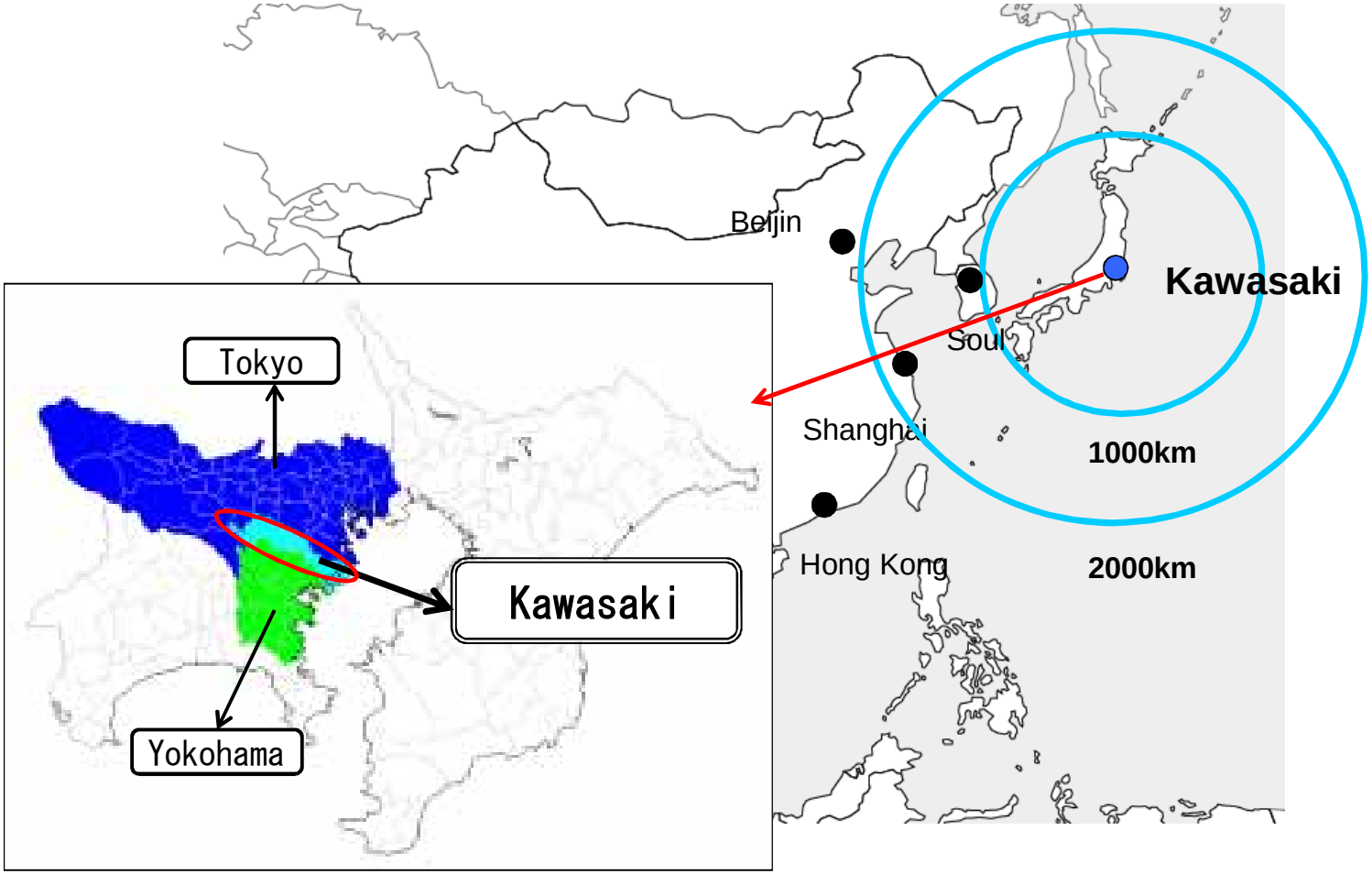
JCM City-to-City Collaboration

between Kawasaki-city and Yangon-city

Kawasaki-city
Japan

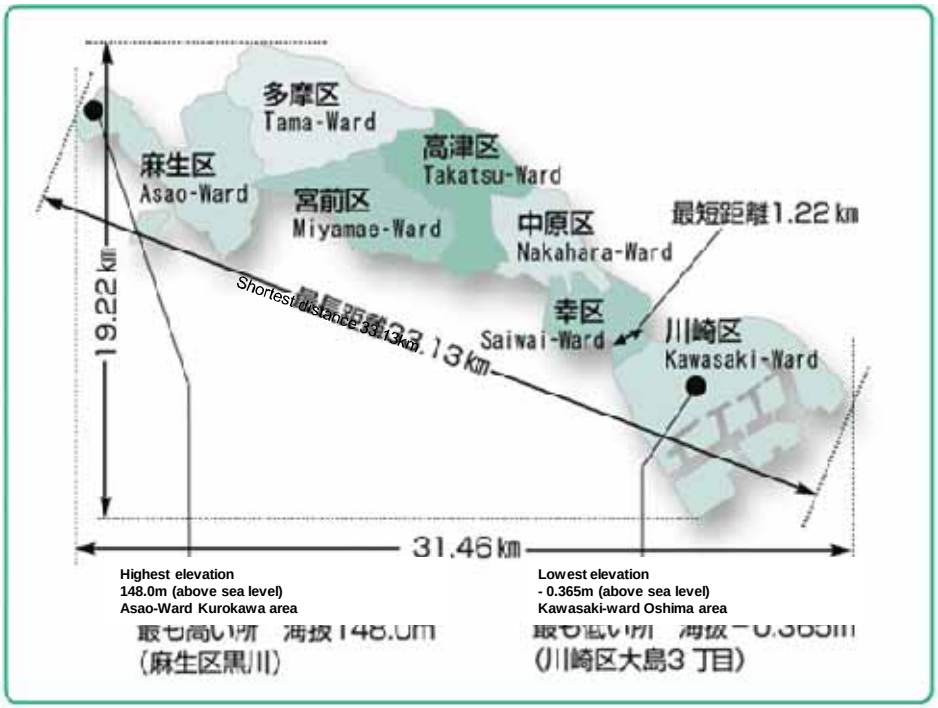
川崎市
KAWASAKI CITY

About Kawasaki-city, Japan

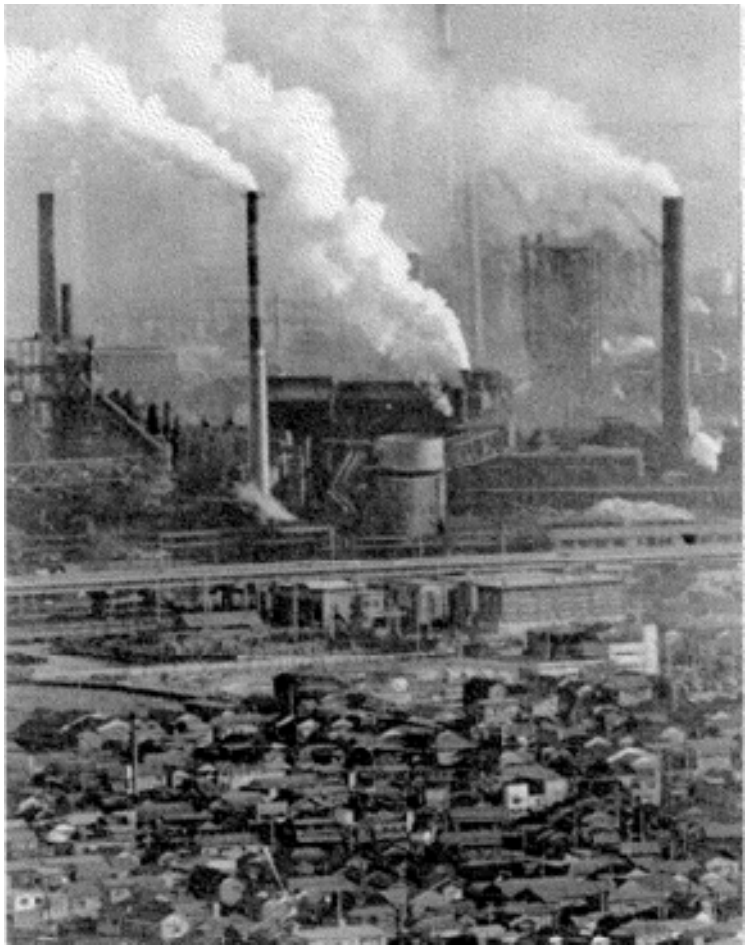


About Kawasaki-city, Japan

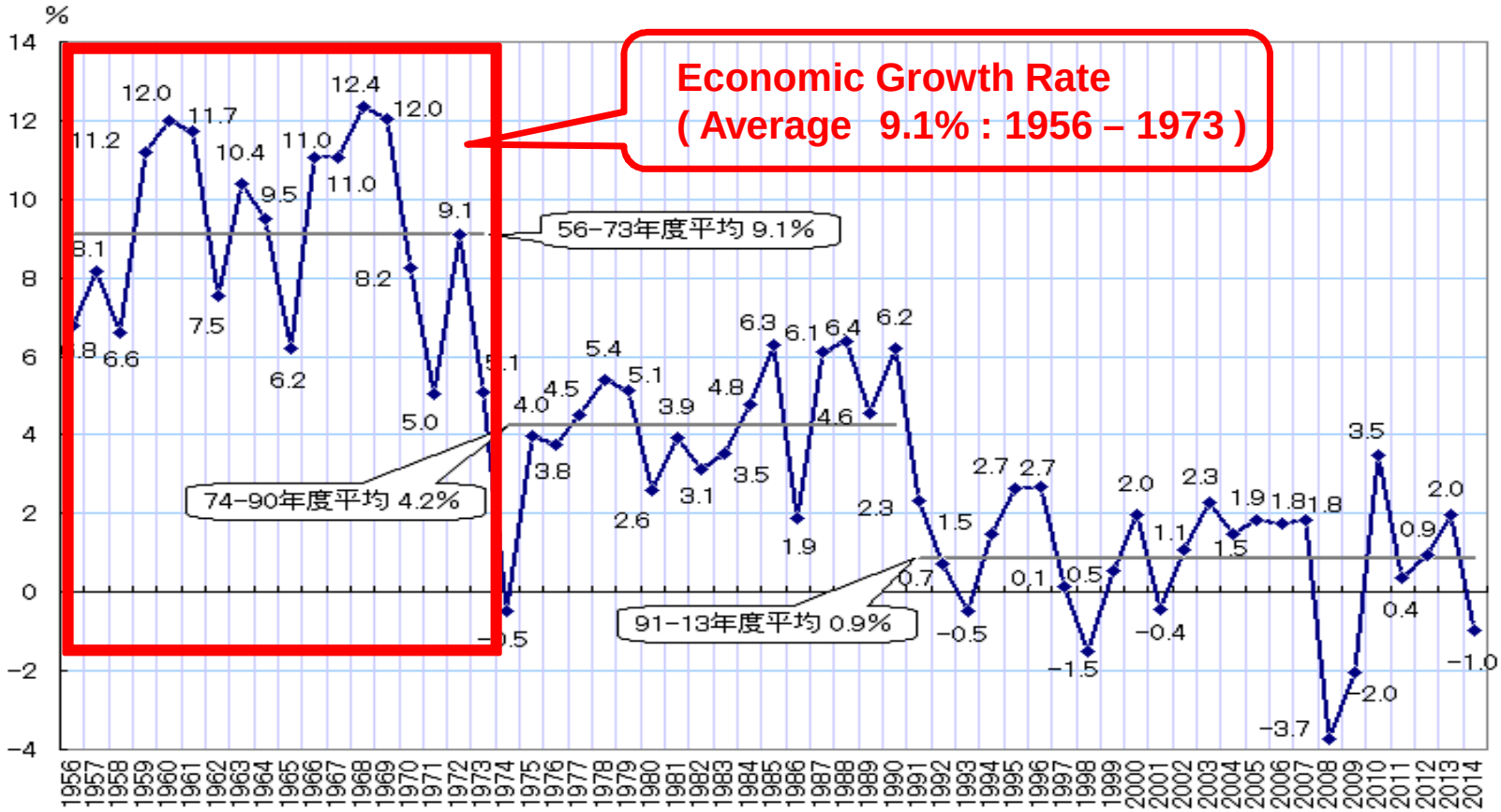
- Population: APPROX 1.47 million population (2014)
- Area: 144.35 Km2
- City budget: APPROX 10 billion US$ (2015)



Experience of Industrial Pollution in Kawasaki (1960-70)



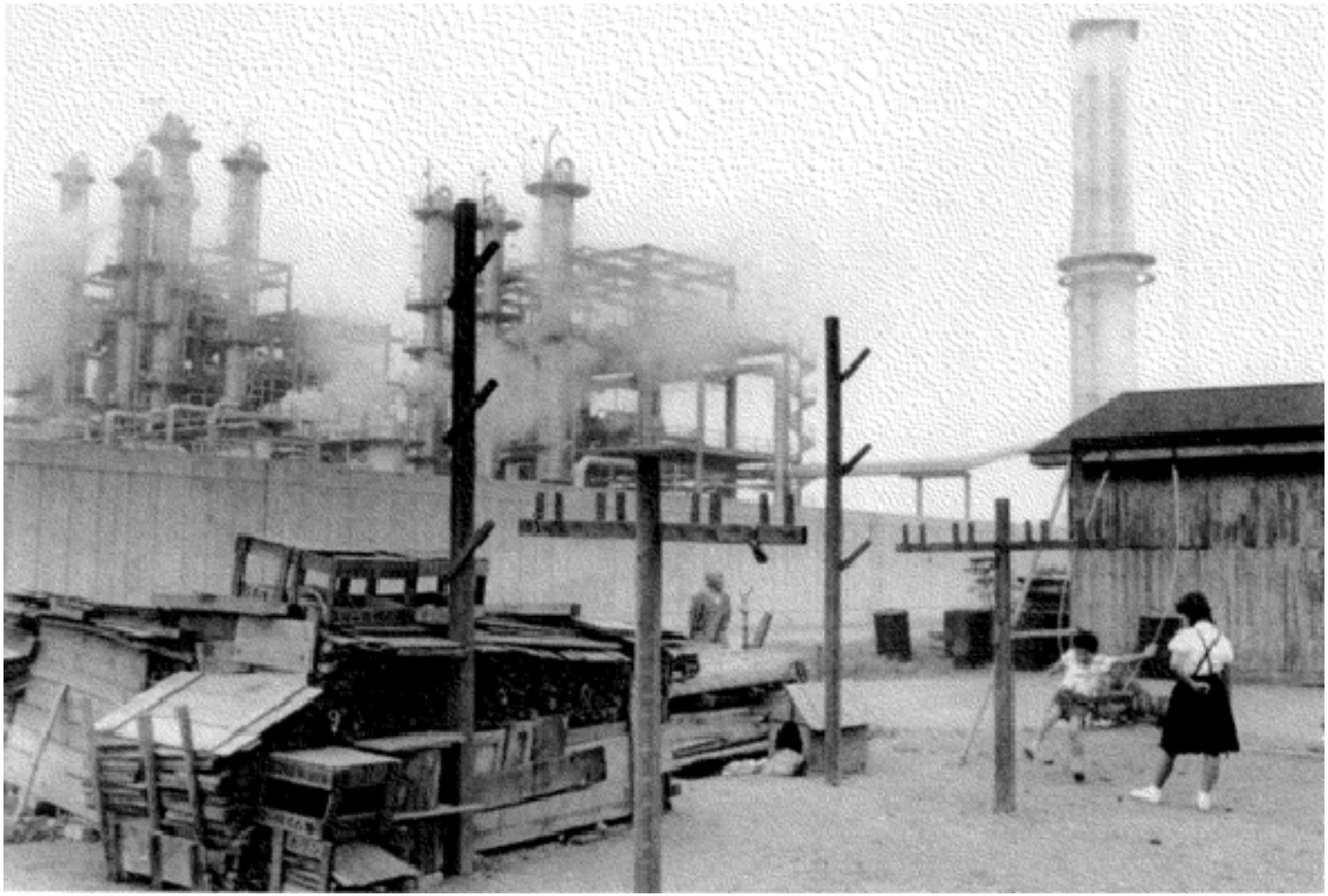
Economic Growth Rate in Japan



（注）年度ベース。93SNA連鎖方式推計。平均は各年度数値の単純平均。1980年度以前は「平成12年版国民経済計算年報」（63SNAベース）、1981～94年度は年報（平成21年度確報）による。それ以降は、2015年7–9月期2次速報値 <2015年12月8日公表>

（資料）内閣府SNAサイト

Factories nearby Residential Area in Kawasaki (1970)



Water Pollution at Tama-River (1970)

Tama-River covered by full of Garbage (1970)

Air Pollution over Kawasaki Waterfront Area (1960)

Efforts to overcome Pollution Problems

Local Business

- Investment for pollution control
- Development of pollution control technologies

Citizen

- Civil action against pollution
- Public awareness for environment

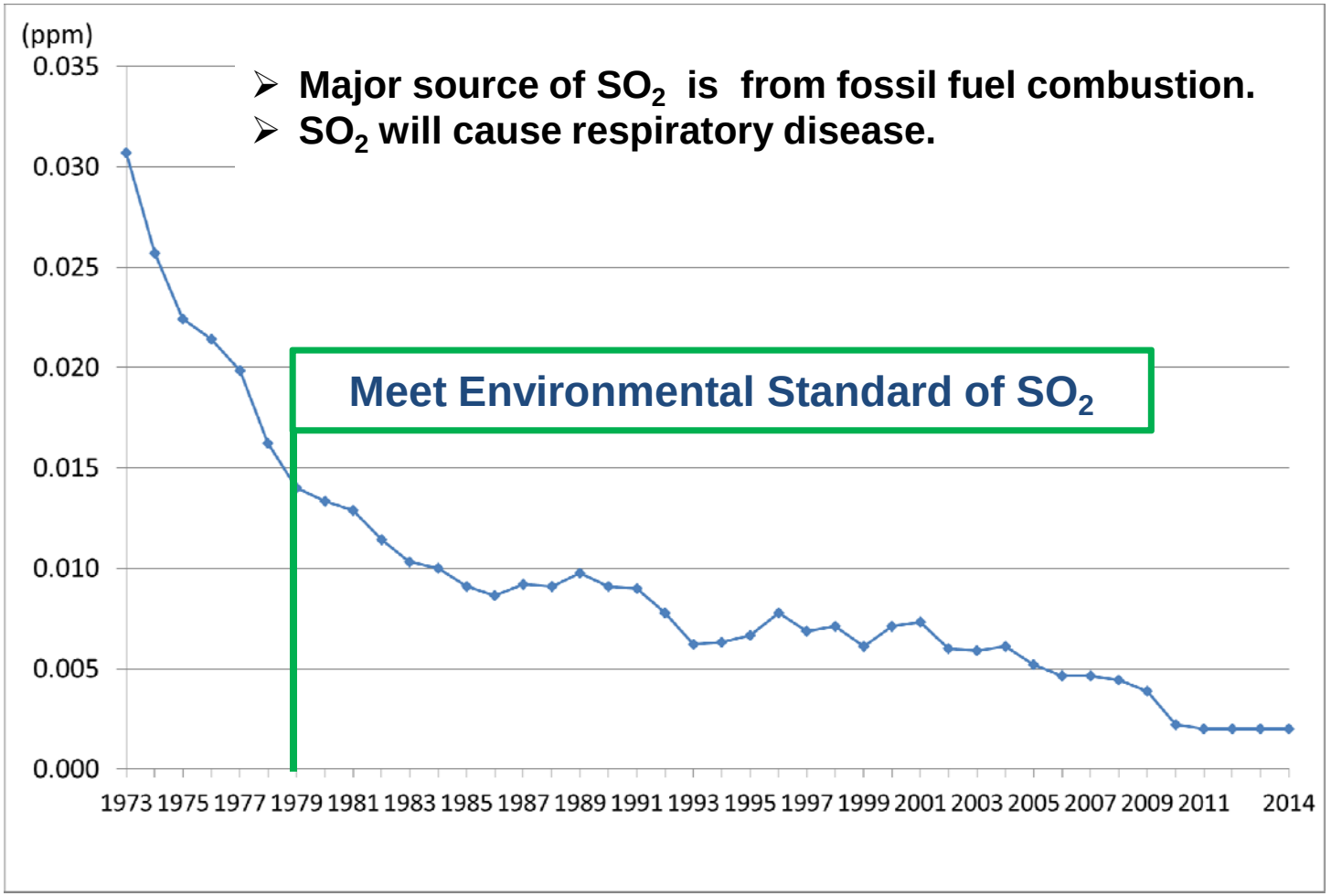
Kawasaki-city

- Pollution control agreement with local industries
- Regulation for pollution control
- Pollution monitoring system

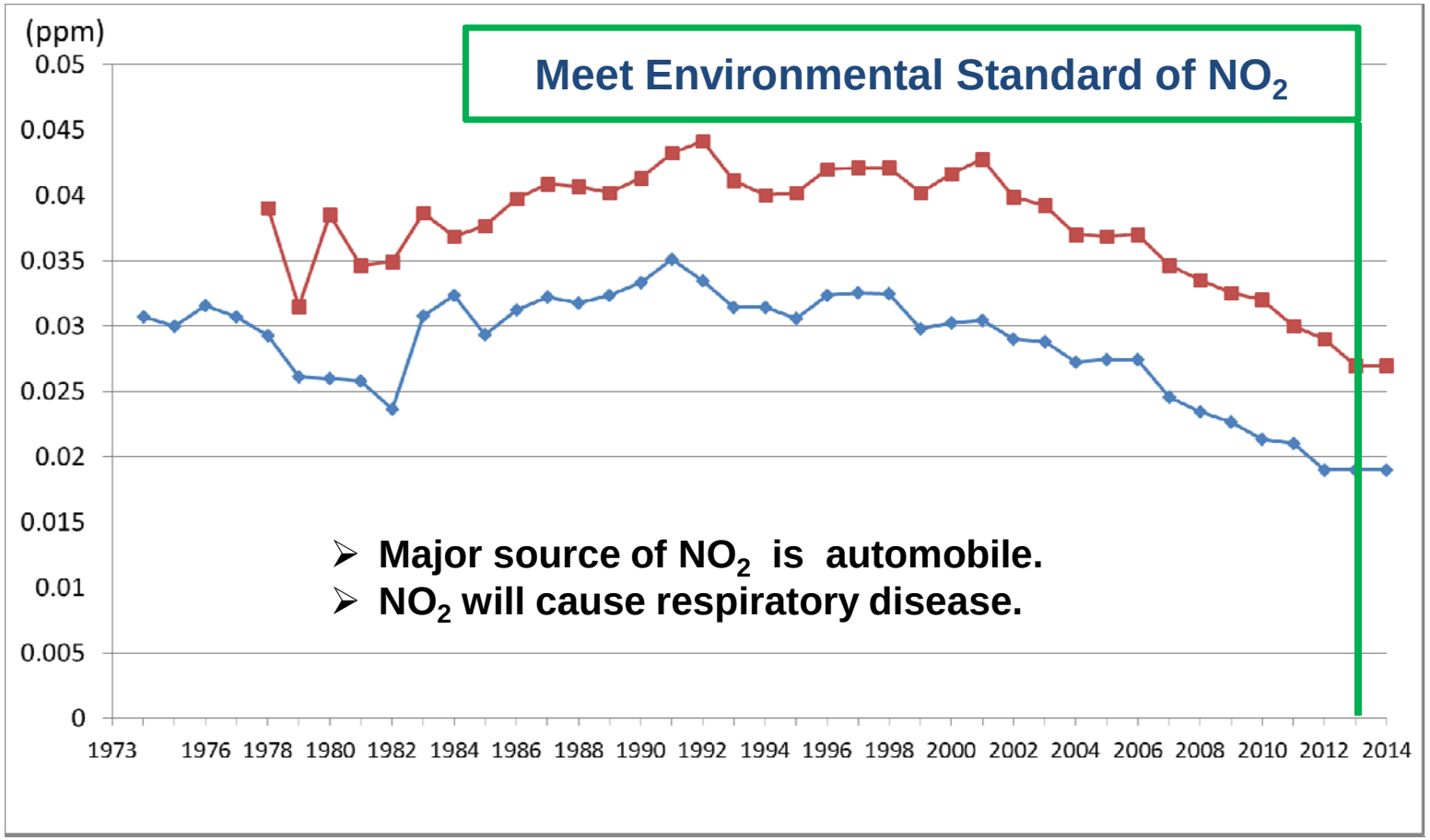
"Sharing of Roles" & "Cooperative Action"

Improvement of Environmental Problems

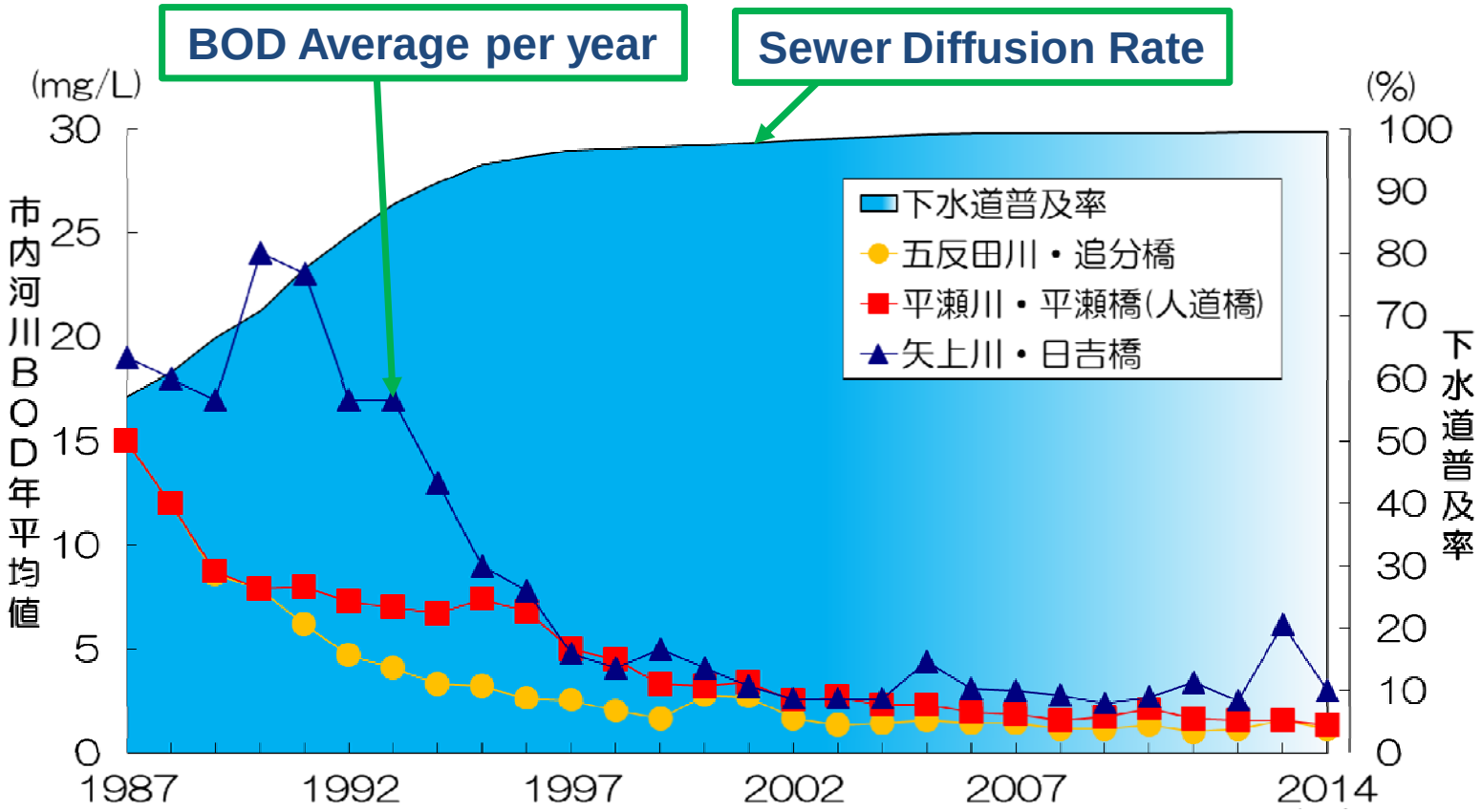
SO_2 Concentration in Air from 1973 - 2014



NO_2 Concentration in Air from 1973 - 2014



BOD in River Water and Sewer Diffusion Rate from 1987 - 2014



Current Landscape of Tama-River (2016)

Current Landscape over Kawasaki Waterfront Area (2016)

Current Landscape over Kawasaki Waterfront Area (2016)

About Yangon-city, Myanmar

About Yangon-city, Myanmar

- Population: APPROX 5.2 million population (2014)
- Area: 598.8 Km^2
- Economic Growth Rate **7.8 %** (2016: Estimated by World Bank)

JCM City-to-City Collaboration Project (2015)

【Objectives】
To contribute to sustainable development and realize low carbon society in Yangon, the study aims to formulate prospective JCM projects collaborate with Kawasaki city and Japanese private entities, which have high-efficiency and low carbon technologies.

Yangon

Potential sectors for low carbon project

[Power]
Unstable power supply, stand-by(back-up) power system in industrial park/ commercial facilities etc.

[Transportation]
Heavy traffic jam, demand of mass rapid transit (MRT) system, insufficient parking lots, lack of consolidated logistics system etc.

[Water supply & sewerage]
Decrepit water supply/sewerage facilities, expansion of the facilities in the suburb etc.

Target sector

1) Low carbon industrial park
2) Low carbon building management system
3) Low carbon water supply/sewerage facilities
4) Project identification of Renewable energy/New energy

Technologies to be introduced

a) High efficiency air conditioning facilities, energy saving fluorescent light, etc.
b) High efficiency air conditioning facilities, energy saving fluorescent light, etc.
c) High efficiency pumping system, low carbon technologies in water sector etc.
d) Solar power, biogas, biomass, mini hydropower etc.

Kawasaki

Support on environmental technology and industrial development collaborate with member of Kawasaki green innovation cluster etc.

Japanese private company

Nippon Koei (consulting)

Study/support of JCM project formulation between Japanese and Myanmar companies

JCM City-to-City Collaboration Project (2015)

Mingaradon Industrial park in Yangon

Pollution Control and Cleansing Department in YCDC

City Planning and Land Administration in YCDC

Meeting with CPLA&PCCD in YCDC
regarding City-to-city collaboration workshop

JCM City-to-City Collaboration Project (2015)

Kawasaki Chamber of Commerce and Industry

Economic and Labor Affairs Bureau of Kawasaki

Zero-Emission Industrial park

Ukishima Incineration Plant

JCM City-to-City Collaboration Project (2015)

Building up "Trust" and "Mutual Understanding"

City-to-city collaboration workshop held in Yangon city hall

JCM City-to-City Collaboration Project (2015)

မိုးတော်လတစ်ဦး

CITY NEWS

City to City နားလည်မှုစာချုပ်လွှာရေးထိုးနိုင်ရေး အာဟုပ်ရုံဆွေးနွေးပွဲ မြို့တော်ခန်းမ၌ ကျင်းပ

City News article

Achievement: MOU between Kawasaki and Yangon (2015)

Memorandum of Understanding
Between the City of Kawasaki, JAPAN and the City of Yangon, Myanmar on the City to City Collaboration

In order to promote city to city collaboration between Kawasaki and Yangon for achievement of low carbon city in Yangon and thus to contribute to the further prosperity of both, the City of Kawasaki and the City of Yangon hereby agree upon the following:

1. Both parties shall be committed to promote city to city collaboration for achievement of low carbon society in Yangon and contribute to the further prosperity of Kawasaki and Yangon within the fields of technical cooperation, information exchange, and economic exchange as well as develop cooperative framework based the idea of both cities are on win-win and equal relationship.
2. In order to achieve the aforementioned objectives, both parties shall cooperate on the following:
   (a) Excavating and supporting of low-carbon projects utilizing Joint crediting mechanism (JCM) scheme
   (b) Technical cooperation and information exchange for realizing low-carbon society of Yangon
   (c) Supporting creation of new business in a field of environment
3. According to this Memorandum of Understanding (MOU), there shall be back to back missions to have exchanges and study visits in both cities.
4. This MOU shall become effective on the signed date and remain valid for three years. If one country wants to terminate the MOU, they shall inform in writing before one month, otherwise the MOU will be continued automatically.
5. The contents of this MOU can be amended in accordance with a written agreement of both parties.
6. Any disagreement which comes from interpretation of the MOU shall be solved in a friendly way based on both parties' trust and discussion.
7. This MOU shall be made in two original copies in English.

March 25th, 2016

H.E U Hla Myint
Mayor of Yangon

Mr. Norihiko Fukuda
Mayor of Kawasaki

August 2015: Start of city-to-city collaboration

October 2015: 1st Visit to Yangon-city

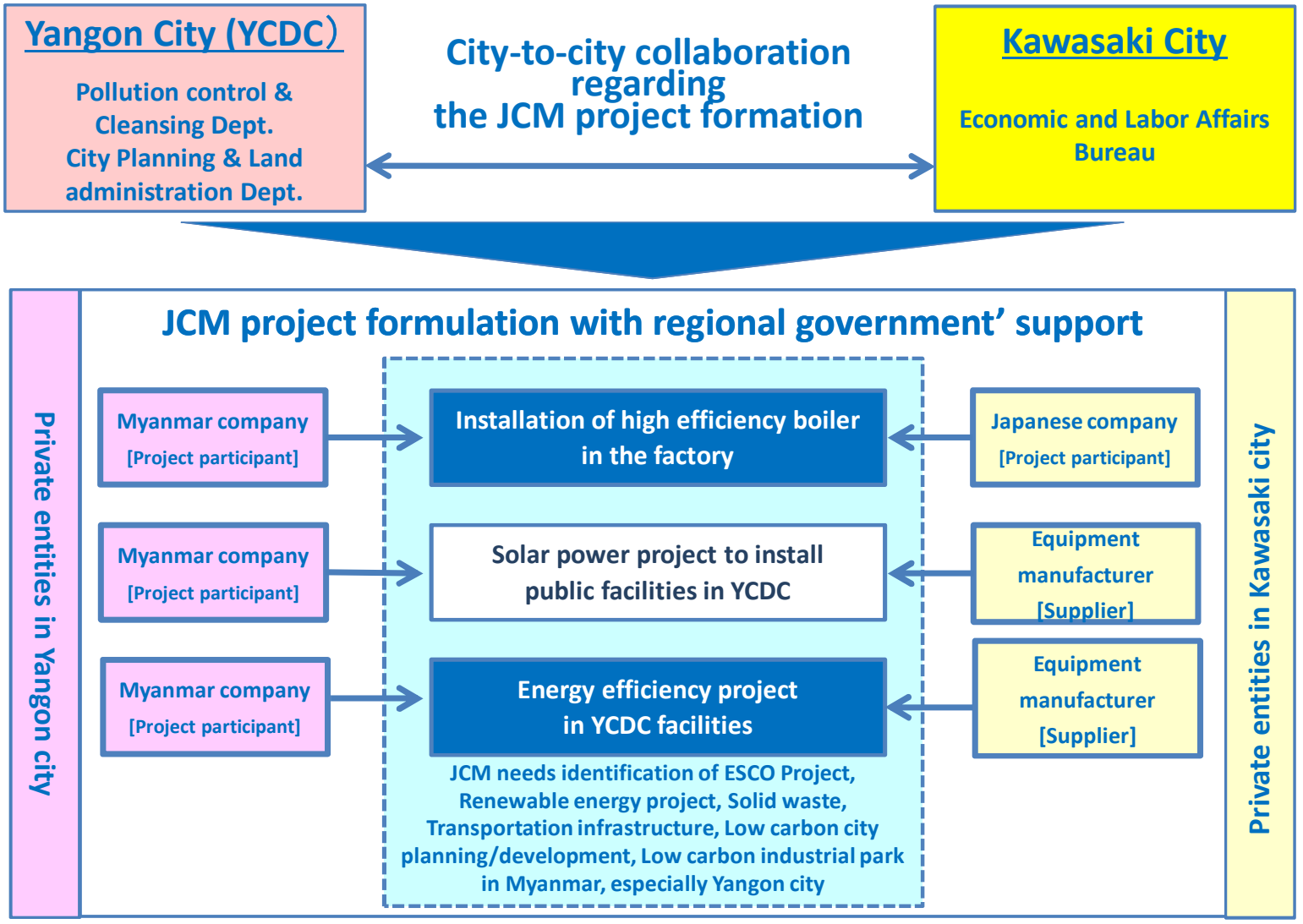
December 2015: Discussion on Draft MOU at Yangon-city

January 2016: Workshop on City-to-city collaboration at Yangon-city

March 2016: Concluding MOU between Kawasaki city and YCDC

Workshop for city-to-city collaboration at Yangon

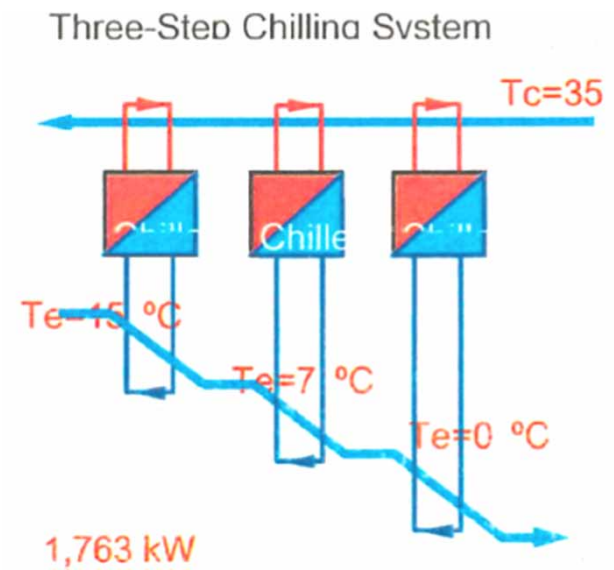
JCM City-to-City Collaboration Project (2016)



Ongoing JCM Model Project - 1 (2016)

JCM Model Project - 1: Saving Energy by High Efficient Chiller

<Introduced Technology>



Item	Value
Location	Drinking factory in Yangon
Efficiency	COP4.3, compressor 95%
Capacity	Compressor 1401+1039kW Condenser 1650 kW x 2
Investment	2.25 mil US$
Annual saving	1.8-3.2 GWh/year (0.18-0.32 mil US$/yr)
CO2 Reduction	1029 ton/year

- Cascade system of high efficient chiller can reduce electricity consumption and CO2 emission
- 28% electricity reduction

Ongoing JCM Model Project - 2 (2016)

JCM Model Project - 2: Saving Energy by High Efficiency Boiler

<Introduced Technology>

Item	Value
Location	Food factory in Yangon
Efficiency	94%
Capacity	2 ton/h x 6 nos
Investment	0.81 mil USD
Annual fuel saving	257 kL/yr, 0.14 mil US$/yr
CO2 Reduction	674 ton/year

- High-efficiency once-through oil boiler reduce fossil fuel and CO2 emission
- Co-benefit of reduction of air pollutant
- 9.6% fuel reduction

Ongoing JCM Model Project (2016):
Installation of Solar Power Generation Device in Public Facility in Yangon

Selection of Solar PV Generation Pilot Project of YCDC Facility

- Selection of Pilot Project Site:
  - (1) Interview Survey → (2) Site Survey → (3) Document Review
- Criteria for Selection: Needs, Demand, Location

Candidate	Status	Load	Selection result
Nyaung Hnit Pin	-Peak 7MW, off-peak 6.8 Nw, 24 hr operation -1st phase 2014, 2nd phase 2015	440 kW (LV) 3.2MW+3.4 MW (HV)	1st priority: PV possible to supply LV side. (110 kW x 4 unit of lift-up pump) For HV side, further study necessary.
Hlawga	- 24hr, fixed demand - 1MW x 2nos, 6.6 kV - Pump installation in 2008	2 MW	2nd priority: Under partial update (new electric board has mismatch of interface). →It will take time until PV connection study becomes possible.
La Gun Byin	132kWx6+25 kWx6 + 30 kWx4, 400V Peak 450 kW, off-peak 350 kW	450 kW	Too small, remote

Pilot Project Site: Nyaung Hnit Pin Water Purification Plant

Electric Room (PV –related Equipment can be stored)

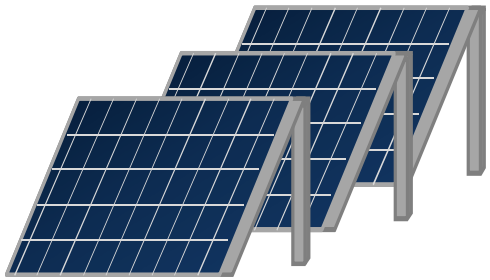
Pump Room

Candidate PV Module Area

Photo Voltaic (PV) System Concept

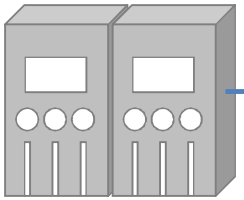
< PV System on Planning >

- Solar PV Energy sent to YESC (Yangon Electric Supply Company) grid
- YCDC purchase Electricity from YESC grid
- Net Metering : Tariff Payment = Energy used – PV generated



2.0 MW PV Array in YCDC
Water Purification Plant

Power Conditioners
DC -> AC



Control Panel, Switch,
Meter, etc.

YESC Grid

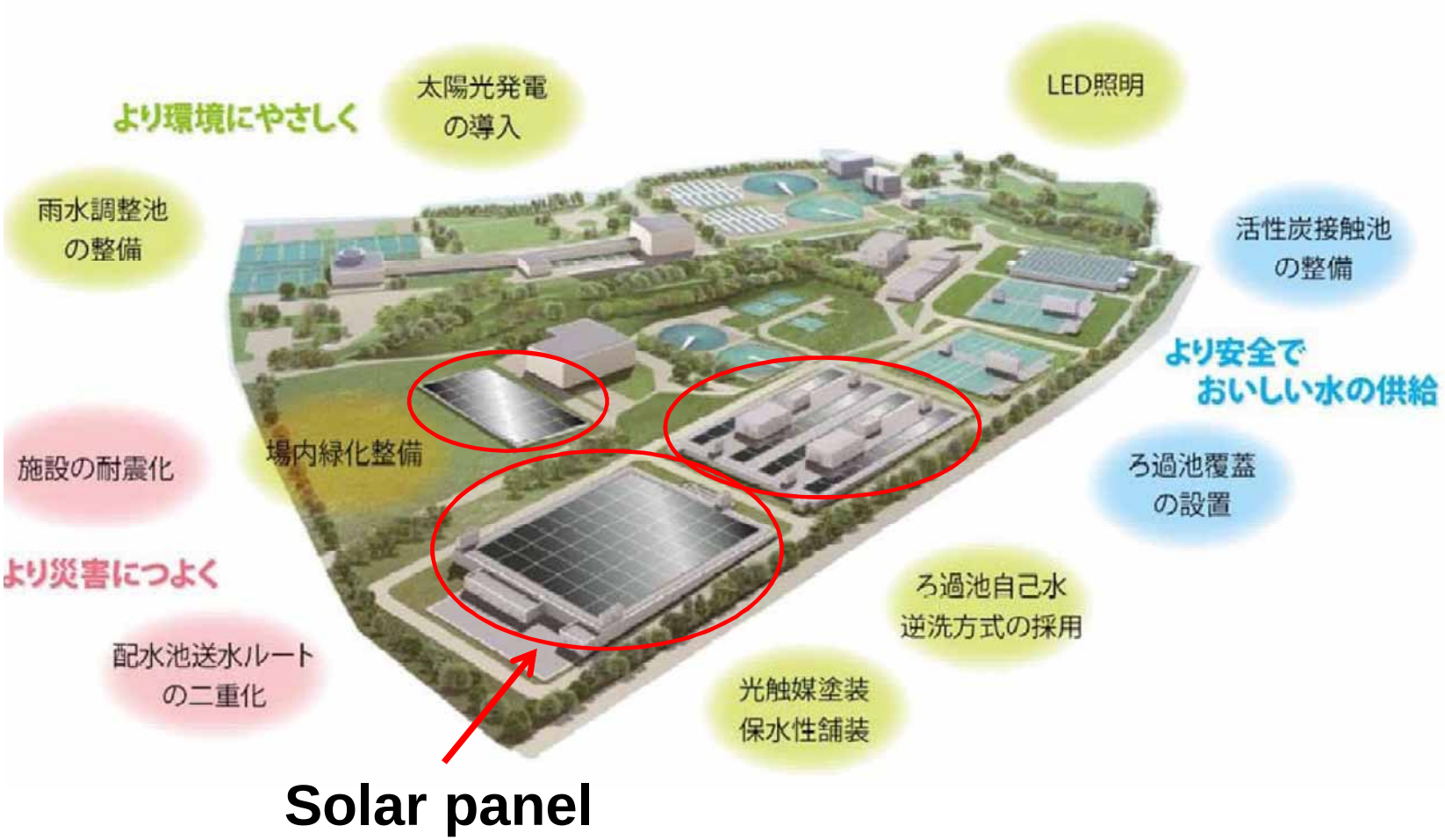
YCDC pump

Image of installation of solar power generation device in public facility:

Nagasawa Water Purification Plant in Kawasaki

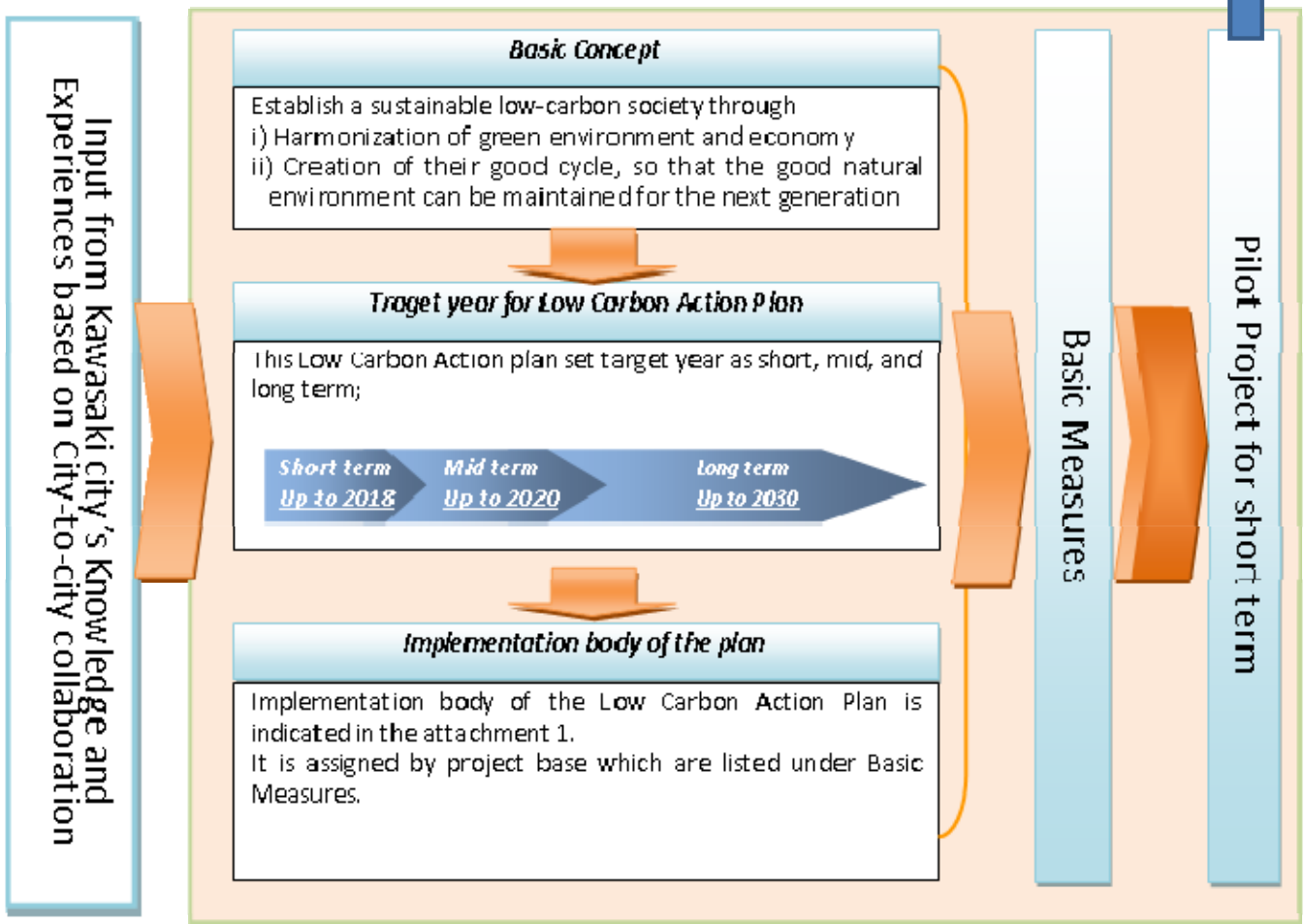
Image of installation of solar power generation device in public facility:

Nagasawa Water Purification Plant in Kawasaki

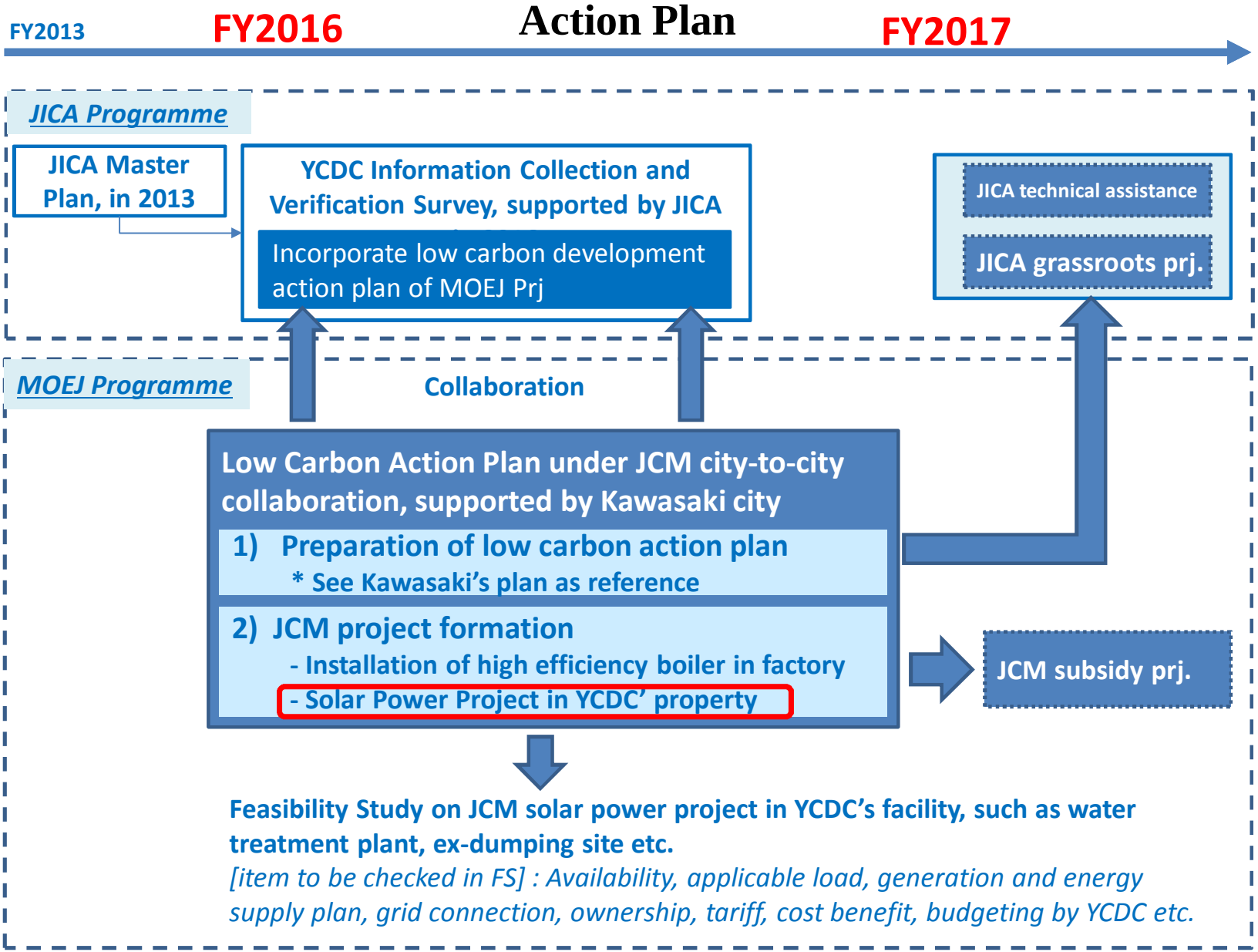


Preparation of Low Carbon Action Plan in Yangon (2016)

Linkage with JCM



Action Plan


FY2013
FY2016
FY2017
JICA Programme
JICA Master Plan, in 2013
YCDC Information Collection and Verification Survey, supported by JICA
Incorporate low carbon development action plan of MOEJ Prj
JICA technical assistance
JICA grassroots prj.
MOEJ Programme
Collaboration
Low Carbon Action Plan under JCM city-to-city collaboration, supported by Kawasaki city
1) Preparation of low carbon action plan
* See Kawasaki's plan as reference
2) JCM project formation
- Installation of high efficiency boiler in factory
- Solar Power Project in YCDC' property
JCM subsidy prj.
Feasibility Study on JCM solar power project in YCDC's facility, such as water treatment plant, ex-dumping site etc.
[item to be checked in FS] : Availability, applicable load, generation and energy supply plan, grid connection, ownership, tariff, cost benefit, budgeting by YCDC etc.

Potential of City-to-City Collaboration in the future (1)

Low Carbon Society	• Eco town planning and sharing experience • Introduction of energy saving products/technologies from Japanese private entities • Support on Private sector collaboration, such as Kawasaki Chamber of Commerce and Industry etc. • Support on capacity development through JICA scheme etc.
Monitoring	• Support on system development on car exhaust/air pollution/water quality / soil condition, including analysis know-how
Solid Waste	• Planning/implementation of solid waste collection system • Planning/implementation of garbage separation program • Planning/implementation of compost promotion program • Knowledge sharing of industrial waste management • Establishment of solid water database etc.

Potential of City-to-City Collaboration (2)

Water supply /Sewerage	• Sharing of management knowledge on water supply / sewerage system • Sharing of water tariff collecting / water quality management knowledge
Education	• Planning / implementation of environmental education programs
Other options	• Implementation of site tour on Kawasaki eco town etc. • Establishment of Environmental Impact Assessment (EIA) system

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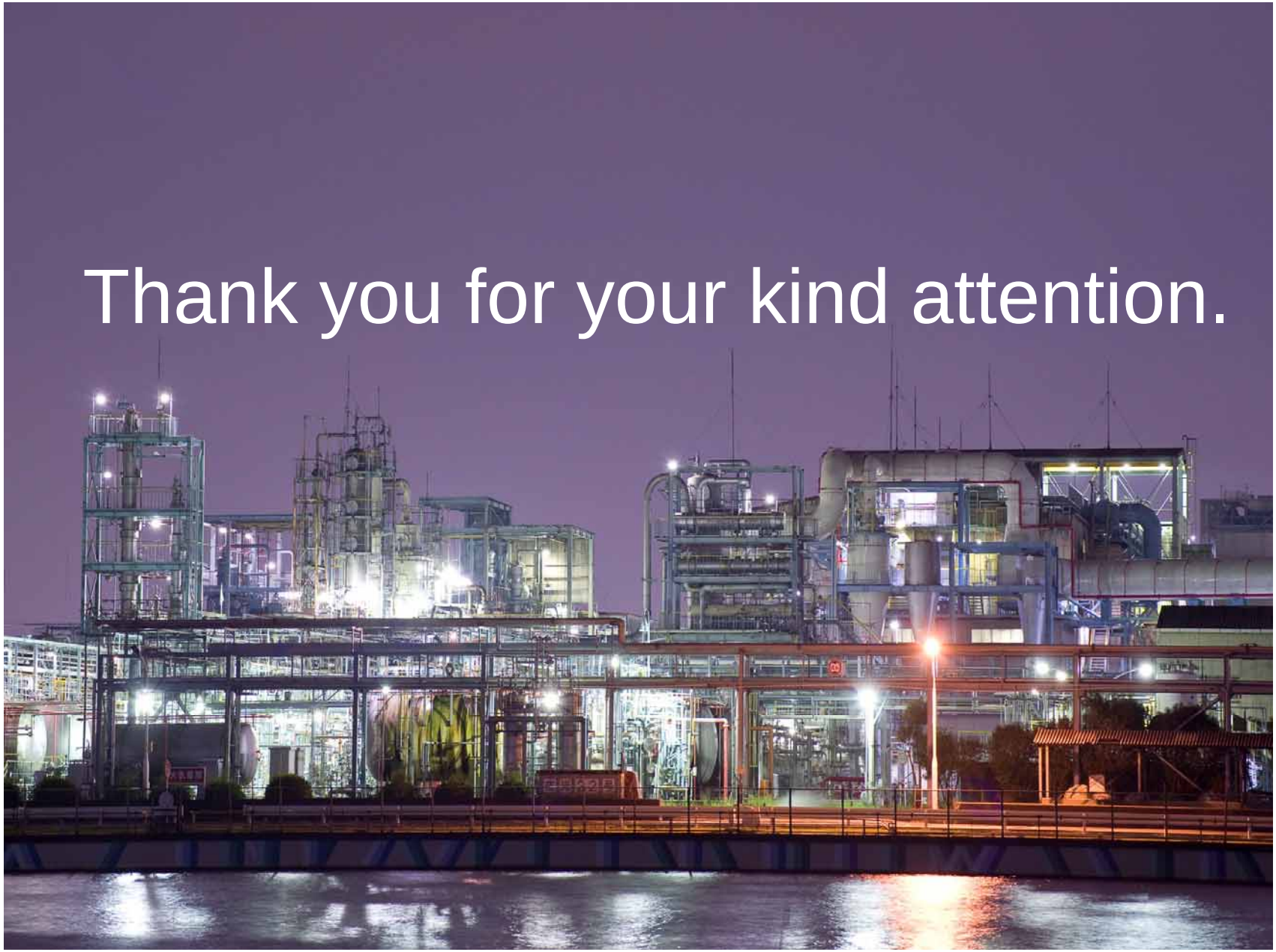
Introduction of Japanese Advanced Products and Technologies in terms of “Low Carbon” or “Zero Carbon”


Thank you for your kind attention.