

**FY2017 Feasibility Study of Joint Crediting  
Mechanism Project by City to City  
Collaboration**

**Promotion on Green Innovation through JCM  
City-to-city Collaboration in DKI-JKT**

**Final Report**

March 2018

Nippon Koei Co., Ltd.  
Kawasaki City

**FY2017**  
**Feasibility Study of Joint Crediting Mechanism Project**  
**by City-to-City Collaboration**

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**Contents**

	Pages
CHAPTER 1 BACKGROUND OF THE STUDY .....	1-1
1.1 BACKGROUND.....	1-1
1.2 OBJECTIVE OF THE STUDY .....	1-2
1.3 STUDY IMPLEMENTATION SETUP.....	1-2
1.4 STUDY IMPLEMENTATION SCHEDULE.....	1-3
CHAPTER 2 OVERVIEW OF DKI-JKT.....	2-1
2.1 OVERVIEW.....	2-1
2.1.1 General Information .....	2-1
2.2 CLIMATE CHANGE POLICY IN INDONESIA .....	2-2
2.2.1 Overview of Climate Change Policy in Indonesia .....	2-2
2.2.2 National Action Plan on Green House Gas Emissions Reduction (RAN-GRK) 2-3	
2.2.3 Climate Change Measures in Regional Level Development Plan relevant to DKI-JKT.....	2-4
CHAPTER 3 JCM CITY TO CITY COLLABORATION.....	3-1
3.1 PRESENT SITUATION .....	3-1
3.2 SUMMARY .....	3-2
3.3 CITY TO CITY COLLABORATION IMPLEMENTATION POLICY.....	3-3
3.4 CONTRIBUTION TO DKI-JKT BY IMPEMNTATION OF CITY TO CITY COLLABORATION ACTIVITIES .....	3-4
3.5 EXAMINING GREEN INOVATION POTENTIAL AT DKI-JKT .....	3-5
3.5.1 Present Situation.....	3-5
3.5.2 Green Innovation Potential at DKI-JKT .....	3-5
3.6 STUDY RESULT FOR CITY TO CITY COLLABORATION.....	3-7
3.6.1 Summary .....	3-7
3.6.2 Discussion between Kawasaki City and DKI-JKT .....	3-8
3.6.3 Discussion with Indonesian JCM Secretariat.....	3-9
3.6.4 Discussion with Indonesian Organisations and Companies.....	3-10
3.6.5 JCM Seminar at Tokyo .....	3-10

CHAPTER 4 JCM PROJECT FORMULATION .....	4-1
4.1 PROJECT OUTLINE.....	4-1
4.2 PROJECT FORMULATION RESULT .....	4-3
4.2.1 Technology to be Introduced.....	4-3
4.2.2 Project Impacts .....	4-4
4.2.3 Implementation Schedule .....	4-5
CHAPTER 5 JCM BUSINESS MATCHING .....	5-1
5.1 BACKGROUND.....	5-1
5.2 OUTLINE OF JCM BUSINESS MATCHING .....	5-1
5.2.1 Objective .....	5-1
5.2.2 Basic Approach: Utilization of Japanese Technologies .....	5-1
5.2.3 Participants .....	5-2
5.3 OVERVIEW OF ORGANISED JCM BUSINESS MATCHING .....	5-3
5.4 SNAPSHOTS OF JCM BUSINESS MATCHING .....	5-4
5.5 CONCLUSION .....	5-5
CHAPTER 6 ISSUES AND FURTHER ACTIONS .....	6-1
6.1 ISSUES.....	6-1
6.2 FURTHER ACTIONS .....	6-2

## **Table Contents**

Table 2-1	Overview of DKI-JKT in Comparison to Kawasaki City.....	2-2
Table 2-2	Sector-wise Goal in RAN-GRK .....	2-3
Table 2-3	Types of National/Regional Level Development Plans in Indonesia .....	2-5
Table 2-4	Climate Change related Statements in RPJMN2015 - 2019.....	2-6
Table 3-1	City to City Collaboration Achievements by Kawasaki City .....	3-1
Table 3-2	Major City to City Collaboration Activities Conducted during the Study .....	3-2
Table 3-3	Ideas to utilize city-to-city collaboration .....	3-4
Table 3-4	Study Results for City to City Collaboration.....	3-7
Table 4-1	Major Specification of Absorption Chiller .....	4-4
Table 4-2	Identification of Depreciation Period .....	4-4
Table 4-3	JCM Model Project Implementation Schedule (upon Application/ Registration).....	4-5
Table 5-1	Participants of Business Matching.....	5-2

## **Figure Contents**

Figure 1-1	Location Map of DKI-JKT .....	1-1
Figure 1-2	Implementation Setup of the Study .....	1-2
Figure 1-3	Overall Study Schedule .....	1-3
Figure 2-1	Administrative Regional Boundary of DKI-JKT .....	2-1
Figure 2-2	National Roadmap for Climate Change Mitigation.....	2-3
Figure 2-3	Correlation among National Level and Regional Level Development Plans.....	2-5
Figure 3-1	Potential Cooperation Framework of City to City Collaboration .....	3-3
Figure 3-2	Project Formulation Approach to Martialize Green Innovation.....	3-5
Figure 4-1	Proposed Implementation Setup for JCM Project .....	4-1
Figure 4-2	Image of Absorption Chiller.....	4-3

### **List of Abbreviations**

<b>Abbreviation</b>	<b>Full Name</b>	<b>English Name</b>
DKI-JKT	Daerah Khusus Ibukota Jakarta	Special Capital Region of Jakarta
JCM	Joint Crediting mechanism	---
BAPPEDA	Badan Perencanaan Pembangunan Daerah	Regional Development Planning
GHG	Greenhouse Gases	---
BLH	Badan Lingkungan Hidup	Department of Environment
PTSP	Badan Pelayanan Terpadu Satu Pintu	One stop permit service board
RPJPN	Rencana Pembangunan Jangka Panjang Nasional	National Long-term Development Plan
RAN-GRK	Rencana Nasional Panuramine Emisi Gas Rumah Kaca	National Action Plan for Greenhouse Gas Reduction
BAU	Business as Usual	---
BAPPENAS	Badan Perencanaan Pembangunan Nasional	Ministry of National Development Planning
RPJMD	Rencana Pembangunan Jangka Menengah Daerah	Regional Medium-term Development Plan
RPJMN	Rencana Pembangunan Jangka Menengah Nasional	National Medium-term Development Plan
PLN	Perusahaan Listrik Negara	State Electricity Company

## **CHAPTER 1 BACKGROUND OF THE STUDY**

### **1.1 BACKGROUND**

The Special Capital Region of Jakarta (DKI-JKT: Daerah Khusus Ibukota Jakarta) is the capital of the Republic of Indonesia and having a population of 9.58 million which is the largest city in the country. DKI-JKT is also the center of the country's industries (commerce and manufacturing industry), and with surrounding cities forming the Jakarta metropolitan area. The Jakarta metropolitan area possess approximately 20 million population and industrial zone development thought both domestic and foreign investments are prevalent since the latter half of the 20<sup>th</sup> century.



**Figure 1-1 Location Map of DKI-JKT**

During the Asian monetary crisis in 1997, the investment to the area has temporary stagnated but currently the situation has recovered and its development is further expanding.

DKI-JKT is one of the major industrial hubs in Asia and the private sector investment is actively conducted. However due to rapid increase in the electricity demand, supply capacity of power stations faces deficit in some situations. Therefore, some hotels and factories introduce their own power generating facilities to meet their own electricity demands. In order to improve the situation, the Ministry of Industry launches the Green Industry policy and promoting energy efficiency in the industrial sector, but not significant improvement has been achieved so far.

Local governments in Japan have experienced similar issues/ problems such as energy supply deficits, pollutions and other problems in relation to urbanization especially during the recovery phase after the World War 2. Many Japanese local governments have gained expertise in management of such city related problems and also supported private sectors for promotion of business development as well as energy efficiency/ green innovation of their business activities. Kawasaki City, in Kanagawa prefecture, is serving as one of the hub city for the Keihin Industrial zone, and the city has various experience and expertise in relation to pollution control to industrial development

Before the conduct of the Study, DKI-JKT and Kawasaki City did not have any official interactions. However, since DKI-JKT expressed an interest in the city to city collaboration activities to achieve low carbon society which Kawasaki City is conducting since 2015, the Study was proposed and selected as one of the studies for “FY2017 Feasibility Study of Joint Crediting Mechanism Project by City to City Collaboration”.

## 1.2 OBJECTIVE OF THE STUDY

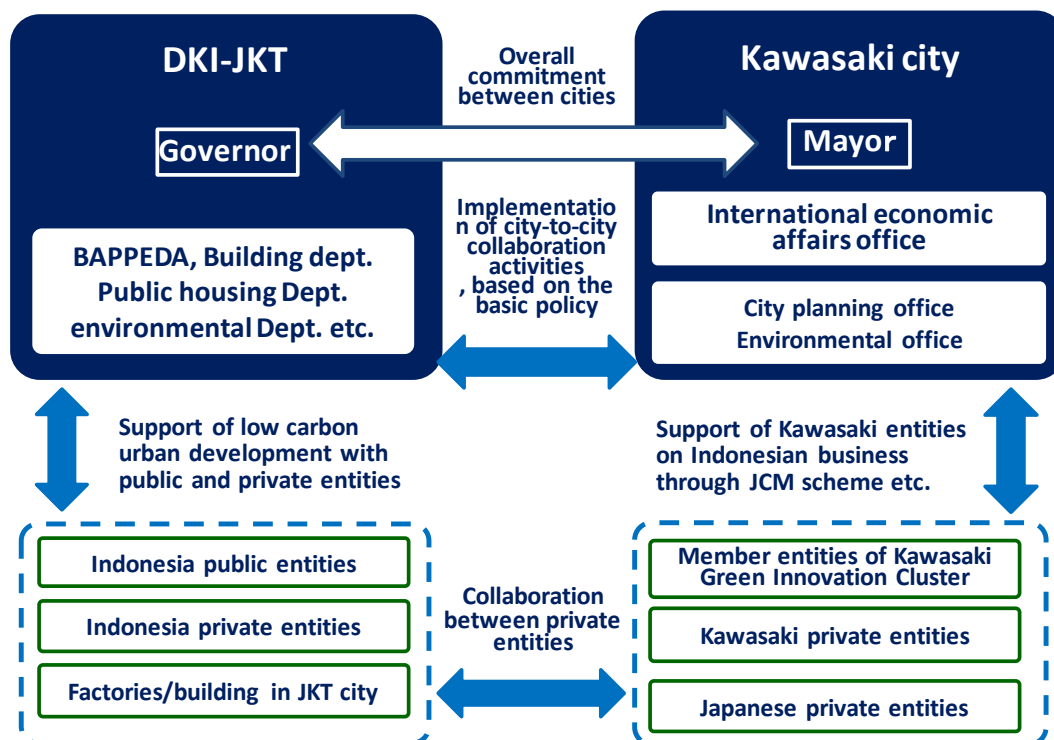
The Study aims to contribute for achieving the green innovation in the industrial sectors of DKI-JKT through the city to city collaboration with Kawasaki city which has rich experience and knowledge for energy efficiency and green innovation. Furthermore, the Study aims to formulate potential JCM projects which can be applied for the JCM model project scheme funded by the Ministry of Environment, Japan

## 1.3 STUDY IMPLEMENTATION SETUP

Nippon Koei Co., Ltd leaded the Study in cooperation with Kawasaki City and conducted various discussions and collaborations with the DKI-JKT government to materialize JCM city to city collaborations in DKI-JKT.

The main implementation body of Kawasaki City is the International Economic Affairs Office, as the same as the JCM city to city collaboration study (project? Activities?) starting from 2015 for Yangon City in the Union Republic of Myanmar.

Upon the commencement of the Study, DKI-JKT was in a transitional stage due to an election of its governor. During the transitional stage, the Study Team interacted with the transitional team of the DKI-JKT government. After the new governor has taken his office in October 2017, the Regional Development and Planning Department (BAPPEDA: Badan Perencanaan Pembangunan Daerah) of DKI-JKT became the main counterpart of the Study. Furthermore, DKI-JKT's offices which administer activities related to greenhouse gas (GHG) reduction, such as the Environmental Department (BLH: Badan Lingkungan Hidup) and the One-Door Service Department (PTSP: Badan Pelayanan Terpadu Satu Pintu) were involved in the Study.



Source: Study Team

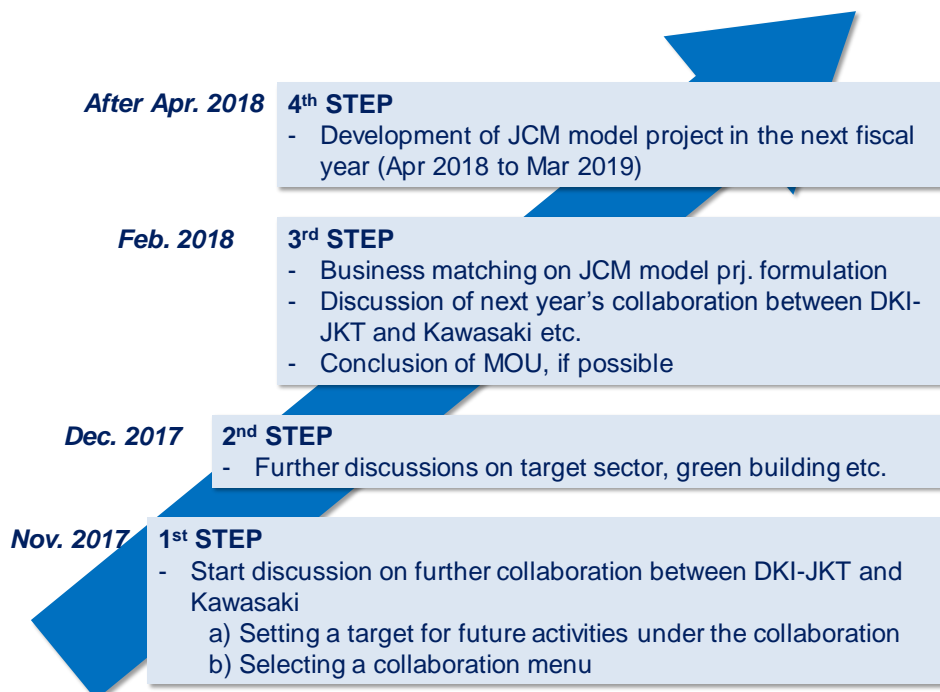
**Figure 1-2 Implementation Setup of the Study**

Furthermore, member companies of the Kawasaki Green Innovation Cluster were involved in the Study. The cluster consists of Kawasaki City based companies which has energy efficient technologies/products and currently working or planning to work overseas based on experience gained in Japan. The Study Team conducted series of discussions with the member companies and also received technical supports and guidance for materialization of JCM projects in DKI-JKT. The Study Team also requested non-member companies of the cluster to support the Study and to consider applying for the JCM model project schemes.

For identifying the study stakeholders among the Indonesian companies, the Study Team received a support from the Green Building Council Indonesia (GBCI), a NGO in Indonesia which support planning, designing and implementation of the green building in Indonesia. GBCI is not only collaborating with DKI-JKT for promoting the green building in Jakarta, but during the Study, actively involved in the JCM business matching conducted during the Study (refer Chapter 5 of this report), and facilitated the local building operators and other companies to get involved in JCM.

#### 1.4 STUDY IMPLEMENTATION SCHEDULE

The Study was selected as one of the studies for the second proposal of FY 2017 Feasibility Study of Joint Crediting Mechanism Project by City to City Collaboration and started from September 2017 and ended in March 2018.



Source: Study Team

**Figure 1-3 Overall Study Schedule**

For the conduct of the Study, Nippon Koei Co., Ltd, utilized the networks as well as experience gained in other studies/ projects in Indonesia and prioritized study activities which enable to achieve the study objective in the given study time frame. The less prioritized activities will be considered in the succeeding study to be proposed in the next fiscal year.



## **CHAPTER 2 OVERVIEW OF DKI-JKT**

### **2.1 OVERVIEW**

#### **2.1.1 General Information**

The province of DKI-JKT consists of five cities (Kota) and one district/ regency (Kabupaten), an island area. The five cities are further subdivided into 43 wards (Kecamatan) and 265 villages (Kelurahan). The head of DKI-JKT government will be the governor.



Source: Study Team

**Figure 2-1 Administrative Regional Boundary of DKI-JKT**

As stated in the above table, DKI-JKT is the largest city in Indonesia and also the center for the politics, the economy and the culture of the country. Therefore, energy consumption is higher compared to other part of the country and DKI-JKT has high potential for the Joint Crediting Mechanism (JCM).

As a reference, comparison of the general statistics (population, area, budget, and gross regional project amount) of two cities are provided in the following table.

**Table 2-1 Overview of DKI-JKT in Comparison to Kawasaki City**

Items	 Jakarta	 Kawasaki
Population	Approx. 10 million	Approx. 1.5 million
Area	662 [km2]	144.35 [km2]
City budget	Approx. 5.3 billion USD	Approx. 10 billion USD
Gross regional product	164 billion USD	492.56 billion USD

Source: Compiled by the Study Team based on various secondary data

## 2.2 CLIMATE CHANGE POLICY IN INDONESIA

In the Study, the study target is DKI-JKT. However, not much of DKI-JKT specific climate change related organizations, intuitional arrangements, measures have been publicized so far. Therefore, climate change related information currently available at the national level as well as DKI-JKT is presented hereunder.

### 2.2.1 Overview of Climate Change Policy in Indonesia

Indonesia is proactive in climate change measures among the Asian nations, and regarding as one of the leading countries in the region.

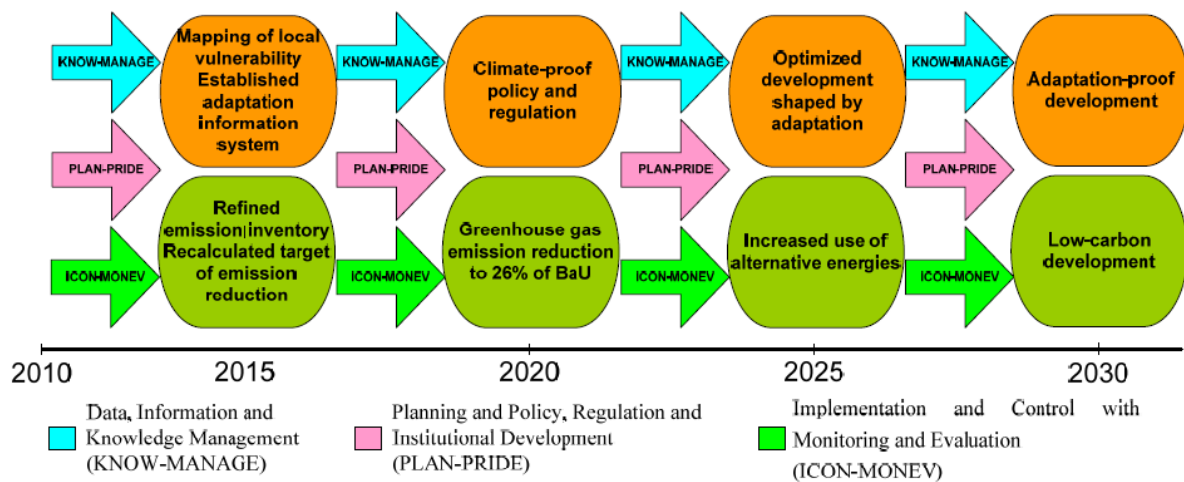
For formulating 20-year long-term national development plan, the National Long-term Development Plan (Rencana Pembangunan Jangka Panjang Nasional 2005-2025: RPJPN 2005-2025) is the latest long-term development plan of Indonesia. The development plan was announced in 2009, and describing the following six principles. The development plan identifies the climate change and the global warming as major issues to be tackled by the country.

1. Maintain balances of sustainability, practicability and usage of natural resources and environment
2. For upgrading and maintenance of settlements and socio-economic activities, sustain functions, capacities and amenities of current as well as future lifestyle through appropriate land uses
3. Expand sustainable economic uses of natural resources and environment
4. Improve natural resources and environmental management to improve the quality of life.
5. Provide innovation and amenity in the daily life.
6. Improve maintenance and usages of the biodiversity as one of the development capital

For the climate change measures at the national level, sector-wise road maps are prepared for the duration of 2019 to 2029.

The road map intends that not only RPJPN2005- 2025, but also the National Medium-term Development Plan (Rencana Pembangunan Jangka Menengah Nasional: RPJMN 2015~2019)

to include climate change issues as the key priorities and relevant ministries and departments are required to reflect the content of the road maps upon preparation of respective strategic plans.



Source: Indonesia Climate Change Sectoral Roadmap (ICCSR)

**Figure 2-2 National Roadmap for Climate Change Mitigation**

In 2009, Indonesia set its national GHG emission goal to reduce by 26% in 2020 from the BAU (without any measures) level with its own efforts and reaching 41% reduction if the country secures international support.

The climate change mitigation plan for Indonesia is compiled as the National Action Plan on Green House Gas Emission Reduction (Rencana Nasional Penurunan Emisi Gas Rumah Kaca: RAN-GRK), and RAN-GRK currently serves as the national policy for the climate change mitigation measures,

## 2.2.2 National Action Plan on Green House Gas Emissions Reduction (RAN-GRK)

The National Action Plan on Green House Gas Emission Reduction (RAN-GRK) issued as the President Decree No. 61 in September 2011, is the national mitigation measure action plan which determines GHG emission reduction goals for Indonesia. The goal is set to reduce GHG emission by 26% in 2020 from the BAU level with its own efforts and reaching 41% reduction if the country secures international support. In RAN-GRK, sector-wise goal, responsible ministries, and major mitigation measures are described and the summary of such is presented in the table below.

**Table 2-2 Sector-wise Goal in RAN-GRK**

Sector	Emission Reduction Target (Giga ton CO <sub>2</sub> e)		Major Mitigation Activities
	26%	41%	
Forestry and Peat	0.672 (87.6%)	1.039 (87.4%)	Forest fire management, watershed management, forest/land recovery, industrial plantation, community forestry, illegal harvesting control, forestry degradation prevention, community

			capacity development, etc.
Agriculture	0.008 (1.0%)	0.011 (0.9%)	Low carbon emission paddy introduction, high-efficient irrigation, organic fertilizers, etc.
Industry	0.001 (0.1%)	0.005 (0.4%)	Usage of energy efficient technology, renewable energy
Energy and Transportation	0.038 (5.0%)	0.056 (4.7%)	Introduction of bio-fuel, high efficient engine, improved transportation system, improved public transportation system, energy efficient technology, renewable energy, etc.
Waste	0.048 (6.3%)	0.078 (6.6%)	Appropriate usage of final disposal sites, 3R activities, drainage control in urban areas, etc.
Total	0.767	1.189	

Source: Compiled by the Study Team based on various secondary data

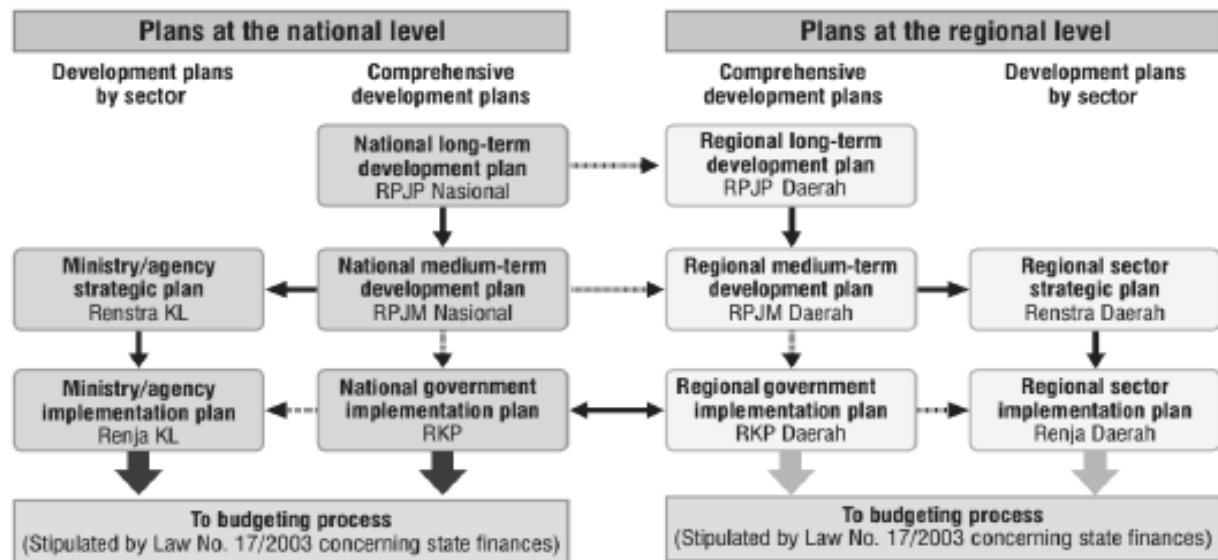
### **2.2.3 Climate Change Measures in Regional Level Development Plan relevant to DKI-JKT**

For development plans at respective levels in Indonesia, the National Long-term Development Plan (RPJPN 2005-2025), and the National Medium-term Development Plan (RPJMN 2015~2019) are currently regarded as the latest superior plans, in accordance with the National Development Planning System Law (Law No. 25/2004). Annual plans, the National Spatial Plan (RTRWN), and other development plans/ spatial plans to be formulated by regional governments are regarded as subordinate plans of these plans. Consistency with the superior plans is taken into account upon formation of respective subordinate plans.

**Table 2-3 Types of National/Regional Level Development Plans in Indonesia**

National Level	Regional Level	Duration (years)
National Long-term Development Plan (RPJPN)	Regional Long-term Development Plan (RPJPD)	20
National Medium-term Development Plan (RPJMN)	Regional Medium-term Development Plan (RPJMD)	5
Ministry/ Agency Strategic Plan (Renstra-KL)	Regional Sector Strategic Plan ( Renstra-SKPD)	5
National Government Implementation Plan (RKP)	Regional Government Implementation Plan (RKPD)	1
Ministry/ Agency Implementation Plan (Renja-KL)	Regional Sector Implementation Plan (Renja-SKPD)	1

Source: Compiled by the Study Team based on various secondary data



Source: The Strategy for Mainstreaming Adaptation into National Development Planning: Integration Framework, BAPPENAS, 2012

**Figure 2-3 Correlation among National Level and Regional Level Development Plans**

Mr. Joko Widodo was inaugurated as the president of Indonesia in October 2014, and the new National Medium-term Plan (RPJMN) for 2015 to 2019 has been formulated. RPJMN 2015-2019 serves as the third medium-plan of RPJPN2005- 2025, and set its vision as “Sovereignty, self-reliant and Goton Royong (mutual support)” and determines that improving inequalities in human development, social development, and economic development and environmental safeguards to be standards for the country’s development.

In RPJMN 2015-2019, three dimensions of development, namely i) Human Development (education, health, housing, mental/character), ii) Primary Sector Development (food sovereignty, energy and electricity, maritime and marine, tourism and industry, and iii) Equitation (among income groups, regions) are emphasized and certainty and law enforcement, security and order, politics and democracy, and governance and reform are determined as necessary conditions for development of these dimensions.

Furthermore, in RPJMN 2015-2019, climate change mitigation and adaptation are set as one

of the general directions for the national development policy. Also, to achieve goals of the specific development agenda, considerations for climate change mitigation and adaptation are taken into account in respective policies and strategies. Also, RPJMN 2015-2019 identifies that the climate change as main stream/ interdisciplinary development topic for the nation, and directions for climate change mitigation/adaptation are determined in these aspects. Climate change related major statements in RPJMN2015-2019 are described in the following table.

**Table 2-4 Climate Change related Statements in RPJMN2015 - 2019**

<b>Book1: National Development Agenda</b>		
Chapter3 Strategic environment		
	3.4. Post 2015 Agenda and Climate Change	
Chapter5 National Development Policy		
	5.4. National Development Main Goals	
		Improving quality of environment, natural disaster mitigation and handling of climate change
Chapter6 National Development Agenda		
	6.3. Developing Indonesia from its outskirts by strengthening regions and villages in the framework of an united nation	
		6.3.2. Inter-regional development equity, especially in eastern Indonesia
	6.6. Increasing productivity and competitiveness of the international market	
		6.6.1. Building a national connectivity to achieve development balance
		6.6.2. Development of mass urban public transport
		6.6.3. Development of housing and settlement region
		6.6.7. Capacity building in innovation and technology
	6.7. Realizing economic independence by driving domestic strategic economic sectors	
		6.7.1. Improvement of food sovereignty
		6.7.2. Water security
		6.7.3. Energy sovereignty
		6.7.4. Conservation of natural resources, environment and disaster management
		6.7.5. Maritime and marine economic development
Chapter 7 Rules of Implementation		
	7.1. Funding framework	
<b>Book2: Sectoral Development Agenda</b>		
Chapter1 Mainstreaming and cross-field development		
	1.1. Policy direction and mainstreaming strategies	
		1.1.3. Gender mainstreaming
	1.2. Cross-sectoral policy direction and development strategies	
		1.2.1. Equity and poverty reduction
		1.2.2. Climate Change
		1.2.2.1. Problem and strategic issues
		1. GHG emission reduction/mitigation
		2. Enhancing community resilience/adaptation to climate change
		1.2.2.2. Field's targets
		1. Reduced GHG emissions for the five priority sectors (forestry & peat land, agriculture, energy & transport, industry and waste) 26 % by 2019
		2. Increasing community resilience to the impact of climate change, implementation in 15 vulnerable areas which are RAN-API pilot area
		1.2.2.3. Development policy direction and strategy
		1.2.2.4. Funding framework
		1.2.2.5. Regulatory framework and institutional framework
Chapter4 Science and technology		
	4.3. Policy direction and strategy	
		4.3.2. Improvement of sustainability and utilization of natural resources
Chapter5 Politics		

Chapter8 Regional and spatial development		
	8.1.	Issues and strategic issues
		8.1.4. Urban
	8.6.	Institutional framework
		8.6.5 Rural and rural region development
Chapter9 Infrastructure		
Chapter10 Natural resource and environmental management		

Source: RPJMN(2015～2019)

## **CHAPTER 3 JCM CITY TO CITY COLLABORATION**

### **3.1 PRESENT SITUATION**

The study area of the Study is DKI-JKT, Indonesia. In DKI-JKT, individual project based JCM studies have been conducted in the past but, there is no city to city collaboration activities yet. However, DKI-JKT has already collaborated with Kawasaki City and jointly organized business meetings in the past. Therefore, DKI-JKT is already aware about the importance of business matching proposed in the Study, and efficient implementation of the business matching and other activities was possible in the Study due to the past experience of DKI-JKT.

On the other hand, Kawasaki City has been involved in various JCM city to city collaboration activities such as the collaboration with Bandung City, Indonesia (2014) and Yangon City, Myanmar (2015 and onward). Major achievements of Kawasaki City in relation to the city to city collaboration is summarized in the following table.

**Table 3-1 City to City Collaboration Achievements by Kawasaki City**

#	Achievement
1	Implementation of JCM city to city collaboration activities (project?) with Bandung City (FY2014 and FY 2015)
2	Signing of Memorandum of Understanding (MOU) with Yangon City for long-term collaboration for city to city collaboration (March 2016)
3	Selected as JCM Model Projects (FY 2016: 2 projects )
4	Formulation of low carbon action plan with Yangon City

Source: Study Team

Among the major achievements indicated above, formulation of low carbon action plan will be one of the major development activities for Yangon City, the action plan was prepared based on expertise of Kawasaki City.

Kawasaki City is one of the Japanese cities in Japan designated by government ordinance. Recently, Kawasaki City is actively involved in city to city collaboration with cities abroad. Kawasaki City established its own Environmental Research Institute and manages researches/studies of environmental problems within in the city. The institute serves as an information center for the city in relation to environmental management and related issues. The institute as well as the city have various collaboration schemes with other countries, cities abroad and UN organizations. Therefore, Kawasaki City is capable of conducting and supporting various capacity development programs to the cities in collaboration.

Furthermore, in relation to JCM, through the city to city collaboration with Yangon city, Kawasaki City has gained extensive expertise for formulation of low carbon action plan and signing of relevant memorandum of understanding. Such expertise can be effectively utilized for the collaboration with DKI-JKT.



### 3.2 SUMMARY

The followings are regarded and the key tasks of the Study.

- Examining feasibilities and promoting formulation for potential JCM projects with respect to active involvement of companies related to Kawasaki City and DKI-JKT
- Organizing JCM business matching,
- Conducting green innovation promotion activities in DKI-JKT, based on expertise of Kawasaki City

The detail of the actual activities conducted during the Study is summarized in the table below.

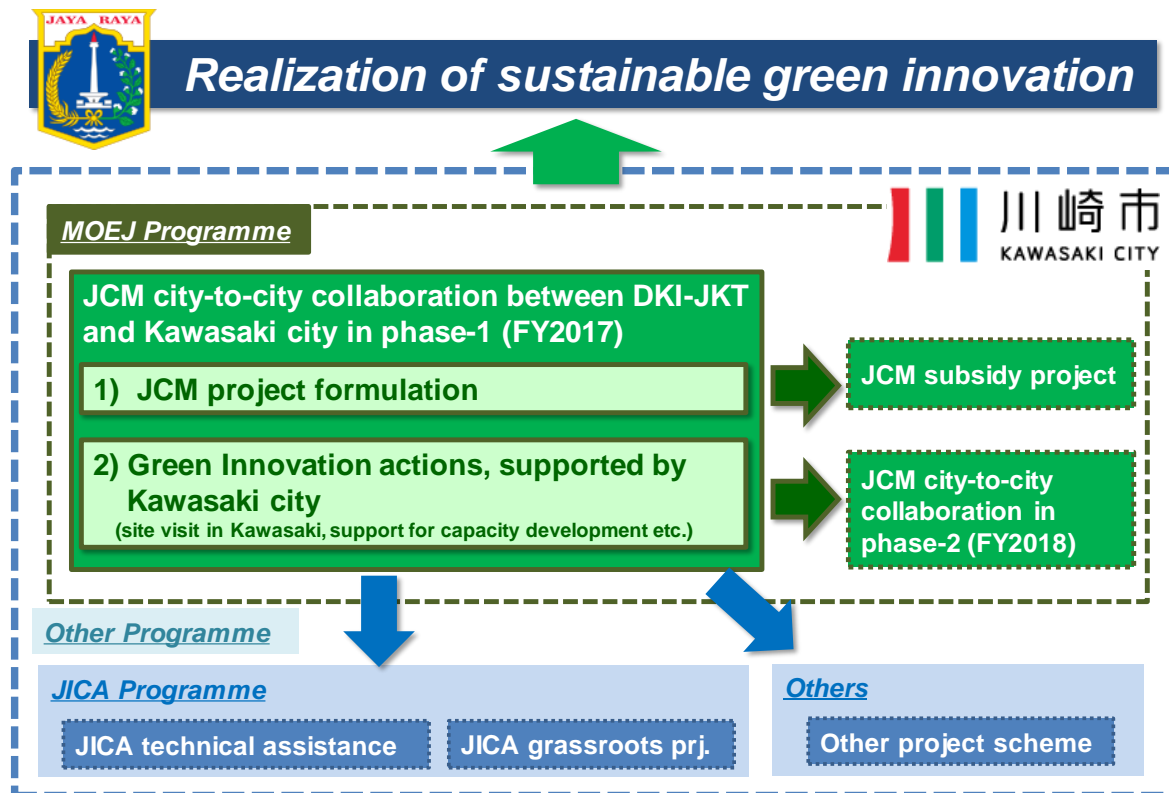
**Table 3-2 Major City to City Collaboration Activities Conducted during the Study**

#	Item	Description
1	JCM Business Matching	<p>Jakarta is one of major cities in Asia for Japanese companies to expand their business. Therefore, JCM implementation only through the JCM model project scheme is not enough to utilize the development potential of Jakarta. On the other hand, Kawasaki City has established the Kawasaki Green Innovation Cluster to support companies based in Kawasaki City for overseas business development.</p> <p>In the Study, identification of JCM potential projects and business matching were conducted through initiatives and supports of two cities concerned.</p>
2	Green Innovation Promotion	<p>Kawasaki City has already implemented zero-emission industrial zone through the private-public-partnership assistance schemes (Kawasaki Green Innovation Cluster), Kawasaki energy efficiency subsidy scheme, energy efficiency/ energy creation/ renewable energy scheme for housing.</p> <p>On the other hand, currently in DKI-JKT, activities to promote energy efficiency are not much visible from the outsider. In consideration of this, the discussion and outputs are considered at long term perspective to promote the green innovation through the city to city collaboration between Kawasaki City and DKI-JKT.</p>

Source: Study Team

### 3.3 CITY TO CITY COLLABORATION IMPLEMENTATION POLICY

The implementation policy for the city to city collaboration between Kawasaki City and DKI-JKI is presented in the figure below. Since the city to city collaboration activities between two cities are expected to continue in the succeeding years, the implementation policy also assumes the collaboration activities to continue for multiple years. Since the study period of the Study is only 6 months which is relatively short<sup>1</sup> in comparison to other similar studies, prioritization of achievable outputs within the given timeframe has been considered and reflected in this year's implementation policy. This enabled the relevant stakeholders to have efficient and effective discussions during the Study.



Source: Study Team

**Figure 3-1 Potential Cooperation Framework of City to City Collaboration**

During the Study, the Study Team mainly interacted with BAPPEDA of DKI-JKT, which administers development activities in Jakarta for discussion of possible city to city collaboration activities.

As indicated in the implementation policy, discussions were made for the following two topics:

- JCM project formulation
- Green innovation actions, reflecting problems, issues and needs of DKI-JKT and supported by Kawasaki City.

<sup>1</sup> This was due to following reasons; This study has been selected at second public tender which was concluded in September 2017, and new governor of DTI-JKT has been elected in October 2017.

In order that the two topics to be organically linked for the actual implementation, discussion as well as examination conducted in the Study intended that potential JCM project(s) to serve as one of approaches to materialize the green innovation in DKI-JKT.

### **3.4 CONTRIBUTION TO DKI-JKT BY IMPLEMENTATION OF CITY TO CITY COLLABORATION ACTIVITIES**

DKI-JKT serve as an industrial hub of Indonesia and both domestic and overseas companies engage in various business activities. Also, DKI-JKT is contributing as an export hub to major Asian countries including Japan.

In Indonesia, promotion of the green industry (by the Ministry of Industry) and activities by Indonesia ESCO association are prevalent at the national level. DKI-JKT has been involved in similar activities but such regional level activities are not much highlighted and also achievements are somewhat limited. Therefore, companies based in DKI-JKT and which are interested in energy efficiency technologies, familiar with JCM, and consider about participation in JCM projects tend to be limited to Japanese companies and some big companies.

In consideration of the above situations, JCM project formulation shall disseminate necessary information to potential stakeholders. In order to do so, the Study fully utilized the framework of city to city collaboration scheme and conducted following activities.

**Table 3-3 Ideas to utilize city-to-city collaboration**

#	Ideas	Details
1	Extension of JCM to companies within DKI-JKT	In the Jakarta area, many JCM candidate projects have been considered and implemented. However, majority of these projects are limited to Japanese companies or factories affiliated with Japanese companies. One of possible causes of such situation is limited information sharing to local companies and targets for JCM were confined. It is conducted that support and involvement of DKI-JKT in the Study enable more local stakeholders to be part of the JCM during the study.
2	Sharing of knowledge and experience between two cities through the city to city collaboration	Not only JCM but also in other aspects, two cities have various knowledge and experience accumulated in terms of the city to city collaboration. Therefore, opportunities for information sharing and discussions and a foundation for long term collaboration were provided during the Study.
3	Implementation of Green Innovation Activities through public private partnership	Since Jakarta has been already well developed as a city, further development is expected through the green innovation. In this aspect, Kawasaki City already has knowledge/ experience emphasizing in private-public partnership. In this connection implementation of the green innovation activities through the private-public partnership was examined during the Study.

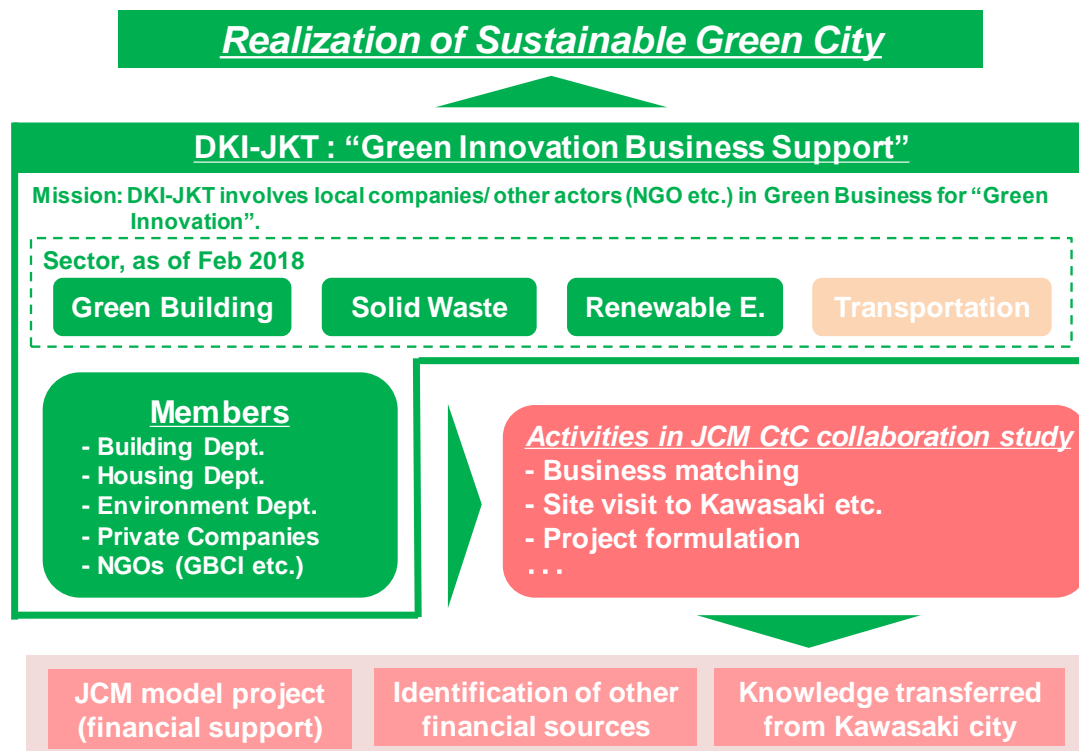
Source: Study Team

### 3.5 EXAMINING GREEN INOVATION POTENTIAL AT DKI-JKT

#### 3.5.1 Present Situation

DKI-JKT, as the capital of Indonesia, has been working on various climate change measures so far. The Study Team feels that DKI-JKT, as the national capital and representative city of Indonesia, has further potential to implement the green innovation activities. Therefore, in the Study, after confirming various problems and issues to be tackled by DKI-JKT, potential projects and activities which can be implemented as JCM or with support/collaboration with Kawasaki City were identified through various discussions among concerned DKI-JKT officers. Constructive discussions were made for further development of potential projects for the next fiscal year and onward.

#### 3.5.2 Green Innovation Potential at DKI-JKT



Source: Study Team

**Figure 3-2 Project Formulation Approach to Martialize Green Innovation**

Through the discussion with DKI-JKT the following four sectors have been identified as sectors having high demands for green innovation. The present situation of the four sectors are summarised hereunder.

#### 1) Green Building

Due to recent drastic economic development, rapid urbanization, similarly to major cities in Japan, is going on in Jakarta. Especially the central Jakarta is crowded with high-story office buildings and apartments, and high energy consumption by such buildings are becoming one of serious problems for the city. In consideration of

the situation, DKI-JKT formulated the green building policy to facilitate the construction of energy efficiency buildings in collaboration with the Green Building Council Indonesia (GBCI) a NGO already promoting the green building in Indonesia. However, since the green building is not well recognized by majority of building owners, its construction and extension are not in well progress.

**2) Waste Management**

Jakarta metropolitan area has a population of approximately 20 million and daily average of 7,000 ton of waste is produced. To handle the situation, the waste management of Jakarta is administered by Environmental Department (BLH) of DKI-JKT. In Jakarta, waste separation/ collection, intermediate treatment and final disposal are already introduced in the waste management but their qualities have not yet reached the level of Japan. Currently, the final disposal site for Jakarta metropolitan area has only one final disposal site located away from the urban areas. The existing final disposal site only accommodated disposal by dumping.

During the Study, BLH expressed high interests to waste separation/ collection system, participatory waste management, final disposal measures adopted by Kawasaki City.

**3) Renewable Energy**

West Jawa, where DKI-JKT is located, already have a stable electricity grid system maintained by a state-run electric power company, the national PLN (Perusahaan Listrik Negara). Therefore, power cut seldom happens and stable power supply is available in Jakarta area. However, island areas along the Pacific Ocean, and a part of DKI-JKT do not have full connection to the existing grid systems. DKI-JKT related facilities in such island areas require to use their own power generators. From the facility operation and maintenance point of views, introduction of renewable energy system is getting one of key interests by DKI-JKT.

In addition, since Indonesia has established Feed in Tariff (FIT) system, DKI-JKT can benefit from FIT by introducing renewable energy projects

**4) Urban Transportation**

Jakarta is one of the worst traffic congested cities in Asia. Not only private vehicles but also increasing number of bike taxi such as Grab, Uber, GOJEK, etc. are major causes of heavy traffic congestion in the city. To tackle the problem, DKI-JKT is introducing vehicle license number-wise traffic restriction<sup>2</sup> in the major traffic congestion areas of the city. Furthermore, to ease the chronic traffic congestion in the city, DKI-JKT is introducing other measures such as operation of Trans-Jakarta and construction of MRT. However, full-scale operation of MRT requires certain time, thus fundamental solutions to solve the traffic congestion is currently not available yet.

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<sup>2</sup> At the designated areas of central Jakarta, vehicles allowed to enter the areas are determined based even-number days and odd-number days. For example, for even number dates, only vehicles having even numbers at the last-digit of their license plates are allowed to enter the designated areas.

In addition, the bike taxis are used for “Last/First 1 mile” scheme connecting traffic hubs in the central areas and suburbs. This is also one of causes of increasing traffic congestion (and exhaust gas) in Jakarta

### 3.6 STUDY RESULT FOR CITY TO CITY COLLABORATION

#### 3.6.1 Summary

The total study period was about six months from September 2017 to March 2018. Since the Study is the first year of succeeding studies, the Study emphasized on the followings: confirming present situations of two cities, sharing issues and needs related to city to city collaboration activities in DKI-JKT, discussing contents of supporting activities by Kawasaki City, examination of further city to city collaboration activities.

Among the four field surveys, officers of Kawasaki City have participated in two field surveys among the four field surveys conducted during the Study. Kawasaki City explained pollution control measures and activities for promoting the low carbon society conducted by the city to the concerned stakeholders in Indonesia, and furthermore, shared the information on major environmental products/ technologies of Japanese companies based in Kawasaki City.

Results of the city to city collaboration activities conducted during the Study are presented in the following table.

**Table 3-4 Study Results for City to City Collaboration**

Content	Schedule	Description
Kick-off meeting (Tokyo)	September 8 <sup>th</sup> , 2017	<ul style="list-style-type: none"> <li>Explanation of proposed scheme and schedule</li> <li>Confirmation of issues, goals, methodologies and schedule</li> </ul>
The 1 <sup>st</sup> Field Survey (Jakarta)	October 24 <sup>th</sup> to November 3 <sup>rd</sup> , 2017	<ul style="list-style-type: none"> <li>Kick-off meeting between Kawasaki City and DKI-JKT (BAPPEDA, etc.)</li> <li>Meeting with relevant organizations (JCM Secretariat, JICA experts, Embassy of Japan in Indonesia, JETRO, etc.)</li> </ul>
The 2 <sup>nd</sup> Field Survey (Jakarta)	December 5 <sup>th</sup> to 16 <sup>th</sup> , 2017	<ul style="list-style-type: none"> <li>Meeting with DKI-JKT (BAPPEDA, etc) and other relevant organizations (JCM Secretariat, JICA experts, etc.), Japanese companies in Indonesia</li> <li>Meeting with relevant stakeholders of the green building: DKI-JKT (PTSP, Building department, etc.), other organizations (GBCI, etc.)</li> <li>Preparation for JCM business matching (February 2018)</li> </ul>
The 3 <sup>rd</sup> Field Survey (Jakarta)	January 16 <sup>th</sup> to 28 <sup>th</sup> , 2018	<ul style="list-style-type: none"> <li>Meeting with DKI-JKT (BAPPEDA, etc) and other relevant organizations (JCM Secretariat JICA experts, etc.), Japanese companies in Indonesia</li> <li>Preparation for JCM business matching (February 2018)</li> </ul>
JCM Seminar (Tokyo)	January 30 <sup>th</sup> , 2018	<ul style="list-style-type: none"> <li>Two officers from DKI-JKT participated in the JCM seminar organized by the Ministry of Environment, Japan, and presented activities of DKI-JKT during the seminar</li> </ul>
The 4 <sup>th</sup> Field Survey (Jakarta)	February 6 <sup>th</sup> , to 10 <sup>th</sup> , 2018	<ul style="list-style-type: none"> <li>2<sup>nd</sup> meeting between Kawasaki City and DKI-JKT (BAPPEDA, etc.) on plan for the next fiscal year</li> <li>Meeting with relevant organizations (JCM Secretariat, JICA experts, etc.), Japanese companies in Indonesia</li> </ul>

Content	Schedule	Description
JCM Business Matching (Jakarta)	February 8 <sup>th</sup> , 2018	<ul style="list-style-type: none"> <li>Organized JCM Business Matching (with support of DKI-JKT)</li> <li>65 participants from Japanese companies, Indonesian companies and other organizations</li> </ul>
Final Reporting to Ministry of Environment (Tokyo)	February 27 <sup>th</sup> , 2018	<ul style="list-style-type: none"> <li>Explanation of the results and achievements of the Study</li> </ul>

Source: Study Team

### 3.6.2 Discussion between Kawasaki City and DKI-JKT

During the 1<sup>st</sup> field survey, a kick-off meeting was held between officers of Kawasaki City and DKI-JT. At the kick-off meeting, officers from Kawasaki City explained about general description of Kawasaki City as well as major activities conducted by the city in relation to environmental management. The JCM Secretariat of Indonesia also participated in the kick-off meeting. The JCM Secretariat explained about JCM and major JCM achievements in Indonesia to DKI-JKT.

During the 4<sup>th</sup> field survey, a second meeting between officers of Kawasaki City and DKI-JT was held. DKI-JKT explained priority issues and needs of the city in relation to the city to city collaboration. In the meeting, discussions were made for i) priority sectors to be selected for the next fiscal year's city to city collaboration activities, and ii) JCM project formulation. As the conclusion, promotion of green building, further introduction of renewable energy, promotion of energy efficiency projects/technologies are selected as the priority sectors for the next fiscal year.

In addition to meeting with officers of BAPPEDA, meetings with other departments/ offices within DKI-JKT were held and discussions for further city to city collaboration activities and JMC project formulation were made among participants.



1<sup>st</sup> Kick-off Meeting between Kawasaki City and DKI-JKT (November 2017)



1<sup>st</sup> Kick-off Meeting between Kawasaki City and DKI-JKT (November 2017)





2<sup>nd</sup> Meeting between Kawasaki City and DKI-JKT  
(February 2018)



2<sup>nd</sup> Meeting between Kawasaki City and DKI-JKT  
(February 2018)



Disunion with DKI-JKT on Urban Transportation  
(January 2018)



Disunion with DKI-JKT on Green Building (January  
2018)

### **3.6.3 Discussion with Indonesian JCM Secretariat**

During all the field surveys, the Study Team visited the JCM Secretariat and made discussion on policies/ approaches of DKI-JKT in respect to the city to city collaboration, and priority sectors for JCM project formulation. For the conduct of the Study, tremendous support was provided from the JCM Secretariat.



Meeting between Kawasaki City and JCM Secretariat  
(November 2017)



Meeting between Kawasaki City and JCM Secretariat  
(November 2017)





Meeting with BAPPEDA (including JCM Secretariat)  
(December 2017)



Meeting with BAPPEDA (including JCM Secretariat)  
(February 2018)

### **3.6.4 Discussion with Indonesian Organisations and Companies**

During the study, the green building has been identified as one of the priority sectors for JCM project formulation, meetings was held with local organisations and Japanese companies in Indonesia related to the green building activities.



Meeting with GBCI (November 2017)



Meeting with GBCI (February 2018)

### **3.6.5 JCM Seminar at Tokyo**

Two officers from DKI-JKT BAPPEDA were invited to the JCM Seminar organized by the Ministry of Environment, Japan, and held in January 2018. At the seminar, participants from DKI-JKT presented city's environmental policies and on-going activities related to the city to city collaboration by DKI-JKT.



Presentation by BAPPEDA Officer (January 2018)



Scene of JCM Seminar (January 2018)

## CHAPTER 4 JCM PROJECT FORMULATION

### 4.1 PROJECT OUTLINE

From the beginning of the scheme, the feasibility studies for JCM project examined multiple candidates of potential JCM model projects and supported implementation of each respective project. During the Study, potential projects have been identified through discussions and one project has been selected as one of the FY2017 JCM model project. The outline of the selected project is presented hereunder.

#### Project Description

The Project aims to effectively use exhaust steam which is currently disposed at a factory of PT. Timuraya Tunggal by introducing an absorption chiller manufactured by Kawasaki Thermal Engineering Co., Ltd. The absorption chiller enables to produce 500USRt of cold from the factory.

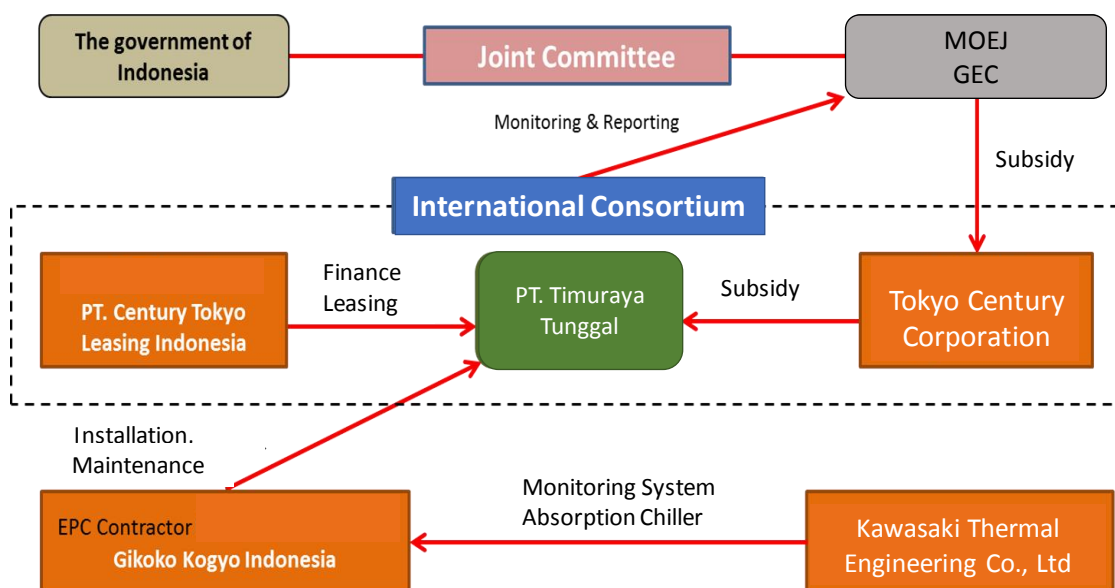
#### Project Area

Timuraya Tunggal Factory located in Karawang Industrial Park

#### Project Implementation Setup

An international consortium was formed for the selected JCM Model Project. Tokyo Century Cooperation is the representative participant of the international consortium. Tokyo Century Cooperation will procure an absorption chiller manufactured by Kawasaki Thermal Engineering Co., Ltd and install the absorption chiller at a factory of PT. Timuraya Tunggal, partner participant of the international consortium. Tokyo Century Cooperation will further provide financial lease to Timuraya Tunggal through its subsidiary company in Indonesia.

The proposed implementation setup of the Project is shown in the following figure.



Source: Study Team

**Figure 4-1 Proposed Implementation Setup for JCM Project**

The company profile of the partner participant PT. Timuraya Tunggal is briefed hereunder.

**PT. Timuraya Tunggal**

Established Year: 1979

Business Operation: Chemical Industry

(Production and sales of sulfur acid, aluminum sulfate, potassium sulfate, hydrochloric acid, etc. Trading of chemicals with petroleum gas industry)

Number of Employees: 565 (as of July 2017)

**GHG Emission Reduction Mechanism**

Reference emission amount will be grid-origin electricity consumption amount by a traction motor of a turbo chiller having similar cooling capacity as that of the absorption chiller to be introduced by the Project. In the proposed Project, the project emission amount of CO<sub>2</sub> and GHG will be zero since exhaust steam which is currently disposed at the factory will be utilized by the absorption chiller to be introduced.

Electricity consumption by auxiliary equipment such as pump, cooling tower, etc. will occur in both the reference case (turbo chiller) and the project case (absorption chiller), thus CO<sub>2</sub> emission from such equipment was not included in the emission reduction estimate.

**Relevance with Indonesian Policies**

Indonesia is abundant in energy resources such as petroleum. On the other hand, due to the subsidy policy toward petroleum products, energy consumption in Indonesia is increasing rapidly. In order to tackle the increasing energy consumption, a National Energy Policy covering up to 2050 was formulated in 2014. In the policy, a target value for the ratio of new and renewable energy against the primary energy has been set. Introducing the absorption chiller is in accordance with the longer-term energy policy of Indonesia and contributes to reduction of energy consumption.

**Contribution to Public Interest**

According to a ministry decree by the Ministry of Energy and Mineral Resources (No.31/2005), concrete regulation to promote energy efficiency is determined in Indonesia. The article 9 of the decree determine usages of energy efficiency equipment/technology.

In Indonesia, the consumption of primary energy (petroleum, coal and natural gas) is 175 MTOE (15<sup>th</sup> in the world, according to BP Database 2016) and this is one of the highest consumption in the Southeast Asian countries.

In the National Energy Plan, following target values are set to be achieved by 2025; annual improvement target of one percent of energy consumption rate<sup>3</sup>; energy elasticity<sup>4</sup> to be less than one. Therefore, the Indonesian government is promoting introduction of energy efficiency equipment/ facilities/ technologies. In this context, institutional arrangement for mandatory introduction of exhaust heat recovery technologies is expected.

Introducing the steam absorption chiller in the proposed Project enables to effectively use

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<sup>3</sup> energy consumption rate: energy amount which require to produce products or money. Lower values imply better production efficiency using energy

<sup>4</sup> energy elasticity: energy consumption increase rate / GDP increase rate

heat energy discharged to the atmosphere. This contributes to exercise of the decree which promotes the energy efficiency in Indonesia.

## **4.2 PROJECT FORMULATION RESULT**

### **4.2.1 Technology to be Introduced**

The technology to be introduced in the proposed Project is the absorption chiller manufactured by Kawasaki Thermal Engineering Co., Ltd. The absorption chiller recovers and effectively use waste heat with natural refrigerant

#### **Installation Achievement of the Absorption Chiller to be Introduced for the Project**

Absorption chillers manufactured by Kawasaki Thermal Engineering Co., Ltd. are already established technology and have been already installed about 20,000 in Japan and about 40 in Southeast Asian countries including Indonesia. In Indonesia, three absorption chillers have been introduced so far.

#### **Diffusion Status and Influence of the Absorption Chiller in Indonesia (Perspective for further application and development)**

According to a report by BSRIA, the absorption chiller only covers two percent of total chillers installed in Indonesia in 2013. The number of the absorption chiller is low and only one-seventh of the turbo chiller which covers 15% of total chiller in 2013. This figure implies that there is a potential for further diffusion of the absorption chiller in Indonesia, though changes in fuel/ electricity price may affect further introduction of the absorption chiller.

Currently, 90% of Indonesian market for the absorption chiller is dominated by four manufactures (three Chinese companies and one Indian company), and presence of Japanese manufactures (Kawasaki Thermal Engineering Co., Ltd, Ebara Refrigeration Equipment & Systems Co., Ltd, Hitachi) are very limited. Therefore, the JCM Model Project will be a good opportunity to promote the absorption chiller based on Japanese technology in Indonesia.

Since majority of factories owned by Indonesia companies tend to have lower waste heat usage efficiency compared to that of Japanese companies, the Study Team thinks that an option of combining JCM and financing lease like in case of the proposed Project contribute to further diffuse Japanese technology in Indonesia. Major specifications of the absorption chiller to be introduced in the Project are described hereunder.



Source: Product Catalogue of Kawasaki Thermal Engineering Co., Ltd  
**Figure 4-2 Image of Absorption Chiller**

**Table 4-1 Major Specification of Absorption Chiller**

Item	Description
Type	Absorption Chiller (Kawasaki Thermal Engineering Co., Ltd)
Product Number	Σ NES:700AN7A
Country of Origin	Japan
Cooling Capacity	2,462 kW (700USRt)
Advantage	1. Low steam consumption: 3.8 kg/h・USRt 2. High operation efficiency: High efficiency across the full range of load conditions, contributing to greater energy savings 3. High system efficiency: including auxiliary equipment 4. Flexibility to replacement demands: easy delivery and simplified foundation due to lightweight

Source: Product Catalogue of Kawasaki Thermal Engineering Co., Ltd

#### 4.2.2 Project Impacts

Major positive impacts expected from the Project are reductions of energy-origin CO<sub>2</sub> emission and GHG emission. Estimated emission reductions are presented here under.

- ① CO<sub>2</sub> emission reduction: 1,084 tonCO<sub>2</sub>/year
- ② GHG emission reduction: 1,084 tonCO<sub>2</sub>/year
- ③ CO<sub>2</sub> emission reduction total amount (①x statutory depreciation period) : 8,672 [tonCO<sub>2</sub>]
- ④ GHG emission reduction total amount (②x statutory depreciation period) ) : 8,672 [tonCO<sub>2</sub> equivalent]

CO<sub>2</sub> and GHG emission reduction costs (cost effectiveness) of the Project are calculated as follows:

- ① CO<sub>2</sub> reduction cost (subsidy amount)  
2,325JPY/tonCO<sub>2</sub>=subsidy amount/ (CO<sub>2</sub> reduction/year x statutory depreciation period)
- ② GHG reduction cost (subsidy amount)  
2,325 JPY /tonCO<sub>2</sub> =subsidy amount/ (GHG reduction/year x statutory depreciation period)

The statutory depreciation period adopted for the project is based the Ministerial Ordinance concerning the Useful Life, etc. of Depreciable Assets (Finance Ministry Ordinance No.15 of 1965) and described hereunder.

**Table 4-2 Identification of Depreciation Period**

Appended Table to Supplementary Provisions	Type	Description	Depreciation Period
Appended Table 2	Chemical Industry Facility	Other Facility	8 years

Source: Study Team

### 4.2.3 Implementation Schedule

Indicative implementation schedule for the JCM model project is presented in the following table. The proposed Project has been selected as the JCM Model Project in October 2017 and already announced as one of the projects to be implemented under FY 2018 JCM Model Project scheme. Procurement, delivery, installation and testing of the equipment are scheduled in 2018 and monitoring of the Project is scheduled from June 2018 and onward.

**Table 4-3 JCM Model Project Implementation Schedule (upon Application/  
Registration)**

Year	2017				2018											
Month	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Application	Submission			Awarded												
Contract																
Production						Production		Shipping								
Commissioning test																
Acceptance check																
Monitoring																
JCM registration																
Payment												Reporting	Payment			

Source: Study Team



## **CHAPTER 5 JCM BUSINESS MATCHING**

### **5.1 BACKGROUND**

In the previous feasibility studies of JCM project by city to city collaboration, significant time was dedicated for concrete discussions among relevant stakeholders in relation to materialization of proposed/ potential projects and actual business implementation.

DKI-JKT is one of the largest cities in the world, and many Japanese governmental agencies as well as companies are familiar with the area. Certain numbers of Japanese companies are already establishing their business activities in Jakarta area. Furthermore, some Japanese companies having their base in Kawasaki city have already doing their business in Jakarta area.

In consideration of the above, necessities for i) sharing technologies and achievements of Japanese companies (including Kawasaki city based companies) already establishing or planning to establish their business in Jakarta area with local private companies in the area, and ii) providing discussion opportunities for potential businesses, have been identified during the Study. Therefore, a JCM business matching has been planned and conducted as a part of the Study.

In the JCM business matching, “green building” has been selected as the main theme, since i) having many high-story buildings, potential demands for the theme are expected to be high in Jakarta area, and ii) as JCM model projects, the actual implementation can be expected relatively in short period in comparison to other themes/fields.

### **5.2 OUTLINE OF JCM BUSINESS MATCHING**

#### **5.2.1 Objective**

The JICA Business Matching was organized to identify feasible business activities for the city to city collaboration between DKI-JKT and Kawasaki City for the next fiscal year.

#### **5.2.2 Basic Approach: Utilization of Japanese Technologies**

The Study is expected to identify potential JCM projects which contribute to mediate issues/problems prevalent in DKI-JKT, referring to expertise gained by Kawasaki City. Especially, introducing comprehensive energy-saving products/ technologies involved by Japanese companies in Kawasaki City as the potential JCM projects are considered for priorities.

This kind of approach may not be readily available to provide services in a short time-span, thus formulating potential projects through the business matching intended to identify business activities which enable to provide services and impacts in longer time-span through introducing applicable products/ technologies.



### 5.2.3 Participants

Participants of the JCM business matching are not only personnel of DKI-JKY and Kawasaki City, but also Japanese as well as Indonesian companies whom the Study team had discussions or information exchanges during the conduct of the Study. For the Indonesian companies, companies suggested by DKI-JKY PTSP and other authorities also participated in the JCM business matching.

Major organizations and companies participated in the JCM business matching are presented in the table below.

**Table 5-1 Participants of Business Matching**

#	Organization/ Company Name
1	Kawasaki City
2	DKI-JKT BAPPEDA
3	DKI-JKT PTSP
4	DKI-JKT BLH
5	DKI-JKT
6	Coordinating Ministry for Economic Affairs (Indonesia)
7	Indonesian JCM Secretariat
8	Green Building Council Indonesia
9	Nippon Koei Co., Ltd
10	Azbil
11	PT Fuji Furukawa E & C Indonesia
12	PT Mayekawa
13	PT Tokyo Century Leasing Indonesia
14	Softem
15	MDI
16	PT Gikoko Indonesia
17	Indopower International
18	PT Indokoei International
19	PT. Duta Sarana Perkasa
20	Koperasi Energi Terbarukan Indonesia
21	PT. Suryaraya Investama
22	Panorama Land
23	PT. Putragaya Wahana
24	PT. Grand Indonesia
25	PT. Mitra Panca Persada
26	PT. PP (Persero). Tbk
27	PT. Jakpro
28	PT. Baryon Hasta Persada
29	PT. Kepland Investama
30	PT. KAS Green Energy
31	PT. Sinar Mas Land

Source: Study Team

Priority for Indonesian participants are given to companies which already have joint ventures/ business collaboration with Japanese companies or companies familiar with JCM model projects. However, due to support from DKI-JKT and GBCI, companies which are new to JCM or Japanese products/ technologies, also participated in the business matching.

### 5.3 OVERVIEW OF ORGANISED JCM BUSINESS MATCHING

The overview of the JCM business matching is described hereunder. In general, active as well as constructive discussions for potential project implementation were held among participants.

Date & Time: February 8, 2018 (8:30 - 14:00)

Venue: Meeting Hall, Mercure Hotel Saban, Jakarta

Objectives:

- 1) Identifying potential activities and projects which are feasible to be implemented through JCM model projects
- 2) Exchanging opinions among participants for achieving the low carbon society
- 3) Introducing relevant products/technologies of Japanese participating companies to Indonesian participants

Agenda:

#	Time	Descriptions	Time	Speaker
---	8:00-8:30	Registration	---	---
1	8:30 - 8:35	Opening remarks (1)	5 min.	Bappeda
2	8:35 – 8:40	Opening remarks (2)	5 min.	City of Kawasaki
3	8:40 – 8:45	Opening remarks (3)	5 min.	Coordination Ministry for Economic Affairs
4	8:45 – 9:00	Explanation of JCM	15 min.	the JCM secretariat
5	9:00 – 9:15	Explanation of Green building policy	15 min.	DKI-JKT (BP PTSP)
6	9:15 – 9:30	Explanation of Green building activities	15 min.	GBCI
7	9:30 -9:40	Q&A	10 min.	All
8	9:40 – 9:55	Tea Break	15 min.	All
9	9:55 – 10:00	Explanation of the purpose of this business matching	5 min.	Nippon Koei
10	10:00 – 10:10	JCM Testimony (1)	10 min.	Japanese Company
11	10:10– 10:20	JCM Testimony (2)	10 min.	Japanese Company
12	10:20 – 10:30	JCM Testimony (3)	10 min.	Japanese Company
13	10:30 - 11:30	Business matching discussion	60 min.	All
14	11:30 – 11:35	Closing remarks (1)	5 min.	DKI-JKT
15	11:35 – 11:40	Closing remarks (2)	5 min.	City of Kawasaki
16	11:40 – 11:45	Closing remarks (3)	5 min.	Coordination Ministry for Economic Affairs
17	11:45 – 13:15	Lunch	90 min.	All
18	13:15 –	Further Discussion	---	All

## 5.4 SNAPSHOTS OF JCM BUISSNESS MATCHING



Banner of JCM Business Matching



Presentation by DKI-JKT about Green Building



Presentation by Kawasaki City about Kawasaki City



Presentation by Japanese Company about Its Business and Achievements



Business Matching among Japanese and Indonesian Companies 1



Business Matching among Japanese and Indonesian Companies 2

## **5.5 CONCLUSION**

About 30 Japanese/ Indonesia private companies participated in the JCM business matching conducted during the Study. Not only the outline of JCM but also the following topics were shared among the participants: present situations and achievements of JCM in Indonesia, energy efficiency technologies/ products of Japanese companies which can be applicable for potential JCM projects.

At the discussion session of the business matching, individual discussions were conducted among participants for further concrete business developments.

Participated Japanese companies received various questions from participated Indonesian companies and active discussions for further business development have been held.

In the pervious/ on-going city to city collaboration activities, majority of activities planned or conducted were targeted the public sector. However, based on the result of the Study, the Study Team confirmed that active involvement of the private sector is also important for the city to city collaboration and also to contribute to industrial development as well as problem solving at the cities concerned. Therefore, for the next fiscal year and onward if the succeeding Study continues, the Study Team proposes to implement similar activities as this year.

## **CHAPTER 6 ISSUES AND FURTHER ACTIONS**

### **6.1 ISSUES**

The city to city collaboration examined during the Study intends to achieve the green innovation in DKI-JKT through a long-term collaboration between Kawasaki City and DKI-JKT. As stated earlier in this report, “Green Building”, “Waste Management”, “Renewable Energy”, and “Urban Transportation” were identified as prioritized sectors for the further city to city collaboration in DKI-JKT.

In the Study, discussions were made for what kind of activities to be taken up between two cities for next year and onward. As described in Section 3.3 “City to City Collaboration Implementation Policy”, the Study Team aims to achieve the green innovation through two main activities; JCM project formulation using the JCM model project scheme, and collaboration activities between two cities to ease major problems prevalent in DKI-JKT. For the JCM project formulation in “Green Building” and “Renewable Energy” sectors, it is planned to conduct feasibility studies to formulate the prospective JCM model project and further proceed for the concrete project formulation.

At the JCM business matching held in February 2018, “Green Building” was selected as the main theme for Indonesian/Japanese participants and aimed to identify concrete technologies/products to be targeted for next year’s study. Therefore, participation of various companies in this year’s JCM business matching, both Japanese companies (including companies having their base in Kawasaki City) having energy efficiency technologies for buildings and Indonesian companies which are interested in the green building or JCM, provided a sufficient foundation for activities to be scheduled at the next year and onward. The potential Japanese companies to conduct the JCM feasibility study is already identified, and further details on the potential project, including the project area and technologies to be introduced will be examined.

For the “Renewable Energy” sector, since there is a strong request from the Energy Department of DKI-JKT, feasibility study is planned to be conducted with Japanese company based in this city-to-city collaboration in the next fiscal year. The Energy Department of DKI-JKT considers introduction of renewable energy at the island area of DKI-JKT as one of its priority issues. However, in the next fiscal year’s proposed study, not only the renewable energy project in the island area but also other potential projects including that of private sector will be examined by the Study Team.

On the other hand, for the “Waste Management” and “Urban Transportation” sectors, the Study Team needs to further consider about the activities for next year and onward through continual discussions with two cities. For these sectors, not only the JCM project formulation, but also collaboration activities between two cities to ease major problems in DKI-JKT will be also effective. For the “Waste Management” sector, since Kawasaki City has various experiences in relation to waste separation/collection system, participatory waste management, final disposal measures, DKI-JKT(BLH) has high interests in assistance from Kawasaki City in this sector. In these two sectors, further determination of policies/ approaches for which problems in DKI-JKT to be tackled is required.

In the city-to-city collaboration projects, assistance to city master plan formulation of developing countries is often regarded and typical collaboration activities. In the collaboration project starting from FY 2015 between the Kawasaki city and Yangon city in Myanmar,

Kawasaki City has assisted Yangon City to prepare the Low Carbon Action Plan (LCAP) which aimed to achieve a low carbon society. However since, various development plans and policies have been already formulated in DKI-JKT, assistance by Kawasaki City in this aspect seems to be of less priority. Therefore, there is no need to stick to master plan formulation, rather the city-to-city collaboration which contribute to needs of DKI-JKT and maximize usages of Kawasaki City's expertise shall be discussed.

## **6.2 FURTHER ACTIONS**

In the next fiscal year, the Study Team proposes a JCM project formulation study targeting the “Green Building”, “Renewable Energy” and the “Energy Efficiency in Industrial Sectors”. The “Energy Efficiency in Industrial Sectors” is closely related with the green industry policy promoted by the Ministry of Industry in Indonesia. The Study Team plans to conduct the JCM project formulation study for these sectors in the next fiscal year and aims to apply for the JCM model project at FY2019 and onward.

In Indonesia, for introducing latest technologies related to energy efficiency, reluctances to high initial investment cost by government and companies can be one of the major obstacles. As a part of the study for the next fiscal year, examination for using subsidies from the JCM model project schemes and/or involving lease companies for project financing will be considered in the following year. Furthermore, in relation to the city to city collaboration, the Study Team proposes series of JCM business matching in the next fiscal year. Since various development plans and policies are already developed in DKI-JKT, achieving these plans and strategies require the actual implementation of the relevant business activities.

Therefore, as a part of the proposed study of city-to-city collaboration for the next fiscal year, business matching related to priority issues and important sectors identified by DKI-JKT, will be planned as a part of the city to city collaboration activities as starting points for new business development. Kawasaki City already organizes the green innovation cluster, and members of the cluster include companies which provide innovative environmental technologies, products and services. These technologies, products, and services more likely to have high potential to solve priority issues in DKI-JKT, and in return, expected to contribute to further development and promotion of the green innovation of the city. Organizing series of the business matching enables DKI-JKT government and local companies to be exposed to relevant technologies and products by Japanese companies and contributes to implementation of further business activities. This kind of approach also benefit members of the green innovation cluster who are considering expanding their business at abroad. One of the reasons for Kawasaki City to get involved in the city to city collaboration is to provide more business opportunities for companies based in Kawasaki City, and organizing business matching will be also beneficial for Kawasaki City as well.