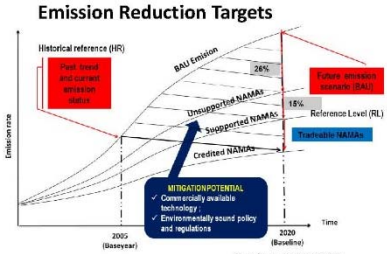
Historical and projection of GHG emission under BAU scenario by sector (2000-2020)



- Emisi Gas Rumah Kaca (GRK) di dunia harus dikurangi untuyk mencegah semakin parahnya perubahan iklim, masalahnya pertumbuhan ekonomi sejalan dengan peningkatan emisi GRK.
- Komitmen sukarela Indonesia adalah mengurangi emisi sebesar **26% di bawah level proyeksi BAU di tahun 2020** (dan bisa sampai 41% bila dengan bantuan internasional.
- Pemerintah yang baru akan meneruskan komitmen yang sudah disampaikan.

Perkembangan terbaru di dunia:
- **Setiap negara wajib mengurangi emisi GRKnya dan komitmen kewajiban ini harus disampaikan ke dunia internasional sebelum bulan September 2015.**
- **Untuk mengurangi emisi GRK tersebut, bisa dilakukan kerjasama antar Negara.**
- **Pengurangan emisi yang dilakukan harus memenuhi kaidah pelaporan, transparan, dan menghindari perhitungan dan pencatatan berganda.**
- **Saat ini yang menyampaikan komitmennya sudah 7 negara, termasuk US dan EU.**

Emission Reduction Targets



Sumber: DNPI, 2011

Sector	Unilateral	Supported
Forestry and Peat	0.672	1.039
Waste	0.048	0.078
Energy and Transport	0.038	0.056
Agriculture	0.008	0.011
Industry	0.001	0.005
Total	**0.767**	**1.189**

(dalam GtCO2e) **Sumber: DNPI/2011**

Bagaimana model kegiatan JCM

【Dicky Edwin Hindarto, Indonesia JCM Secretariat】

Tahapan kegiatan JCM

Usulan Proyek
Kedua pemerintah memfasilitasi usulan proyek/kegiatan dari dua negara dengan melalui Project Idea Note (PIN)

Feasibility Study (FS)
FS dilakukan menggunakan 100% grant dari pemerintah Jepang atau menggunakan dana gabungan dari berbagai pendanaan yang lain

Implementasi
Hanya proyek yang disetujui oleh kedua negara yang kemudian diimplementasikan

Langkah-langkah implementasi JCM

【Dicky Edwin Hindarto, Indonesia JCM Secretariat】

Perkembangan proyek JCM terkini

The Project Implementation

- 3 proyek sudah dalam status terdaftar sebagai proyek JCM (hasil validasi TPE sudah diterima oleh Joint Committee).
- 12 proyek JCM tengah dalam tahap pengembangan.
- 1 projek dibatalkan karena masalah manajemen.
- Seluruh proyek yang dibangun dikembangkan atas dasar kerjasama antara peserta proyek Indonesia dan peserta proyek Jepang.

Proyek JCM yang sudah terdaftar

1. "Energy Saving for Air-Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller".
2. "Project of Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia".
3. "Project of Introducing High Efficiency Refrigerator to a Frozen Food Processing Plant in Indonesia".

Proyek JCM pertama yang terdaftar:

- Kerjasama antara **Ebara Equipment & Systems** dan **PT Primatexco Indonesia**
- Lokasi: Batang, Jawa Tengah
- Total estimasi pengurangan emisi **799 tCO_2 eq.** di tahun 2020
- Penghematan energy per tahun **965 MWh**

Proyek-proyek JCM yang sudah diimplementasikan

No	Project title	Estimated annual emissions reduction, average (tCO2/y)	Capacity/estimated energy saving
1	Energy Saving for Air-Conditioning and Process Cooling by Introducing High-efficiency Centrifugal Chiller	114	
2	Project of Introducing High Efficiency Refrigerator to a Food Industry Cold Storage in Indonesia	120	173 MWh
3	Project of Introducing High Efficiency Refrigerator to a Frozen Food Processing Plant in Indonesia	21	32 MWh
4	Energy saving for air-conditioning at textile factory	592	799 MWh
5	Energy Savings at Convenience Stores	33	39 MWh
6	Energy saving for textile factory facility cooling by high efficiency centrifugal chiller	104	92.4 MWh
7	Energy saving through introduction of regenerative burners to the aluminum holding furnace of the automotive components manufacturer	855	
8	Energy saving by double bundle-type heat pump at beverage plant	585	
9	Upgrading to Air-Saving Loom Project	566	
10	Introduction to high-efficient old corrugated cartons process factory	14,000	
11	Energy Saving by Optimum Operation at Oil Refinery	3400	
12	Utility Facility Operation Optimization Technology - "RENKEI" Control	58,000	800 MWh
13	Power generation by waste heat recovery in cement industry	122,000	30.4 MW
14	Remote Auto-Monitoring System for Thin-Film Solar Power Plant in Indonesia	1,432	1 MW
15	Solar power hybrid System installation to existing base transceiver stations in off-grid area	2,786	18 kW
		204,608	**1,935 MWh/31.418 MW**

【Dicky Edwin Hindarto, Indonesia JCM Secretariat】

Skema pembiayaan proyek JCM dari MOEJ (Kementerian Lingkungan Jepang)

- Meliputi separoh dari biaya instalasi peralatan pengurang gas rumah kaca (GRK) yang dipasang
- Harus ada konsorsium internasionalnya yang bersifat business to business
- Kredit pengurangan emisi karbon yang akan didapat MOEJ akan setara dengan besar investasinya

Subsidi dari MOEJ | **Biaya dari partisipan proyek**

50% | 50%

Subsidi diberikan sampai dengan maksimal 50% dari total nilai proyek

Biaya awal untuk pemasangan **peralatan baru**

Biaya konstruksi dan biaya terkait, biaya peralatan, biaya survei dan uji, biaya administrasi, serta **peralatan pemantauan**

Teknologi untuk mengurangi emisi CO2 dari sumber yang berhubungan dengan energi atau sumber emisi lain

- Peserta proyek

Entitas Jepang
Entitas Indonesia

GEC: Global Environment Center Foundation, secretariat untuk skema subsidi MOEJ

Konsorsium internasional → **Mengirim proposal subsidi kepada MOEJ melalui GEC**

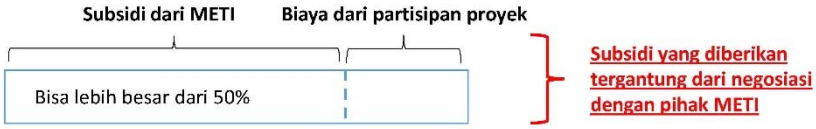
Inisiatif dari peserta proyek Indonesia – Pemanfaatan panas buang (WHR) di industri semen

Peserta: PT. Semen Indonesia & JFE Engineering

- Inisiatif dari perusahaan semen Indonesia untuk mengurangi konsumsi energy batubara
- Total investasi proyek: 52 juta USD
- 17% dari total investasi menggunakan dana dari MOEJ

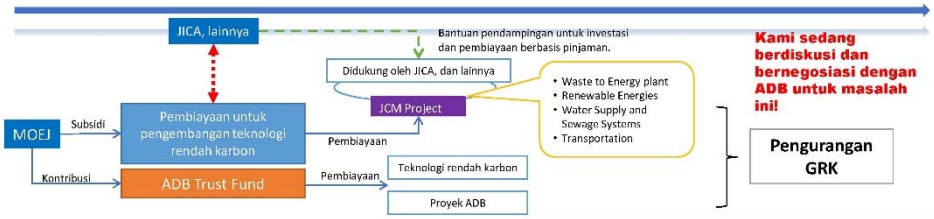
【Dicky Edwin Hindarto, Indonesia JCM Secretariat】

Skema pembiayaan proyek JCM dari METI (Kementerian Energi, Dagang, dan Industri)



- Untuk beberapa waktu, peralatan tetap menjadi milik METI untuk kemudian diserahterimakan kepada peserta proyek.
- Subsidi langsung pada peralatan, barang modal, dan pengembangan kapasitas dari penerima proyek.
- Tidak membutuhkan konsorsium internasional.

Skema pembiayaan lompatan kodok (leap frog)



Pembiayaan untuk ekspansi teknologi rendah karbon

Budget untuk tahun fiskal 2014
4,2 Miliar Yen (42 juta USD)

Skema
Membiayai proyek yang memiliki efisiensi lebih baik dalam pengurangan emisi GRK dengan kolaborasi antara proyek lain yang didukung JICA dan organisasi nasional lain

Tujuan
Untuk mengekspansi teknologi rendah karbon yang terdepan dan superior dalam membangun masyarakat rendah karbon dalam skala kota dan skala area di lingkup yang lebih luas dan untuk mendapatkan kredit dari JCM

Trust Fund ADB

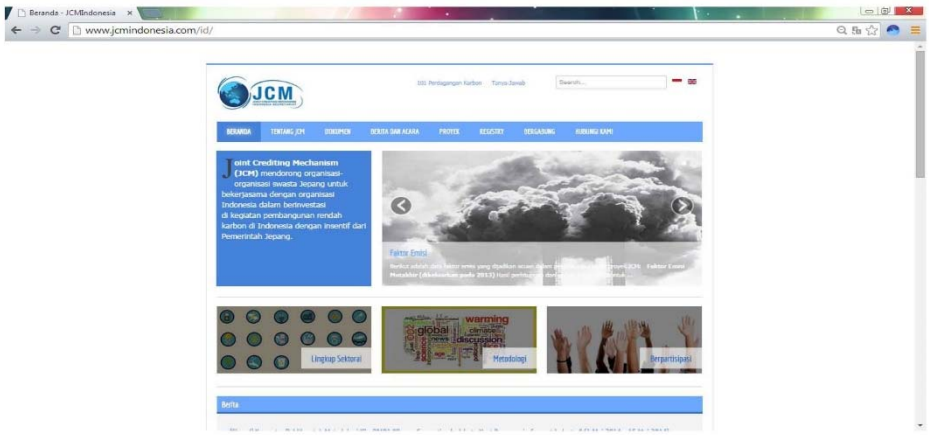
Budget untuk tahun fiskal 2014
1,8 Miliar Yen (18 juta USD)

Skema
Memberikan insentif finansial untuk adopsi teknologi rendah karbon terdepan yang dapat mengurangi emisi GRK dalam jumlah besar namun memiliki biaya yang tinggi dalam proyek yang dibiayai ADB

Tujuan
Untuk mengembangkan proyek ADB sebagai perkembangan "lompatan kodok" dengan teknologi terdepan dan untuk menunjukkan efektivitas dari skema JCM dengan akusisi kredit JCM

【Dicky Edwin Hindarto, Indonesia JCM Secretariat】

Sila kunjungi website kami www.jcmindonesia.com untuk keterangan lebih rinci



JCM
JOINT CREDITING MECHANISM
INDONESIA - JAPAN

Terima kasih!
Hatur nuhun!

3.2 Batam Mission to Yokohama: Signing of MoU

The City of Batam is looking to the City of Yokohama, which has advanced environmental and energy technologies, for cooperation relating to low-carbon technologies, and has shown a strong interest this project. On May 27, 2015, the Mayor of Batam City visited Japan and signed a Letter of Intent relating to technical cooperation between Yokohama and Batam. With regard to this opportunity, based on the long-term collaborative relationship, it will link coordination among the stakeholders on low-carbon technologies of the private sector, as well as environmental management capacity and systems of local governments, etc.

Thus, this project, in consideration of the discussions to this point between Yokohama City and Batam City, based on the need for project formation for JCM projects as expressed during the visit from Batam to Yokohama in May 2015, the sectors to be handled include waste and wastewater treatment, energy efficiency, and renewable energy.

Source: IGES

（2）Presentation Materials【Kenji Asakawa, IGES】

Institute for Global Environmental Strategies

【平成27年度アジアの低炭素社会実現のためのJCM案件形成可能性調査事業委託業務】

インドネシア共和国バタム市における JCM案件形成調査について

平成27年5月

公益財団法人地球環境戦略研究機関（IGES）
淺川　賢司

IGES
Institute for Global Environmental Strategies

発表内容

1. 二国間クレジット制度（JCM）とは？
2. JCMを進めるメリットとは？
3. JCMプロジェクトとは？
4. バタム市の調査について
5. 今年度(H25)の技術ミッションのお誘い

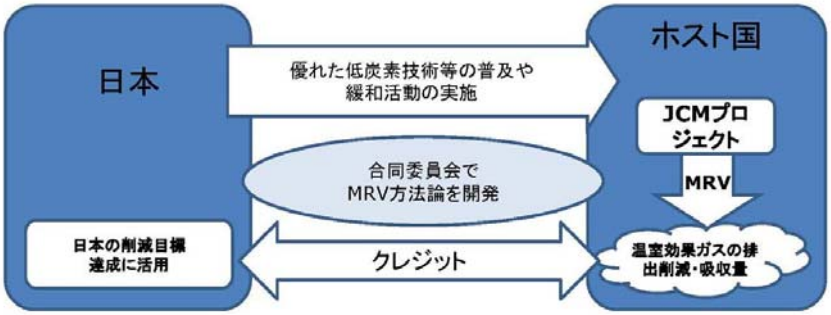
2

【Kenji Asakawa, IGES】

1. JCMとは？

JCMの基本概念

- 優れた低炭素技術・製品・システム・サービス・インフラの普及や緩和活動の実施を加速し、途上国の持続可能な開発に貢献。
- 日本からの温室効果ガス排出削減・吸収への貢献を、測定・報告・検証(MRV)方法論を適用し、定量的に適切に評価し、日本の排出削減目標の達成に活用。
- CDMを補完し、地球規模での温室効果ガス排出削減・吸収行動を促進することにより、国連気候変動枠組条約の究極的な目的の達成に貢献。



出典：日本国政府資料

3

1. JCMとは？

日本政府の対応：二国間クレジット制度 (JCM: Joint Crediting Mechanism)

世界低炭素成長ビジョン	日本再生戦略	革新的エネルギー・環境戦略
H23.11.29 *1	H24.7.31 *2	H24.9.14 *3

◆「・・・新たな市場メカニズムの具体化に向け、二国間協力（二国間オフセット・クレジット制度）や地域協力をさらに推進していく。」

◆「・・・二国間オフセット・クレジット制度の構築等を通じて、我が国の優れた環境・低炭素技術・知見の活用による世界のグリーン経済への移行に貢献する。」

◆「・・・二国間オフセット・クレジット制度をはじめとして、我が国の技術等による地球規模での削減を推進し・・・」

- *1:地球温暖化問題に関する閣僚委員会（了承）
- *2:閣議（決定）
- *3:エネルギー・環境会議（決定）

4

【Kenji Asakawa, IGES】

2. メリットは？

環境省JCM設備補助事業

2015年度予算(案):
年間24億円かつ3か年
(合計72億円)
(2014年度予算は年間12億円かつ3か年)

日本国政府

初期投資費用の最大1/2を補助

MRVの実施によりGHG排出削減量を測定。クレジットの発行後は1/2以上を日本政府に納入

国際コンソーシアム
(日本の民間団体を含む)

補助対象者
(日本の民間団体を含む)国際コンソーシアム

事業実施期間
最大3年間

補助対象
エネルギー起源CO2排出削減のための設備・機器を導入する事業(工事費、設備費、事務費等を含む)

補助対象要件
補助交付決定を受けた後に設備の設置工事に着手し、平成29年度内に完工すること。また、JCMプロジェクトとしての登録及びクレジットの発行を目指すこと

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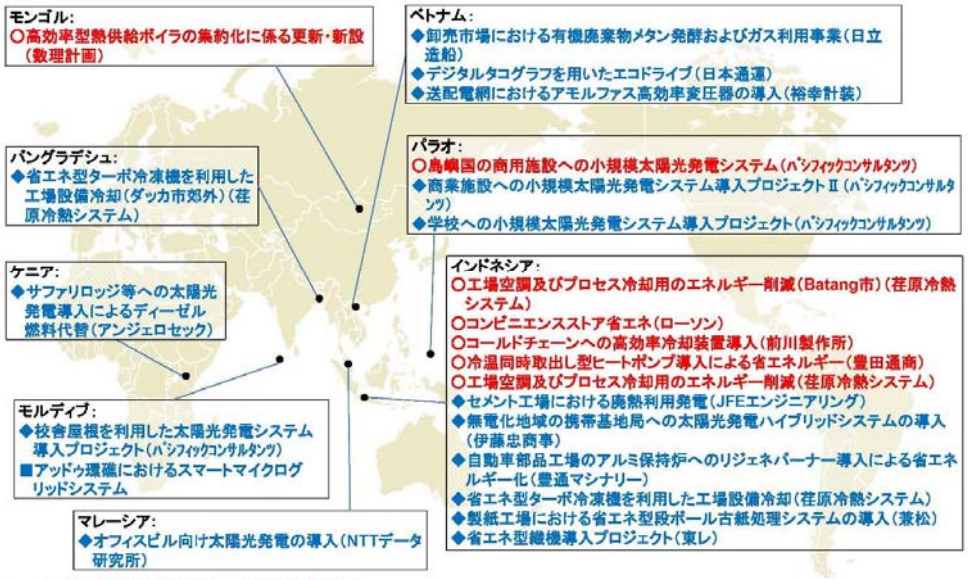
出典:日本国政府資料

2. メリットは？

環境省JCM資金支援事業(2013・2014年度)



○2013年度設備補助事業:7件採択(3ヶ国)
◆2014年度設備補助事業:15件採択(7ヶ国)
■2014年度ADB基金事業:1件採択(1カ国)

合計:23件採択(8カ国)

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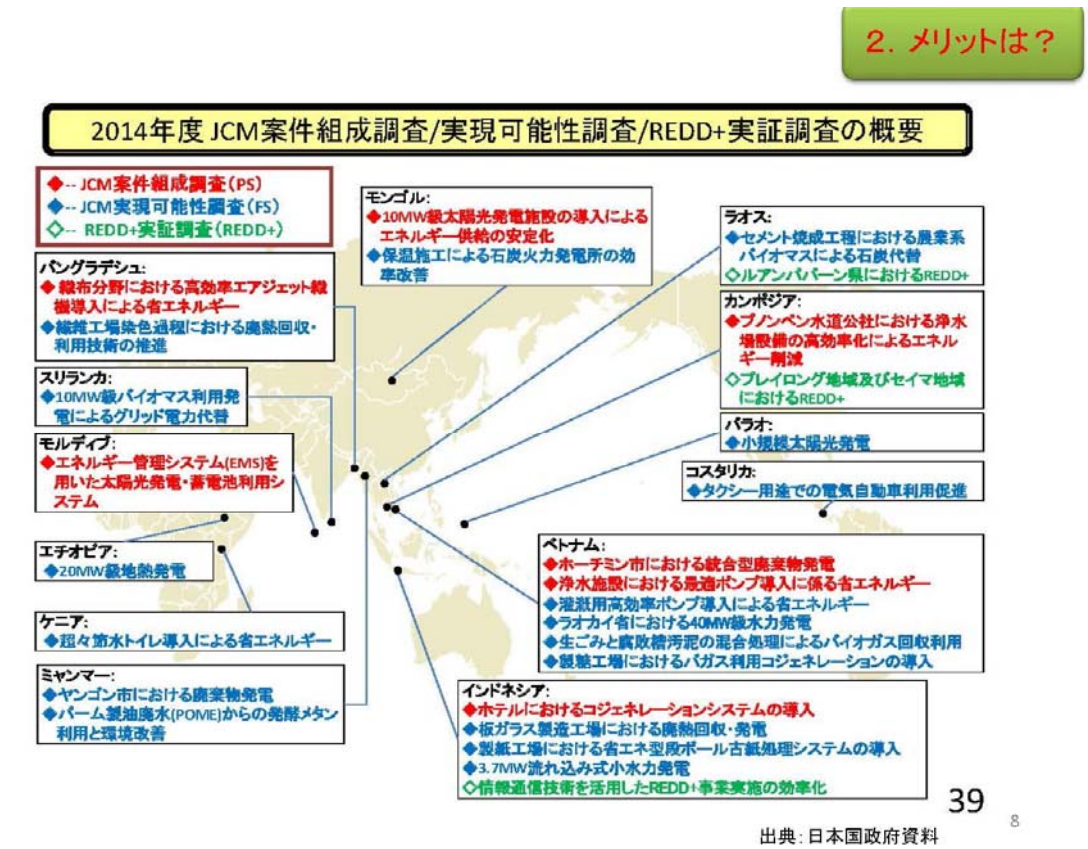
出典:日本国政府資料

【Kenji Asakawa, IGES】

出典：日本国政府資料

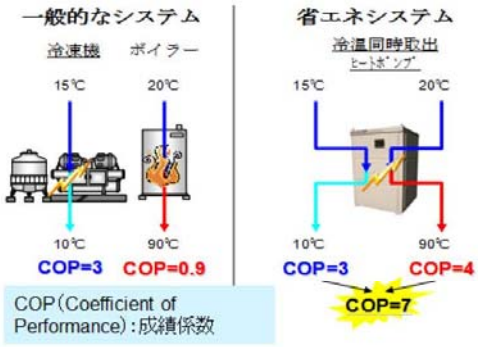


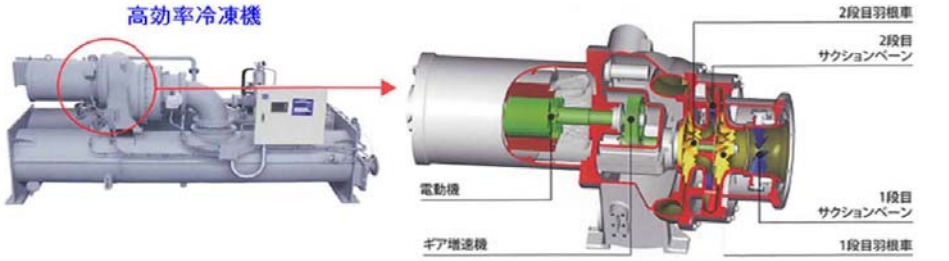
出典：日本国政府資料

【Kenji Asakawa, IGES】

3. JCMプロジェクトとは？

省エネ系





出典：地球環境センター資料

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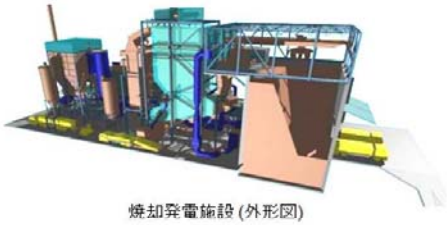
3. JCMプロジェクトとは？

再エネ系



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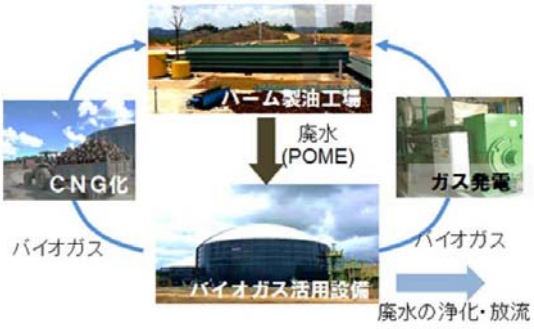

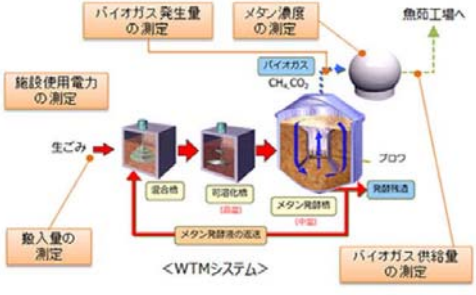

出典：地球環境センター資料

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【Kenji Asakawa, IGES】

4. バタム市調査

4. バタム市調査

BATAMINDO工業団地

PT.Asia Matsushita Electric(松下電池工業：電池) PT. ALTECO Chemical(アルファー技研：梱包) PT.Asahi Electronics Batam（朝日コーポレーション：留守番電話機） PT. Chiyoda(千代田電子：PCB組立） PT. Exas Batam(相川プレス：板金) PT. Ex Batam, Indonesia(エクセル電子：ジャックソケット、板) PT. Fujitec Indonesia(フジテック：エレベータ、エスカレータ PT. GMAC Batama(バイテック：PCB組立) PT. Japan Medical Supply(ジェイ・エム・エス：医療機具） PT. Japan Servo Motors(日本サーボ：電子部品） PT. Kyocera Indonesia(京セラ：電話機部品) PT. Matsushita Electronics(松下電子：電子部品) PT. Minamoto Indonesia(清和金属：ヒューズホルダー、リードフレーム) PT. Matsushita Kotobuki Electronic Periheral Indonesia(松下寿電子：ディスクドライブヘッド) PT. Nagano Drilube(長野ドライブ―ル：金属部品コーティング) PT. Nissin Kogyo(日伸工業：TV画像管) PT. Noble Batam(帝国通信：可変抵抗、計器) PT. Oki Electric Cable Batam(沖電気：電気ケーブル) PT. Patlite Indonesia(パトライト：非常灯) PT. PFU Technology Indonesia(PFU：PCB組立)	PT. Rubycom Indonesia(ルビコム：コンデンサー) PT. Sansyu Precision(三しゅうプレシジョン：金属加工) Takamori Singapore：Metal Stamping Parts PT. Sanipack(サニパック：ポリエチレンバッグ) PT. Sanyo Energy Batam(三洋ソフトエナジー：ニッケルカドミウム電池) PT. Sanyo Precision Batam(三洋精密：マイクロモータ) PT. Seiko Epson(セイコーエプソン：スキャナー、IC基盤) PT. Shin-etsu Magnetis Indonesia(信越化学：マグネット金属、HDDボイスコイルモータ) PT. SIIX Electronics Indonesia(サカタインクス：PCB組立) PT. Singapore Oil Seal Co. Batam(NOK：オイルシール) PT. Sony Chemicals Indonesia(ソニーケミカル：フレキシブルPCB、平型ケーブル) PT.Sumitomo Wiring Systems Batam(住友電装：自動車用ワイヤーハーネス) PT. TEAC Electronics(ティアック：フロッピーディスクドライブ) PT. TEC Indonesia(東芝テック：プリンターヘッド、スイッチ電源) PT.Toyocom(東洋通信機:液晶部品) PT.Yokogawa Mfg. Batam(横河電機：計器) PT Foster Electric(フォスター：スピーカー組立) PT Shimano Batam Manufacturing(シマノ：自転車部品、釣竿) HYMOLD(昭和電工：プラスチック成形)

出典：インドネシア共和国投資調整庁日本事務所

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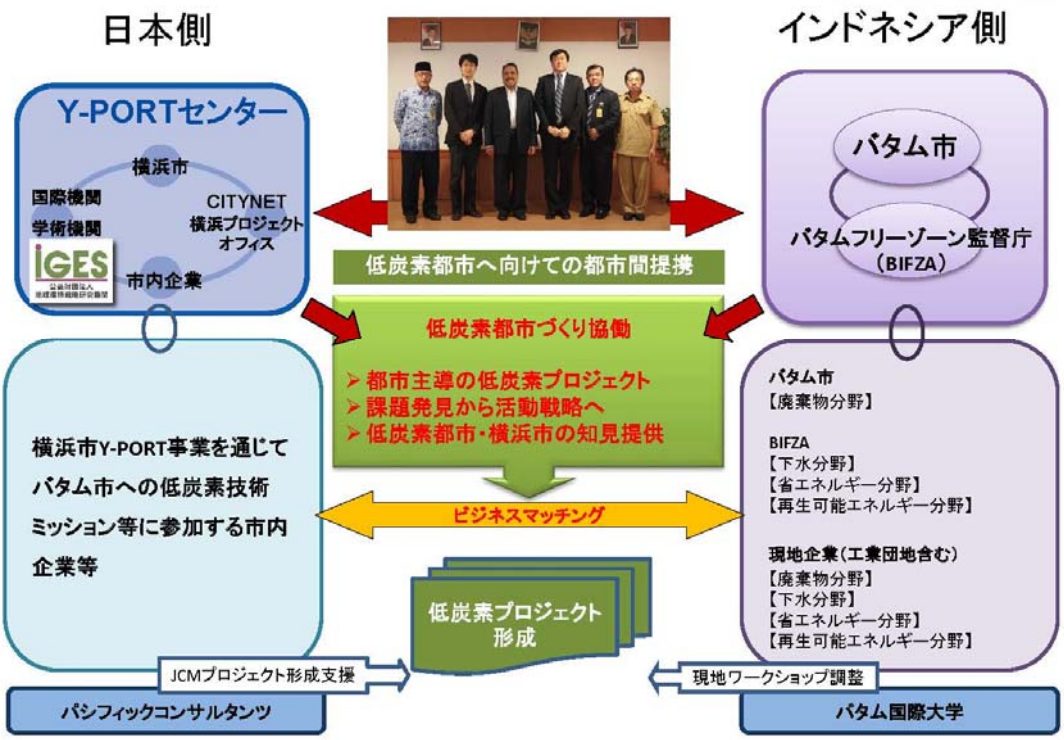
【Kenji Asakawa, IGES】

4. バタム市調査



4. バタム市調査

実施年月日	イベント内容	開催場所
2015年4月20-24日	バタム市調査インセプションミーティング	バタム
5月25-27日	バタム市来浜・施設見学	横浜
8月(予定)	第一回:低炭素技術ミッション	バタム
10月	バタム側職員・企業等の施設見学等(10月上旬) アジアスマートシティ会議におけるJCM都市間連携専門家会合(10月19-21日:予定)	横浜
11月(予定)	第二回:低炭素技術ミッション	バタム
2016年 1月(予定)	最終報告会(関係企業等も含む)	バタム

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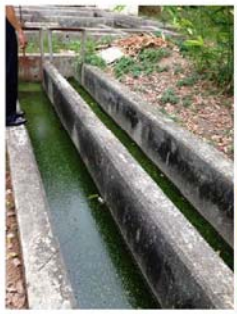
【Kenji Asakawa, IGES】

4. バタム市調査

Hang Nadim 国際空港

【省エネ】空調負荷が高い（市内ショッピングモールも可能性あり）

【省エネ】上水供給ポンプの効率が悪い
（現地の日系等の工場にも可能性あり）



【再エネ】汚水処理がされていない

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4. バタム市調査

汚泥処理施設

【再エネ・省エネ】汚泥処理が不十分 （市内工業団地にも可能性あり）

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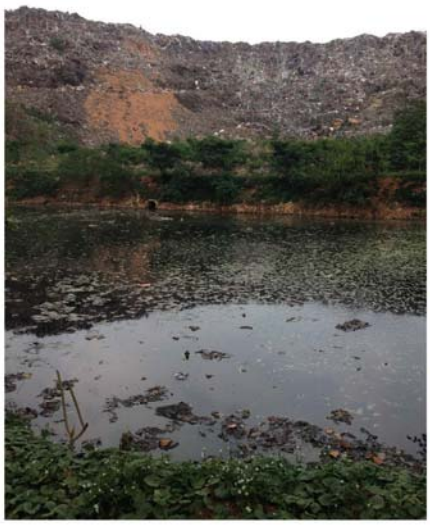
【Kenji Asakawa, IGES】

4. バタム市調査

廃棄物最終処分



【再エネ・省エネ】廃棄物管理，浸出水処理が不十分

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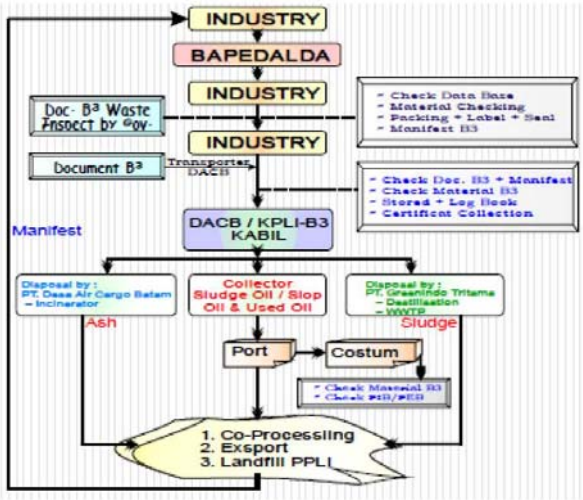
4. バタム市調査

産廃処理施設



【省エネ】汚泥処理が不十分

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【Kenji Asakawa, IGES】

5. 今年度(H25)の技術ミッションのお誘い

- 目的：低炭素プロジェクトの発掘
- 対象：市内企業を中心とする省エネ等の技術や製品の提供、市場の開拓等を検討されている民間事業者様
- 開催地：インドネシア国バタム市（現地集合・解散）
- 時期：2015年8月
- 内容：
  - ➢ 現地ワークショップを通したバタム行政官（市・FZ監督庁）との意見交換•ビジネスマッチング
  - ➢ 現地企業訪問•視察（エネルギー、下水道等）

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ありがとうございました。

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E-mail: mm-info@iges.or.jp

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3.3 Business Matching

A business matching seminar was jointly organized by Batam City, BIFZA and the Y-PORT Center, for companies/entities from Yokohama City and Batam local companies and government bodies.

From Japan, thirteen Japanese companies (9 companies from Yokohama, of which 5 are small- and medium-sized enterprises), participated, and a total of 30 persons, including observers from JICA and JETRO, as well as the Secretariat.

From Indonesia, participants came from entities including the Indonesia Ministry of Public Works and Housing and JCM Secretariat, as well as the City of Batam, and BIFZA, and there was meaningful information sharing regarding the MoU between Yokohama City and Batam City, as well as this feasibility study.

(1) Agenda (August 19)

9:00-9:15	**Opening Remarks** ● Ahmad Dahlan (City of Batam) ● Mustofa Widjaja (BIFZA) ● Yuana Rochma Astuti (MENKO) ● Tetsuya Nakajima (City of Yokohama)
9:15-9:45	**Introducing the Background** ➢ National policy related to Green City Initiatives ● Edward Abdurrahman (PU) ➢ City-to-city cooperation of Y-PORT projects based on Yokohama's Innovative Urban Solution ● Yasuaki Nakamura (City of Yokohama) ➢ Introduction of the JCM between Indonesian and Japan ● Keni Atika (Indonesia JCM Secretariat) Q & A
9:45-10:25 (5 min. for each presentation)	**Introducing Potential Needs of JCM project in Batam** ➢ Airport (Hang Nadim) - Potential of Energy-efficiency (A/C, Water-pump) and wastewater treatment ● (BIFZA) ➢ Industrial-park (Batamindo, Panbil, Kabil) - Potential of Energy-efficiency of powergeneration, waste-water treatment and energy supply ● (Batamindo, Panbil or Kabil) ➢ Industrial waste treatment - Potential of Energy-efficiency ● Kurniawan Chang (PT Desa Air Cargo) ➢ Municipal Solid Waste (MSW) management - Potential of Energy-efficiency ● Amir Rusli (City of Batam)
10:25-11:00	**Q & A**
10:30-10:45	Coffee break
10:45-11:15 (5 min. for one presentation)	**Introducing Low Carbon Technologies of Japan participants companies** ➢ Overview of Low Carbon Technologies of participant companies ● Kenji Asakawa (IGES) ➢ Energy Efficiency Technology ● Erwin Avianto (iFORCOM Tokyo) ➢ Renewable Energy Technology ● Kikuo Sagawa (FINTECH) ➢ Water Supply/Treatment (incl. Septage Treatment) Technology ● Yuichi Hirose (AMCON)
11:15-12:00	**Q & A**
12:00-12:15	**Closing Remarks** ● Ahmad Dahlan (City of Batam) ● Mustofa Widjaja (BIFZA) ● Tetsuya Nakajima (City of Yokohama)
12:15-13:30	(Lunch Reception)

13:30-14:45	**Individual meeting for Match-making** This session serves to promote exchange of information and ideas through free discussion for match-making. Each Japanese supplier has a booth/desk and welcome Batam participants for more intensive discussion. Indonesia-Japanese interpreters are available for better communication.

(2) Meeting Summary (honorifics omitted)

Opening Speeches by City of Batam, BIFZA, Economic Responsible Coordination Agency, City of Yokohama

Background Explanation

- Edward Abdurrahman (Indonesia Ministry of Public Works and Housing) explained Indonesia's national policy relating to Green City Initiatives.
- Yasuaki Nakamura of the City of Yokohama (Y-PORT Center), explained the signing of the "Letter of Intent on Technical Cooperation for Sustainable Urban Development" between the City of Yokohama and City of Batam in May 2015, and that the first project of the Y-PORT Center was Japan's Ministry of the Environment's "FY2015 Commissioned Feasibility Study for Project Formation of JCM Projects for Realization of a Low-Carbon Society in Asia." There was also an explanation about JCM project formation through government and industry exchanges of the two cities.
- Keni Atika of the Indonesia JCM Secretariat explained topics including JCM application procedures between Japan and Indonesia.
- In this regard, in response to a question from Binsar (BIFZA) about the next steps for JCM project formation, the Secretariat explained that the process used for actual JCM project formation already done in places like Surabaya would be a good reference.

JCM Project Needs in Batam City

- Regarding the Hang Nadim International Airport, Richard Silitonga explained the growth of passenger and freight numbers, as well as the operating status of airport facilities, as well as terminal and runway expansion plans, and so on. It was noted that there is a significant need for environmental technologies relating to air conditioning and wastewater treatment, etc.
- Regarding industrial parks, Ibrahim (Batamindo) explained topics including electricity supply service stabilized by (natural) gas on-site power generation for tenant companies, and wastewater treatment systems (WWTP), etc.
- Regarding industrial waste, Rosali explained that illegal actions relating to emissions of industrial waste from industrial production processes increased environmental pollution risk, and that key issues in the Batam free zone included ① regulations for B3 waste (hazardous waste) were not effective (no manifest ledgers did not exist, etc.); ② there were seasonal effects of pollution (pollution from oil sludge in northern Batam, smoke damage due to forest fires in Sumatra, etc.); and ③ potential environmental impacts were appearing due to a growing population. Thus, it was noted that there is a significant need for environmental technologies relating to industrial waste treatment.
- With regard to municipal water supply and wastewater treatment, Amir Rusli explained that the population of Batam Island was over 1.2 million people, and that pollution of water resources was occurring due to wastewater on the island not only from industry and trade, but also from housing and other development projects. Thus, it was noted that there is a significant need for environmental technologies relating to wastewater and sludge treatment.

Introduction of Low-Carbon Technologies of Japanese Companies

- There were explanations from Kenji Asakawa of IGES with regard to low-carbon technologies of participating companies, from Ryosuke Itoh of iFORCOM Tokyo with regard to energy-efficient operating systems and consulting, from Yasuyuki Okada of FINTECH with regard to recycling of unused biomass, and from Yuichi Hirose of AMCON with regard to high-efficiency sludge dewatering technology.
- In response, there was a comment from Edward (PU) about the desire to tackle challenges based on a low-carbon development master plan for the City of Batam, and to expand this to other cities as well.

One-on-One Business Discussions

- The Japanese companies then went to separate tables and engaged in one-on-one business discussions with local companies.

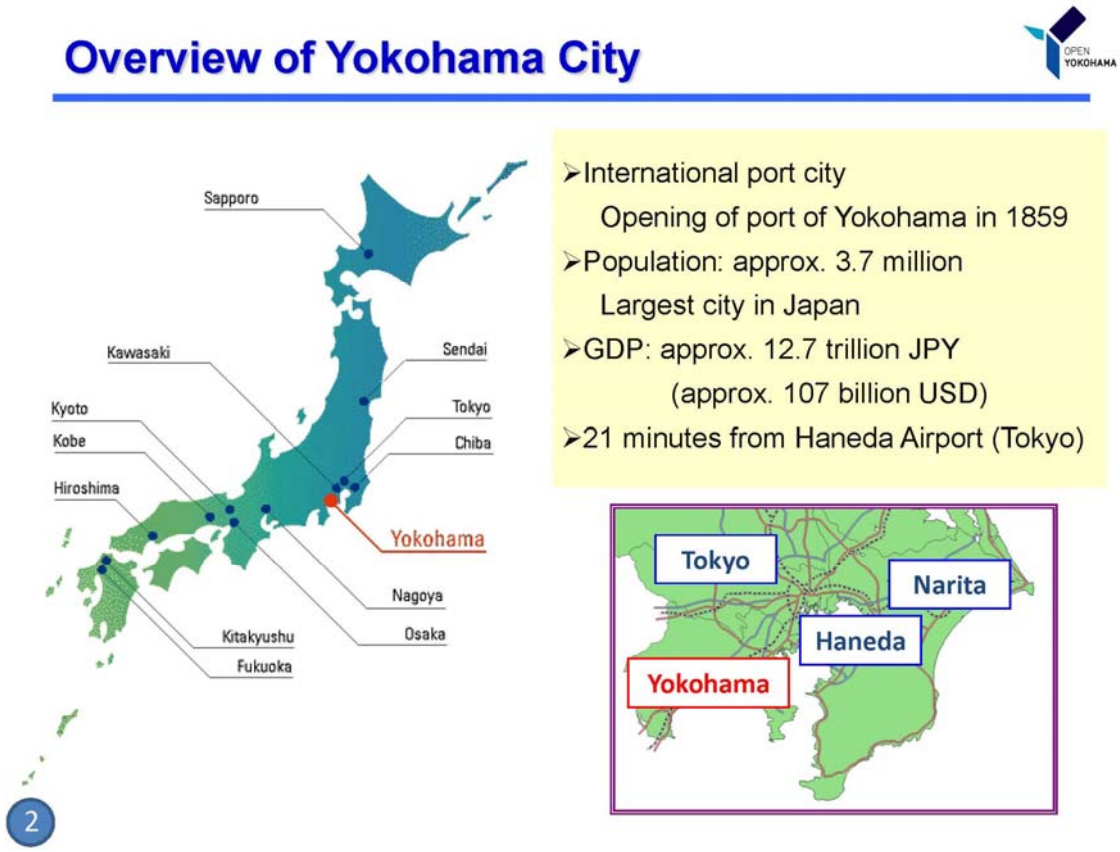
Japanese Language Session

- Kenji Asakawa of IGES explained the Joint Crediting Mechanism and subsidy programs.

(3) List of Participants

	Company Name	City/Small and Medium Enterprise	Persons
Participating company	FINTECH Corporation	Batam/SME	2
	iFORCOM Tokyo	Batam/SME	3
	AMCON Inc.	Batam/SME	2
	JFE KANKYO Corporation	Batam	2
	JUSTEC Co.	Batam/SME	1
	JFE Engineering Corporation	Batam	1
	Japan NUS Co.	Batam	1
	Mansei Recycle Systems Co.	Batam/SME	2
	PricewaterhouseCoopers LLP		1
	DKK-TOA CORPORATION	Yokohama Water Business Conference	1
	Advan Analytical	Singaporean company	1
	Japan Development Institute		1
	Yokohama Port Corporation	Batam	3
Observer	Ministry of Environment and Forestry (Indonesia) JICA	Observer	1
	Indonesia Low Carbon Development Program JICA Expert	Observer	1
	JETRO Singapore Center	Observer	1
Secretariat	IGES	Secretariat	2
	Pacific Consultants	Secretariat	1
	City of Yokohama	Secretariat	3
	Companies (13), observers (3 organizations) Secretariat (3 organizations)	City companies (9) Of which, SMEs (5)	30 persons

(4) Presentation Materials【Yasuaki Nakamura, City of Yokohama (Y-PORT Center】



【Yasuaki Nakamura, City of Yokohama (Y-PORT Center】

External Recognition on Achievement by the City of Yokohama

LEE KUAN YEW WORLD CITY PRIZE

2014 SPECIAL MENTION: CITY OF YOKOHAMA

URBAN REDEVELOPMENT AUTHORITY SINGAPORE

CENTRE for LiveableCities SINGAPORE

WORLD CITIES SUMMIT

Y-PORT CENTER
Yokohama Urban Smart Solution

3

City to City Collaboration

Letter of Intent on Technical Cooperation for Sustainable Urban Development Signed with the City of Batam, on 27th May, 2015.

Contents of Agreement

1. The City of Yokohama will offer technical advice in promoting the eco-city development of the City of Batam.
2. **The Parties will encourage participation of the private sector and academic organizations.**
3. The Parties will take action to obtain cooperation of the governments of both countries and international organizations.
4. The Parties will mutually provide information essential to implementing the above collaboration effectively..

4

【Yasuaki Nakamura, City of Yokohama (Y-PORT Center】

Yokohama' s International Development Cooperation – Y-PORT

Comprehensive Partnership Agreement with JICA (25th October, 2011)

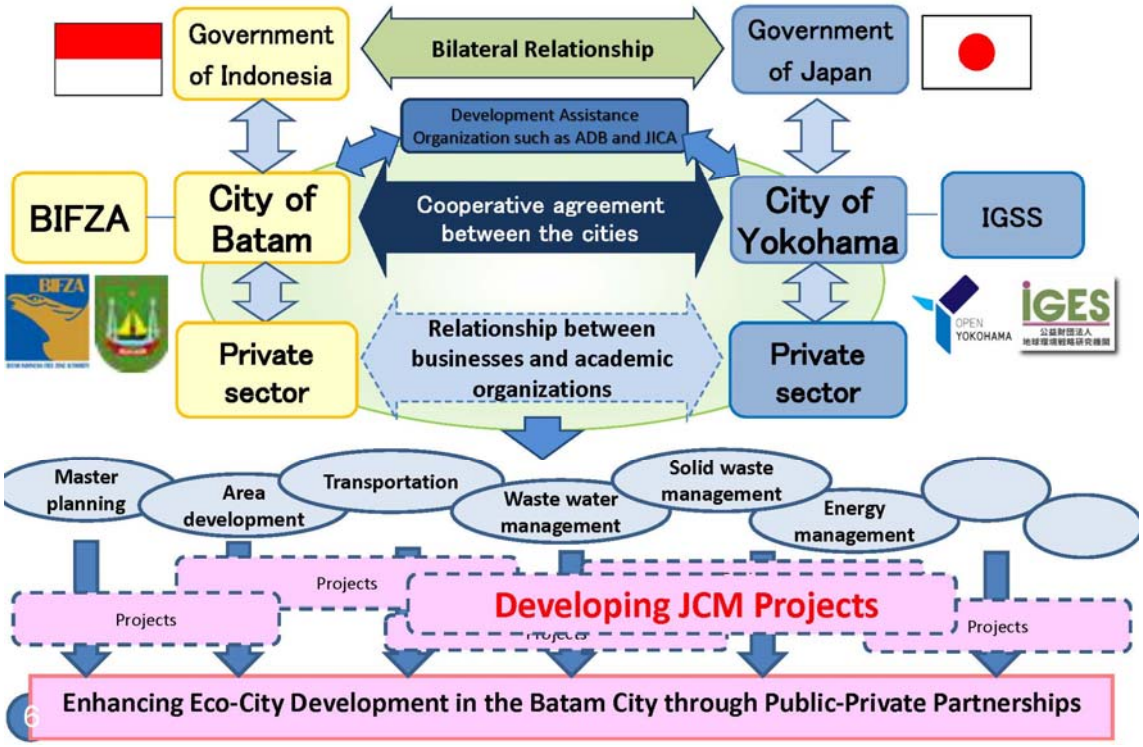
- Strengthening cooperation to solve urban problems in developing regions

Memorandum of Understanding on Collaboration with Asian Development Bank on 16th October, 2013)

- Utilizing knowhow and technologies of the City of Yokohama and Yokohama private firms to ADB Project

** It was the first time for JICA and ADB to conclude the comprehensive agreement or MOU with a local government.*

Proposed Framework for Y-PORT activities under the City to City Cooperative Relationship



【Yasuaki Nakamura, City of Yokohama (Y-PORT Center】

【Edward Abdurrahman, Indonesia Ministry of Public Works and Housing】

NATIONAL POLICY AND STRATEGIES
ON GREEN CITIES PROGRAM

Ir. Edward Abdurrahman, M.Sc

Head of Sub Directorate for Integrated Planning and Partnership

DIRECTORATE GENERAL OF HUMAN SETTLEMENT
MINISTRY OF PUBLIC WORKS AND HOUSING
REPUBLIC OF INDONESIA

OUTLINE

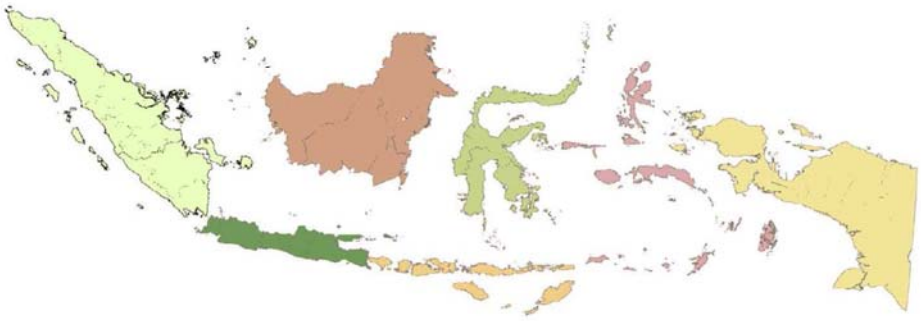
- Introduction
- National Policies and Strategies
- Green Cities Development
- Best Practices

【Edward Abdurrahman, Indonesia Ministry of Public Works and Housing】

The Urban Millennium

- The world has been rapidly urbanizing.
- Since 2010, more than 50% of Indonesia population live in urban area. Current population in Indonesia is 247 milion people (4th world largest) and tends to increase.
- Trends of urbanization will continue occurring in Indonesia where approximately 68% of the population will live in urban areas by 2025.
- Urbanization creates challenges as well as opportunities for sustainable development.

Population Disparity



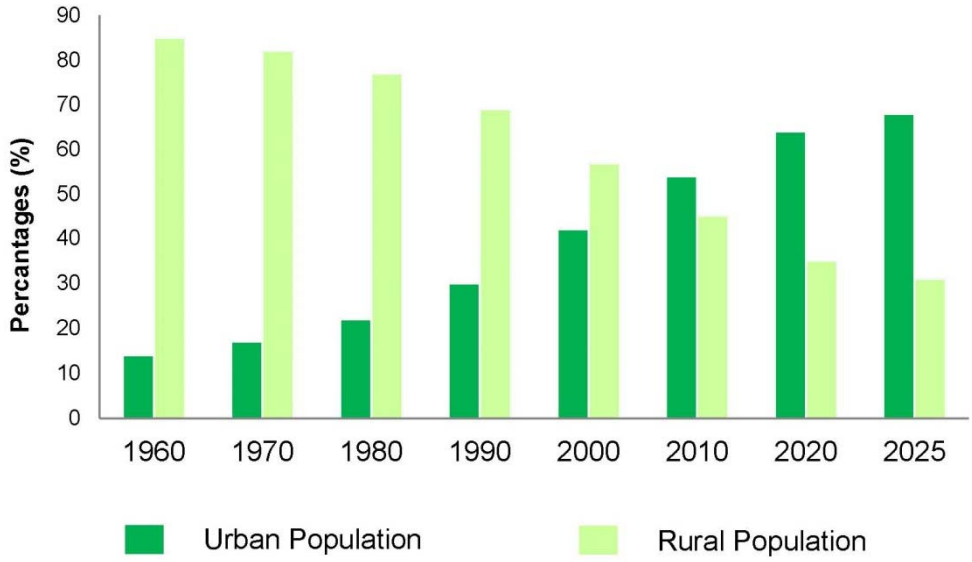
Indonesian population and economic activities has been concentrated in Java. The island is inhabited by more than 140 million people in a space only 126.700 km2. Service, trade, and industry mostly located in Java, creating economic disparity between Java and Non-Java.

Java

Outside Java

【Edward Abdurrahman, Indonesia Ministry of Public Works and Housing】

URBAN POPULATION GROWTH

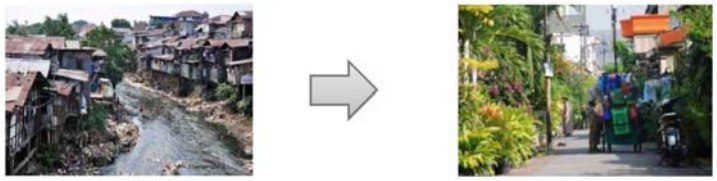


SLUM CONDITION IN INDONESIA

Slum Alleviation Target:

Based on Law No. 17 of 2007 regarding National Long-Term Development Plan 2005-2025, GoI intended to accomplish "City Without Slum" by 2020

Total slums area (2014): 38.431 Ha



【Edward Abdurrahman, Indonesia Ministry of Public Works and Housing】

WATER AND SANITATION COVERAGE

Indicator	2009	2014	MDGs Target (2015)
Proportion of people with safe drinking water	47.71%	**70%**	68.87%
Proportion of people with decent sanitation	51.19%	**61%**	62.41%

Household access to sustainable safe drinking water and sanitation continue to rise despite sensible disparity among provinces. To accelerate progress to achieve MDGs target, provision of water and sanitation infrastructure has become a priority in the national medium-term development plan. Hence, funding for development continue to rise significantly from year to year.

Promoting

Green Cities Program

【Edward Abdurrahman, Indonesia Ministry of Public Works and Housing】

RIO+20
United Nations Conference on Sustainable Development

THE FUTURE WE WANT

"We recognize that, if well planned and developed including through integrated planning and management approaches, cities can promote economically, socially and environmentally sustainable societies. In this regard, we recognize the need for a holistic approach to urban development and human settlements that provides for affordable housing and infrastructure and prioritizes slum upgrading and urban regeneration"

"We also commit to promote sustainable development policies that **support inclusive housing and social services**; a safe and healthy living environment for all, particularly children, youth, women, elderly and disabled; affordable and sustainable **transport and energy**; promotion, protection and restoration of safe and **green urban spaces**; safe and clean **drinking water and sanitation**; healthy air quality; generation of decent jobs; and improved **urban planning and slum upgrading**. We further support sustainable **management of waste** through the application of the **3Rs** (reduce, reuse and recycle)"

SUSTAINABILITY

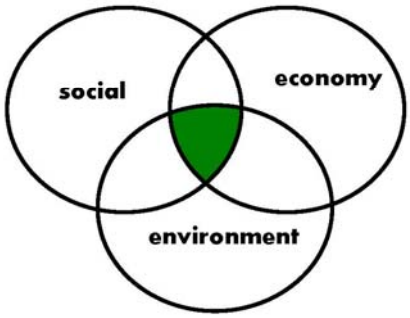
Sustainability is the capacity to endure a diverse and productive biological system, which requires reconciliation of environmental, social equity, and economic demands.

Contemporary process of urbanization in developing world is characterized not just by a shift from rural to urban, but more compounded with the urbanization of poverty and social exclusion which could threat the very possibility of **sustainable city**. Cities can not be expected to become 'island of reform' in isolation from the wider global political economy in which they are produced. Thus to **promote sustainable cities** and **sustainable urbanization** can not be dissociated from the uneven geographies of development (Source: A. Allen, 2009).

【Edward Abdurrahman, Indonesia Ministry of Public Works and Housing】

SUSTAINABLE INFRASTRUCTURE DEVELOPMENT

Sustainable infrastructure development means encouraging economic growth while protecting the environment and improving our quality of life, and increasing community's social capital, without affecting the ability of future generations to fulfill their needs by developing reliable infrastructure.



GREEN CITES POLICIES

Law Number 17 of 2007 regarding National Long-Term Development Plan:

To meet housing needs along with provision of water and sanitation infrastructure for the whole society, and promote realization of cities without slums

Law Number 1 of 2011 regarding Housing & Settlement Area

Slum improvement can be conducted through restoration, renewal, and relocation.

Law Number 26 of 2007 regarding Spatial Planning

Proportion of green space in urban areas must be provided minimum 30% of the area of the city.

【Edward Abdurrahman, Indonesia Ministry of Public Works and Housing】

Law Number 18 of 2008 regarding Solid Waste Management

Local governments must close final waste processing site (TPA) operate with open dumping system. Final processing site should operate with controlled or sanitary landfill system

Law Number 28 of 2002 regarding Building Development

Every buildings have to consider safety aspect, convenience, and reliability

INTEGRATED INFRASTRUCTURE APPROACH

- To optimize integrated infrastructure development in 174 strategic cities/ regencies by supporting the urban spatial planning and building regulation.
- There are 326 regencies/cities already prepared Spatial Plan (RTRW).

Neighborhood

Regency/City

Regional

【Edward Abdurrahman, Indonesia Ministry of Public Works and Housing】

GREEN CITY DEVELOPMENT IN INDONESIA

Green City Development is intended to improve local capacity in the application of spatial planning, and to anticipate adverse impact of urbanization through collaborative planning and implementation between public, private, and communities.

Programs include:

- Green City Action Plan
- Green public campaigns
- Green map
- Master Plan and the Technical Planning for open public spaces

Best Practice

Green Waste

Regional Sewerage System

Improvement of urban drainage system by introducing ecodrain concept combining detention (holds water temporarily) with retention (ground absorption)

【Edward Abdurrahman, Indonesia Ministry of Public Works and Housing】

Best Practice

Community Based Sanitation Development (SANIMAS)

Sanimas focused on community empowerment:

- Applying demand responsive approach
- Role of government: *provider → facilitator*
- Provide information on technology, finance, environmental, social, cultural and institutional aspects.

Best Practice

Neighborhood Development

Upgrading of high density riverbanks settlements, Karang Waru-Yogyakarta

Karangwaru river was dirty and full of trash from surrounding settlements. With PLPBK program,

Karangwaru residents rehabilitated riverside and built a communal sanitation system. Maintenance is managed by communities.

【Edward Abdurrahman, Indonesia Ministry of Public Works and Housing】

Best Practice

Kampung Improvement Program (KIP)

❑Since 1969 Kampung Improvement Program was implemented in several major cities such as Jakarta, Bandung, and Surabaya, with more than 5 million affected slum population through Tri-Bina principle, which include physical, social, and economic development.

❑The program had received numerous awards such as Aga Khan Award for Architecture in 1980 and World Habitat Award in 1992.

…Better planned and better functioning cities can help guide us to the future we want: cities where everyone has adequate shelter, water, sanitation, health and other basic services; cities with good education and job prospects; cities with energy-efficient buildings and public transport systems; cities where all feel they belong…
--Ban Kim Moon, 2012

Thank You...

3.4 JCM Workshop, Asia Smart City Conference, etc.

(1) JCM Workshop (October 19, 2015)

Institute for Global Environmental Strategies (IGES), with co-sponsorship from Japan's Ministry of the Environment, organized the "Workshop on Joint Crediting Mechanism (JCM) and City-to-City Cooperation" on October 19, at Pacifico Yokohama.

This workshop, which was mainly for stakeholders that have participated in the "Feasibility Study for Project Formation of JCM Projects based on City-to-City Collaboration" (which began this fiscal year), including about 70 persons from local governments, companies, and consultants, etc., had active discussions about topics such as project formation of JCM projects making use of city-to-city collaboration, as well as examples and challenges for the creation of low-carbon cities in Asia.

Dendi Purnomo (Head of Environment Management Authority), and Binsar Tambunan (BIFZA), Memet E. Rachmat, and Richard Silitonga also participated. (Honorifics omitted)

Source: IGES

(2) 4th Asia Smart City Conference (October 20, 2015)

In fiscal 2015, the 4th Asia Smart City Conference was held as a forum for Asian city mayors and experts from international and other organizations to gather together and share perspectives on the realization of sustainable cities.

This year, participants in small group sessions heard presentations regarding urban development initiatives and programs of funding organizations, and there were discussions by specialists in each theme, and these sessions were followed by a plenary with reports back from the groups.

At the plenary round-table session, there was a proposal to establish the “Asia Smart City Alliance” (ASCA) as a network of the meeting’s participating cities and organizations, in order to strengthen collaboration for creating sustainable cities.

Participants in this conference also included Dendi Purnomo (Head of City of Batam Environment Management Authority), and Jon Arizal (Vice Chairman of BIFZA), and Binsar Tambunan (BIFZA). (Honorifics omitted)

Source: International Affairs Bureau, City of Yokohama

(3) Site Visits

① Site Visit to Industrial Waste Recycling Facility (October 20, 2015)

A site visit was organized to an industrial waste recycling and incineration electric power generation facility, with Meme (BIFZA) and Kurniawan (Desa Air Cargo) joining as key persons from Batam.

Items that attracted special attention included aspects such as the ultimate handling (type of buyers, prices, etc.) of valuable resources such as mercury and rare metals, recovered from industrial waste.


Site visit to the Yokohama Eco-Clean plant of JFE KANKYO Corporation

② Site Visit to Municipal Solid Waste Incineration and Waste Heat Electricity Generation Facility (October 21, 2015)

A site visit was organized to a municipal solid waste incineration and waste heat electricity generation facility, with Dendi (City of Batam) and Binsar (BIFZA) joining as key persons from Batam.

Items that attracted special attention included aspects such as the separation of waste to be processed at the incineration plant, facility processing capacity as well as construction and operating costs, the electrical generation facilities and electricity sales, and regulations and measures dealing with emissions.


Site Visit to City of Yokohama Resources & Waste Recycling Bureau Kanazawa Plant

3.5 Small Workshops with BIFZA

(1) Discussions with Related BIFZA Departments (9:00 - 11:00 a.m., December 3, 2015)

An interim report was presented to BIFZA. In particular, a detailed discussion was presented regarding projects with prospects for future JCM project formation involving small- and medium-sized enterprises in the city.

① Participants (honorifics omitted)

Purnomo Andiantono (Director for Promotion & Public Sector) Binsar Tambunan Head of Program Development, Planning and Program & Research Development Bureau) Tato Wahyu H (Derector), Sulasmono (Sub. Dit Humas), Ir. Memet E. Rachmat, Richard Silitonga, Jaka Prasetya, and others
FINTEC (Okada, Sagawa), iFORCOM Tokyo (Itoh, Erwin) City of Yokohama (Nakamura), IGES (Asakawa, Nugroho), PCKK (Nishihata)

② Meeting Notes (honorifics omitted)

- (BIFZA) Purnomo Andiantono: Expressed the hope that while utilizing JCM, concrete projects can be formed that contribute to CO2 emission reduction, that city-to-city collaboration can continue next year and thereafter, and that there will be repeat future visits by Japanese companies and others.
- (City of Yokohama) Nakamura: The context for today's report meeting is that there has been steady progress by BIFZA and the P-PORT Center since the letter of intent was signed between the cities of Batam and Yokohama in May this year. Through city-to-city collaboration, cooperation can be expected in a variety of infrastructure sectors, but for starters progress is being made with attention to the JCM. Today's workshop we would like to introduce the status of progress of this fiscal year's JCM study, and four fast track candidate projects. Also acknowledged the polite and enthusiastic response from the Batam side with regard to this research.
- (IGES) Asakawa: Explained the latest information about the Joint Crediting Mechanism (JCM), and explained in detail the application procedures for JCM equipment subsidy projects. He also articulated the potential for utilizing Japanese companies' low-carbon technologies to contribute to the realization of smart and green development on Batam Island. He enumerated examples of mapping of Japanese technologies, in addition to a vision based on overall objectives, key drivers for achievement, and clusters of sectors of target technologies.
- (BIFZA): Tato Wahyu H: There is an investment project relating to smart cities from Singaporean investors (marina development and Sekupang smart area). I have a question about compatibility. Are the proposals explained in this presentation a master plan for the city? Or for a specific project?
- IGES (Asakawa): As done by mapping on the map, the proposal is for clustering of individual technologies, and it may also be possible to introduce individual technologies that are compatible with the Singapore area development.
- (City of Yokohama) Nakamura: We are open to collaboration with other countries, under an overall plan of the Smart and Green Island Concept for Batam Island. Also it is import to understand BIZFA's overall plan, so we appreciate information on this.
- (BIFZA) Person in charge of wastewater projects: Is the Japan Environment Agency's subsidy budget for this fiscal year? Will it also be the same amount next fiscal year?
- (IGES) Asakawa: Yes.
- (BIFZA) Binsar: In public sector facilities, it is necessary to keep in mind the timing of procedures for construction work bids and budget implementation, etc.
- (BIFZA) Binsar: The CDM project cycle is long, but how about for JCM?
- (IGES) Asakawa: If application is made in May, selection is done in July.
- Following this discussion, detailed presentations were made by from Japanese participants: from iFORCOM regarding energy-saving operation of air condition systems at Hang Nadim Airport, from FINTEC regarding photovoltaic/biomass combined use renewable energy

systems, and from AMCON regarding high-efficiency treatment systems for industrial wastewater. Further, from JUSTEC there was also the introduction of a proposal for a rehabilitation project for a johkasoh sludge treatment facility at Batam Center.

- When the opinion from BIZFA was stated that there was also a desire for project formation in industrial zones and universities, etc., the Japanese side responded that iFORCOM's technologies could also be applied to facilities such as shopping malls.
- (BIZFA) manager of sewerage systems, Memet: A WWTP construction product is proceeding with assistance from Korea (Phase 1: Korean assistance of 55 million USD). Assistance in other districts is not decided, and there is an interest in support from Japan. Would like to hear about the effectiveness in reducing BOD and COD of JUSTEC's johkasoh sludge and wastewater pre-treatment equipment (SPATON).
- PCKK (Nishihata): Responded that by removing organic suspended solids (SS) from wastewater, users can expect benefits of significant reductions in both BOD and COD loads.

Interim Report to BIFZA

Explanation from city companies regarding proposed projects

Commemorative photo

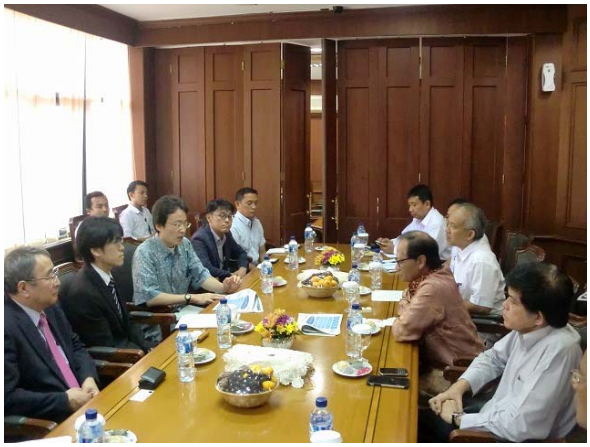
(2) Report to Chairman of BIFZA (11:15 a.m. - 12:00 p.m., December 3, 2015)

① Participants (honorifics omitted)

Mustofa Widjaja (Chairman of BIFZA) Purnomo Andiantono (Director for Promotion & Public Sector) Binsar Tambunan (Head of Program Development, Planning and Program & Research Development Bureau) Other: Key persons in infrastructure sector, etc.
FINTEC (Okada, Sagawa), iFORCOM Tokyo (Itoh, Erwin) City of Yokohama (Nakamura), IGES (Asakawa, Nugroho), PCKK (Nishihata)

② Meeting Notes (honorifics omitted)

- Chairman Mustofa Widjaja of BIZFA acknowledged participants including the City of Yokohama and IGES, and expressed expectations for increased technical capacity of BIZFA personnel, making use of JCM. He also encouraged the Japanese size not to hesitate to ask if support was needed from the BIZFA side.
- Mr. Nakamura of the City of Yokohama presented an explanation of the JCM project formation state report event held earlier, and acknowledged BIZFA's generous response to the mission of Japanese companies and others to Batam, and BIZFA's sending of a delegation to Japan. Also referring to the 4th Asia Smart City Conference (ASCC) held on October 20, 2015, he reported on the discussions about establishing a task force consisting of the City of Batam, BIFZA, the City of Yokohama, and IGES, for sustainable urban development of Batam Island.
- When Mr. Nakamura of the City of Yokohama handed over the minutes of meeting (M/M) of the task force (mentioned above), Chairman Mustofa understood, but responded that he would also like to confirm the contents with the person responsible for these matters before giving formal consent.
- Mr. Asakawa of IGES explained the hope to develop the project by iFORCOM for energy-saving operating systems at Hang Nadim Airport as a flagship project, while also forming other private sector projects such as the FINTEC renewable energy project, and AMCON project regarding high-efficiency treatment systems for industrial wastewater. He also referred to JUSTEC's proposal for a rehabilitation project for a johkasoh sludge treatment facility at Batam Center.
- When Chairman Mustofa asked about the schedule for the energy efficiency proposal at Hang Nadim Airport, iFORCOM explained that there was an intention to sign a letter of intent with BIFZA in January 2016.
- With regard to domestic wastewater and johkasoh sludge wastewater, Chairman Mustofa pointed out that Korean (KOICA) technical cooperation and soft loans were also in progress. Mr. Asakawa of IGES explained that this proposal was for the installation of pre-treatment equipment for wastewater at existing treatment facilities. Mr. Nakamura of IGES explained that implementation by Korea of the new wastewater treatment project at Batam Center would likely require a long time period, and as a result, rehabilitation would be needed for the Batam Center's existing facilities for the medium term. Also, even if a new wastewater treatment facility is constructed, it is possible to accept the treatment of sludge generated from septic tanks from five out of six treatment districts on Batam Island. Chairman Mustofa generally accepted these explanations.
- With regard to wastewater treatment, Chairman Mustofa commented that this is an common issue in both the public and private sectors, and that is also involves airports, hospitals, industrial parks, and housing, etc., and that he had some expectation for Japanese companies' technologies.




Report to Chairman of BIFZA

(3) Wrap-up Meeting with City of Batam (December 3, 2015, 14:00 - 16:00)

In interim report was presented to the City of Batam. A detailed discussion was presented regarding projects with prospects for future JCM project formation, particularly involving small- and medium-sized enterprises in the city. Also, because it is important that projects for the City of Batam involving Yokohama companies are compatible with Batam's development plans, information was also gathered with regard to the City of Batam's development plans.

① Participants (honorifics omitted)

Gintoyono, Be, Se, MM (Assistant Economics & Development) Dendi Purnomo (Head of Environment Management Authority) Azril Apriansyan (Infrastructure Planning Division) Other (1 person)
FINTEC (Okada, Sagawa), iFORCOM Tokyo (Itoh, Erwin) City of Yokohama (Nakamura), IGES (Asakawa, Nugroho), PCKK (Nishihata)

② Meeting Notes (honorifics omitted)

- Mr. Nakamura of the City of Yokohama explained that the JCM study was progressing smoothly, as the first project based on the Letter of Intent signed in May this year between the City of Batam and the City of Yokohama. He also acknowledged the City of Batam's generous response to the mission of Japanese companies and others to Batam, and the City of Batam's and others' sending of a delegation to Japan.
- Also referring to the 4th Asia Smart City Conference (ASCC) held in October 2015, he reported on the discussions about establishing a task force consisting of the City of Batam, BIFZA, the City of Yokohama, and IGES, for sustainable urban development of Batam, and handed over the minutes of the meeting (M/M) relating to the above-mentioned task force.
- Mr. Asakawa of IGES conveyed appreciation to the City of Batam for resolving problems when test equipment from AMCON was unable to get customs clearance.
- The City of Batam explained that, with 2019 as the target year, a program (zero waste, zero slum area) was underway with JICA and the Indonesian government targeting the drinking water and public sanitation sectors in Batam, and that the City of Batam had been awarded by the central government for a redevelopment/resettlement promotion program in medium-sized cities.
- Next, the City of Batam made a presentation based on slides entitled "Batam towards Green & Resilient Cities," referring to current conditions and issues mentioned below.
  - The central government has a plan to develop Batam as a free trade port and area focused on export-oriented manufacturing industries and shipping, and to that end, developments were underway for infrastructure including ports, highways, and bridges (noting the concept of the "Sumatra Corridor" of connecting roads and bridges), as well as utilities such as electricity and waterworks (water resources are especially important on an island).
  - As for the tourism industry, the region now comes third after Jakarta and Bali in terms of foreign tourists, and "ecotourism" has become a key concept here. There are also many hotels and other amenity facilities.
  - However, many issues naturally remain, such as the maintenance and upgrading of existing infrastructure, wastewater and waste treatment, etc. In particular, there are some areas that in reality have virtually no control of wastewater and waste materials.
- Mr. Asakawa of IGES explained the latest information about the Joint Crediting Mechanism (JCM), and explained in detail the application procedures for JCM equipment subsidy projects. He also articulated the potential for utilizing Japanese companies' low-carbon technologies to contribute to the realization of smart and green development on Batam Island.
- Gintoyono of the City of Batam indicated an interest in utilizing Japan's low-carbon technologies at the city-owned hospital, and in response from the Japanese side it was mentioned that following a site visit this time of a hospital under BIFZA, there was an interest in also making a site visit to a hospital under the jurisdiction of the City of Batam during the January 2016 mission.

- An official from the City of Batam asked about the life of batteries for photovoltaic power generation, and the Japanese side responded that there are various types of batteries, and their use depended on the use environment and costs. For example, lithium batteries are expected to have a life of about seven or eight years.
- From the City of Batam it was mentioned that, with regard to photovoltaic power, the deputy mayor, who is a mayoral candidate in the December 9 election for the City of Batam, formulated a photovoltaic installation promotion plan previously (about two years ago).

Interim Report to City of Batam on JCM Study

Introduction from City of Batam on development master plan

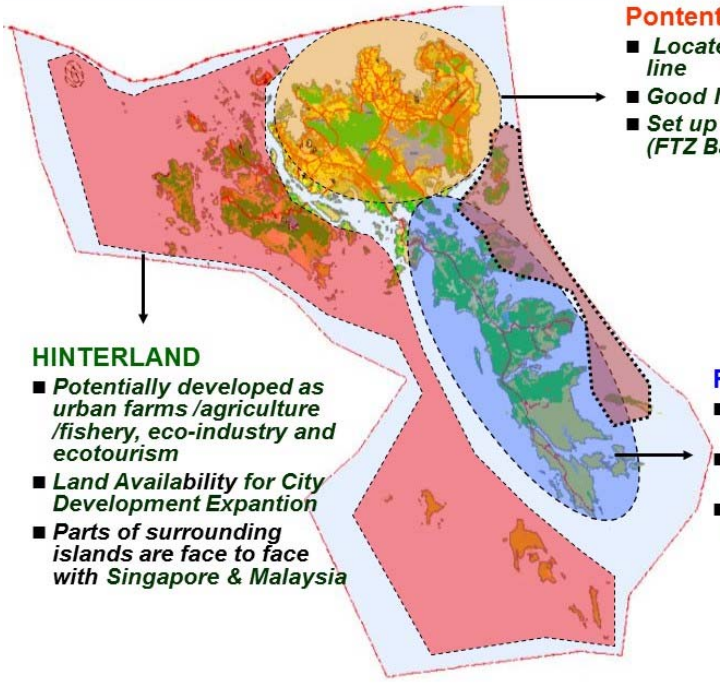
③ Presentation Materials【Azril Apriansyan, City of Batam (excerpts)】

BATAM CITY'S STATISTICS

NO	KETERANGAN	2010	2011	2012	2013
1	Population	944.285	992.425	1.123.690	1.135.412
2	Labor Force	288.318	319.054	336.562	348.979
3	Foreign Tourist	1.007.446	1.161.581	1.219.608	1.336.430
4	Registered Companies according to their group business field	4.351	4.907	5.328	5.546
5	GDP at Current Price according to their group business field (Million Rp)	47.297.634	52.624.417	57.645.949	61.173.146
6	Economic Growth (%)	7,77	7,20	6,78	5,83
7	Export (Million US$)	8.481,61	9.847,95	9.836,14	11.754,91
8	Human Development Index (HDI)	77,80	78,03	78,46	78,77
9	Gini Ratio Index (%)	0,245	0,3512	0,3022	0,307
10	Batam City's Budgets (Billion Rp)	1.291,09	1.439,13	1.491,40	1.860,58

【Azril Apriansyan, City of Batam (excerpts)】

GEOGRAPHIC POTENTIAL



Pontential of BATAM Island

- *Located within international shipping line*
- *Good Infrastructures*
- *Set up as National Strategic Area (FTZ Batam, Bintan, Karimun)*

HINTERLAND

- *Potentially developed as urban farms /agriculture /fishery, eco-industry and ecotourism*
- *Land Availability for City Development Expantion*
- *Parts of surrounding islands are face to face with Singapore & Malaysia*

REMPANG-GALANG ISLAND

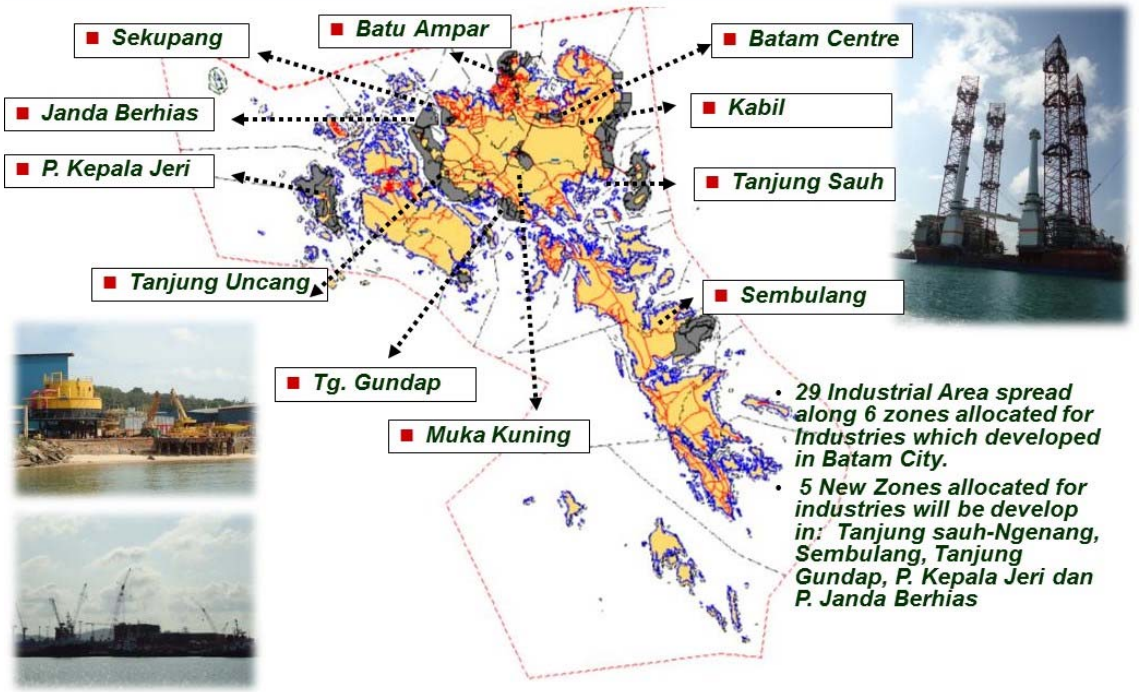
- *Land Availability for City Development Expantion*
- *Connected to Batam with Street and bridges*
- *Set up as National Strategic Area (FTZ Batam, Bintan, Karimun)*

3 FREE TRADE & FREE PORT ZONE OF BATAM CITY

- *The National Medium-Term Development Plan (RPJMN 2015-2019), Stated that Batam City will become one of the Strategic Area for center of economic development, one of it being a Free Trade & Free Port Zone (KPBPB) Batam, Bintan, Karimun. The state Government planned to:*
  - *Develop Manufacture Industries that oriented on export in the Free Trade & Free Port Zone.*
  - *Develop Tourism*
  - *Always Updating the Infrastructures.*

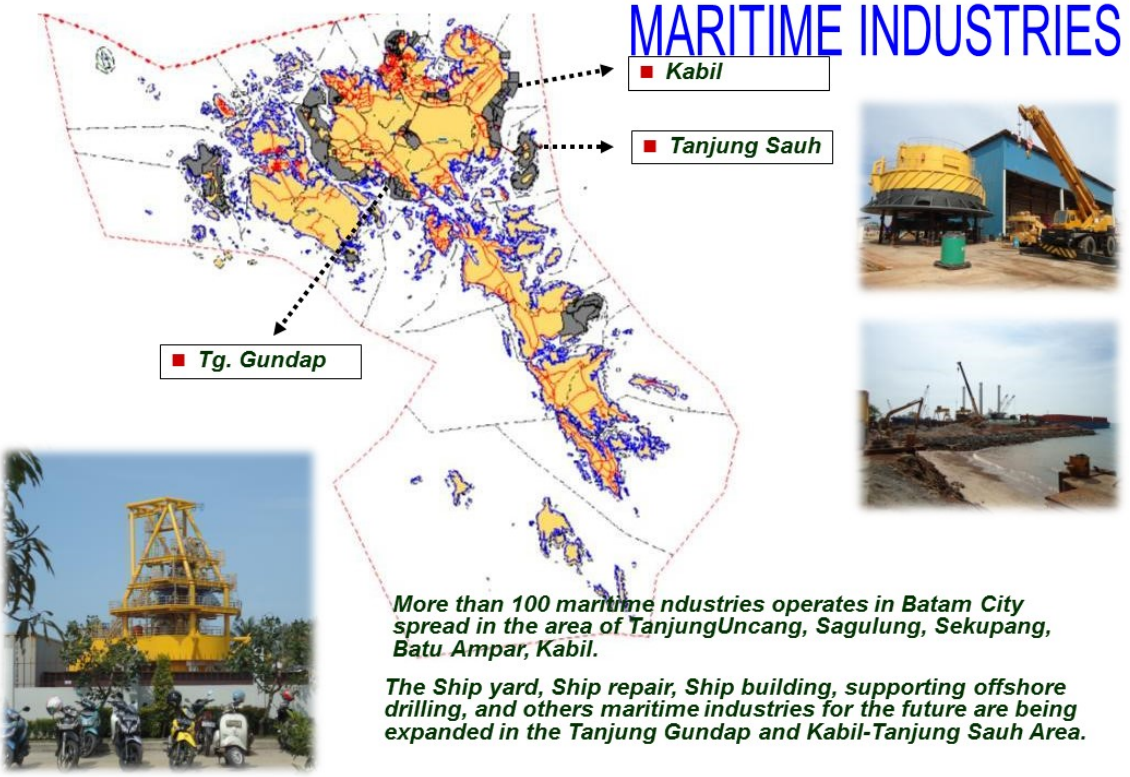
【Azril Apriansyan, City of Batam (excerpts)】

INDUSTRIES



- 29 Industrial Area spread along 6 zones allocated for Industries which developed in Batam City.
- 5 New Zones allocated for industries will be develop in: Tanjung sauh-Ngenang, Sembulang, Tanjung Gundap, P. Kepala Jeri dan P. Janda Berhias

MARITIME INDUSTRIES

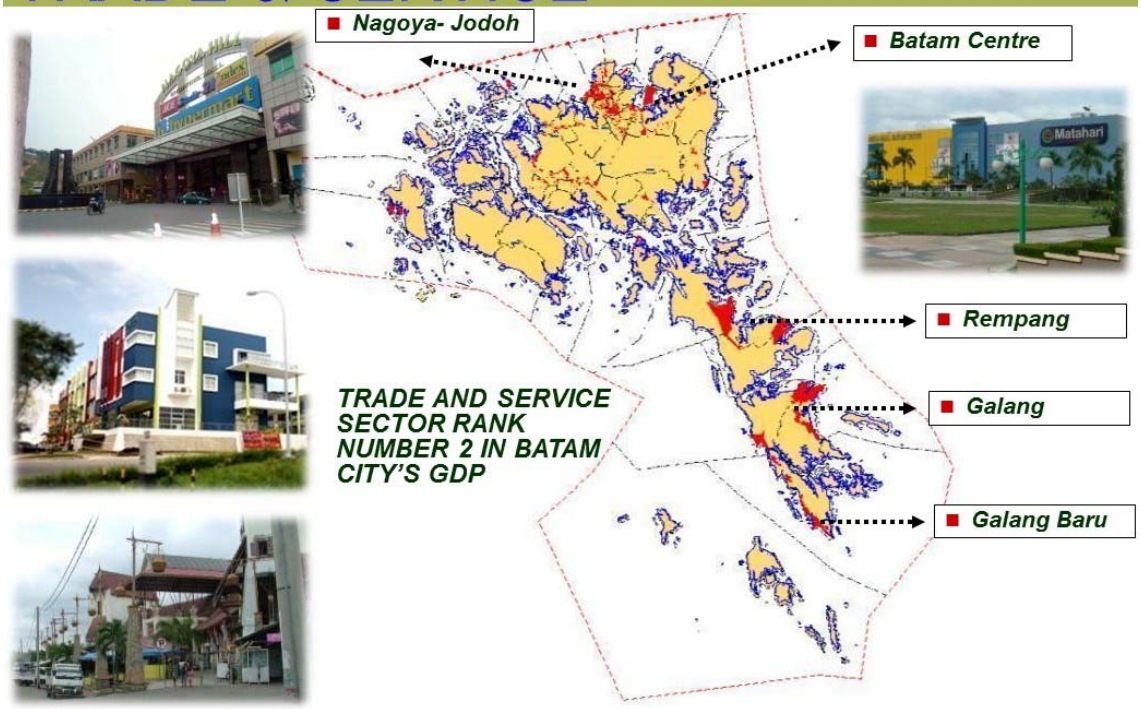


More than 100 maritime ndustries operates in Batam City spread in the area of TanjungUncang, Sagulung, Sekupang, Batu Ampar, Kabil.

The Ship yard, Ship repair, Ship building, supporting offshore drilling, and others maritime industries for the future are being expanded in the Tanjung Gundap and Kabil-Tanjung Sauh Area.

【Azril Apriansyan, City of Batam (excerpts)】

TRADE & SERVICE



BATAM CITY'S STRATEGIC DEVELOPMENT PLAN

No	MID-TERM NATIONAL DEVELOPMENT PLAN
1	Train Railways in Batu Ampar - Bandara Hang Nadim and Tanjung Uncang – Batam Centre
2	Batam City's Bus Rapid Transit System
3	Expansion of Kabil (tanjung Sauh) port
4	Expansion of Batu Ampar's Container Port
5	Development of Subang Mas Port
6	Development of Punggur Port
7	Development of Belakang Padang Port
8	Development and Expansion of Sekupang Port
9	Development jalan Simpang Jam – Batu Ampar

【Azril Apriansyan, City of Batam (excerpts)】

No	Kegiatan Strategis Jangka Menengah Nasional
10	Development Jalan Tol Batu Ampar-Muka Kuning-Hang Nadim
11	Development Flyover Simpang Kabil dan Simpang Jam
12	Interconnection Batam – Bintan Electricity 150 KVA
13	Development Estuari Dam Sei Gong
14	Development Estuari Dam Rempang Utara
15	Development Estuari Dam Teluk Nongsa
16	Development Estuari Dam Pulau Kepala Jeri
17	Development Techno Park Berbasis Industri

No	NEEDS
1	Trans Barelang Bridges (6 Bridges) Maintenance Operational
2	Batam City's Dams Maintenance Operational
3	Enhancement and Maintenance of 160 Km National Roads and it's utilities (drainages, street lights, pedestrian)
4	Enhancement and Maintenance of Provintial Roads and it's utilities (drainages, street lights, pedestrian)
5	*Area Traffic Control System* (ATCS), Street Furniture, JPO (pedestrian bridge)
6	Closed-circuit television (CCTV) for Batam City's Security
7	Pembangunan Sarana Bantu Navigasi
8	Pembangunan Sarana Prasarana Pendidikan dan Kesehatan
9	Pembangunan Balai Latihan Kerja
10	Pengendalian Banjir (Sistem Keterpaduan drainase Lingkungan hingga ke Sungai)

【Azril Apriansyan, City of Batam (excerpts)】

Lanjutan.....

No	Kegiatan Strategis
11	Bus Terminals and Shelters
12	Greenery Open Space (Kebun Raya Batam dan RTH Publik Aktif)
13	Wastes and Sewages Management (Penataan TPA dan IPAL)
14	Improving the quality of settlements and Slums Area Handling (PSU)
15	Building Cheap housing for workers (Rumah Susun Sewa Pekerja)
16	Electricity in Hinterland
17	Clean Water in Hinterland (SPAM wilayah hinterland)
18	Development of platform/dock in hinterland
19	Transportation between islands
20	Infrastructure for tourism
21	Telecommunications for all the islands in Batam City

3.6 Final Report Meeting

A final reporting meeting with Japanese companies and local government and companies was jointly organized by the City of Batam, BIFZA, and the Y-PORT Center (Yokohama City, IGES).

The establishment of the task force team was announced, involving the City of Batam, BIFZA, City of Yokohama, and IGES, with the participation of three private sector companies from Japan, the JCM Secretariat from Indonesia, and BIFZA from the City of Batam. That was followed by information sharing, including a report on the results of this feasibility study, and then a common understanding was developed among the participants with regard to promotion of cooperation for project formation and realization of projects relating to JCM equipment subsidy projects.

Prior to the seminar, a courtesy call was made to Batam City Hall to the current mayor, and the current deputy mayor (to become the new mayor in March), to explain the overview of city-to-city collaboration and JCM project formation, etc.

(1) Agenda (9:00 - 11:50 a.m., January 20, 2016)

9:00 AM-9:15	**Opening Remarks** ● Ahmad Dahlan (City of Batam) ● Jon Arizal (BIFZA) ● Tetsuya Nakajima (City of Yokohama)
9:15 AM-10:00	**Background information** ➢ Updates of the JCM in Indonesia ● Dicky Edwin Hindarto (Head of Indonesia JCM Secretariat) ➢ Batam Towards Green and Resilient City ● Azril Apriansyhah (Head of BAPPEKO, City of Batam) ➢ Batam Towards Smart City ● Imam Bachroni (BIFZA) Q & A
10:00 AM-10:15	**Outline of the programme** ➢ Flagship projects and way forward toward smart and green island of Batam under city-to-city collaboration - Introduction of city-to-city collaboration between Batam and Yokohama - Introduction of the JCM and its financing program - Draft proposals from Yokohama side ● Yasuaki Nakamura (Yokohama) ● Kenji Asakawa (IGES) Q & A
10:15 AM-10:30	Coffee break
10:30 AM-11:30	Final report of the feasibility study ➢ Energy-saving operation of A/C system at Hang Nadim Airport ● Erwin Avianto (iFORCOM) ➢ High-efficiency treatment system for industrial waste-water ● Buntaro Shiono (AMCON) ➢ Waste-to-Fuel plant for industrial waste ● Kevin Sagawa (FINTECH) Q & A
11:30 AM-11:35	**Announcement of establishing "Task Force Team for the city-to-city collaboration between Batam and Yokohama"**
11:35 AM-11:45	**Closing Remarks** ● H. Muhammad Rudi, SE, MM (City of Batam) ● Jon Arizal (BIFZA) ● Tetsuya Nakajima (City of Yokohama)

(2) Participants from Japan (honorifics omitted)

(City of Yokohama) Tetsuya Nakajima, Kazuhito Taketo, Yasuaki Nakamura (IGES) Kenji Asakawa, Sudarmanto Budi Nugroho (FINTEC) Motoyuki Okada, Kikuo Sagawa (iFORCOM Tokyo) Ryosuke Itoh, Erwin Avianto (JUSTEC) Kotaro Doi (PCKK) Akifumi Nishihata

(3) Meeting Summary (honorifics omitted)

- At the start of the meeting, after acknowledgment of participants from the City of Batam and from Japan, and acknowledgment of the Secretariat, Director Nakajima from the City of Yokohama expressed appreciation to the City of Batam and BIZFA locally for their cooperation, which made it possible to have three concrete proposals (energy saving, water treatment, renewable energy) so soon after the signing of the Letter of Intent between the City of Batam and the City of Yokohama in May 2015.
- Dicky, Head of the Indonesia JCM Secretariat, said that it was significant that three JCM city-to-city collaboration projects (Batam and Yokohama, Bandung and Kawasaki, Surabaya and Kitakyushu) were underway in Indonesia, and that it was hoped that JCM projects would be registered.
- Next, Atika of the Indonesia JCM Secretariat, explained that the JCM Secretariat also had a role of introducing local companies to Japanese companies that were seeking Indonesian counterparts, that the Secretariat could facilitate consultation for companies that had issues about the development of JCM projects, and that it wanted to increase not only energy conservation but also renewable energy projects, etc.
- Imam of BIFZA said that for Batam, ideas for the realization of a smart city were very important, and that he looked forward to continued cooperation between Batam and the Y-PORT Center.
- Mr. Nakamura of the City of Yokohama and Mr. Asakawa of IGES said that the City of Batam was Y-PORT's first cooperation partner, and that they hoped to formulate JCM projects soon, as flagship projects of JCM city-to-city collaboration.
- Mr. Sagawa of FINTEC explained that in the course of discussions about a waste to energy project and photovoltaic power generation project with an industrial waste treatment company (PT Desa Air Cargo), the CO2 emission reduction benefits were large, but for projects with high initial investment costs, use of the JCM equipment subsidy would be effective.
- During the question and answer session, BIFZA personnel asked about the expected numbers for energy efficiency in projects where air conditioning equipment energy efficient systems were installed in the Hang Nadim Airport terminal building. Mr. Itoh of iFORCOM Tokyo responded that there could be a variation of 10 to 20 percent for the target equipment, but for most equipment, actual measurements of energy efficiency after system installation exceed prior projections of energy efficiency.
- After announcing the establishment of the Task Force Team consisting of the City of Batam, BIFZA, City of Yokohama, and IGES, Dendi Purnomo (Head of Environment Management Authority) announced the conclusion of a successful meeting.

Courtesy call to Mayor Dahlan, City of Batam

Courtesy call to Deputy Mayor Rudi, City of Batam

Workshop (Opening Speech by Director Nakajima)

Workshop (Group Photo)

Workshop (Presentations by City of Yokohama and IGES)

Workshop (Announcement of Creation of Task Force)

Workshop (Presentations by Small and Medium-sized Enterprises from City of Yokohama)

Workshop (Q&A from the Floor)

Members of Task Force Team Established

City / Authorities	Department/Bureau	Title	Name
City of Batam	Environment Impacts Controlling Division	Head	Mr Dendi Purnomo
	Waste to Energy Project of Sanitation and landscape Division	Senior Researcher / Project Coordinator	Mr. Amir Rusli
BIFZA	BIFZA	Vice Chairman	Mr. Jon Arizal
	Japan Representative Office	Representative	Mr. Hajime Kinoshita
	Directorate of Promotion & Public Relations	Director	Mr. Purnomo Andiantono
	Planning and Program & Research Development Bureau	Head of Program Development	Mr Binsar Tambunan
City of Yokohama	Development Cooperation Division, International Cooperation Bureau	Manager Assistant Manager	Mr. Masakazu Okuno Mr. Yasuaki Nakamura
IGES	Climate and Energy Area	Senior Policy Researcher	Mr. Kenji Asakawa
	Integrated Policies for Sustainable Societies	Researcher	Mr. Sudarmanto Budi Nugroho

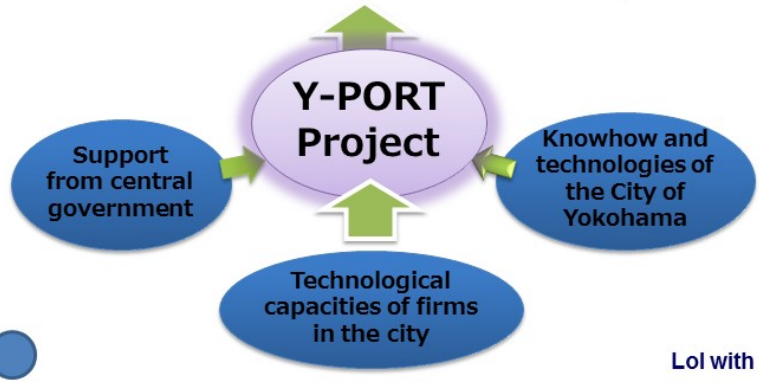
(5) Presentation Materials【Yasuaki Nakamura (Yokohama), Kenji Asakawa (IGES)】

Yokohama' s International Development Cooperation – Y-PORT

Yokohama
Partnership of Resources and Technologies

It is essential to provide not simple products but solutions through combining technologies and knowhow of the public and private sectors

Enhancement of international technical cooperation



MOU with JICA

MOU with ADB

LoI with the City of Batam in May, 2015

【Yasuaki Nakamura (Yokohama), Kenji Asakawa (IGES)】

City to City Collaboration

Letter of Intent on Technical Cooperation for Sustainable Urban Development Signed with the City of Batam, on 27th May, 2015.

Contents of Agreement

1. The City of Yokohama will offer technical advice in promoting the eco-city development of the City of Batam.
2. **The Parties will encourage participation of the private sector and academic organizations.**
3. The Parties will take action to obtain cooperation of the governments of both countries and international organizations.
4. The Parties will mutually provide information essential to implementing the above collaboration effectively..

3

Y-PORT CENTER – Knowledge hub for smart city management

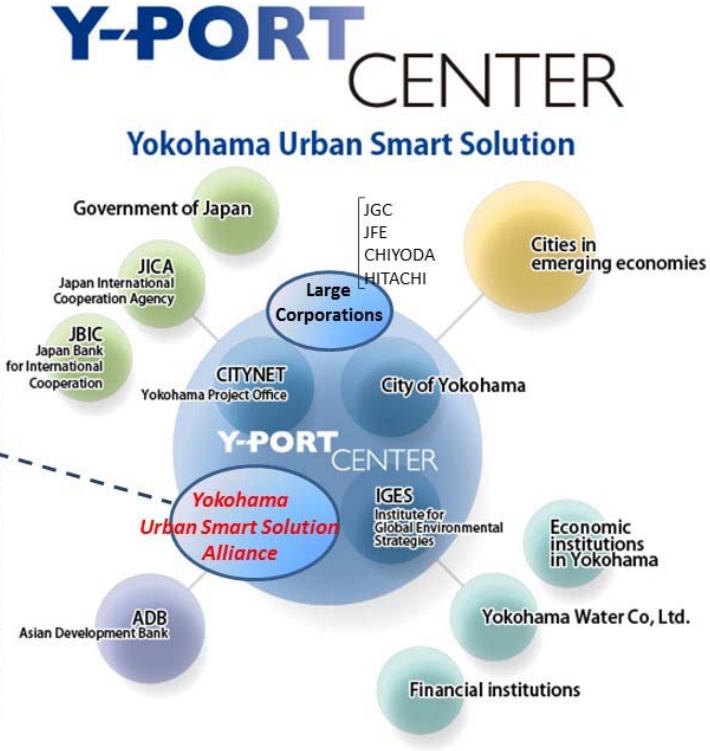
Yokohama Urban Smart Solution Alliance

Over 10 Leading Private SMEs in Yokohama form up an alliance under the roof of Y-PORT CENTER to;

- Provide best available smart solutions
- Establish a showcase of smart urban solutions
- Serve and promote as one-stop shop with SME's knowledge and technologies

to cities in Asia and the world.

Y-PORT CENTER
Yokohama Urban Smart Solution



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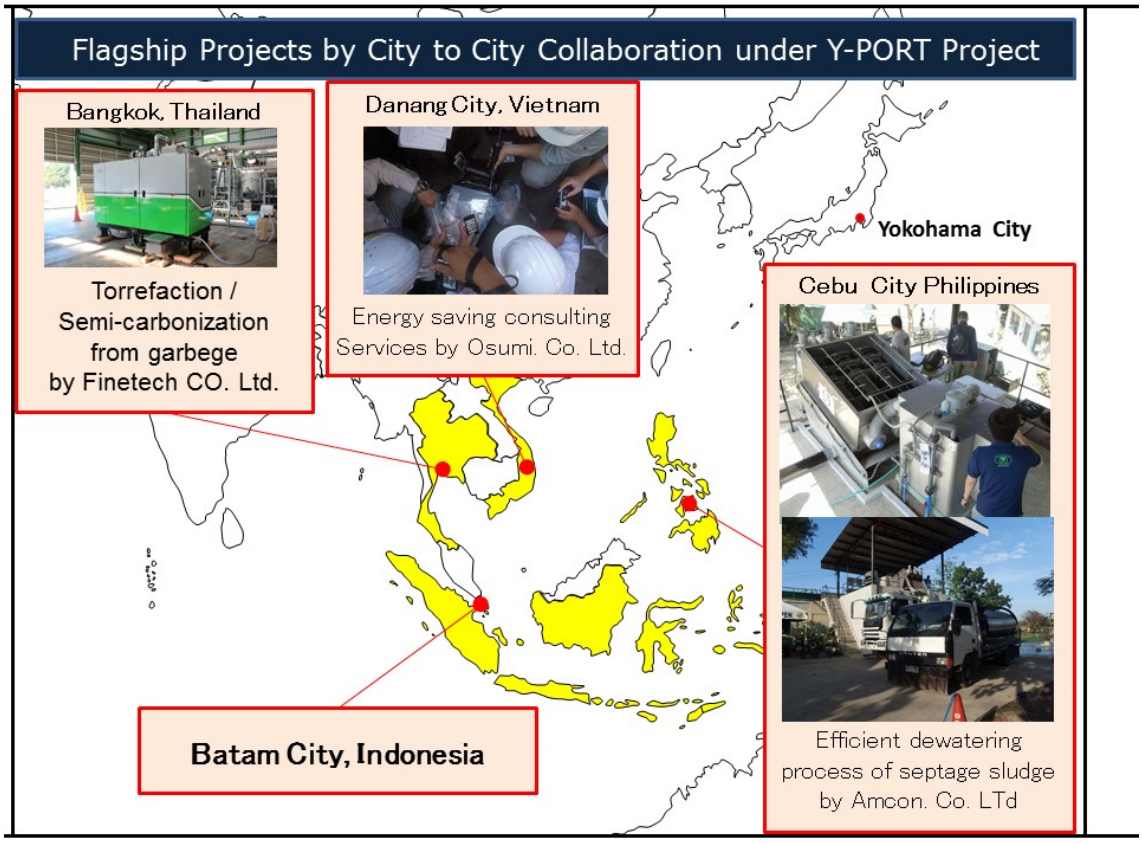
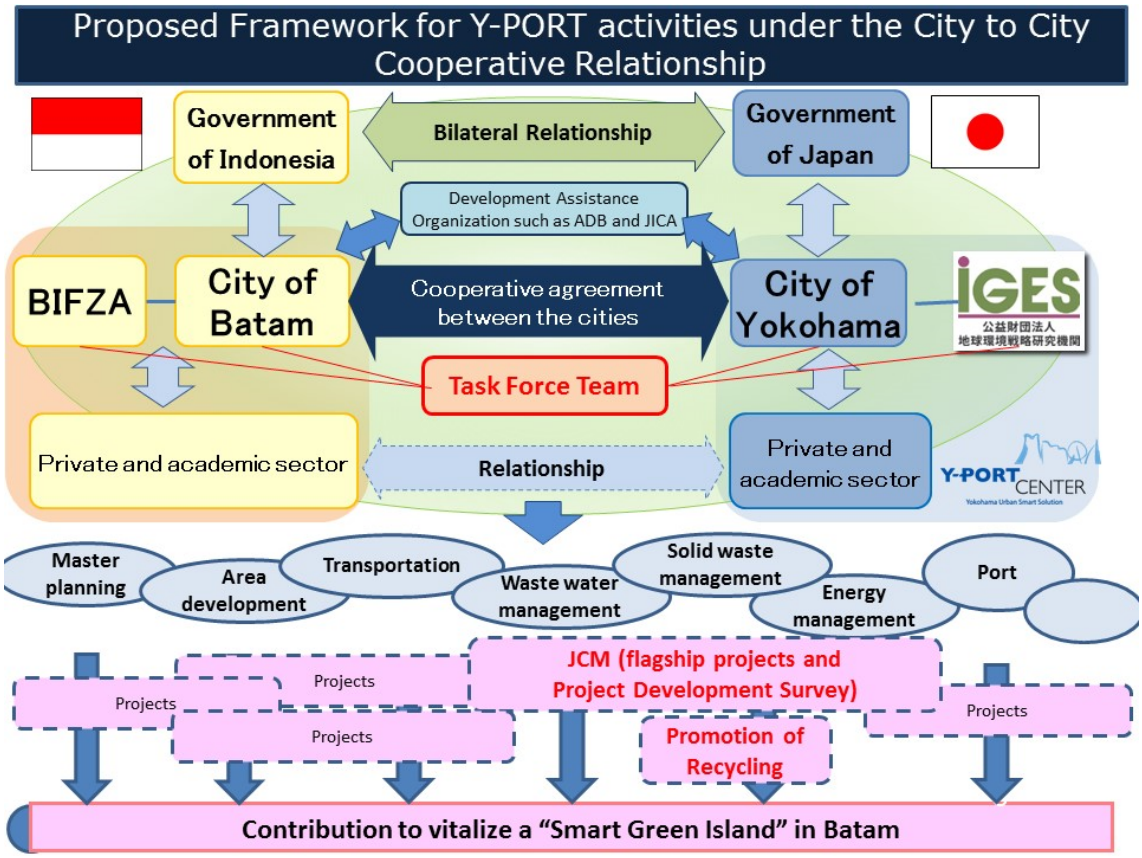
【Yasuaki Nakamura (Yokohama), Kenji Asakawa (IGES)】



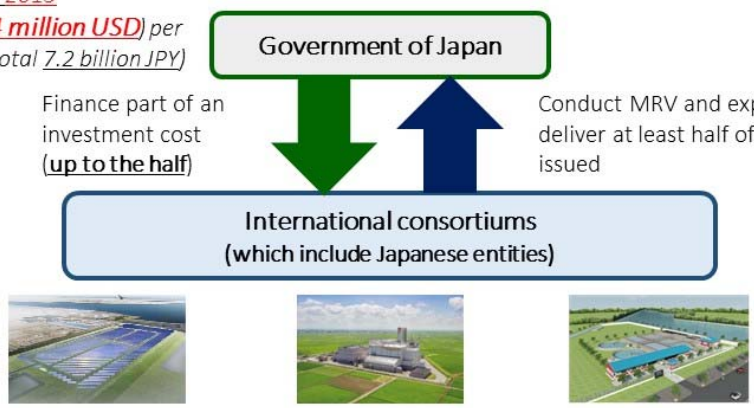


【Yasuaki Nakamura (Yokohama), Kenji Asakawa (IGES)】

【Yasuaki Nakamura (Yokohama), Kenji Asakawa (IGES)】

JCM Financing Programme (MOEJ)

The budget for FY 2015
*2.4 billion JPY (**24 million USD**) per year by FY2017 (total 7.2 billion JPY)*



- Scope of the financing: facilities, equipment, vehicles, etc. which reduce CO_2 from fossil fuel combustion as well as construction cost for installing those facilities, etc.
- Eligible Projects : starting installation after the adoption of the financing and finishing installation within three years.

Source: Government of Japan, Sept 2015

→ Call for proposals and necessary documents are announced on Global Environment Centre Foundation (GEC) website: http://gec.jp/jcm/kobo/index.html

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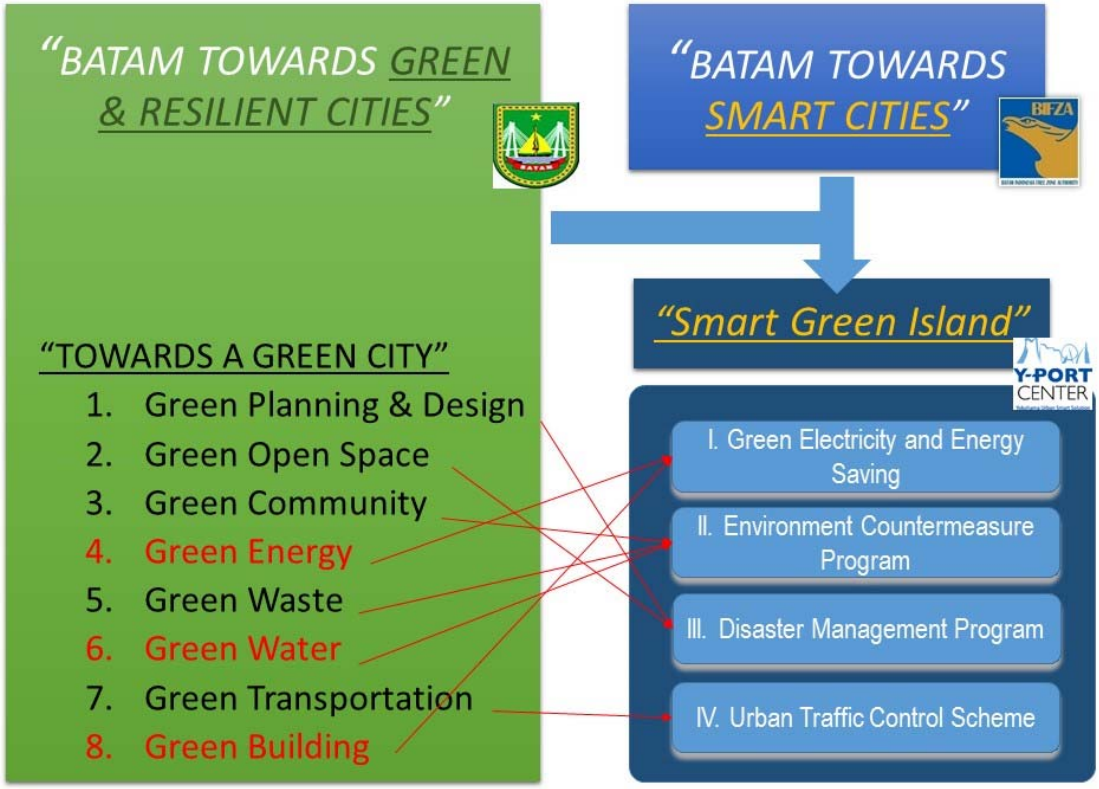
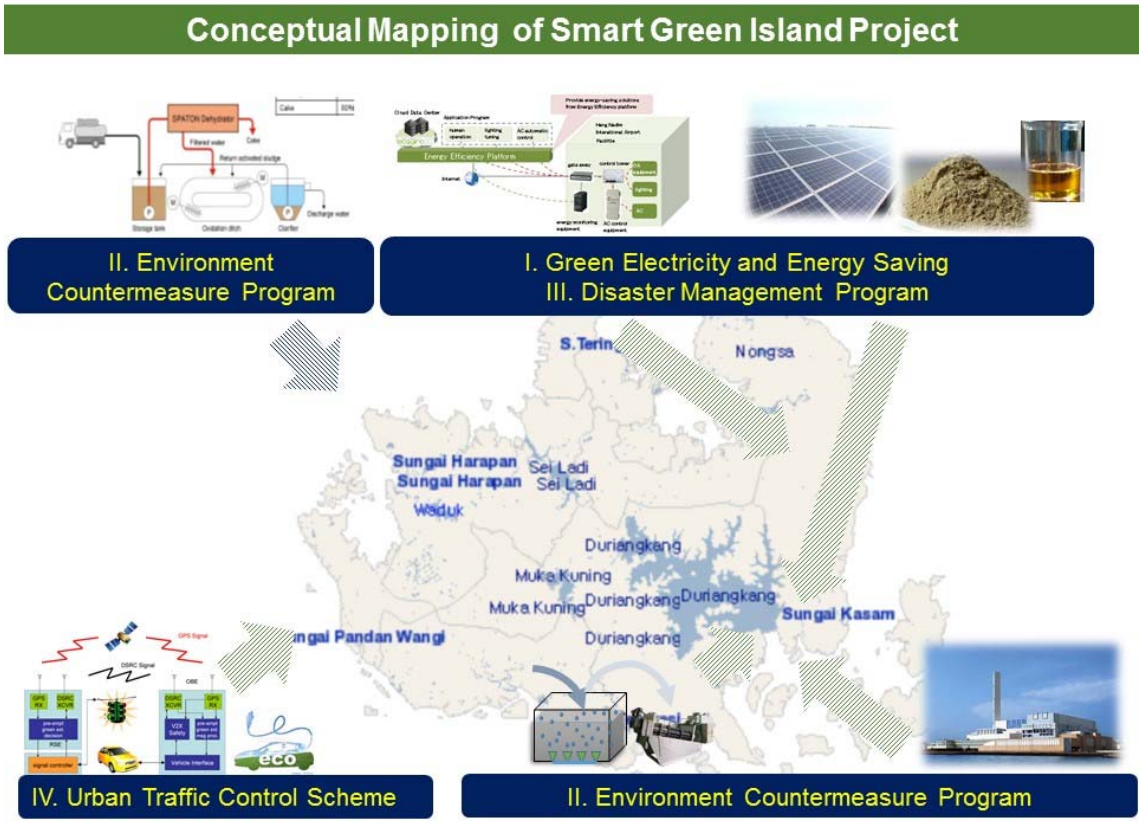
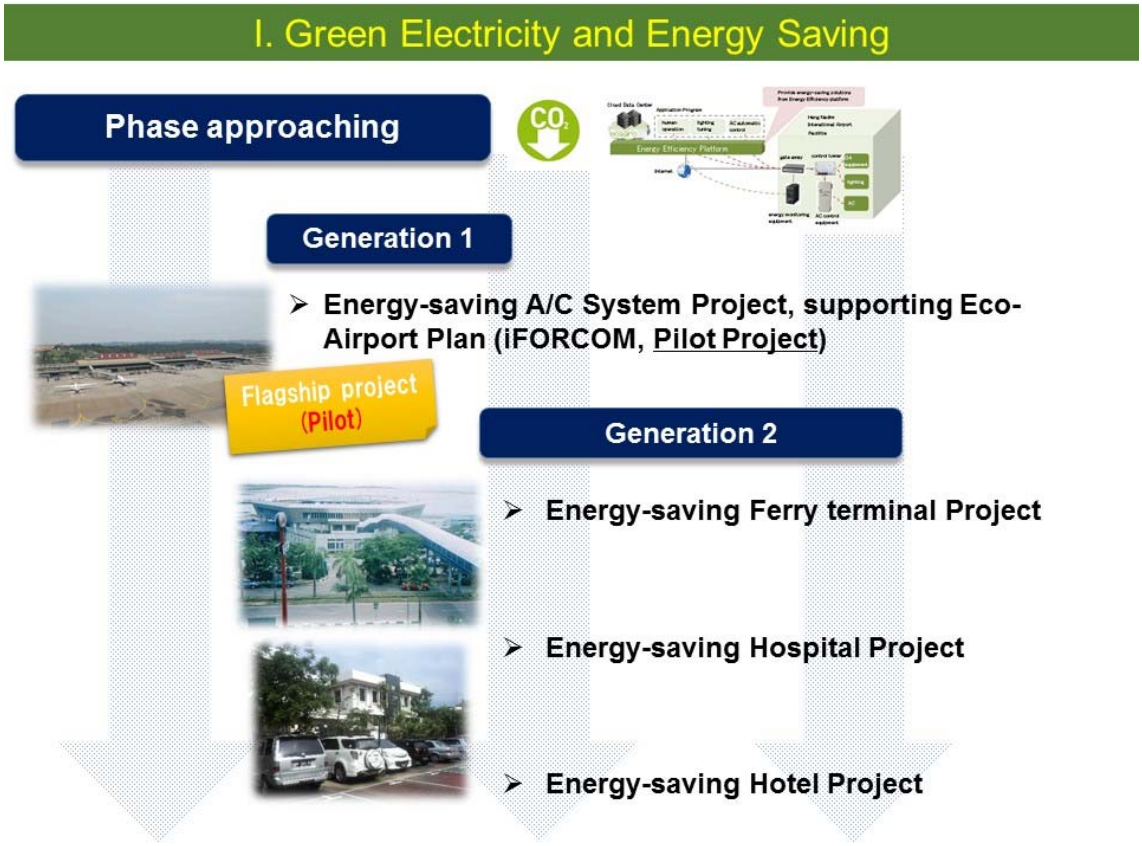


【Yasuaki Nakamura (Yokohama), Kenji Asakawa (IGES)】





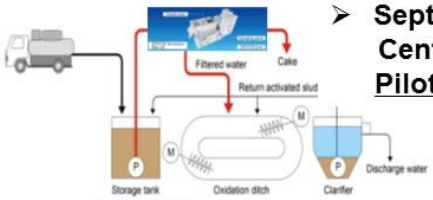
【Yasuaki Nakamura (Yokohama), Kenji Asakawa (IGES)】

II. Environment Countermeasure Program

Phase approaching

Where we are

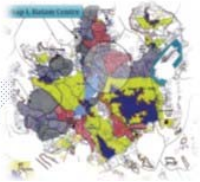
Generation 1



- **Septage Pre-treatment for improving IPAL of Batam Centre with dehydrator "SPATON" (JUSTEC-BIFZA, Pilot Project)**

Generation 2

- **Improving IPAL of Hang Nadim Airport for "Eco-Airport" (JUSTEC-BIFZA)**



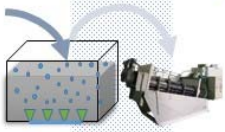
- **Expanding to other IPALs (JUSTEC-BIFZA)**

II. Environment Countermeasure Program

Phase approaching

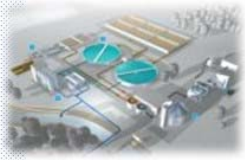
Where we are

Generation 1:



- **Microbubble Flocculation Tank and "Volute" Dewatering Equipment (AMCON- PT Desa Air Cargo)**

Generation 2



- **High-efficiency Wastewater Treatment Project for Industrial Complexes, such as BATAMINDO, Panbil and Kabil**

【Yasuaki Nakamura (Yokohama), Kenji Asakawa (IGES)】