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> Comparison of GHG Emission in the Future **Under Different Scenarios Against Current GHG Emission Condition**

Ultimate Goal: 15% reduction of GHGs emission by 2012

All Your Life, In Our Care

**JICA Training** 

Yokohama, Japan

**Capacity Building on Climate Change** 

	Year 2007	Yea	ar 2012
Sector	Current GHG Emission *	Future GHG Emission Under BAU Scenario *	Future GHG Emission Under BMA Action Plan Implementation *
Transportation	21.18	25.30	19.77
Biofuels Energy (reduced GHG)			(-0.61)
Electricity	14.86	16	13.75
Waste / Wastewater	1.13	1.13	0.95
Waste Recycle (reduced GHG)			(-0.28)
Others (estimate 15% of total GHG emission from other sectors)	5.58	6.36	6.36
Green Area (reduced GHG)	(-0.10)	(-0.10)	(-1.00)
Total	42.65	48.69	38.94
		* (1	CO <sub>2</sub> equivalent – million tons





















g Mitigation duri	ng 2007-2011
Target Reduce CO <sub>2</sub> in 2012 (million-tons)	Total amount of CO <sub>2</sub> Reduction (million-tons)
5.53	under evaluation
0.61	0.88
2.25	0.67
0.46	0.42
0.90	1.70
9.75	3.67
	g Mitigation duri Target Reduce CO <sub>2</sub> in 2012 (million-tons) 5.53 0.61 2.25 0.46 0.90 9.75

Resu	Ilts of Measures und bal Warming Mitigat	er BMA tion du	A Action Plan on ring 2007-2011	J.
			All Your Life	, In Our Care
2007-201	0: CO2 Reduction	=	1.16 million tons	
2011 :	CO2 Reduction	=	2.51 million tons	
From data	a analysis found that:			
> li	n 2011, CO <sub>2</sub> Reduction of 3	3.67 millio	on tons, accounting for	
3	7.64% of the CO <sub>2</sub> reduction	n target (S	9.75 million tons) in the	
E	Bangkok Action Plan on Glo	bal Warn	ning Mitigation	
2	2007-2012			
> C	CO <sub>2</sub> Reduction of 7.54% (3.	67 millior	tons) from 15%	
(	7.30 million tons) of the tota	al CO <sub>2</sub> en	nission anticipated in	-
ti ti	he year 2012 under busine	ss as usu	al projection	-
(•	48.69 million tons)			
		Braff.		15



Expand Mass Transit and Imp	prove Traffic	System
Activity	Target CO2Emission Reduction (million ton p.a.)	All Your Life in 0 Amount of CO2 Reduction (million ton p.a.)
1 . Expand the Mass Transit Rail System within the Bangkok Metropolitan Area		
1.1 Support the Implementation of Mass Transit Rail System in the Bangkok Metropolitan Area	2.4	-
2. Improve Public Bus System		
2.1 Implement a Bus Rapid Transit System :BRT)	0.19	-
2.2 Support Improvements to the existing Public Bus System	1.24	-
3. Improve Traffic System		
3.1 Improve the Road Network	1.7	-
Total	5.53	-





Promote the Use of Renewable Energy				
Activity	Target CO2 Emission Reduction (milliion ton p.a.)	Amount of CO2 Reduction (milliion ton p.a.)		
1 . Promote the Use of Biofuels				
1.1 Promote the Use of Gasohol	0.27	0.38		
1.2 Promote the Use of Bio- Diesel	0.34	0.50		
Total	0.61	0.88		
-ALIA	Best	den.		

Improve Building Electricity Consumption Efficiency					
Activity	Target CO2 Emission Reduction (milliion ton p.a.)	Amount of CO2 Reduction (milliion ton p.a.)			
1 . Improve Building Energy Consumption Efficiency					
1.1 Improve Energy Efficiency in All BMA Buildings	0.01	-			
1.2 Promote and Support the Implementation of Energy Conservation Scheme in Privately Owned Buildings	0.42	-			
2. Electricity Conservation Campaign for Bangkokians 2.1 Campaign for Efficient Use of Electrical Appliances	0.70	-			
2.2 Campaign for Reduced Use of Air-Conditioning Systems	0.41	0.66			
2.3 Support Energy Efficiency Labeling of, and Proper Maintenance Scheme for, Electrical Appliances	0.44	-			
2.4 Promote the Use of Energy-Saving Appliances	0.14	-			
2.5 Promote the Use of Energy-Saving Light Bulbs	0.13	-			
3. Other Activities - Organized "Earth hour" activities to promote Energy Saving in Building		0.0043			
Total	2.25	0.67			





Improve Solid Waste Mana Treatment	agement and W Efficiency	/astewater
Activity	Target CO2 Emission Reduction (milliion ton p.a.)	AllYourLife, In Our Care Amount of CO2 Reduction (milliion ton p.a.)
1. Increase Efficiency in Solid Waste Management	0.10	0.12
1.1 Improve Efficiency in Organic Waste Management		
1.2 Support Solid Wastes Reuse and Recycling	0.28	0.27
2. Increase Efficiency in Wastewater Treatment	0.05	0.0324
2.1 Increase Wastewater Treatment Capacity		
2.2 Reduce Household Wastewater	0.03	0.000033
Total	0.46	0.42

(e	Expansion	of Green Ar	eas	Care
	Activity	Target CO2 Emission Reduction (milliion ton p.a.)	Amount of CO2 Reduction (milliion ton p.a.)	
	1.Plant Trees in the Bangkok Metropolitan Area	0.14	0.017	
	1.1: Plant Trees in the Area Under the Jurisdiction of the Bangkok			
	1.2 Campaign and Support TreePlanting on Private Land in Bangkok	0.32	0.010	
	2. Plant Trees in the Neighboring Province Areas	0.54	1.67	
	Total	1.0	1.70	
	ALL ALL			







			Adaptati	ion Impleme	ntation		All Your Life, In Our C
				- F	· · · · · · · · · · · · · · · · · · ·		
	Physically e	environmental Im Prevention	pact		Institution and Public Aw	d Increasing areness	Capacity Building
Flood Control	Coastal Erosion Protection	Transportation	City Planing	Disaster Prevention	Campaign Activity	Publishing Media	Establish ener control and conservatior Center
Dike along Chao Phraya River	- Hard Structure	Extend The Mass Transit Network	Establish Bangkok Metropolitan	Structural Prevention	Organize the s Building energy	eminar on refficie ncy	Research and development
Drainage System Improvement	Grow Mangrove Tree	Secondary Mass Transit System Development	General Plan, 3 <sup>rd</sup> which concerning about promoting life	Educating and stimulating disaster prevention awareness	Organized the program for BM. on Energy Con	training A's schools servation	Local wisdom and appropriate technology
		Transportation Facilities Development	and asset safety by prevent and mitigate from	Researching	60 Earth Hour	s Project	Sufficiency an effective education
		Bicycle Network Development	and human action and promoteing the climate	Community	Commnity Ba Waste Manager	se Solid nent, CBM	International Training
	-63	Create Public Participation	change solving by expand	have a chance to participate.	Campaign Low Society in com	Carbon munity	









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### Stormwater Retention Area

Where the drainage capacity of the canals is too small to bring the storm water runoff to the pumping station, and some areas are low and no retention area is available. BMA has provided 21 retention ponds total storage capacity 12.7 Mm<sup>3</sup>. to keep storage volume for early rainfall detention in order to decrease peak runoff during rain.



### **Drainage System Improvement**

### Flood Control Center (FCC)

FCC was established in 1990, which utilize computer technology for systematic and management of operation of flood protection. The center is comprised of one master station which is located in DDS office and 69 remote terminal units (SCADA) scattered around Bangkok. The center has basic functions in monitoring and collect of hydrological data (rainfall and water level), facilities operation conditions, flood damage situation and water quality data by using an on-line system. The various data are processing and transmit to the facilities operators and flood fighting team.

































6	Extend Th	e Mass Tran	sit Network	J. In Our Care			
	BTS PASSENGER COMPARE 2010 - 2011						
			PERSON/MONTH				
	MONTH	2010	2011				
	SEPTEMBER	12,649,000	16,075,000				
	OCTOBER	13,177,000	15,186,500				
	NOVEMBER	13,310,000	14,332,000				
	DECEMBER	13,192,000	17,215,000				

























- 2. To conduct the specific plan, area development plans and the renewal plan for burned down properties in certain areas.
- *3. To conserve, rehabilitate and develop* the city, and designate land readjustment plans for urban development.



## The major plans and activities of CPD

4. To study and specify city planning measures.

5. *To monitor and evaluate* the enforcement of city planning measures and laws.

6. *To examine and regulate* utilization of land and buildings in control areas.

7. *To apply geographic information systems* to the development of the BMA's city planning information center.



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The major plans and activities of CPD

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Bangkok Metropolitan General Plan,

### Vision :

**1.** A metropolis with remarkable national art and culture identities.

**2.** A healthy metropolis with high quality of life achievable through the conservation of the environment and convenience through the comprehensive transportation networks.

**3.** A metropolis that is the economic and technological center of the nation and Southeast Asia.







of Thailand and other Southeast Asian countries.

3. To develop Bangkok into a tourism center and a gateway to Thailand and other Southeast Asian countries.

Bangkok Metropolitan General Plan, 3rd Revision

### **Objectives** :

7. To promote risk-free and pollution-free manufacturing industries in Bangkok that rely on advanced expertise, workmanship, and technology.

8. To preserve the productivity of the existing agricultural areas of Bangkok.

9. To preserve and restore local art and culture of significant architectural, historical, and anthropological values.



4. To develop Bangkok into an administrative center and the site for major national and international institutes.

5. To promote efficient mass transit system and comprehensive transportation networks.

6. To promote the development, improvement, and restoration of Bangkok residential areas and community centers.



### **Objectives** :

10. To conserve natural resources of prime merit and beauty. To maintain, conserve, and restore good environmental quality in order to prevent natural calamities.

11. To promote life and asset safety by prevent and mitigate from natural disaster and human action.

12. To promote the climate change solving by expand green area for reduce greenhouse gas.

























### BANGKOK COMPREHENSIVE PLAN (3rd Revision)

Incentive : Floor Area Ratio (FAR) Bonus for MRT Supporting Facilities, e.g. Public Parking, etc.



# BANGKOK COMPREHENSIVE PLAN (3<sup>rd</sup> Revision) Incentive : Floor Area Ratio (FAR) Bonus for Green Buildings

### BANGKOK COMPREHENSIVE PLAN (3rd Revision)

Incentive : Floor Area Ratio (FAR) Bonus for Rain Water Storage



## BANGKOK COMPREHENSIVE PLAN (3rd Revision) Incentive : Floor Area Ratio (FAR) Bonus for Affordable Housing



### BANGKOK COMPREHENSIVE PLAN (3rd Revision)

Incentive : Transfer of Development Right (TDR) within a Land Use Zone







Incentive : Transfer of Development Right (TDR) from Historic Zones to Development Zones







- Managing, controlling, inspecting of the building construction and safety system. The buildings will be inspected over 3000 buildings a year
- Preparation of Data and Information System.
- We are now collecting and organizing the data in order to make use in disaster prevention. For example, the statistics of disasters occurring, , community map data etc. which will be finished in 2013.

## Researching and Development

• Now we are on the process of researching, collecting data for making disaster prevention and mitigation plan from earthquake. We are making the data on risk areas, effects, and possibility of losses that may occur in case earthquake occurs which should be finished in 2014.

# Educating and stimulating disaster

- · Educating and stimulating disaster prevention awareness
- Publishing the manual, leaflet, documents to educate and stimulate self awareness on how to behave during disaster occurs. We published 5000 of "Coping with disaster around you ?????อย่กับภัยใกล้ตัว" books.
- Publicizing knowledge and information via <u>www.Bangkok.go.th./fire</u>
- Stimulating the learning process on dealing with disaster such as typhoon, flooding, fire. In 2011, we had the evacuation drill for all 436 schools under Bangkok Metropolitan Administration.
- Providing evacuation drill for 500 public and private
  companies including the communities.

# Preparedness

### **Staffs**

- Preparedness of fire fighters, fire trucks, and equipments to be ready all the time.
- Preparedness of fire volunteers to be able to help the fire officers when disaster occurs.
- Providing training for fire fighters and fire volunteers for better quality in operation by training 1000 people a year.



- We are trying to create stronger communities that are self dependable and have awareness in education within one's own community. For example, drilling in basic disaster prevention and mitigation, knowing how to inform others when disaster occurs.
- Evacuation drilling to increase individual skills 2 times a year.


















































# RECORD OF DISCUSSIONS

## ON

# TECHNICAL COOPERATION PROJECT FOR BANGKOK MASTER PLAN ON CLIMATE CHANGE 2013-2023

IN

## THE KINGDOM OF THAILAND

# AGREED UPON BETWEEN

# **BANGKOK METROPOLITAN ADMINISTRATION**

# AND

# JAPAN INTERNATIONAL COOPERATION AGENCY

Bangkok, November 7, 2012

Mr. Tomoyuki KAWABATA Senior Representative Thailand Office Japan International Cooperation Agency Japan

Alwander 1003

Mr. Vallop Suwandee Deputy Governor of Bangkok For Governor of Bangkok Bangkok Metropolitan Administration Kingdom of Thailand Based on the Minutes of Meetings on the Detailed Planning Survey on the Project for Bangkok Master Plan on Climate Change 2013-2023 (hereinafter referred to as "the Project") signed on 29<sup>th</sup> June 2012 between Bangkok Metropolitan Administration (hereinafter referred to as "BMA"), and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with BMA and relevant organizations to develop a detailed plan of the Project.

Both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that BMA, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of the Kingdom of Thailand.

The Project will be implemented within the framework of the Agreement on Technical Cooperation between the Government of Japan and the Government of Kingdom of Thailand signed on November 5, 1981 (hereinafter referred to as "the Agreement.").

Appendix 1:	Project Description
Appendix 2:	Main Points Discussed
Appendix 3:	Minutes of Meetings on Japanese Technical Cooperation Project for Bangkok Master Plan on Climate Change 2013-2023, dated 29 <sup>th</sup> June 2012

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## PROJECT DESCRIPTION

## I. BACKGROUND

Bangkok has a very high level of Greenhouse Gas (GHG) emission per capita. At the same time, the city is likely to suffer from the impact of climate change such as flooding, coastal erosion and etc. Consequently, Bangkok Metropolitan Administration (BMA) has been taking several actions to tackle climate change, particularly the implementation of BMA Action Plan on Global Warming Mitigation 2007-2012 which aims at reducing GHG emission by at least 15% under business as usual projection in 2012. In Thailand, BMA has been the first and only municipality that has its own action plan and targets related to climate change. Since the Action Plan will be terminated by 2012, it is necessary for BMA to conduct an assessment and further develop a comprehensive long term master plan. However, the experience and capacity of BMA' staff particularly in effectively planning, implementing and evaluating climate change policies and actions are still limited. In order to formulate a quality Bangkok Master Plan on Climate Change 2013-2023 and to ensure effective implementation and sustainability, BMA requests JICA assistance for technical cooperation project.

## II. OUTLINE OF THE PROJECT

Details of the Project are described in the Logical Framework (Project Design Matrix: PDM) (Annex I) and the tentative Plan of Operation (PO) (Annex II).

- 1. Input
  - (1) Input by JICA
    - (a) Dispatch of Experts

JICA will provide the services of Japanese experts as listed in Annex III.

(b) Training in Japan

JICA will offer training in Japan to Thai counterpart personnel connected with this project.

(c) Local Cost

JICA will shoulder minimum local cost necessary for implementation of the Project except for what is described in the following input by BMA.

(2) Input by BMA

BMA will take necessary measures to provide at its own expense:

 (a) Services of BMA counterpart personnel and administrative personnel as listed in Annex IV;

TLL. V. Auromandes

- (b) Suitable office space with necessary equipment for Japanese experts;
- (c) Information as well as support in obtaining medical service;
- (d) Credentials or identification cards;
- (e) Available data (including maps and photographs) and information related to the Project; and
- (f) Running expenses necessary for the implementation of the Project;

## 2. Implementation Structure

The Project organization chart is given in the Annex V. The roles and assignments of relevant organizations are as follows:

## (1) BMA

(a) Director General, Department of Environment of BMA, as the Project Director, will bear overall responsibility for the administration and implementation of the Project.

(b) Director of Air Quality and Noise Management Division, Department of Environment of BMA, as the Project Manager, will be responsible for the managerial and technical matters of the Project.

## (2) JICA Experts

(a) JICA Project Leader

JICA Project Leader will provide necessary recommendations and advice to the Project Director and Project Manager on any matters pertaining to the implementation of the project.

(b) JICA Experts

JICA experts will give necessary technical guidance, advice and recommendations to BMA on technical matters pertaining to the implementation of the Project.

## (3) Joint Coordinating Committee

Joint Coordinating Committee (hereinafter referred to as "JCC") will be established in order to facilitate inter-organizational coordination. JCC will be held at least once a year and whenever deems it necessary. JCC will approve an annual work plan, review overall progress, conduct monitoring and evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project. A list of proposed members of JCC is shown in the Annex VI.

## 3. Project Sites

The project site is within the Bangkok Metropolitan area.

## 4. Duration

The duration of the project will be two (2) years from the date of the first arrival of JICA expert(s) in the Kingdom of Thailand.

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5. Reports

The following reports will be jointly prepared in English and in Thai by BMA and JICA Experts.

- (1) Assessment Report of BMA Action Plan 2007-2012
- (2) Bangkok Master Plan on Climate Change 2013-2023 (1<sup>st</sup> Draft)
- (3) Bangkok Master Plan on Climate Change 2013-2023 (2<sup>nd</sup> Draft)
- (4) Bangkok Master Plan on Climate Change 2013-2023 (Final)

6. Environmental and Social Considerations

BMA agreed to abide by 'JICA Guidelines for Environmental and Social Considerations (April 2010)' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

## III. UNDERTAKINGS OF BMA

- 1. BMA will take necessary measures to:
  - (1) ensure that the technologies and knowledge acquired by the Thai nationals as a result of Japanese technical cooperation contributes to the economic and social development of Thailand, and that the knowledge and experience acquired by the personnel of Thailand from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project; and
  - (2) grant privileges, exemptions and benefits to the JICA experts referred to in II-1(1) above and their families, which are no less favorable than those granted to experts of third countries performing similar missions in Thailand under the Colombo Plan Technical Cooperation Scheme.
  - (3) Other privileges, exemptions and benefits will be provided in accordance with the Agreement.

## IV. EVALUATION

JICA and BMA will jointly conduct the terminal evaluation during the last six (6) months of the cooperation term

## V. PROMOTION OF PUBLIC SUPPORT

For the purpose of promoting support for the Project, BMA will take appropriate measures to make the Project widely known to the people of Thailand.

# VI. MUTUAL CONSULTATION

JICA and BMA will consult each other whenever any major issues arise in the course of Project implementation.

V. Saustande T.K.

# VII. AMENDMENTS

The record of discussions may be amended by the minutes of meetings between BMA and JICA.

The minutes of meetings will be signed by authorized persons of each side who may be different from the signers of the record of discussions.

TENTATIVE PROJECT DESIGN MATRIX (PDM)
TENTATIVE PLAN OF OPERATION (PO)
LIST OF JICA EXPERTS
LIST OF THAI COUNTERPARTS AND ADMINISTRATIVE PERSONNEL
PROJECT ORGANIZATION CHART
LIST OF MEMBERS OF JOINT COORDINATING COMMITTEE

V. Jamsonster Titi.

# ANNEX I TENTATIVE PROJECT DESIGN MATRIX

Name of Project: Bangkok Master Plan on Climate Change 2013 – 2023 Project period: Two years Implementing organization: BMA

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<ol> <li>Overall Goal:</li> <li>Bangkok Master Plan on Climate Change is well implemented by BMA in a sustainable manner.</li> <li>The responsible departments of the BMA are able to manage, monitor and evaluate the progress of the Master Plan.</li> </ol>	<ul> <li>1-1 Sufficient budget and staff are allocated by each responsible department in BMA to implement the Master Plan.</li> <li>1-2 Positive effects on adaptation and mitigation are recognized by mid-term review of the Master Plan.</li> </ul>	Records of BMA Mid-term review/progress report	
Project Purpose: The Bangkok Master Plan on Climate Change (including its action plan(s) is fully prepared for the implementation.	<ul> <li>1-1 The Bangkok Master Plan on Climate Change is officially approved by BMA by the end of the project duration.</li> <li>1-2 The resources made available for implementation of the Master Plan.</li> <li>1-3 Intra/inter-organizational cooperation and implementation structure is established to implement the Master Plan.</li> </ul>	Gazette of BMA Records of BMA Records of BMA	<ul> <li>Access to external schemes for support (e.g. subsidies) is made available to complement the support for the implementation of the Master Plan</li> </ul>
Output: 1. Based on the assessment of the implementation of the Bangkok Action Plan on Global Warming Mitigation 2007 – 2012, the Bangkok Master Plan on Climate Change 2013 – 2023 is drafted as the framework to deal with the impacts of climate change.	<ul> <li>1-1 The assessment report is prepared by the end of the first year of the project duration.</li> <li>1-2 The Master Plan is accepted by all the participating departments of BMA.</li> </ul>	Assessment report made by BMA The drafted Master Plan	
<ol> <li>The capacity of BMA officials is increased for the efficient and effective implementation of the Bangkok Master Plan on Climate Change 2013 – 2023.</li> </ol>	<ul> <li>2-1 The sufficient number of staff from the participating departments is able to perform assessment and planning.</li> <li>2-2 The training program is developed by BMA.</li> </ul>	Records of BMA Documents on the established training program	
<ul> <li>Activities</li> <li>1.1 To set up the implementation structure (steering committee and working group)</li> <li>1.2 To prepare terms of reference for reviewing the Bangkok Action Plan on Global Warming Mitigation 2007 – 2012</li> <li>1.3 To collect information on the results of the implementation of Bangkok Action Plan on Global Warming Mitigation 2007 – 2012</li> </ul>	Inputs. 1 Japanese side 1) Experts 2) Training in Japan 3) Training in Thailand 4) Equipment 5) Project operation cost	<ul> <li>Preconditions</li> <li>All the participating departments of BMA and other relevant organizations are willing to participate in the</li> </ul>	

1.4 To analyze the collected information and produce an assessment report	2 Thai side () Counterpart personnel	steering committee and
1.5 To take stock of the current situation including the existing BMA Action Plans and other relevant policies and measures, and activities	<ol> <li>Project operation cost</li> <li>Office space and facilities</li> </ol>	working group.
1.6 To review and improve data collection, methodologies for estimation and monitoring of GHG emission and reduction, referring to national standards/systems and reporting formats.		
1.7 To develop overall and sectoral strategies, using problem analysis, selecting practical approaches and identifying available resources and schemes for the implementation of the Master Plan.		
1.8 To draft the Bangkok Master Plan on Climate Change 2013 – 2023 in accordance with the developed sectoral strategies		
1.9 To organize public consultation, workshops and seminars at various levels		
1.10To finalize the Master Plan		
1.11 To facilitate the process for the approval of the Master Plan		
1.12To disseminate the Master Plan to such key organizations as the ministries, public and private organizations and neighboring provinces.		
<ol> <li>1.13 To consult with relevant organizations at appropriate times throughout the project duration</li> </ol>		
2.1 To organize training programs and seminars to strengthen the capacity of BMA staff to facilitate the implementation of the Master Plan including a TOT training programs for instructors and managers		
2.2 To organize seminars and/or workshops for relevant stakeholders		
2.3 To develop and disseminate educational materials on the Master		

# ANNEX II TENTATIVE PLAN OF OPERATION

	Activities/Month	1	2	3	4	.5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
.1	To set up the implementation structure (steering committee and working group)				1								0.75	0.11	1111									1.7	
.2	To prepare terms of reference for reviewing the Bangkok Action Plan on Global Warming Mitigation 2007-2012	-	C										11												
1.3	To collect information on the results of the implementation of Bangkok Action Plan on Global Warming Mitigation 2007-2012	1						T																	
1.4	To analyze the collected information and produce an assessment report.				1D			Asse	ssmer	nt repo	ort		1,1		11										
1.5	To take stock of the current situation including the existing BMA Action Plans and other relevant polities and measures, and activities																								
1.6	To review and improve data collection, methodologies for estimation and monitoring of GHG emission and reduction, referring to national standards/systems and reporting formats		Î													Ĩ									
1,7	To develop overall and sectoral strategies, using problem analysis, selecting practical approaches and identifying available resources and schemes for the implementation of the Master Plan.											-													
.8	To draft the Baugkok Master Plan on Climate Change 2013-2023 in accordance with the developed sectoral strategies							4					4	1st C	Draft			2nd (	Draft						
.9	To organize public consultation, workshops and seminars at various levels							1								i ni	0	-	-	Sili					
.10	To finalize the Master Plan		_			-	1 1				-				-			-	-	-					
m	To facilitate the process for the approval of the Master Plan				h.						1										4	Fin	al repo	ort -	
.12	To disseminate the Master Plan to such key organizations as the ministries, public and private organizations and neighboring provinces				T,																2				
.13	To consult with relevant organizations at appropriate times throughout the project duration	-	-	-	-				-	-			-						-	-					
LI -	To organize training programs and seminars to strengthen the capacity of BMA staff to facilitate the implementation of the Master Plan including a TOT training programs for instructors and managers				1						-	-													
.2	To organize seminars and/or workshops for relevant stakeholders				1			-			Ē			-								-			
.3	To develop and disseminate educational materials on the Master Pian for the public															Ī									

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# ANNEX III LIST OF JAPANESE EXPERTS

Experts in the fields of:

- (1) Team Leader / Master Planning
- (2) Environmentally Sustainable Transport
- (3) Energy Efficiency and Alternative Energy
- (4) Efficient Solid Waste Management and Wastewater Treatment
- (5) Green Urban Planning
- (6) Adaptation Planning
- (7) Other experts for implementing the project activities, if necessary

The fields and number of experts are subject to change.

1. Answeringer (1t.

# ANNEX IV LIST OF THAI COUNTERPARTS AND ADMINISTRATIVE PERSONNEL

1. Project Director	Director General, Department of Environment of BMA			
2. Project Manager Director of Air Quality and Noise Mar Division, Department of Environment				
(3-7 Secretariats )	Environmental Impact Study and Analysis Sub- division			
3. Act.SubLt.Wiruch Tanchanapradit	Chief of Environmental Impact Study and Analysis Sub-Division, Department of Environment(DOE)			
4. Miss Supaporn Kittiwarodom	Environmentalist, DOE			
5. Miss Panyalaln Thawonrat	Environmental Officer, DOE			
6. Miss Thanaporn Kemdang	Environmental Officer, DOE			
7. Miss Natnares Macharoen	Environmental Officer, DOE			

In the event of transfer/posting or retirement of counterpart personnel, his/her successor will be designated immediately.

# List of Working Group Personnel

Working Group 1: Environ	nmentally Sustainable Transport	
Name-Surname	Department/ Task force	Focal point
1. Mr. Oravit Hemachudha	Deputy Director General, Department of Traffic and Transportation (DOT)	
2. Mr. Thosapol Suparee	Chief of Traffic signal Sub-Division, DOT	V
3. Mrs. Kreufah Boondoung	Professional Computer Technical Officer, DOT	
4. Mr. Chakaphong Thienphithak	Civil Engineer, DOT	
5. Mr. Jakrapon Wannagul	Civil Engineer, DOT	

Working Group 2: Energy Eff	iciency and Alternative Energy	
Name-Surname	Department/ Task force	Focal point
1. Mr. Nuttapol Nakapan	Civil Engineer, Department of Public Work (DOPW)	1
2. Mr. Choovat Senparn	Civil Engineer, DOPW	
3. Miss Supaporn Kittiwarodom	Environmentalist, DOE	$\checkmark$
4. Miss Supawan Intoon	Environmental Officer, DOE	
5. Miss Natnares Macharoen	Environmental Officer, DOE	

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Name-Surname	Department/ Task force	Focal point
1. Ms. Wontana Wattiyingyong	Solid Waste Hazardous Waste and Nightsoil Management Division, DOE	
2. Ms. Wankaew Homnan	Sanitary Technical Officer, Solid Waste Hazardous Waste and Nightsoil Management Division, DOE	7
3. Ms. Suthimol Kessomboon	Chief of Project and Sludge Management Sub-Office, Department of Drainage and Sewerage (DODS)	
4. Ms. Sirilak Leerasiri	Chief of Database and Tariff Collection Sub-Office, DODS	V
5. Mr. Pathan Banjongproo	Sanitary Engineer Professional Level, DODS	

Name-Surname	Department/ Task force	Focal point
1. Mr. Surasak Wongpoot	Urban Planner, Department of City Planning (DOCP)	
2. Ms. Soysook Phongspul	Urban Planner, DOCP	V
<ol> <li>Ms. Khwanchanok Sakkosit</li> </ol>	Urban Planner, DOCP	
4. Ms. Sukontha Yimpong	Urban Planner, DOCP	
5. Ms. Thipawan Saenchan	Urban Planner, DOCP	

Name-Surname	Department/ Task force	Focal point
1. Mr. Keerati Sripramai	Disaster Prevention and Mitigation Practitioner Level, Bangkok Fire and Reserve Department	1
2. Ms. Patcharee Iamkamala	Policy Planning Analyst, Strategy and Evaluation Department	V
3. Mr. Vichai Somboon	Chief of Project and Management Sub-Office, DODS	
<ol> <li>Mr. Surat Jaroenchaisakul</li> </ol>	Chief of Drainage System Development Sub-Division, DODS	
5. Mrs. Siriporn Tantivanich	Chief of Vehicle Emission Sub- Division, DOE	
6. Ms. Orapim Pimcharoen	Urban Planner, DOCP	
7. Mr. Jarupong Pengglieng	Environmentalist, DOE	
8. Mr. Sanya Phanphitthayut	Environmentalist, DOE	-
9. Mr. Woraphong Billy	Environmental Officer, DOE	V

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# ANNEX V PROJECT ORGANIZATION CHART

Implementation Structure



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## ANNEX VI LIST OF MEMBERS OF JOINT COORDINATING COMMITTEE

# I. FUNCTION

The Joint Coordinating Committee (hereinafter referred to as "JCC"), composed of members listed in 2 below, will meet at least once a year and whenever the necessity arises. JCC may be organized jointly with Steering Committee (as shown in Annex V). The main functions of JCC shall be as follows;

- To formulate the annual operational work plan of the Project based on the tentative schedule of implementation within the framework of the Record of Discussions (R/D)
- (2) To review the overall progress and achievements of the Project
- (3) To examine major issues arising from or in connection with the Project
- (4) To work out the modification of activities depending on the necessity
- (5) To endure smooth implementation of the Project and to secure ministerial coordination, guidance and supervision

## 2. COMMITTEE COMPOSITION

(1) Chairperson:

Deputy-Governor of BMA

(2) Committee Members

## 1) Thai side

- Representative(s) of BMA
- Representative(s) of Thailand Greenhouse Gas Management Organization (Public Organization) (TGO)
- Representative(s) of Pollution Control Department (PCD)
- Representative(s) of Office of Natural Resources and Environmental Policy and Planning (ONEP)
- Representative(s) of Department of Alternative Energy Development and Efficiency (DEDE)
- Representative(s) of Office of the National Economic and Social Development Board (NESDB)
- Representative(s) of Office and Transport and Traffic Policy and Planning (OTP)
- Representative(s) of Thailand International Development Cooperation Agency (TICA)
- Other official(s) appointed by the Chairperson or the Project Director

2) Japanese side

- JICA Experts to be dispatched by JICA.
- Representative(s) of JICA Thailand Office
- Other personnel concerned to be decided and/or dispatched by JICA, if necessary

3) Observer

- Official(s) of the Embassy of Japan in Thailand
- Other official(s) appointed by the Chairperson or the Project Director may attend the Committee meetings as observer(s)

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## MAIN POINTS DISCUSSED

## 1. Justification of the Project

(1) Bangkok has a very high level of Greenhouse Gas (GHG) emission per capita that is as high as 7.1 tons of CO2 per annum in 2007. Thus, promotion of measures against climate change in BMA would significantly contribute to the reduction of national emission of GHGs in the Kingdom of Thailand.

(2) In Thailand, BMA has been the first and only municipality that has its own action plan and targets related to climate change. BMA's effort to plan and implement a Master Plan on Climate Change 2013-2023 is expected to facilitate the initiatives at regional/provincial levels in tackling climate change in the future.

(3) This Project is designed to develop the capacity of BMA and to prepare the enabling environment to implement the Master Plan so that BMA will be able to tackle climate change in a sustainable manner.

(4) The Project is considered as an integral part of the Thai Government's effort to proceed with measures against climate change.

#### 2. Implementation Structure

The implementation structure of the Project is shown in Annex V of the Record of Discussions. The Steering Committee will set directions of the Project and conduct inter-organizational coordination. The Working Group will be responsible for the management and operation of Project activities. The Department of Environment of BMA will act as the secretariat to the Steering Committee. Each related department of BMA will be in charge of their respective tasks directed by the Working Group. Task Forces may be formed to deal with technical issues.

## 3. Scope of Bangkok Master Plan on Climate Change

In addition to the 5 initiatives of mitigation in the BMA Action Plan on Global Warming Mitigation 2007-2012, BMA side has proposed to include adaptation initiatives in the Bangkok Master Plan on Climate Change 2013-2023. Detailed scope of initiatives covered by the Master Plan is to be decided through Steering Committee and Working Group discussions. The initiatives to be discussed are as follows:

(1) Environmentally Sustainable Transport

- (2) Energy Efficiency and Alternative Energy
- (3) Efficient Solid Waste Management and Wastewater Treatment
- (4) Green Urban Planning
- (5) Adaptation Initiatives

#### 4. Training Programs

Training programs in Japan and other activities under Output 2 of the PDM will be conducted for the purpose of capacity development of BMA Officials in order to facilitate inter-organizational cooperation and to foster the common understanding among participating organizations on the development of the Master Plan, as well as to learn from Japanese experiences such as planning/implementation/evaluation of mitigation/adaptation measures and facilitation of public participation.

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# 5. Involvement of Yokohama City

BMA requested to JICA, and JICA agreed to provide BMA staff with opportunities to learn from the experiences of Yokohama City through training in Japan or dispatching of experts.

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Appendix 3

# MINUTES OF MEETINGS ON JAPANESE TECHNICAL COOPERATION PROJECT FOR BANGKOK MASTER PLAN ON CLIMATE CHANGE 2013 - 2023

29th June 2012

V. Anoración Titi.

#### MINUTES OF MEETINGS BETWEEN JAPAN INTERNATIONAL COOPERATION AGENCY AND BANGKOK METROPOLITAN ADMINISTRATION ON JAPANESE TECHNICAL COOPERATION PROJECT FOR BANGKOK MASTER PLAN ON CLIMATE CHANGE 2013-2023 IN THE KINGDOM OF THAILAND

Japan International Cooperation Agency (hereinafter referred to as "JICA") and Bangkok Metropolitan Administration (hereinafter referred to as "BMA") had a series of discussions for the purpose of discussing the detailed framework of the technical cooperation project for Bangkok Master Plan on Climate Change 2013-2023 (hereinafter referred to as "the Project").

As a result of the discussions, both sides agreed on the matters referred to in the document attached hereto.

Bangkok, 29th June 2012

Mr. Hiroshi ENOMOTO Director of Office for Climate Change Global Environment Department Japan International Cooperation Agency Japan

Mr. Kriengpol Padhanarath Deputy Director-General Department of Environment Bangkok Metropolitan Administration Kingdom of Thailand

## THE ATTACHED DOCUMENT

## L TITLE OF THE PROJECT

The title of the Project is "Bangkok Master Plan on Climate Change 2013-2023".

## II. RECORD OF DISCUSSIONS

The draft Record of Discussions (hereinafter referred to as "R/D"), which stipulates the framework of the Project, will be finalized and signed by the representatives of BMA and JICA Thailand Office after notification of approval of implementation of the Project by both sides.

Both side agreed on the draft R/D as shown in Appendix I.

## III. PROJECT DESIGN MATRIX

The Japanese side explained that Project Design Matrix (hereinafter referred to as "PDM") is to be introduced for the efficient and effective management and evaluation of the Project. Both sides agreed on the PDM of the Project as shown in the Appendix II. The PDM may be reviewed and revised, when necessity arises in the course of implementation of the Project.

## IV. TENTATIVE PLAN OF OPERATION

The tentative Plan of Operation (hereinafter referred to as "PO") for the Project is shown in Appendix III. The activities of the Project may be subject to change in the scope of the R/D with mutual consultation when necessity arises in the course of implementation of the Project.

#### V. OTHERS

#### 1. Administration of the Project

(1) Director General, Department of Environment of BMA, as the Project Director, will bear overall responsibility for the administration and implementation of the Project.

(2) Director of Air Quality and Noise Management Division, Department of Environment of BMA, as the Project Manager, will be responsible for the managerial and technical matters of the Project.

(3) The Japanese Experts will give necessary technical guidance and advice to the Thai counterpart personnel on technical matters pertaining to the implementation of the Project.

#### 2. Cooperation Period of the Project

The duration of the technical cooperation for the Project will be two (2) years from the date of Japanese Expert's arrival in the Kingdom of Thailand.

#### 3. Justification of the Project

(1) Bangkok has a very high level of Greenhouse Gas (GHG) emission per capita that is as

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high as 7.1 tons of CO2 per annum in 2007. Thus, promotion of measures against climate change in BMA would significantly contribute to the reduction of national emission of GHGs in the Kingdom of Thailand.

(2) In Thailand, BMA has been the first and only municipality that has its own action plan and targets related to climate change, BMA's effort to plan and implement Master Plan is expected to facilitate the initiatives at regional/provincial levels in tackling climate change in the future.

(3) This Project is designed to develop the capacity of BMA and to prepare the enabling environment to implement Master Plan so that BMA will be able to tackle climate change in a sustainable manner.

(4) The Project is considered as an integral part of the Thai Government's effort to proceed with measures against climate change.

#### 4. Implementation Structure

The implementation structure of the Project is shown in Annex V of the draft Record of Discussions. The Steering Committee will set directions of the Project and conduct inter-organizational coordination. The Working Group will be responsible for the management and operation of Project activities. The Department of Environment of BMA will act as the secretariat to the Steering Committee. Each related department of BMA will be in charge of their respective tasks directed by the Working Group. Task Forces may be formed to deal with technical issues.

#### 5. Scope of Bangkok Master Plan on Climate Change

In addition to the 5 initiatives of mitigation in the BMA Action Plan on Global Warming Mitigation 2007-2012, BMA side has proposed to include adaptation initiatives in the Bangkok Master Plan on Climate Change 2013-2023. Detailed scope of initiatives covered by the Master Plan is to be decided through Steering Committee and Working Group discussions. The initiatives to be discussed are as follows:

- (1) Environmentally Sustainable Transport
- (2) Energy Efficiency and Alternative Energy
- (3) Efficient Solid Waste Management and Wastewater Treatment
- (4) Green Urban Planning
- (5) Adaptation Initiatives

#### 6. Training Programs

Training programs in Japan will be conducted in order to facilitate inter-organizational cooperation and to foster the common understanding among participating organizations on the development of Master Plan, as well as to learn from Japanese experiences.

#### 7. Involvement of Yokohama City

BMA requested to JICA to provide BMA staff with opportunities to learn from the experiences of Yokohama City through training in Japan or dispatching of experts.



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Appendix I	Draft Record of Discussions
Appendix II	Project Design Matrix
Appendix III	Tentative Plan of Operation
Appendix IV	Annexes III-VII of R/D

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Appendix I of M/M

(Draft) RECORD OF DISCUSSIONS

ON

## TECHNICAL COOPERATION PROJECT FOR BANGKOK MASTER PLAN ON CLIMATE CHANGE 2013-2023

IN

## **KINGDOM OF THAILAND**

## AGREED UPON BETWEEN

## BANGKOK METROPOLITAN ADMINISTRATION

# AND

# JAPAN INTERNATIONAL COOPERATION AGENCY

Bangkok,

, 2012

Chief Representative Thailand Office Japan International Cooperation Agency (JICA) Japan

Eangkok Metropolitan Administration Kingdom of Thailand

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Based on the Minutes of Meetings on the Detailed Planning Survey on the Project for Bangkok Master Plan on Climate Change 2013-2023 (hereinafter referred to as "the Project") signed on 29<sup>th</sup> June, 2012 between Bangkok Metropolitan Administration (hereinafter referred to as "BMA"), and the Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA held a series of discussions with BMA and relevant organizations to develop a detailed plan of the Project.

Both parties agreed the details of the Project and the main points discussed as described in the Appendix 1 and the Appendix 2 respectively.

Both parties also agreed that BMA, the counterpart to JICA, will be responsible for the implementation of the Project in cooperation with JICA, coordinate with other relevant organizations and ensure that the self-reliant operation of the Project is sustained during and after the implementation period in order to contribute toward social and economic development of the Kingdom of Thailand.

The Project will be implemented within the framework of the Agreement on Technical Cooperation between the Government of Japan and the Government of Kingdom of Thailand signed on November 5, 1981 (hereinafter referred to as "the Agreement.").

 Appendix 1:
 Project Description

 Appendix 2:
 Main Points Discussed

 Appendix 3:
 Minutes of Meetings on the Project for Bangkok Master Plan on Climate Change 2013-2023

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## PROJECT DESCRIPTION

## I. BACKGROUND

Bangkok has a very high level of Greenhouse Gas (GHG) emission per capita. At the same time, the city is likely to suffer from the impact of climate change such as flooding, coastal erosion and etc. Consequently, Bangkok Metropolitan Administration (BMA) has been taking several actions to tackle climate change, particularly the implementation of BMA Action Plan on Global Warming Mitigation 2007-2012 which aims at reducing GHG emission by at least 15% under business as usual projection in 2012. In Thailand, BMA has been the first and only municipality that has its own action plan and targets related to climate change. Since the Action Plan will be terminated by 2012, it is necessary for BMA to conduct an assessment and further develop a comprehensive long term master plan. However, the experience and capacity of BMA' staff particularly in effectively planning, implementing and evaluating climate change policies and actions are still limited. In order to formulate a quality Bangkok Master Plan on Climate Change 2013-2023 and to ensure effective implementation and sustainability, BMA requests JICA assistance for technical cooperation project.

#### **II. OUTLINE OF THE PROJECT**

Details of the Project are described in the Logical Framework (Project Design Matrix: PDM) (Annex I) and the tentative Plan of Operation (PO) (Annex II).

1. Input

(1) Input by JICA

(a) Dispatch of Experts

JICA will provide the services of Japanese experts as listed in Annex III.

(b) Training in Japan

JICA will offer training in Japan to Thai counterpart personnel connected with this project.

(c) Local Cost

JICA will shoulder minimum local cost necessary for implementation of the Project except for what is described in the following input by BMA.

(2) Input by BMA

BMA will take necessary measures to provide at its own expense: (a) Services of BMA counterpart personnel and administrative personnel as listed in Annex IV;

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- (b) Suitable office space with necessary equipment for Japanese experts;
- (c) Information as well as support in obtaining medical service;
- (d) Credentials or identification cards;
- (e) Available data (including maps and photographs) and information related to the Project; and
- (f) Running expenses necessary for the implementation of the Project;

#### 2. Implementation Structure

The Project organization chart is given in the Annex V. The roles and assignments of relevant organizations are as follows:

(1) BMA

(a) Director General, Department of Environment of BMA, as the Project Director, will bear overall responsibility for the administration and implementation of the Project.

(b) Director of Air Quality and Noise Management Division, Department of Environment of BMA, as the Project Manager, will be responsible for the managerial and technical matters of the Project.

## (2) JICA Experts

(a) JICA Project Leader

JICA Project Leader will provide necessary recommendations and advice to the Project Director and Project Manager on any matters pertaining to the Implementation of the project.

(b) JICA Experts

JICA Experts will give necessary technical guidance, advice and recommendations to BMA on technical matters pertaining to the implementation of the Project.

## (3) Joint Coordinating Committee

Joint Coordinating Committee (hereinafter referred to as "JCC") will be held at least once a year and whenever deems it necessary. JCC will approve an annual work plan, review overall progress, conduct monitoring and evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project. A list of proposed members of JCC is shown in the Annex VI.

#### 3. Project Sites

The project site is within the Bangkok Metropolitan area.

4. Duration

The duration of the project will be two (2) years from the date of the first arrival of JICA expert(s) in the Kingdom of Thailand.

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## 5. Reports

The following reports will be jointly prepared in English and in Thai by BMA and JICA Experts.

- (1) Assessment Report of BMA Action Plan 2007-2012
- (2) Bangkok Master Plan on Climate Change 2013-2023 (1<sup>st</sup> Draft)
- (3) Bangkok Master Plan on Climate Change 2013-2023 (2nd Draft)
- (4) Bangkok Master Plan on Climate Change 2013-2023 (Final)

6. Environmental and Social Considerations

BMA agreed to abide by 'JICA Guidelines for Environmental and Social Considerations (April 2010)' in order to ensure that appropriate considerations will be made for the environmental and social impacts of the Project.

#### III. UNDERTAKINGS OF BMA

- 1. BMA will take necessary measures to:
  - (1) ensure that the technologies and knowledge acquired by the Thai nationals as a result of Japanese technical cooperation contributes to the economic and social development of Thailand, and that the knowledge and experience acquired by the personnel of Thailand from technical training as well as the equipment provided by JICA will be utilized effectively in the implementation of the Project; and
  - (2) grant privileges, exemptions and benefits to the JICA experts of the JICA missions above and their families, which are no less favorable than those granted to experts of third countries performing similar missions in Thailand under the Colombo Plan Technical Cooperation Scheme.

#### IV. EVALUATION

JICA and BMA will jointly conduct the terminal evaluation during the last six (6) months of the cooperation term

# V. PROMOTION OF PUBLIC SUPPORT

For the purpose of promoting support for the Project, BMA will take appropriate measures to make the Project widely known to the people of Thailand.

#### VI. MUTUAL CONSULTATION

JICA and BMA will consult each other whenever any major issues arise in the course of Project implementation.

#### VII. AMENDMENTS

The record of discussions may be amended by the minutes of meetings between BMA and JICA.

The minutes of meetings will be signed by authorized persons of each side who may be different from the signers of the record of discussions.

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Annex I	Tentative Project Design Matrix (PDM)
Annex II	Tentative Plan of Operation (PO)
Annex III	List of JICA Experts
Annex IV	List of BMA Counterpart Personnel
Annex V	Project Organization Chart
Annex VI	List of Members of Joint Coordinating Committee

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## MAIN POINTS DISCUSSED

#### 1. Justification of the Project

(1) Bangkok has a very high level of Greenhouse Gas (GHG) emission per capita that is as high as 7.1 tons of CO2 per annum in 2007. Thus, promotion of measures against climate change in BMA would significantly contribute to the reduction of national emission of GHGs in the Kingdom of Thailand.

(2) In Thailand, BMA has been the first and only municipality that has its own action plan and targets related to climate change. BMA's effort to plan and implement Master Plan is expected to facilitate the initiatives at regional/provincial levels in tackling climate change in the future.

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## 4. Training Programs

Training programs in Japan will be conducted in order to facilitate inter-organizational cooperation and to foster the common understanding among participating organizations on the development of Master Plan as well as to learn from Japanese experiences.

#### 5. Involvement of Yokohama City

BMA requested to JICA to provide BMA staff with opportunities to learn from the experiences of Yokohama City through training in Japan or dispatching of experts.

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Appendix II of M/M

# Project Design Matrix as of June 2012

Name of Project: Bangkok Maser Plan on Climate Change 2013 - 2023 Project period: Two years

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Implementing organization: BMA	Oble disaba Madifichia Indicatore	Means of Verification	Important Assumptions
Narrative Summary	Objectively verificable indicators	Intents of Terrorenson	anipet mate and a second
<ul> <li>Overall Goal:</li> <li>1. Bangkok Master Plan on Climate Change is well implemented by BMA in a sustainable manner.</li> <li>2. The responsible departments of the BMA are able to manage, monitor and evaluate the progress of the Bangkok Master Plan.</li> </ul>	<ul> <li>1-1 Sufficient budget and staff are allocated by each responsible department in BMA to implement the Master Plan.</li> <li>1-2 Positive effects on adaptation and mitigation are recognized by mid-term review of the Master Plan.</li> </ul>	Records of BMA Mid-term review/progress report	
Project Purpose: The Bangkok Master Plan on Climate Change (including its action plan(s) is fully prepared for the implementation.	<ol> <li>1-1 The Bangkok Master Plan on Climate Change is officially approved by BMA by the end of the project duration.</li> <li>1-2 The resources made available for implementation of the Master Plan.</li> <li>1-3 Intra/inter-organizational cooperation and implementation structure is established to implement the Master Plan.</li> </ol>	Gazette of BMA Records of BMA Records of BMA	<ul> <li>Access to external schemes for support (eg subsidies) is made available to complement the support for the implementation of the Mater Plan.</li> </ul>
Output: 1. Based on the assessment of the implementation of the Bangkok Action Plan on Global Warming Mitigation 2007-2012, the Bangkok Master Plan on Climate Change 2013 - 2023 is drafted as the Second to deal with the impacts of climate change.	<ul> <li>1-1 The assessment report is prepared by the end of the first year of the project duration.</li> <li>1-2 The Master Plan is accepted by all the participating departments of BMA.</li> </ul>	Assessment report made by BMA The drafted Master Plan	
<ol> <li>The capacity of BMA officials is increased for the efficient and effective implementation of the Bangkok Master Plan on Climate Change 2013 – 2023.</li> </ol>	<ul> <li>2-1 The sufficient number of staff from the participating departments is able to perform assessment and planning.</li> <li>2-2 The training program is developed by BMA.</li> </ul>	Records of BMA Documents on the established training program	
<ul> <li>Activities</li> <li>1.1 To set up the implementation structure (stearing committee and working group)</li> <li>1.2 To prepare terms of reference for reviewing the Bangkok Action Plan</li> <li>1.3 To collect information on the results of the implementation of Bangkok Action Plan on Global Warming Mitigation 2007-2012</li> <li>1.4 To analyze the collected information and produce an assessment</li> </ul>	Inputs. 1 Japanese side 1) Experts 2) Training in Japan 3) Training in Thailand 4) Equipment 5) Project operation cost 2 Thai side		Preconditions     All the participating departments of BMA and other relevant organizations are willing to participate in the steering committee and

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1	1) Countermart personne)	working group
report	2) Project operation cost	
Action Plans and other relevant policies and measures, and activities	<ol> <li>Office space and facilities</li> </ol>	
1.6 To review and improve data collection, methodologies for estimation and monitoring of GHG emission and reduction, referring to national standards/systems and reporting formats.		
1.7 To develop overall and sectoral strategies, using problem analysis, selecting practical approaches and identifying available resources and schemes for the implementation of the Master Plan.		
1.8 To draft the Bangkok Master Plan on Climate Change in accordance with the developed sectoral strategies		
1.9 To organize public consultation, workshops and seminars at various levels		
1.10To finalize the Bangkok Master Plan		
1.11To facilitate the process for the approval of the Bangkok Master Plan		
<ol> <li>1.12To disseminate the Bangkok Master Plan to such key organizations as the ministries, public and private organizations and neighboring provinces.</li> </ol>		
1.13To consult with relevant organizations at appropriate times throughout the project duration		
2.1 To organize training programs and seminars to strengthen the capacity of BMA staff to facilitate the implementation of the BMA		
Master Plan including a TOT training programs for instructors and managers		
2.2 To organize seminars and/or workshops for relevant stakeholders		
2.3 To develop and disseminate educational materials on the BMA Master Plan for the public		

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Tentative Plan of Operation

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# Appendix IV of M/M ANNEXES III-VII of R/D

#### ANNEX III of R/D LIST OF JAPANESE EXPERTS

Experts in the field of:

- Team Leader / Master Planning
   Environmentally Sustainable Transport
   Energy Efficiency and Alternative Energy
   Efficient Solid Waste Management and Wastewater Treatment
- (5) Green Urban Planning
- (6) Adaptation Planning
- (7) Other experts for implementing the project activities, if necessary

The fields and number of experts are subject to change.

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## ANNEX IV of R/D LIST OF THAI COUNTERPARTS AND ADMINISTRATIVE PERSONNEL

Project Position	Position/Organization											
Project Director	Director General, Department of Environment of BMA											
Project Manager	Director of Air Quality and Noise Management Division, Department of Environment of BMA											

In the event of transfer / posting or retirement of counterpart personnel, his/her successor will be designated immediately.

The list of other Thai counterpart personnel will be prepared by BMA before signing of R/D.

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## ANNEX V of R/D Project Organization Chart

## Implementation Structure



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#### ANNEX VII of R/D LIST OF MEMBERS OF JOINT COORDINATING COMMITTEE

#### 1. FUNCTION

The Joint Coordinating Committee (hereinafter referred to as "ICC"), composed of members listed in 2 below, will meet at least once a year and whenever the necessity arises. JCC may be organized jointly with Steering Committee (as shown in Annex V). The main functions of JCC shall be as follows;

- To formulate the annual operational work plan of the Project based on the tentative schedule of implementation within the framework of the Record of Discussions (R/D)
- (2) To review the overall progress and achievements of the Project
- (3) To examine major issues arising from or in connection with the Project
- (4) To work out the modification of activities depending on the necessity
- (5) To endure smooth implementation of the Project and to secure ministerial coordination, guidance and supervision

#### 2. COMMITTEE COMPOSITION

(1) Chairperson:

Deputy-Governor of BMA

(2) Committee Members

1) Thai side

- · Representative(s) of BMA
- · Representative(s) of TGO
- · Representative(s) of PCD
- · Representative(s) of ONEP
- Representative(s) of DEDE
- Representative(s) of NESDB
- · Representative(s) of OTP
- Representative(s) of TICA
- · Other official(s) appointed by the Chairperson or the Project Director

2) Japanese side

- JICA Experts to be dispatched by JICA
- Representative(s) of JICA Thailand Office
- Other personnel concerned to be decided and/or dispatched by JICA, if necessary

3) Observer

- Official(s) of the Embassy of Japan in Thailand
- Other official(s) appointed by the Chairperson or the Project Director may attend the Committee meetings as observer(s)

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